IMPROVEMENT OR PERIL: THE PARADOX OF PROFESSIONALIZING INNOVATION-DRIVEN PORTFOLIO FIRMS

by

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ABSTRACT

MELISSA RENEE-CARTER MEDAUGH. Improvement or peril: The paradox of professionalizing innovation-driven portfolio firms. (Under the direction of DR. FRANZ KELLERMANNS)

To understand why some innovation-driven portfolio firms benefit more from venture capital (VC) funding than others, I explore the salient phenomenon of founder CEO exit. Integrating institutional logics and psychological contracts theories, I propose a meso-level theoretical framework that identifies and explains how an institutional logic of new venture professionalization shapes suboptimal founder CEO exit strategy in portfolio firms. Founder CEO exits may enhance institutional legitimacy, while also fostering contentious relational dynamics that undermine trust and cooperation between founders and venture capitalists; spill over to affect observers; and contribute to a negative sociopolitical climate within portfolio firms. I derive and test hypotheses about the paradoxical effects of founder CEO exit on portfolio firm performance over time and likelihood of failure, including how the conditions of exit – namely, the timing and nature of the exit event – influence those outcomes. I use growth modeling and logistic regression to analyze a unique panel data set of 182 high-technology portfolio firms, founded 1990-2010. Despite mixed empirical results, I found overall support for my proposition: Rigid implementation of founder CEO exit strategy in portfolio firms may improve some short-term metrics of performance (i.e., valuation), while imperiling other longer-term outcomes (i.e., profitability and odds of survival).

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"Unlike the linear accumulation of knowledge and ability one might hope for, the path to mastery is filled with serendipity, accidents, dead ends, and do-overs." McCall (2010:5)

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DEDICATION

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

Purpose of the Research

Venture capital (VC) has emerged over the past 30 years as an important facilitator of technological developments and commercialized innovations around the world (Gornall & Strebulaev, 2015; Jackson, 2011; Puri & Zarutskie, 2012). VC refers to private equity investment that is funded by groups of limited partners and managed by venture capitalists who act as fiduciaries of the fund. Venture capitalists often invest in high risk, innovation-driven startups or earlier stage firms to earn a potentially high-return for their limited partners (Huang & Knight, 2017; Puri & Zarutskie, 2012; Wasserman, 2003). These new ventures may bring radical innovations to existing markets, create new markets, or introduce new technologies with potential to do either (Hellmann & Puri, 2002). Moreover, VC-backed firms, also referred to as portfolio firms, contribute substantially to national and global economies. For example, portfolio firms accounted for approximately 21% of U.S. GDP in 2008 (Gornall & Strebulaev, 2015). By 2013, 42% of public U.S. firms (founded 1974-2013) had acquired VC at some point, including innovative icons Amazon, Apple, FedEx, Google, Microsoft, and Tesla (Gornall & Strebulaev, 2015). These portfolio firms also accounted for over 80% ($115 billion) of public firm expenditures on research and development and employed nearly 40% of public company employees. Given the importance of innovation-driven portfolio firms and thus, VC, to the economy, it is no wonder why scholars continue to examine how and under what conditions VC contributes to portfolio firm success.

Indeed, venture capitalists who work closely with founders of portfolio firms may add value above and beyond the financial capital they provide (Hellmann & Puri, 2002).

They often act as scouts, strategic advisors, and coaches, selecting high potential portfolio firms, offering advice and mentorship, and connecting entrepreneurs to new customers, suppliers, and talent (Berglund, 2011; Bertoni et al., 2011; Hellmann, 2000). Venture capitalists also tend to monitor portfolio firms closely and help portfolio firms professionalize operations (Hellmann & Puri, 2002). Demonstrating the potential benefit afforded new portfolio firms, Puri and Zarutskie (2012) found that failure hazard tends to be lower for portfolio firms when compared to matched non-portfolio firms, at least in the short-term. Additionally, portfolio firms tend to grow faster and larger and are more likely than non-portfolio firms to make an initial public offering (IPO) or be acquired; both are considered successful outcomes (Da Rin, Hellmann, & Puri, 2011; Gompers & Lerner, 1998).

Nonetheless, 40% to over 60% of portfolio firms fail (Hellmann & Puri, 2002; Kaplan et al., 2009; Wasserman, 2003, 2012). Indeed, a more holistic review of the literature reveals inconsistent findings regarding the benefits of VC (see Rosenbush, Brinckmann, & Müller, 2013). Many studies challenge the so-called “value-added proposition” (Busenitz, Fiet, & Moesel, 2004), suggesting the "initial head start" gained from VC may not last (Chemmanur, Krishnan, & Nandy, 2011; Florin, 2005; Puri & Zarutskie, 2012). VC may also foster advantages on certain performance metrics (e.g., growth, valuation), but not others (e.g., profitability) (Croce, Marti, & Murtinu, 2013; Florin, 2005; Wasserman, 2017). Regarding the mixed conclusions of their meta-analysis, Rosenbusch et al. (2013) suggested that the potential benefits afforded portfolio firms by acquiring VC “may be offset by disadvantages,” including “dependencies and strategic rigidities that are attached to financial resources provided by [venture capitalists]” (p.

348). Such dependency and strategic rigidity has been observed in the enactment of founder exit[1] strategies in portfolio firms (Wasserman, 2003). Founder exit refers to a founder's voluntary or involuntary removal from the "primary ownership and decision-making structures of the firm" (DeTienne, 2010: 204). Accordingly, I aimed through the current study to better understand how founder exit is enacted in portfolio firms, including the conditions of founder exit that may offset the benefit potential associated with VC.

Research Questions

Founder exit is considered an important organizational milestone that allows firms to advance and grow beyond the limited managerial capacities of their founders (Boeker & Karichalil, 2002). However, like research on the effects of VC on portfolio firm performance, past research reveals no consensus on the performance benefits of founder exit. Rather, research shows that founder exit may be strategic, resulting in performance improvements (Wasserman, 2017), or disruptive, resulting in organizational crisis (Lerner, 1994) and even failure (Chen & Thompson, 2015; Guenther, Oertel, & Walgenbach, 2016). For instance, Wasserman (2017) found that firms retaining their founders are valued less than firms that hire professional CEOs; however, Wasserman did not evaluate the longitudinal effects of founder CEO exit on firm valuation. Indeed, Hendricks and Miller's (2014) longitudinal study revealed that the valuation premium afforded to firms with non-founder CEOs at IPO quickly diminished, as those firms underperformed when compared to their founder-led peers. Guenther et al.'s (2016) cross-industry study also emphasized the hazards associated with founder exit during the

[1] I use founder replacement, exit, and succession interchangeably throughout this paper.

early years of a firm's life cycle (the "sensitive period"). Firms that experienced founder exit within the first nine years of founding were more likely to fail.

Although a substantial body of literature examines the effects of founder exit on firm outcomes, the phenomenon is surprisingly understudied in the context of portfolio firms (Ewen & Marx, 2018; van Dijk, Schrevel, van Stormbroek-Burgers, & Blomme, 2014). Venture capitalists on the firms' boards of directors, however, routinely seek external, professional CEOs to replace founders in their efforts to help professionalize portfolio firm operations and top management structures (Christiensen et al., 2009; Wasserman, 2003). They tend to exert great influence over the timing of founder exit and conditions under which founders exit from their CEO positions (Kaplan, Sensoy, & Strömberg, 2009; Hellmann & Puri, 2002; Jung, 2014; Wasserman, 2003). Indeed, founders of portfolio firms are more likely than founders of non-portfolio firms to exit (Boeker & Wiltbank, 2005) and exit sooner (Wasserman, 2003).

Moreover, founder CEOs of portfolio firms are particularly vulnerable to forced exit (Christiensen et al., 2009; Fiet, Busenitz, Moesel, & Barney, 1997; Hellmann & Puri, 2002; Wasserman, 2012). Forced exits occur when venture capitalists and venture capitalist-led boards of directors enact contractual provisions that allow them to replace founder CEOs without founders' explicit or voluntary consent (Wasserman, 2012). Yet, the inherently adversarial nature of forced exits may undermine cooperative founder-venture capitalist relationships, which are vital to portfolio firm success (Cable & Shane, 1997; Bygrave & Timmons, 1992). The potential for founder CEO exits to occur during sensitive developmental periods and under adversarial conditions may thus diminish the

performance benefit of founder exit in portfolio firms (Guenther et al., 2016; Lerner, 1994). These conditions remain underexplored in the extant literature.

The potential for some portfolio firms to experience organizational crisis when founder CEOs exit, combined with the relatively limited research that explores this possibility, suggests founder exit is a fertile topic to explore when attempting to understand why the full value-added potential of VC may unrealized or unsustainable. Accordingly, I sought here to answer the following related research questions: 1) *How does founder CEO exit affect portfolio firms' performance (i.e., valuation and profitability) over time and likelihood of failure?* and 2) *How do the conditions of founder CEO exit – namely, the timing and nature of the exit event (i.e., amicable, accommodating, or adversarial) – influence these same firm outcomes?*

Theoretical Framework

To answer these research questions, I approached founder CEO exit from an institutional perspective (i.e., institutional logics) and integrated psychological contracts theory to conceptualize its performance effects on innovation-driven portfolio firms. I began with a discussion of the foundational premises of new institutionalism (DiMaggio & Powell, 1983) and the key characteristics of the institutional environment in which innovation-driven portfolio firms and VC firms operate. I identified what I refer to as the institutional logic (IL) of new venture professionalization (Thornton, Ocasio, & Lounsbury, 2012), which I posited drives the paradoxical enactment of founder CEO exit in portfolio firms. That is, replacing founder CEOs with professional management may be consistent with institutional norms and provide some short-term benefits, but the timing and nature of exit may increase hazards when purposed to enhanced legitimacy,

not efficiency. I then considered research on psychological contracts theory (Rousseau, 1989) to explain how the IL of new venture professionalization, through founder CEO exit, shapes exchange relationships between founders and venture capitalists, influences the sociopolitical climate within portfolio firms (Cannella & Lubatkin, 1993), and, ultimately, affects firm performance and survival. The integration of psychological contracts theory and institutional theory provided insights into the paradoxical effects of founder CEO exit on portfolio firms, despite potential advantages that VC might otherwise afford. Below I briefly describe institutional and psychological contracts theories and how I applied each to develop a theoretical model and hypotheses that I test using a unique panel data set.

Institutional theory. New institutional theory (DiMaggio & Powell, 1983) explains how organizations in a field (i.e., groups of organizations involved in similar or related activities) become more homogeneous and adopt similar organizational forms (i.e., structures, policies, and processes). Importantly, new institutional theory posits that decisions to adopt specific organizational structures are less often driven by rational calculations to improve efficiency and performance than attempts to reduce uncertainty and gain and maintain legitimacy within established organizational fields (DiMaggio & Powell, 1983). Legitimacy refers to institutional actors' perceptions of appropriate organizational forms and behaviors (Suchman, 1995). Perceptions of legitimacy are grounded in taken-for-granted "practices, assumptions, values, beliefs, and rules" (i.e., institutional logics) (Thornton & Ocasio, 1999: 804) that focus attention and shape institutional actors' preferences, interests, goals, social interactions, decisions, and actions (Friedland & Alford, 1991; Thornton et al., 2012).

I applied an institutional lens to better understand the founder exit phenomenon in portfolio firms. I explored the institutional context in which founder exit occurs, as well as the underlying mechanisms that guide venture capitalists' influence on this reorganizing process. I identified and described an IL of new venture professionalization, which I argued permeates the organizational field in which innovation-driven firms emerge and grow. I suggested that this logic is grounded in institutionalized beliefs about founders' evolving roles in their firms and, relatedly, their managerial limitations as those firms develop (Boeker & Karichalil, 2002). Additionally, I posited that the IL of new venture professionalization drives venture capitalists' beliefs, decisions, and actions – collectively, their strategies – to formalize operations and top management structures, including how and when to professionalize the CEO position. I discussed the implications of routinized founder exit in portfolio firms, which contrasts to well-planned and timely founder successions (Boeker & Karichalil, 2002; DiMaggio & Powell, 1993; Wasserman, 2003).

Psychological contracts theory. I also explored how the IL of new venture professionalization is reified in contracts that govern the exchange relationship between founders and venture capitalists. One of the most widely covered topics in the venture capital literature is the written contract that designates founders' and venture capitalists' legal obligations to each other and the new venture (e.g., Fairchild, 2010; Jensen & Meckling, 1976; Kaplan & Strömberg, 2003; Utset, 2002; Wasserman, 2003; Yitshaki, 2008). Written contracts, however, are inherently incomplete (Bernheim & Whinston, 1998; Sahlman, 1990; Utset, 2002), suggesting founders and venture capitalists also develop unwritten expectations about their exchange relationship (Parhankangas &

Landström, 2004). Psychological contracts theory (Parhankangas & Landström, 2004; Rousseau, 1989) explores such unwritten expectations that represent the party's beliefs about their respective obligations – what each party should give and receive in return.

Psychological contracts exist in parallel to the legal, written contracts emphasized in past research. Like written contracts, psychological contracts are grounded in some degree of mutual trust that parties will act fairly and in good faith (Burton, 1980; Robinson & Rousseau, 1994). They are also highly subjective and may not be shared by all parties (Coyle-Shapiro & Kessler 2000; Rousseau, 1989), which increases the risk of one party believing the other party breached the contract by failing to satisfy her/his obligations (Morrison & Robinson, 1997; Robinson & Rousseau, 1994; Turnley & Feldman, 2000). This cognitive appraisal is a psychological contract breach (Morrison & Robinson, 1997).

Moreover, a perceived psychological contract breach may trigger feelings of violation (e.g., betrayal, anger, resentment) and induce conflict in the exchange relationship that affects the focal organization (Morrison & Robinson, 1997). Morrison and Robinson (1997) define violation as a (negative) "emotional and affective state that may… follow" a perceived breach (p. 230). Psychological contract violation is associated with perceptions of injustice, diminished trust, erosion of cooperation and open communication, conflict, and even retaliatory actions and lawsuits (Hardin & Conley, 2001; Morrison & Robinson, 1997; Parhankangas & Landström, 2004; Robinson & Rousseau, 1994).

As researchers have repeatedly emphasized the performance and survival effects of trust, harmonious cooperation, and open communication between founders and venture

capitalists (e.g., De Clerq & Sapienza, 2001; Sapienza and Korsgaard, 1994; Shane & Cable, 2002; Bygrave & Timmons, 1992), as well as successful CEO successions more generally (e.g., Drover, Busenitz, Matusik, Townsend, Anglin, & Dushnitsky, 2017), psychological contract violation may have particularly disastrous consequences for portfolio firms. Indeed, the potential for psychological contract violation is rather high in portfolio firms, as venture capitalists may enact contractual provisions to force or otherwise coerce founder exit, including withholding funding until founders acquiesce to their own replacement (Hellmann & Puri, 2002; Parhankangas & Landström, 2004, Wasserman, 2003, 2012). Psychological contract violation may be especially strong if founders are replaced when their firms are performing well (Wasserman, 2003), venture capitalists engage in aggressive replacement efforts (Parhankangas & Landström, 2004; Wasserman, 2003), or venture capitalists are otherwise perceived to be acting opportunistically in replacing founders with professional management (Broughman, 2010; Hellmann, 1998; Klausner & Litvak, 2001). Founders and other employees may believe venture capitalists' actions are unjust or that they have failed to fulfill their obligations to the founder and/or firm (Degoey, 2000; Fiet et al., 1997; Morrison & Robinson, 1997).

Importantly, founder exits that are more contentious or adversarial in nature may be associated with psychological contract violation, manifest as disruptive power struggles leading up to and following enactment of founder exit (Giambatista, Rowe, & Riaz, 2005; Jung, 2014). Accordingly, I draw on psychological contract theory to better understand the sociopolitical nature of founder exit in portfolio firms, which is shaped by the IL of new venture professionalization that dominates the organizational field in which

they operate. Specifically, I discuss how adversarial founder exits may result in suboptimal portfolio firm performance, even if optimally timed, but consider also the more deleterious effects of forced founder exit early in firms' life cycles.

Significance of the Study

Despite the advanced state of the literature on VC, Drover et al. (2017) suggest many questions remain. In the completed research detailed below, I sought to better understand why some innovation-driven portfolio firms benefit more from VC than others by focusing on the salient phenomenon of founder CEO exit. I proposed that founder CEO exit has paradoxical effects on portfolio firm performance and survival as an institutionalized prescription for professionalizing these firms.

This study contributes to the extant literature in at least four ways. First, I contribute to growing research on the microfoundations of strategy and organizational theory. I advance theory by offering a meso-level theoretical framework that emphasizes individual and relational mechanisms – the microfoundations – in explaining how the institutional environment influences organizational outcomes (Felin, et al., 2015; Selznick, 1996). Indeed, this is the first known study to integrate institutional logics (Thorton et al., 2012) and psychological contracts theories (Rousseau, 1989) to explain how institutionally-driven power structures external to the firm may be reified in practice within firms to achieve institutional legitimacy, with implications for organizational strategy, internal sociopolitical dynamics, and members' cognitions, affect, and behaviors, as well as paradoxical effects on venture success. In doing so, I answer the call by previous researchers to consider more "mid-range theories" (Jennings, Greenwood,

Lounsbury, & Suddaby, 2013: 3) and bridge the long-lamented macro-micro divide (e.g., House, Rousseau, & Thomas-Hunt, 1995; Rousseau, 1985).

Second, and relatedly, this is the first work that identifies an institutional logic (IL) of new venture professionalization. By examining the institutional environment in which high-technology firms develop (e.g., Busenitz et al., 2004; Certo et al., 2001; Christensen et al., 2009; Croce et al., 2013; Hellmann & Puri, 2002; Kaplan & Strömberg, 2003; Landström, et al., 1998; Sapienza & De Clercq, 2000; Wasserman, 2003, 2012, 2017; Willard et al., 1992) and drawing on research that describes how venture capitalists engage portfolio firms (e.g., Boeker and Wiltbank, 2005; Broughman, 2010; Chen & Thompson, 2015; Collewaert & Fassin, 2013; Parhankangas, Landström, & Smith, 2005; Wasserman, 2003; Zacharakis et al., 2010), I explained how this dominant logic shapes venture capitalists' and other powerful actors' rather rigid beliefs about portfolio firm development, including founder CEOs' transitory roles in governing them. Although I emphasized how the IL of new venture professionalization shapes the venture capitalist-founder CEO relationship and founder exit strategy, this logic undoubtedly influences a variety of strategies venture capitalists employ to gain broader support for more professional management roles, policies, and routines.

Third, I contribute to the broader literature on founder CEO exit, a firm's first succession event, which has received relatively little attention in the context of portfolio firms (van Dijk et al., 2014). I reconciled divergent views of founder exit – as strategic and beneficial (e.g., Boeker & Karichalil, 2002) or disruptive and detrimental (e.g., Lerner, 1994; Guenther et al., 2016) – by examining boundary conditions associated with the IL logic of new venture professionalization. The rigidity in venture capitalists'

strategies to professionalize the top management structure of portfolio firms – driven by the IL logic of new venture professionalization – suggests a decoupling from efficiency goals that may contribute to suboptimal exit conditions, in which founder CEO exits may be poorly timed and adversarial in nature. In this study, I moved beyond the antecedents of founder exit (e.g., Dalton & Kesner, 1985; Fiet et al., 1997; Fredrickson, Hambrick, & Baumrin, 1988; Jung, 2014; Wasserman, 2003; Wennberg et al., 2010) to identify and examine the implications of these exit conditions on firm performance and survival (Dyck, Mauws, Starke, & Mischke, 2002; Wang & Song, 2016). Accordingly, I advance the notion that portfolio firms' performance over time and risk of failure may be associated with suboptimal founder succession strategies implemented much earlier in the firm's life, especially when compelled by venture capitalists to gain legitimacy, not efficiency, and increase short-term returns for their limited partners. Relatedly, this study suggests that other investors should cautiously consider the conditions of founder CEO replacements when conducting due diligence on professionally managed portfolio firms, including those that go public. Together, greater understanding of these exit conditions encourages researchers and practitioners alike to consider the value of more functional founder exits, just as the broader management literature considers functional employee turnover (see Batt & Colvin, 2011).

Finally, I advance an ongoing scholarly conversation about the value of VC and venture capitalists to portfolio firms. From an institutional lens, I reconsidered the value-added proposition prominent in the venture capital literature (e.g., Busenitz et al., 2004) by exploring venture capitalists' rigidities, as driven by the IL of new venture professionalization. Findings from this study reiterate the practical and economic value of

founder-venture capitalist trust and cooperation (Cable & Shane, 1997; De Clerq & Sapienza, 2001; Manigart et al., 2002; Timmons & Bygraves, 1986; Uzzi, 1999), even during the process of professionalization, in fostering portfolio firms' long-term profitability and survival and offer important boundary conditions on the value-added proposition.

Organization of the Dissertation

This manuscript is divided into five chapters. This first chapter provided an overview of the study, including purpose, theoretical foundations, and contributions. In Chapter 2, I review relevant extant literature, develop a conceptual model of founder exit in portfolio firms, and offer several hypotheses regarding the direct and moderated effects of founder exit on portfolio firm performance. In Chapter 3, I detail the methods used to test the model and hypotheses. I identify data sources, review operationalizations of constructs and other variables, and detail analyses I conducted. I convey results of those analyses in Chapter 4. In Chapter 5, I discuss key findings relevant to study objectives, implications of the findings for both theory and practice, limitations of the research design, and future research opportunities.

CHAPTER 2: LITERATURE REVIEW

Venture Capital and Portfolio Firm Performance

Venture capital (VC) is an important contributor to portfolio firm survival and performance, especially among innovation-driven startups. Venture capitalists work with founders to build new, thriving companies. Their involvement is believed to add value to portfolio companies above and beyond their financial investment. Research examining this "value-added proposition" has led to conclusions about the varied roles venture capitalists play, including scout, selecting high potential startups to fund (Bertoni, Colombo, & Grilli., 2011); coach, helping novice entrepreneurs build and nurture successful companies (Hellmann, 2000); and strategic partner, helping entrepreneurs make strategic decisions for the firm, connect to social networks of suppliers, customers, and other sources of capital, and make hiring decisions, especially for executive positions (Berglund, 2011). Portfolio firms also gain advantage from the signaling benefits of acquiring VC, as other investors tend to perceive VC-backed firms as less risky than comparable non-portfolio firms (Krishnan, Ivanov, Masulis, & Singh, 2011). Portfolio firms may gain additional benefits when venture capitalists are highly reputable (Lee & Wahal, 2004).

Past research, however, paints an inconsistent picture of the real benefits afforded portfolio firms after acquiring VC (see review by Rosenbusch et al., 2013). Puri and Zarutskie (2012), for example, found that portfolio firms were half as likely to fail as non-VC financed firms, but suggested the lower failure rate was primarily driven by "a much lower likelihood of failing in the first few years after initially receiving VC" (p. 2249). Their findings suggest the greatest benefit of VC may be the influx of financial

capital and other resources at a critical point early in venture development, effectively reducing portfolio firms' early-stage failure hazard. In fact, Puri and Zarutskie found only a significant difference in the marginal probability failure rate at two years post-investment but no difference at four and six years post-investment.

Of sampled portfolio firms that did fail over a 25-year period, Puri and Zarutskie (2012) found that most were significantly larger at the time of failure, compared to matched non-portfolio firms. Puri and Zarutskie, however, found no significant difference in firm size at IPO. Their findings confirm some research (e.g., Brau, Brown, Osteryoung, 2004), but contradicts other research that reports positive VC-portfolio firm growth relationships (e.g., Belden, Keeley, & Knapp, 2001). Similarly, Florin (2005) found no significant growth or other performance differences between portfolio and non-portfolio firms at two years post-IPO, but Brav and Gompers (1997) found portfolio firms had substantially higher returns five years post-IPO. Puri and Zarutskie also found that failed portfolio firms were less profitable than non-portfolio counterparts; however, they found little difference in profitability at IPO. Their findings confirm Beatty and Zajac's (1994) findings, but contradicts other research (e.g., Belden et al., 2001; Jain, Jayaraman, & Kini, 2008). For example, Florin (2005) found that non-portfolio firms were indeed more profitable at IPO. Additionally, Puri and Zarutskie reported that venture capitalists' reputations made no difference in outcomes, which contrasts previous research (e.g., Lee & Wahal, 2004; Megginson & Weiss, 1991).

Rosenbusch et al.'s (2013) synthesis of the portfolio firm performance literature also evidenced mixed conclusions. Their meta-analysis of 76 studies observed only a small effect of VC when performance was aggregated across indicators. The effect,

however, disappeared after controlling for industry effects. When they examined individual indicators of firm performance, Rosenbusch and colleagues found that VC primarily influences growth and firm valuation, with no effect on profitability. Their conclusions are consistent with venture capitalists' focus on maximizing portfolio firm growth and valuation in anticipation of exits via IPO or acquisition (Gerasymenko & Arthurs, 2014; Puri & Zarutskie, 2012).

In sum, past research on portfolio firm performance suggests the following: First, the benefit of VC depends, in part, on the performance indicator under examination (e.g., valuation, growth, profitability, survival) (Rosenbusch et al., 2013). Second, any "initial head start" portfolio firms gain from acquiring VC may not translate into sustainable advantages (Florin, 2005; Puri & Zarutskie, 2012; Rosenbusch et al., 2013). Thus, longitudinal research that assesses both short- and long-term performance effects is imperative to making accurate inferences (Short, Ketchen, Bennett, & du Toit, 2006). Finally, differences in firm outcomes may depend on factors not fully captured in the extant literature. In light of their mixed conclusions, Rosenbusch et al. (2013) suggested that VC may be attached to strategic rigidities and dependencies with potential to diminish the positive benefits otherwise afforded portfolio firms. In the current research, I argue that the enactment of founder exit (i.e., replacement) in portfolio firms exemplifies such strategic rigidity among venture capitalists and has implications for portfolio firm performance (Boeker & Wiltbank, 2005; Wasserman, 2003). In the next section, I discuss the role of founder exit in firm performance.

Strategic Founder Exit

Founder exit is a firm's first succession event (Wasserman, 2003) and refers to a founder's removal from the "primary ownership and decision-making structures of the firm" (DeTienne, 2010: 204). Founder exit may be conceptualized as a stage of founder role transition, in which founders secede (voluntarily or involuntarily) management of the venture to a professional manager. Founder exit is preceded by a founder's role as resource manager, or chief executive officer (CEO) in incorporated firms, wherein founders strategically organize resources to exploit opportunities and grow their companies while learning to delegate daily and functional responsibility and authority (Boeker & Karichalil, 2002). The extent to which founder exit is beneficial to portfolio firms, however, is debatable, as no consensus exists in the literature.

Indeed, some scholars view founder exit as a disruptive event with potentially detrimental consequences (e.g., Carroll, 1984). Lerner (1994), for example, referred to CEO replacement as an organizational crisis. As the "initial organizational architect" (Nelson, 1990: 710), founders help to establish long-lasting routines, standards, identity, role models, and culture that provide stability for new firms (i.e., the imprinting process) (Baron, Hannan, & Burton, 2001; Johnson, 2007; Marquis & Tilcsik, 2013; Stinchcombe, 1965). Succession disrupts operations and creates instability for employees and other stakeholders, thus worsening firm performance (Gouldner, 1954; Grusky, 1963). Guenther and colleagues (2016) found that failure hazard increases when founders exit during a firm's "sensitive period"; that is, when founders are most likely engaged in imprinting activities and the firm is most vulnerable to its environment (Marquis & Tilcsik, 2013; Stinchcombe, 1965). Once firms are more mature and have established

routines, procedures, and member roles, founder exit has little to no significant effect on firm survival (Guenther et al., 2016; Havemen, 1993).

According to life cycle theorists, however, founder exit is an important, strategic organizational milestone that allows firms to advance and grow beyond the limited managerial capacities of their founders (Boeker & Karichalil, 2002). Life cycle theory is grounded in an optimal matching principle – a match between CEO skillset and venture stage of development and respective managerial needs. Founders face severe managerial deficiencies as their ventures progress through developmental stages; optimal firm performance thus necessitates exit in lieu of professional management (Boeker & Karichalil, 2002; Boeker & Wiltbank, 2005; Carsrud & Johnson, 1989; Sexton, 1986; Sexton & Bowman, 1985). Founders who stay on as CEO too long may become entrenched, keeping firms from adjusting to competitive threats and taking advantage of new opportunities.

Taking a life cycle perspective, Kazanjian (1988) proposed a four-stage model of technology-based, portfolio firm growth, which was developed from analysis of two case studies. He posited that each stage of growth – conception and development, commercialization, growth, and stability – is characterized by unique patterns of organizational problems. Successful firms overcome such problems by implementing solutions that become institutionalized and increase formalization and organizational structure. Kazanjian suggested founders tend to exit during the stability stage (stage 4), after conceiving and developing innovations (stage 1), commercializing them (stage 2), and organizing new firms to efficiently manage sales and production efforts (stage 3). In the stability stage, firms focus on maintaining slower, steady market growth while

working to roll out second generation products/technologies. However, when Kazanjian tested his conceptual model quantitatively, he found that problems in tech-based companies tended to overlap across conceptual stages. He reported, for instance, that problems associated with product/technology development were shared in both conceptualization/development and stability stages. In light of the matching principle of life cycle theory, Kazanjian's findings suggest that, if similar problems exist across development stages, rigid adherence to discrete stage-based solutions may be problematic. Such rigidity could result in suboptimal portfolio firm performance at later stages of development when previously experienced problems may arise once again.

Wasserman's (2003) research on founder exit in portfolio firms sheds light on potentially problematic strategic rigidities that venture capitalists may impose on portfolio firms. Specifically, Wasserman found that venture capitalists tend to adopt a life cycle approach to practice, which includes a routine prescription of founder exit. At a predetermined point in portfolio firm development, venture capitalists reported taking steps to replace founder CEOs in *anticipation* of an eventual mismatch between founders' managerial capacities and portfolio firms' changing managerial needs. For instance, they described their attempts to replace founders after product launch, sometimes insisting on new professional management before providing capital in subsequent funding rounds.

Even founders who successfully launched new products face pressures to exit from their CEO roles (Wasserman, 2003). Wasserman referred to this phenomenon as a "paradox of success" (p. 165) because venture capitalists sought to replace more successful founder CEOs sooner. His work suggests venture capitalists may not view founder success at one stage of firm development as a credible indicator of success at a

later stage. Hiring a professional CEO may provide the means for venture capitalists to reduce uncertainty about a founder's ability to effectively manage a larger, more complicated firm. Reduced investor uncertainty, however, does not necessarily equate to optimal firm performance.

Accordingly, the extent to which founder exit in portfolio firms is managed as a strategic initiative or a more generic prescription is worth contemplating further. Life cycle theory suggests founder exit is a strategic reorganizing endeavor purposed to maximize future performance, but past research suggests founder exit in portfolio firms may be an institutionalized practice; that is, a commonly prescribed effort to professionalize new firms by restructuring the top management team (Hellmann & Puri, 2002; Wasserman, 2003). Because venture capitalists have great influence on when and under what conditions founders exit from their CEO positions (Christiensen et al., 2009; Wasserman, 2003), exploring the circumstances, or conditions, surrounding founder exit may provide insight into why some portfolio firms benefit less from VC than others, including differences in the longevity of benefit attributable to VC.

Moreover, although a substantial body of literature examines the effects of founder exit on firm growth and performance, with mixed conclusions (e.g., DeTienne, 2010; Guenther et al., 2016; Wasserman, 2017; Williard, Krueger, & Feeser, 1992), far less attention has been given to the effects of founder exit on portfolio firms' performance and survival (Ewen & Marx, 2018). Given the importance of innovation-driven firms to the economy, the importance of VC to innovation-driven firms, and the prevalence of founder exit in portfolio firms, this gap warrants further investigation. Thus, the primary objective of the current research was to answer two research questions

about founder CEO exit in portfolio firms: 1) *How does founder CEO exit affect portfolio firms' performance over time and likelihood of failure?* and 2) *How do the conditions of founder CEO exit – namely, the timing and nature of the exit event – influence these firm outcomes?*

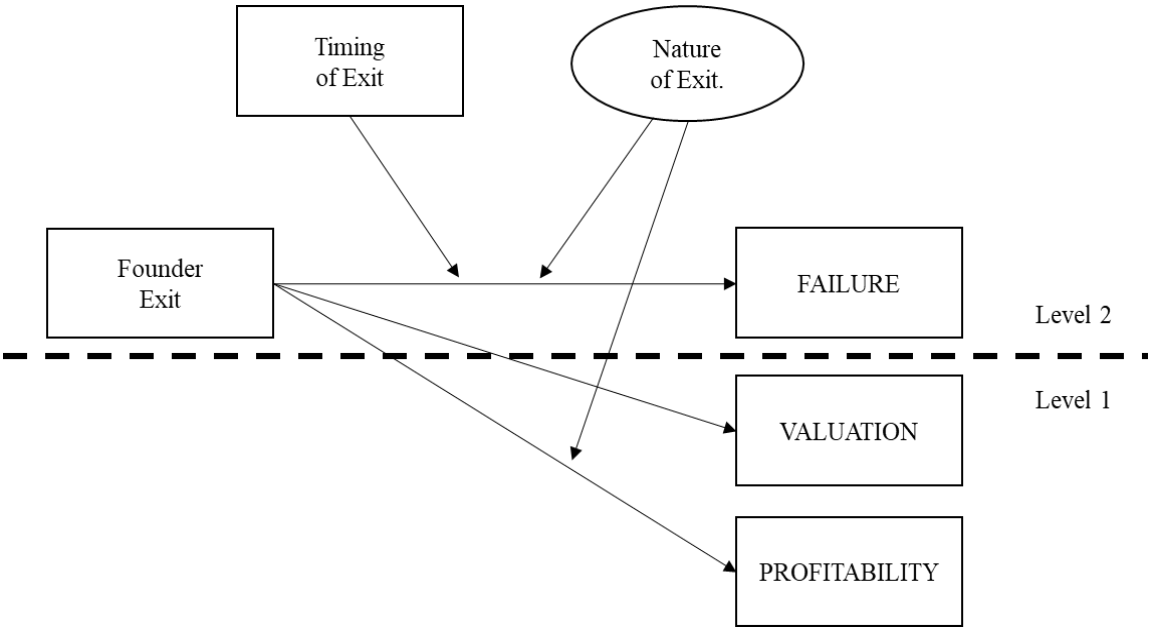
Institutional Theory

To answer these research questions, I investigate the macro- and microfoundations of founder exit strategy in portfolio firms, including factors external to and internal within portfolio firms. I first draw on the premises of institutional theory (DiMaggio & Powell, 1983) to understand the external environment in which portfolio firms emerge and operate, including how institutional logics drive efforts to professionalize portfolio firms via founder CEO exit (Thornton et al., 2012). Institutional logics research provides insights into why venture capitalists may adopt a rather rigid founder exit strategy and clues about the effects that founder exit and its timing have on firm performance in such circumstances. I then draw on the psychological contracts research (e.g., Robinson & Rousseau, 1994; Rousseau, 1989, 1995) to better understand the internal sociopolitical dynamics that determine the nature of founder exit in this context and, subsequently, firm success (Cannella & Lubatkin, 1993).

Institutional theory suggests that organizations in a field (i.e., an aggregation of organizations involved in similar or related activities) adopt similar or homogeneous structures, policies, and processes (i.e., organizational forms). Firm decisions regarding organizational form may be less dependent on the unique circumstances of each organization – less an effort to improve efficiency – and more a way of gaining and maintaining legitimacy among stakeholders (DiMaggio & Powell, 1983; Meyer &

Figure 1

Conceptual model



Rowan, 1977; Scott, 2014; Tolbert & Zucker, 1983; Zajac & Westphal, 2004). Legitimacy is "a generalized perception or assumption that the actions of an entity are desirable, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman 1995: 574). Legitimacy perceptions shape how actors (e.g., people, teams, firms) make sense of their environments, the range of decisions they make, and the actions they take to conform to the pressures of institutionalized prescriptions (Suchman, 1995).

Powerful institutional actors create and perpetuate rules upon which legitimacy perceptions are established and perpetuated. More powerful organizations compel dependent organizations to adopt certain organizational forms perceived to be more

legitimate and penalize those organizations that fail to conform (DiMaggio & Powell, 1983). This power dynamic is built into formal and informal exchange relationships where dependencies exist (DiMaggio & Powell, 1983). More powerful organizations (e.g., states, resource owners, venture capitalists) may impose legitimated structural conventions, for example, and dependent organizations either comply or face repercussions. Dependent organizations thus tend to adopt structures legitimated by more powerful organizations in the exchange relationship (DiMaggio & Powell, 1983).

Research on downsizing provides an excellent example of how firms may gain legitimacy and short-term benefit when conforming to popular organizational forms but risk long-term efficiency and performance in doing so (Ahmadjian & Robinson, 2001; Budros, 1997, 2004; Guthrie & Datta. 2008; McKinley, Sanchez, & Schick, 1995; McKinley, Zhao, & Rust, 2000). Downsizing refers to "the planned elimination of positions or jobs" (Cascio, 1993: 96), which leads to a permanent reduction of a firm's workforce and, consequently, human resource costs. Freeman (1994) presented downsizing as an often-necessary component of a comprehensive organizational change strategy, similar to life cycle theorists' propositions about the importance of founder exit. He suggested that downsizing should be used as a strategic tool in a broader organizational improvement plan designed to reorient organizations faced with performance failures or intense competition. Freeman thus provided a strategic rationale for a reorganizing practice purposed to correct performance deficiencies, while warning against short-sighted campaigns to improve the bottom line.

Budro (1997), however, countered that downsizing was less strategic than Freeman (1994) suggested, even threatening firms' long-term performance for short-term

gain. Budro considered downsizing from an institutional theory lens. He argued that some firms choose large-scale downsizing primarily in response to stockholder demands and other industry pressures to reduce human resource costs and increase shareholder profits. That is, downsizing is not necessarily a rational, strategic response to performance inefficiencies and competitive threats. Rather, firms follow the lead of others in their "social frame of reference" (Budro, 1997: 233) to reduce uncertainty and conform to institutional expectations (Chen & Thompson, 2015), even if firms are performing well and not facing significant threat. The strategy of downsizing allowed the appearance of competitiveness and legitimacy within a market, while maximizing returns to powerful investors. The potential short-term payoff, however, did not necessarily lead to long-term, sustainable gains.

New ventures also face powerful actors who may compel them to adopt dominant legitimate forms, regardless of whether the legitimate form leads to enhanced overall efficiency (DiMaggio & Powell, 1983). For young portfolio firms, venture capitalists have substantial power to affect the organizational forms they adopt. Founders depend on financial resources provided by venture capitalists, as well as intangible resources, such as strategic advice and connections to suppliers, customers, and talent (Busenitz et al., 2004; Croce et al., 2013). Although founders and venture capitalists are interdependent actors who share an ownership relationship, contractual norms entrench portfolio firm dependency and enable venture capitalists to prioritize their financial interests over other stakeholders (e.g., founders) and portfolio firms' long-term interests (Hellmann & Puri, 2002; Kaplan & Strömberg, 2003; Wasserman, 2003, 2012). Funding contracts include mechanisms that venture capitalists may enact to impose strategic and operational

changes in portfolio firms. For instance, contracts typically include provisions that give venture capitalists preferred stock, majority voting rights, and control over boards of directors (Amit, Brander, & Zott, 1998; Landström, Manigart, Mason, & Sapienza, 1998), which permit venture capitalist-led boards of directors to make decisions without the explicit consent of the founder (Parhankanga, Landström, & Smith, 2005). Venture capitalists also tend to structure contracts to fund portfolio firms in multiple rounds (Sahlman, 1990; Wasserman, 2003). At any of these funding rounds, venture capitalists may affect power dynamics by insisting on more favorable contract terms. Even when founders maintain majority ownership, VC contracts often reify power structures that grant venture capitalists substantial power over founders (Hellmann & Puri, 2002). This power imbalance typically leaves portfolio firms vulnerable to pressure by venture capitalists to conform to legitimate organizational forms. Most notably, venture capitalists may enact contractual provisions or withhold capital to force legitimating structural changes in top management via founder CEO replacement (Chen & Thompson, 2015; Ewen & Marx, 2018; Meyer & Rowan, 1977; Wasserman, 2003). Forced founder CEO exit is quite common (Hellmann & Puri, 2002; Wasserman, 2012), despite evidence that founder exits may create disruption and increase failure hazard (Carroll, 1984; Gouldner, 1954; Grusky, 1963: Guenther et al., 2016; Lerner, 1994).

Institutional Logic of New Venture Professionalization. The social categories and norms associated with perceptions of legitimacy spring from institutional logics, which Thornton and Ocasio (1999) define as "the socially constructed, historical pattern of material practices, assumptions, values, beliefs, and rules" (p. 804) that drive how institutional actors make sense of their interactions with other stakeholders in the

organizational field (Thornton et al., 2012). Institutional logics focus attention; shape the options actors consider when making decisions, solving problems, and taking action; and ultimately, affect what actors consider legitimate with regards to organizational structure and practices (Thornton et al., 2012). While past theory and empirical work suggests that multiple logics may exist and influence firms in an organizational field (Reay & Hinings, 2009; Thornton & Ocasio, 1999), one dominant logic tends to be reflected in organizational form, processes, and norms (Zucker, 1977; Thornton, 2004; Thornton et al., 2012; Thornton & Ocasio, 1999).

The institutional logic that dominates the VC industry and broader organizational field influences the structural and procedural norms that venture capitalists seek to implement in portfolio firms. Venture capitalists and other institutional actors (e.g., underwriters) tend to assume that founders are generally unable to successfully fulfill the role of CEO beyond the early stages of venture growth and development (e.g., product launch) (Wasserman, 2003; Willard, Krueger, & Feeser, 1992; Yitshaki, 2008); founders of high growth technology firms seem especially vulnerable to such stereotypes (Willard et al., 1992). Willard et al. (1992) refers to this stereotype as the "founders' disease," which refers to a conventional belief that founders create value via innovation but are unable to "adapt to the increasing complexity of rapid growth without sacrificing performance or losing control" (p. 181). I suggest this "conventional wisdom" grounds what I refer to as the *institutional logic (IL) of new venture professionalization*, which guides the decisions and actions of venture capitalists and other powerful actors (Thornton et al., 2012), including their exchanges with founders of portfolio firms.

Although the IL of new venture professionalization is unlikely to be the only logic available to venture capitalists and other organizations, I suggest it is a dominant, salient logic that is both available and accessible (Thornton et al., 2012), as it is shared and internalized through professional socialization and its effects may be observed through the similarities in portfolio firms' organizational forms (Hellmann & Puri, 2002; Wasserman, 2003, 2012). Indeed, venture capitalists act as carriers of institutional logics (Almandoz, 2014) through their influence on multiple portfolio firms as they change employers within the same industry (DiMaggio & Powell, 1983) and join syndicates (De Clercq, Sapienza, & Zaheer, 2008). Newer VC firms may also seek to imitate more successful VC firms (Gaba & Terlaak, 2013; Lieberman & Asaba, 2006). Indeed, VC firms also tend to be organized similarly (Barry, 1994; Drover et al., 2017; Gupta & Sapienza, 1992).

The IL of new venture professionalization is further evidenced by venture capitalists' preconceived notions about the point in portfolio firm development when a founder should be replaced (Wasserman, 2003). The assumption is that founders' managerial capabilities quickly become exceeded, which compels venture capitalists to routinely advocate for founder CEO replacement before the need arises (Wasserman, 2003). One way younger firms may appear more legitimate is by professionalizing their operations (Ashforth & Gibbs, 1990; Delmar & Shane, 2004; Stinchcombe, 1965), including replacing founder CEOs with professional managers.

Founder replacement, however, is only one of many ways to professionalize portfolio firms at the upper echelons. For example, hiring additional executive-level team members would permit founder CEO retention by supplementing founder skillsets.

Another option would include transitioning founders to a different executive role in the company (e.g., chief technical officer). Motivated founders could also learn the requisite skills needed to successfully navigate firm growth and related managerial problems. All these options provide portfolio firms with opportunities to extend the benefits associated with founders' entrepreneurial orientation (Mousa & Wales, 2012) and reduce disruption that founder exits may create (Chen & Thompson, 2015; Guenther et al., 2016; Lerner, 1994). Despite other possible strategies for professionalizing portfolio firms, Boeker and Wiltbank (2005) reported that venture capitalists have a strong bias towards replacing top management team members. This bias is consistent with the IL of new venture professionalization.

Indeed, founder CEO exit in portfolio firm is rather common. Previous studies estimate that between 40% and 62% of portfolio firms experience the loss of their founders within six years of founding (Hellmann & Puri, 2002; Kaplan et al., 2009; Wasserman, 2003, 2012). These figures provide some credence to the notion that founder CEO replacement may be a routinized method of professionalizing new portfolio firms and thus less strategic than life cycle theory would suggest. In this case, the IL logic of new venture professionalization may prompt founder exits that diminish the potential benefit possible when founders are strategically replaced.

Paradoxes of Professionalization. Indeed, the IL of new venture professionalization may create a paradox in which founder CEO exit has mixed effects on portfolio firm performance and survival. For instance, professionalization at the top echelons of innovation-driven firms reduces risk uncertainty among institutional actors and allows firms to overcome the liability of newness (Pfeffer & Salancik, 1974;

Stinchcombe, 1965). Thus, portfolio firms that comply with the institutionalized prescription for the founder's disease – professionalization via founder CEO replacement – may appear less risky and thus more attractive to investors (Florin, 2005; Wasserman, 2017). Indeed, a professional CEO at the helm of a firm may signal an acceptable and legitimate degree of professionalization, stability, and trustworthiness (Ashforth & Gibbs, 1990; Delmar & Shane, 2004; DiMaggio & Powell, 1983; Stinchcombe, 1965).

In contrast, portfolio firms that fail to conform to this institutionalized prescription may be penalized. For instance, investment bankers tend to underprice initial stock prices when founders remain their firms' CEOs at IPO, resulting in unretained wealth for the investors (Certo, Covin, Daily, & Dalton, 2001). This "founder discount bias" stems from a prevailing belief in the organizational field that, as firms develop, they should bring on professional CEOs who offer more objective oversight and skills that align better with firms' managerial needs (Certo et al., 2001; Wasserman, 2017).

As fiduciaries, venture capitalists must continually prove themselves to existing and potential limited partners to attract new investment (Gompers, 1994), so they prioritize and act to maximize more investor-centric indicators of firm performance (e.g., valuation) (Wasserman, 2017). Venture capitalists widely advocate for and may compel founder CEO replacement to reduce the likelihood of underpricing and maximize their return on investment via higher valuations (Certo et al., 2001; Wasserman, 2003, 2017). Past research on the longitudinal effects of founder exit on valuation, however, suggest initial gains in valuation may quickly dissipate because non-founder led firms may underperform (Hendricks & Miller, 2014). This paradoxical effect of founder CEO exit on portfolio firm valuation is consistent with past research demonstrating the short-lived

benefits of VC on performance (Florin, 2005; Rosenbusch et al., 2013). Accordingly, I hypothesize the following:

Hypothesis 1*: Founder CEO exit will have a positive effect on portfolio firm valuation that dissipates over time*.

Moreover, portfolio firms that lose their founders in the early years of venture development may be more susceptible to failure (Carroll, 1984; Fischer & Pollock, 2004; Guenther et al., 2016; Haveman, 1993). Early founder exit has potential to create major disruption by interrupting the imprinting process and creating instability and a sense of insecurity for remaining employees (Marquis & Tilcsik, 2013). Such disruption makes firms more susceptible to failure, particularly when founder exit occurs during what Guenther et al. (2016) refer to as the sensitive period of firm development (i.e., approximately 9 years for their cross-industry sample).

In portfolio firms, venture capitalists may routinely take proactive actions to replace founder CEOs early in their life cycles (e.g., after product launch), before firms outgrow their founders' abilities to manage them effectively (Hellmann & Puri, 2002; Wasserman 2003). However, when the matching principle core to strategic founder exit is supplanted by a predetermined timeline for such change, the effects on portfolio firms could be detrimental, especially when exit occurs early in firms' life cycles (Chen & Thompson, 2015; Guenther et al., 2016; Haveman, 1993). Indeed, Sapienza and De Clercq (2000) found that the potential for value creation or destruction in portfolio firms appears strongest at the earliest stages of firm development, especially in high-technology industries. Accordingly, I propose that the timing of founder CEO exit alters its effect on

firm failure, such that founder exit early in a firm's development may increase the likelihood of firm failure. I thus hypothesis the following:

> **Hypothesis 2**: *The timing of founder CEO exit will have a negative effect portfolio firm failure, such that founder exits at early stages of firm development will increase the likelihood of failure*.

Nature of Founder Exit

Driven by the IL of new venture professionalization, the rigidity often evident in venture capitalists' efforts to professionalize the CEO position in portfolio firms may also have implications for those firms' internal environments and, consequently, their performance. Drawing on the psychological contracts literature (Rousseau, 1989), I consider how a routinized, institutionalized approach to founder CEO exit may influence the relationship dynamics between founders and venture capitalists and spillover to affect employees who witness those dynamics. Moreover, psychological contracts research provides important insights into the potential hazards associated with founder CEO exits that are more contentious in nature, including effects on portfolio firm profitability and survival.

Psychological contracts theory. A psychological contract represents a person's "beliefs regarding the terms and conditions of a reciprocal exchange agreement between that focal person and another party" (Rousseau, 1989: 246); that is, perceptions of the mutual obligations promised by each party (Levinson, Munden, Mandl, & Solley, 1962; Schein, 1965). Psychological contracts are typically researched from the perspective of employees in more typical employee-employer relationships, with emphasis placed on employees' beliefs about each party's mutual obligations (Morrison & Robinson, 1997;

Rousseau, 1989; Schein, 1965; van Dijk et al., 2014). In the employment context, the unwritten perceived promises of mutual obligation that comprise psychological contracts may derive initially from overt and perceived promises interpreted from a variety of pre-employment communications and early socialization experiences, as well as written contracts (Morrison & Robinson, 1997; Robinson & Rousseau, 1994; Rousseau, 1989, 2001; Rousseau & Greller, 1994). Additionally, past experiences and generalized expectations of the exchange relationship may contribute to how each party interprets the terms of psychological contracts (Guest 1998, 2004; Rousseau 2001). Parties revise these terms as their exchange relationship continues and they interact and interpret additional information (Robinson, Kraatz, & Rousseau, 1994).

The concept of psychological contracts extends beyond the employee-employer relationship to other exchange relationships (see Roehling, 1997 for review). Psychological contracts within the founder-venture capitalist exchange relationship, however, have largely escaped theoretical and empirical attention (for exceptions, see Parhankangas & Landström, 2004 and van Dijk et al., 2014). The exchange relationship between founder CEOs and venture capitalists, however, differs greatly from the employee-employer relationship typically researched. Although founders develop dependency relationships with venture capitalists, founder CEOs' roles in their firms differ substantially from other employees and even subsequent managers. For example, they tend to have ultimate control over their firms' actions and may make unilateral decisions prior to acceptance of VC. Founders' relationships with their firms also differ, including the extent to which founders take psychological ownership (O'Reilly & Chatman 1986; Wasserman, 2003). Additionally, founders drive their firms' strategic

vision, organizational culture, and processes through imprinting, which provides structure and stability when firms are most vulnerable to their environments (Johnson, 2007; Marquis & Tilcsik, 2013; Stinchcombe, 1965).

Psychological contracts may include transactional or relational terms (Morrison & Robinson, 1997), with different implications. More transactional psychological contracts may be characterized by a person's beliefs regarding short-term and mostly economic exchange obligations (Morrison & Robinson, 1997; Rousseau & McLean Parks, 1993). More relational psychological contracts, however, comprise broader perceived promises made about longer-term exchange relationships that extend beyond monetizable elements to include socioemotional obligations (e.g., loyalty, support) (Morrison & Robinson, 1997; Rousseau & McLean Parks, 1993).

The psychological contracts of founders and venture capitalists likely include both transactional and relational terms. When venture capitalists pursue more arms-length relationships with founders (Hui, Lee, & Rousseau, 2004), it is likely that the parties develop more transactional psychological contracts. However, founders may also expect their exchanges with venture capitalists to include non-capital contributions (e.g., coaching, strategic advice, access to broader social networks), suggesting founders, at least, may perceive both transactional and relational obligations as elements of their psychological contracts (Hui et al., 2004). Founders' expectations may derive from conversations that founders and venture capitalists have when discussing the terms of funding contracts, including conversations about the added value of VC that is difficult to quantify and describe in a legal document (Sahlman, 1990). Rousseau and McLean Parks (1993) proposed that psychological contracts with relational terms "lead to higher

individual performance and labor productivity under the technological or environmental uncertainty or where work in the organization is highly interdependent" (p. 35). New innovation-driven firms certainly operate under such conditions, which suggests that psychological contracts with relational terms may be beneficial to portfolio firm success.

Psychological contracts are also innately subjective. They complement written contracts, which are inherently incomplete (Bernheim & Whinston, 1998; Sahlman, 1990; Utset, 2002), and differ from implied contracts, which are mostly comprised of shared expectations that may be observable by a third-party. Thus, parties to a psychological contract may not interpret the terms of their exchange relationship the same, although they may believe they do (Morrison & Robinson, 1997).

Psychological contract breach and violation. Just as the terms of psychological contracts are subjective, so are judgments regarding fulfilment of those terms. When one party of a psychological contract perceives the other party has not fulfilled their promised obligations, the affected party may perceive a breach, which refers to "the cognition that [the other party] has failed to meet one or more obligations within one's psychological contract in a manner commensurate with one's contributions" (Morrison & Robinson, 1997: 230).

A breach follows the perception of unmet promises and a subjective comparison process, in which one party compares the extent to which both parties fulfilled the psychological contract as promised (Morrison & Robinson, 1997). Comparisons are susceptible to self-serving bias, as parties may overvalue their own contributions (Robinson et al., 1994), and influenced by other individual (e.g., higher equity sensitivity) (Turnley & Feldman, 1999) and relationship factors (e.g., power asymmetry) (Morrison

& Robinson, 1997). Importantly, one party may perceive a contract breach "even when an objective evaluation of the situation would not support this conclusion" (Morrison & Robinson, 1997: 241).

Breaches due to incongruence occur when parties are willing to meet their obligations but have divergent interpretations of the promises they made (Rousseau, 1995). These inadvertent breaches are more likely to occur when mutual obligations are complex and/or ambiguous, or one party no longer recalls all details of their obligations (Morrison & Robinson, 1997). Due to the complexity, ambiguity, and inherent incompleteness of formal contracts (Bernheim & Whinston, 1998; Sahlman, 1990; Utset, 2002), incongruence among founder CEOs and venture capitalists may be rather common. Indeed, founders and venture capitalists often have differing definitions of portfolio firm success, goals for the company, and approaches to firm governance (Christensen, Wuebker, & Wüstenhagen, 2009; Hellmann & Puri, 2002). These incongruences extend to expectations of founder exit (Wasserman, 2003). As each party seeks to protect their respective interests, the divergence may create tension and conflict that decreases trust and confidence in a cooperative partnership (Boyd, Haynes, & Zona, 2011; Zacharakis, Erikson, & George, 2010).

Under certain conditions, a strong, multifaceted emotional and affective state – violation – follows the cognitive appraisal of a psychological contract breach. Violation includes a blend of negative emotions, including anger and disappointment (Morrison & Robinson, 1997; Rousseau, 1989; Schein, 1965). Morrison and Robinson (1997) explained that violation is "experienced at a deep visceral level… and can be deeply disturbing" (p. 231). The perceiver may experience a sense of injustice and feelings of

resentment, betrayal, and even outrage at being mistreated (Morrison & Robinson, 1997; Rousseau, 1989).

Reneging. Whether an instance of violation occurs, depends on the reason the perceiver attributes to a breach. Although incongruence may be incidental, the party who perceives the breach may not attribute it to a misunderstanding and, instead, contribute it to an intentional effort to avoid fulfilling promises, thus triggering an instance of violation. Indeed, more intense feelings of violation follow the belief that a breach results from intentional reneging. Reneging occurs when a party knowingly fails to fulfill a recognized obligation to the other party (Morrison & Robinson, 1997; Rousseau, 1995). Reneging is more likely to occur when organizational turbulence increases or firm performance declines (Morrison & Robinson, 1997), which are conditions that new innovation-driven firms frequently encounter as they operate in highly uncertain environments with often unforeseen obstacles (Sapienza & Gupta, 1994). The extent to which the perceiving party believes the breaching party's actions are procedurally unjust (i.e., dishonest, inconsistent, and/or biased process) and outcomes are distributed unfairly or inequitably also influences the intensity of response (Morrison and Robinson, 1997; Robinson & Rousseau, 1994; Sheppard, Lewicki, & Minton, 1992). Morrison and Robinson (1997) note, however, that "violation may derive from factors that have little to do with the 'objective facts' of the situation" (p. 234). That is, even a simple misunderstanding may trigger intense feelings of violation if the perceiving party attributes the breach to reneging.

Two reneging situations, in particular, foster intense violation and destructive responses: shirking and opportunism (Parhankangas & Landström, 2004; Rousseau,

1995). Shirking occurs when one party is able, but unwilling, to expend sufficient effort to meet her/his obligations. Opportunism involves acting in "one's own self-interest at the expense of the other party and contrary to the other party's reasonable expectations" (Parhankanga et al., 2005: 299). In the context of portfolio firms, both venture capitalists and founders may experience instances of psychological contract violation, and their responses may prove detrimental to the growing firm.

For instance, venture capitalists may believe that founder CEOs act opportunistically pre-investment by failing to disclose pertinent information about founders' backgrounds and abilities to successfully manage firms or providing misleading information about the stage of product development (Collewaert & Fassin, 2013; Parhankangas & Landström, 2004). Venture capitalists may believe post-investment that founders engage in dishonest dealings on behalf of the firm or spend excessively on perquisites. Founder CEOs may also miss important deadlines, fail to hire key talent, or fail to pursue growth opportunities, which venture capitalists may attribute to shirking (Parhankangas, Landström, & Smith, 2005). All these instances represent behaviors that may benefit founders at the expense of venture capitalists and elicit instances of and venture capitalists' reactions to psychological contract violation (Parhankangas & Landström, 2004; Parhankangas et al., 2005).

However, when a dependency relationship exists between contracting parties, the more powerful party may associate greater cost with fulfilling its obligations than reneging on them, making reneging a more appealing option (Emerson, 1962). As previously discussed, portfolio firms enter a dependency relationship with VC firms that is guided by certain institutionalized contractual provisions. These provisions tend to

grant venture capitalists tremendous power over founders, including the ability to replace founder CEOs with professional CEOs, without founders' explicit consent (Hellmann & Puri, 2002). Indeed, founder CEOs of portfolio firms are particularly vulnerable to coerced or forced exit (Christiensen et al., 2009; Fiet et al., 1997; Wasserman, 2003, 2012). Venture capitalists have financial incentive (e.g., higher valuation) to leverage their power and professionalize portfolio firms via founder CEO replacement (Wasserman, 2003; Wasserman, 2017), suggesting reneging may be especially salient these cases. Accordingly, I propose that forced exit elicits instances of psychological contract violation among founders who may believe venture capitalists renege on promises to work alongside them to build and grow their firms.

Forced exit and violation. Although far less research exists from the entrepreneur's perspective, past studies provide some insight into how founder CEOs may perceive psychological contract breaches and experience violation related to founder exit (e.g., Broughman, 2010; Collewaert & Fassin, 2013; van Dijk et al., 2014). Leading up to forced founder CEO exit, for example, founders may find that each funding round provides venture capitalists with a new opportunity to renegotiate contract terms, such that they gain more equity and governance power, making forced exit more tenable (Broughman, 2010). Founders may perceive such actions as opportunistic and antithetical to the cooperative relationship they expect with venture capitalists. Founders may experience intense violation if exit is coerced during a funding round, especially if a firm is cash-strapped (Broughman, 2010; Hellmann, 1998; Klausner & Litvak, 2001). Founders may also experience psychological contract violation when they believe venture capitalists push for CEO replacement for the primary purpose of eliminating founders'

unvested stock options or purchasing founders' vested stock at discounted prices. Founders may perceive these actions as especially unethical and unfair.

Additionally, founders may experience psychological contract violation when they believe their firms are performing relatively well, but venture capitalists pressure them to exit the CEO role anyway. For instance, founders may believe previous positive performance should justify continuation as CEO (Wasserman, 2003) or that venture capitalists unfairly rely on performance benchmarks that privilege their own interests (e.g., valuation) over firms' or founders' interests (e.g., profitability) (Broughman, 2010; Collewaert & Fassin, 2013). Indeed, founder CEOs may resist what they see as unjust efforts to hire a new CEO when they believe their performance has been strong (Wasserman, 2003). Founders may also experience violation when they believe venture capitalists fault them for poor firm performance, despite neglect by venture capitalists in the way of failing to attend board meetings or return their phone calls (Collewaert & Fassin, 2013; Gifford, 1997). Such neglect inhibits founders and their firms from attaining the added value that venture capitalists often promise at the beginning of the exchange relationship; that is, to provide strategic advice and connections to customers, suppliers, and talent. In sum, founders may believe venture capitalists abuse their power when coercing founder exit and perceive efforts before and/or during replacement as unfair or unethical, thus eliciting psychological contract violation and affecting the portfolio firm in unintended ways. I discuss the implications of psychological contract violation in the next section.

Effects on portfolio firms. Importantly, reactions to psychological contract violation may have negative implications for portfolio firms. For instance, psychological

contract violation may trigger conflict between parties to the contract, straining their exchange relationship and spilling over to affect third-party observers (Collewaert & Fassin, 2013; Rousseau & McLean Parks, 1993). Conflict between entrepreneurs and investors is especially prevalent in technologically innovative firms (Collewaert & Fassin, 2013; Sapienza & Amason, 1993). In the context of innovation-driven portfolio firms, I propose that instances of psychological contract violation related to forced founder CEO exit may trigger conflict that 1) reduces trust and cooperation between founders and venture capitalists that is critical to portfolio firm success and 2) elicits, from both founder CEOs and other key employees, destructive responses that negatively affect firm performance and survival.

First, psychological contract violation reduces trust in exchange relationships (Rousseau, 1989). Yet, trust is a necessary condition for cooperation (McAllister, 1995), and cooperation is essential to maximizing the benefit potential of the founder-venture capitalist exchange relationship (Cable & Shane, 1997; De Clerq & Sapienza, 2001; Timmons & Bygraves, 1986). Cooperative exchange relationships yield many firm performance benefits (e.g., reduced monitoring costs, quickened decision making, joint problem solving, innovation and learning, relational rents) (De Clerq & Sapienza, 2001; Uzzi, 1999), allowing new innovation-driven firms to adapt quickly and efficiently in hypercompetitive, dynamic, and uncertain environments (Manigart, Korsgaard, Folger, Sapienza, & Baeyens. 2002). Thus, the potential strategic benefits of founder CEO exit in innovation-driven portfolio firms may be reduced, diminished, or even negated when exit is coerced or forced.

Second, experiences of psychological contract violation affect members' attitudes about their organizations, their work behaviors, and firm performance more broadly (Morrison & Robinson, 1997). Although much of the extant literature on the effects of psychological contract violation focuses on the perspective of aggrieved employees, Rousseau and McLean Parks (1993) suggested that "observers perceiving unfair treatment of others by their employer reduce *their own* efforts and commitment to the organization… [Such perceived treatment] undermines the relationship upon which one's own contract is based" (p. 23). Thus, even when employees do not experience psychological contract breach and violation first-hand, they may develop similar attitudes and respond similarly when sympathetic to other organizational members who they believe received unfair treatment.

This suggests that founders and other employees who witness or become knowledgeable about (perceived) unfair treatment of founder CEOs by venture capitalists may develop similarly dysfunctional attitudes about the venture capitalists they hold responsible and the firm more broadly (Andersson, 1996; Brockner, 1988; Rousseau & Parks, 1993). For instance, founders and other employees may develop feelings of dissatisfaction toward the organization (Suazo 2009; Turnley & Feldman 2000). They may also become cynical about and distrustful of organizational leaders and the firm itself (Andersson, 1996; Rousseau, 1989). Employees negative feelings about the rude party may extend to a new CEO, especially if founders do not play a role in selecting their replacements and/or do not express support for the change. Such dysfunctional attitudes may prompt organizational members to respond similarly to psychological contract violation in particularly destructive ways (Andersson, 1996; Brockner, 1988;

Rousseau & Parks, 1993). Particularly destructive responses include neglect (i.e., abandoning one's job duties), aggressive voice (i.e., aiming to win, regardless of negative effects on the other party), and exit (i.e., voluntarily terminating the exchange relationship) (Hagedorn et al., 1999; Parhankangas & Landström, 2004; Rousseau, 1995).

For instance, employees may shirk (i.e., neglect) in-role behaviors and/or reduce extra-role behaviors (i.e., organizational citizenship behaviors; OCBs) in response to mistreatment or witnessed mistreatment (Antoncic & Antoncic, 2011; Morrison and Robinson 1997; Porath & Erez, 2009; Robinson et al. 1994; Suazo 2009; Turnley & Feldman, 2000). The likely effects of employees neglecting their normal job duties on productivity and the firm's overall performance may be rather intuitive, but their disengagement from discretionary OCBs may be damaging, as well. Indeed, employees' collective engagement in OCBs fosters a collaborative, "mutually supportive and trusting [organizational] climate characterized by a positive spiral of discretionary, altruistic contributions, and improved interunit coordination toward the collective achievement of organizational goals [Gong, Chang, & Cheung, 2010]" (Chun, Shin, Choi, & Kim, 2013: 861). Within such a collaborative climate, efficient allocation of employees' capabilities is possible and may lead to enhanced firm productivity (Chun et al., 2013; Connelley & Folger, 2004; Mossholder et al., 2011). Chun and colleagues (2013) found a significant, moderate relationship (.30) between collective OCB (directed at other employees) and firm performance (i.e., operating profit/total assets). If founders and other early employees respond to forced founder CEO exit by neglecting or otherwise disengaging from in-role and extra-role behaviors, then the negative effects on innovation-driven

portfolio firms' profitability may be even greater than in more established companies that tend to represent the samples in past research.

Forced founder CEO exit may also increase role conflict and role ambiguity among organizational members, which may trigger instances of psychological contract violation and elicit aggressive voice. Role conflict occurs when a focal person and the person who assigns the role (i.e., role sender) have incompatible expectations about the set of behaviors that comprise that role (Katz & Kahn, 1978; Rizzo, House, & Lirtzman, 1970; Tubre & Collins, 2000). In portfolio firms, founder CEOs forced to either transition to a different position within the firm (e.g., Chief Technology Officer (CTO)) or leave the firm entirely may experience role conflict and psychological contract violation when they have little to no influence over strategic decisions, especially if they feel led to believe that their input would continue to be valued. When a professional CEO makes strategic decisions without consulting the founder, or makes decisions despite the founder's disagreement, founders may find that deference to the new CEO is a difficult, unexpected, and unwelcome role adjustment. Even if the founder CEO agrees to her/his replacement, disagreements with the new CEO about firm strategy could foster interpersonal conflict (Mooney, Holahan, & Amason, 2007). Such conflict may create animosity and anxiety that distracts from their work and results in the creation of suboptimal products (Jehn & Mannix, 2001; Wilson, Butter, Cray, Hickson, & Mallory, 1986). Founders may also vent to loyal employees, which may amplify conflict by creating a contagion effect that spreads animosity and anxiety (Barsades, 2002; Dasborough, Ashkanasy, Tee, & Herman, 2009; Jehn, Rispens, Jonsen, & Greer, 2013).

Moreover, early employees may develop close relationships with and be tremendously loyal to founder CEOs and the new portfolio firms they lead. When they believe the founder is coerced into or forced to exit the CEO position, their loyalty may be diminished or depleted. Employees who are not loyal to their organizations are more likely to engage in counter-productive work behaviors (i.e., workplace deviance) that threaten firm performance, including tardiness, absenteeism, idleness at work, and other deviant behaviors (e.g., theft, sabotage) (Biron, 2010; Guillon & Cezanne, 2014; Kelloway, Francis, Prosser, & Cameron, 2010). In contrast, employee loyalty is known to positively affect firm performance via sales growth, employment growth, and growth in market share (Antoncic & Antoncic, 2011). Accordingly, efforts by venture capitalists to force founder CEO exit may decrease or diminish loyalty that remaining employees once shared, which may increase the likelihood that those employees engage in destructive behaviors that reduce firm performance.

Taken together, I argue that forced founder CEO exits in portfolio firms may be problematic in three ways. First, efforts that venture capitalists take to coerce exit before the founder CEO is replaced may elicit psychological contract violation that reduces pre-exit cooperation between them, thus keeping new portfolio firms from maximizing the benefit potential of VC and strategic founder replacement. Second, founder CEOs and other employees may respond to venture capitalists' efforts to coerce exit in destructive ways. They may begin to feel distrustful and dissatisfied and limit their contributions to their portfolio firms, including neglecting job duties prior to replacement and disengaging from discretionary behaviors that contribute to more collaborative, efficient work. They may also experience role conflict following psychological contract violation and respond

using aggressive voice. Finally, decreases in founder and employee loyalty to the firm may follow psychological contract violation and result in any of the aforementioned destructive responses.

Given venture capitalists' rigid approach to founder CEO exit and preferences for strategies that yield higher valuations but not necessarily operational efficiencies (Rosenbusch et al., 2009), they may attend less to the potential negative effect of forced exit on profitability. Indeed, forced founder CEO exits in portfolio firms suggest that transfers of power to professional CEOs are not well-planned or amicable. Contentious founder CEO exits may negatively affect employees' contributions to firm profitability, which may be one reason why Florin (2005) and Puri and Zuratskie (2012) found that portfolio firms had lower profitability than non-portfolio firms. Accordingly, I propose the following hypothesis regarding the nature of founder CEO exit:

> **Hypothesis 3**: *The nature of founder CEO exit will have a negative effect on portfolio firm profitability, such that more contentious exits reduce profitability over time*.

Forced founder CEO exit may even prove perilous for some innovation-driven portfolio firms. For instance, studies have found that employees who remain with their firms after downsizing – another major restructuring event – may experience psychological contract violation and decreased employee loyalty that leads to another destructive response: exit (Hagedorn et al., 1999; Rousseau, 1995). They may actively search for new employment opportunities despite surviving the downsizing event (Kissler, 1994; Morrison, 1994; Morrison & Robinson, 1997; Turnley & Feldman, 1999, 2000). Employee turnover in new innovation-driven firms, however, may be antithetical

to firm survival. Past research shows that employee exit, or turnover, has a weak relationship with firm performance (see Hancock, Allen, Bosco, McDaniel, & Pierce, 2013 for review); yet, this relationship has been mostly studied in more established organizations where the average individual employee may be easier to replace and thus less critical to firm survival than in new innovation-driven firms. Because early employees of innovation-driven firms tend to have highly valuable skillsets and specific knowledge necessary for the successful design and launch of new innovations, they may be difficult and/or costly to replace. Indeed, the time required to search for key talent and get them up to speed could prove devastating to a vulnerable new firm in a dynamic, hypercompetitive environment.

Additionally, employees of innovation-driven portfolio firms may witness or perceive rudeness between founder CEOs and venture capitalists during coerced or forced founder. However, employees who witness rudeness between employees and leaders may experience dysfunctional ideation and reduced creativity (Porath & Erez, 2009). Dysfunctional ideation and decreases in creativity may be especially problematic for new innovation-driven firms because these skillsets allow organizational members to think outside the box to develop new innovations and pivot to take advantage of emerging opportunities.

In sum, past research suggests that innovation-driven portfolio firms may be negatively affected by psychological contract violation related to forced founder CEO exit. Violation may be experienced directly by founders and employees or indirectly by other organizational members who witness and empathize with their state of violation. I propose that forced CEO exit inherently creates a contentious organizational climate that

breeds conflict-triggered, destructive responses to psychological contract violation (e.g., turnover of key employees) and other unintended outcomes (e.g., dysfunctional ideation, decreased creativity). Indeed, forced founder CEO exit may be especially devastating to the survival chances of innovation-driven portfolio firms. Accordingly, I hypothesize the following:

Hypothesis 4: *The nature of founder CEO exit will have a positive effect on portfolio firm failure, such that more contentious exits increase the likelihood of failure*.

Moreover, younger portfolio firms that experience forced founder CEO exit may be at greatest risk of failure, as these conditions may interact synergistically to increase firms' likelihood of failure over time. For instance, such circumstances may signal instability to potential employees, which could make recruiting and retaining key talent especially difficult. Additionally, founders replaced under such circumstances may be unwilling to bring new CEOs up to speed, which could create devastating product delays and other inefficiencies as new CEOs work to overcome critical knowledge deficiencies in a rapidly changing marketplace. Accordingly, I propose the following:

Hypothesis 5: *The likelihood of failure will be greatest for portfolio firms that experience more contentious founder CEO exits earlier in their life cycles*.

CHAPTER 3: METHODOLOGY

Sample

I created a unique panel data set to test hypotheses. My convenience sample included 182 U.S.-based portfolio firms, founded between 1990 and 2010, that competed in one of three broad industry groups where various types of highly innovative, high potential opportunities may be pursued (Hellmann & Puri, 2002; Wasserman, 2017): 1) life-sciences technology (e.g., biotechnology; pharmaceuticals); 2) computer and communications technology (e.g., computer software, hardware, and services; semiconductors; internet services; information technology and services); 3) healthcare technology (e.g., medical devices & equipment). Firms in these industries are unlikely to have the requisite collateral assets to secure traditional debt financing (e.g., bank loans), making them more likely to need and elicit equity capital. Indeed, Wasserman (2017) reported that "between 2005 and 2012" the high-tech and life-sciences industries were "by far the largest industries for American high-potential startups, accounting for more than two-thirds of the angel capital and venture capital invested during the time period" (p. 8), which echoed Gompers' (1995) observation.

I created a historical record for each sampled firm by compiling and matching data from a variety of sources, including newer databases that have recently gained traction among organizational science scholars (Kaplan & Lerner, 2016; Splenda & Barnhart, 2017). Consulting a variety of sources allowed me to triangulate and extend the histories of each sampled portfolio firm by collecting overlapping and complementary data. I first compiled a list of portfolio firms matching my sample criteria using Crunchbase (Kaplan & Lerner, 2016), PrivCo (Ingham & Kodner, 2017; Lanahan &

Armanios, 2018), and VentureXpert (Katila, Thatchenkery, Christensen, & Zenios, 2017), retaining firms that were listed in Crunchbase and at least one of the other databases to maximize the data available for each firm. Of the three initial databases, Crunchbase provided the most comprehensive firm histories.

Crunchbase is an increasingly popular crowd-sourced database for research focused on technology startups (Alexy, Block, Sandner, & Ter Wal, 2012; Block & Sandner, 2009; Croce, Guerini, & Ughetto, 2018; DeSantola, Ramarajan, & Battilana, 2017; Hallen, Bingham, & Cohen, 2014; Santana, Hoover, & Vengadasubbu, 2017; Tata, Martinez, Garcia, Oesch, & Brusoni, 2017; Werth & Boeert, 2013). Crunchbase provides data on private and public firms, which are mostly headquartered in the United States. The database compiles data from a variety of sources, including large investment firms; thousands of entrepreneurs, individual investors, and company executives; and artificial intelligence (AI) algorithms that scan contributed data for inaccuracies and scour the web for additional data (Dalle, den Besten, & Menon, 2017). Crunchbase is best known for tracking VC financings; capturing details on lead investors, firm executives, and board members; and providing links to news about each firm (Kaplan & Lerner, 2016). I obtained permission from Crunchbase to access its Application Programming Interface (API), which permits access to all the data that the company captures for each firm, investor, employee, etc. Dalle et al. (2017) suggested that Crunchbase's API provides a similar level of coverage as PrivCo and VentureXpert. However, I found that Crunchbase's API is far more extensive, although none of the databases provided remotely complete histories for each firm. Even when combined, firm histories required substantial supplementation with data from other archival sources, including company

filings with the U.S. Security Exchange Commission (SEC), online news reports, press releases, COMPUSTAT, online trading sites with company information and financial performance data (e.g., Pitchbook, BioCentury, StockAnalysis.com, FairlyValued.com), and self-reported LinkedIn profiles (Ewen & Marx, 2018). For the final sample, I coded extensive employment and educational histories for over 500 founders and professional CEOs across sampled firms, including 5239 recorded job positions and 191 core founder CEOs; 1255 funding rounds, including debt financing, equity financing, and grants obtained; and 1071 BOD observations; Whenever there was a discrepancy between data sources, I retained the data reported most proximally by the firm (e.g., SEC filings, press releases) or individuals involved with the firm, such as founders, executives, directors, and investors (e.g., LinkedIn profiles).

Data collection resulted in two overlapping data sets to test hypotheses: 1) A cross-sectional data set to test failure hypotheses, which included only firm-level variables and one row of data for each firm; and 2) a panel data set that included a subset of firms that registered an IPO with the SEC, even if the IPO was later withdrawn (i.e., the firm remained private). The panel data set allowed me to test the direct and moderated effects of founder CEO exit on valuation and profitability over time. The panel data set included multiple rows of firm-level (Level 2) and time-varying (Level 1) variables per firm, with each row representing one observation year per firm. The number of observations per firm varied, ranging 2 to 28 (M = 12) for profitability and 2 to 22 (M = 9) for valuation, creating an unbalanced data set. Multiple observations for each firm were associated with that respective firm by a unique firm ID, which linked the same firms in both data sets.

Table 1 provides sample characteristics. Most sampled firms (n = 107) were traded publicly at some point during the observation period and included all technology industries listed above: 76 from the life-sciences technology industry, 21 from the computer and communications technology industry, and 10 from the healthcare technology industry. Four of these public firms traded stocks on the over-the-counter (OTC) market, which is weakly regulated by the SEC, compared to stocks on a major exchange (e.g., NASDAQ, NYSE) (Probasco, 2021). Three additional firms went public via reverse merger, in which the focal firm was acquired by an existing, public firm, but the focal firm was the surviving firm. The majority of private firms (n = 72) were from the life-sciences technology industry, three were from the healthcare industry, and none were from the computer and communications technology industry.

Measures

Below I describe how each variable was operationalized. I begin with outcome variables (i.e., valuation, profitability, and failure), then continue with the predictor variable (i.e., core founder CEO exit), moderating variables (i.e., timing and nature of founder exit), and control variables. Table 2 provides a summary of variables and respective source(s) of data.

Portfolio firm outcomes. The effects of founder exit on firm outcomes are likely time dependent, suggesting the need for researchers to examine performance over time (Guenther et al., 2016; Klotz, Hmieleski, Bradley, & Busenitz, 2014). I examined two portfolio firm outcomes over time: Valuation (M = $1.02 billion, SD = $1.69 billion) and profitability (M = – $90.20 million, SD = $599.03 million). Valuation and profitability are continuous, dynamic variables. *Valuation* was operationalized as market

Table 1

Sample characteristics

Industry	Peer Group	Founding Years	Firms	IPO	Living Dead	Failed	Exits	Nature of Exit			Timing of Exit (years)				
								Ami	Acc	Adv	≤ 3	4-6	7-9	10-12	≥ 13
Life-Sciences	1	1990-1994	8	8	0	1	6	3	0	3	3	1	0	1	1
Technology	2	1995-1999	27	22	2	1	17	10	1	6	1	6	5	0	5
	3	2000-2004	40	20	4	9	24	8	3	13	8	7	5	3	1
	4	2005-2010	73	26	7	6	28	9	5	14	11	10	7	0	0
Computer &	5	1991-1995	4	4	0	0	3	0	0	3	2	1	0	0	0
Communications	6	1996-1999	8	8	0	2	6	3	1	2	3	0	2	0	1
Technology	7	2000-2004	6	6	0	0	5	5	0	0	3	1	1	0	0
	8	2005-2007	3	3	0	0	0	-	-	-	-	-	-	-	-
Healthcare	9	1997-2000	3	2	0	0	2	2	0	0	2	0	0	0	0
Technology	10	2003-2004	5	5	0	0	3	3	0	0	0	2	0	1	0
	11	2006-2009	5	3	0	0	5	5	0	0	3	2	0	0	0
Totals			182	107	13	19	99	48	10	41	36	30	20	5	8

Notes. IPO: Initial Public Offering; Ami: Amicable exit; Acc: Accommodating exit; Adv: Adversarial exit

capitalization, or the market value of a firm's equity at the end of each fiscal year (i.e., end-of-year outstanding common stock * end-of-year stock price). I operationalized *profitability* as a portfolio firm's operating profit (Brännback et al. 2009), which equals earnings before interest and taxes (EBIT). I considered only public firms in my sample when testing valuation and profitability hypotheses (i.e., H1 and H3, respectively) because valuation estimates for private companies are subject to different market forces than public companies, making comparisons between private and public company valuations problematic, and earnings data are difficult to obtain for private portfolio firms. I also excluded valuation and profitability observations for portfolio firms following an acquisition of the firm or in cases of reverse mergers, wherein a focal firm acquires another company but is not the surviving firm. In these cases, the focal firms no longer govern themselves independently or retain pre-acquisition leadership. Twenty-two percent and 13% of profitability and valuation observations in my sample, respectively, occurred before founder CEOs exited their firms.

Failure is a dichotomous categorical variable that captures whether a portfolio firm was defunct by the end of the study observation period (December 31, 2018), even if the failure occurred post-IPO. For each firm, I coded (0) if survival status could be ascertained and there was no change in status; or (1) if performance data could no longer be ascertained (i.e., assumed to close), there was evidence in news reports of a bankruptcy or closing, or the firm was acquired for less than 125% of total debt and equity financing raised (Ewen & Marx, 2018). For firms acquired for 125% or more of total financing raised, I coded failure as "0". To determine the acquisition premium paid for each acquired firm, I considered upfront acquisition payments only, as reported in

SEC filings, press releases, and/or other news reports. I did not consider potential future payments tied to certain milestones. Failed firms represented 10.44% of the final sample.

Core founder CEO exit (founder CEO exit). To operationalize core founder CEO exit (*founder CEO exit*) for each portfolio firm, I first established who was the core founder CEO (Wasserman, 2017) and whether the core founder CEO was replaced (Ewens & Marx, 2018). The core founder CEO 1) was listed as a founder in company records and 2) was the first person to hold the CEO position. In the event that multiple founders shared the first CEO position as co-CEOs, the core founder with the largest initial equity stake (if known) and/or who worked as a full-time employee when the firm was founded (i.e., reported no other positions at the same time) was deemed the core founder CEO (Wasserman, 2017). Self-reported LinkedIn profiles and SEC filings served as primary sources for these data, although I supplemented and verified with data from Crunchbase and VentureXpert, as well as news reports and press releases about changes in executive leadership. I then coded *core CEO exit* (1) if another person held the CEO position in the firm after the core founder or (0) if the core founder remained in the CEO position throughout the observation period (Ewen & Marx, 2018). Across sampled firms, 54.4% experienced founder CEO exit, including 62.55% of public firms and 41.33% of private firms. These percentages are a bit higher than exits reported in previous research (i.e., 38% by Ewen & Marx, 2018; 40% by Hellmann & Puri, 2002).

Timing of core founder CEO exit (exit timing). I calculated the timing of founder CEO exit (*exit timing*) by subtracting the year of founding or incorporation from the year that a founder either left the CEO position or the date that a subsequent CEO joined the firm (Ewen & Marx, 2018), whichever was earlier. (A second CEO may not be

hired immediately following a founder CEO's exit, especially if the founder exits unexpectedly.) The timing of exit variable is nested within the founder CEO exit variable. Accordingly, I dropped portfolio firms from the sample if they experienced founder CEO exit, but I could not establish the date of exit.

The timing of exit variable served as a proxy for each firm's stage of development at the time of founder CEO exit, which lasts at least two years (Ewen & Marx, 2018; Guenther et al., 2016; Marquis & Tilcsik, 2013; Miller & Friesen, 1984; Yan & Zhao, 2009). I thus coded the timing of exit variable as follows: (0) founder exit within the first 3 years of venture founding; (1) founder exit between 4-6 years after venture founding; (2) founder exit between 7- 9 years after venture founding; (3) founder exit between 10-12 years after venture founding; or (4) founder exit between 13-16 years after venture founding. Across the sample, most founder CEO exits occurred within the first six years of venture founding, with 36.36% occurring within the first three years and 30.3% occurring between 4-6 years.

Nature of core founder CEO exit (nature of exit). The nature of core founder CEO exit (*nature of exit*) variable is nested within the founder CEO exit variable and represents the continuum of sociopolitical conditions in which founder CEO exit occurs. To determine the nature of exit, I followed a four-step coding process to determine whether 1) core CEO exit was voluntary; 2) if an interim CEO replaced the core founder CEO; 3) the replaced founder transitioned to another executive position in the firm or remained on the board of directors; and, when applicable, 4) how long the core founder remained in the post-replacement position. I used the following ordinal codes, which I adapted from the coding schemes of Ewen and Marx (2018) and Hellmann and Puri

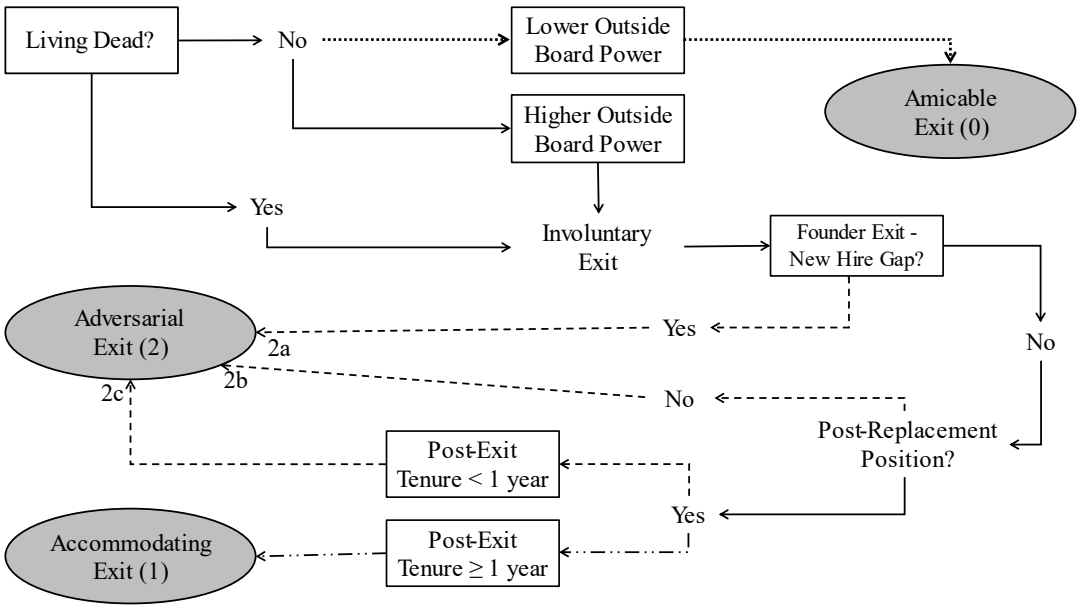
(2002): (0) amicable exit, (1) accommodating exit, or (2) adversarial exit. The coding scheme described below is depicted in Figure 2.

I first identified voluntary exits by assessing two conditions that make forced founder CEO exits more likely: a) Struggling performance prior to founder CEO replacement, or "living dead," and b) a higher proportion of outsiders on the firm's board of directors, or higher "outside director power" (Ewen & Marx, 2018; Lerner, 1995; Parhankangas & Landström, 2004; Wasserman, 2017). Following Ewen and Marx (2018), I determined struggling performance by comparing the ability of portfolio firms to raise capital compared to their peers (Ewen & Marx, 2018). Peer firms are in the same industry and at a similar stage of development (Ewen & Marx, 2018). I considered firm age as a proxy for firm development stage, categorizing peer groups by founding year. For example, one peer group included life-science technology firms founded 1990-1994; another peer group included life-sciences technology firms founded 1995-1999; a third peer group included healthcare technology firms founded 1995-1999; etc. I coded 11 peer groups from three primary industries (see Table 1). The number of firms in each peer group ranged 3-73. Most firms were in one of the life-sciences technology peer groups.

I considered firms unable to complete an equity funding round at the same rate and amount as the 90th percentile of firms in their respective peer groups, within a year of core founder CEO exit, as *living dead*. I counted grants as equity rounds for the purposes of identifying living dead firms because raising equity capital may be unnecessary if a firm is able to raise grant money instead. Additionally, I coded tranches of funding rounds filed within three months of each other as the same funding round and tranches filed more than three months apart as different funding rounds. Whenever the date or

Figure 2

Nature of founder exit coding scheme



amount of a funding round was unavailable, I identified living dead based on the data for the other rounds. Profitable firms, even if they otherwise met the criteria for living dead, were not categorized as living dead. Ten firms that experienced founder CEO exit met the living dead criteria (10.1%).

For firms that were not living dead, I then determined the extent of outside director power at the time of core founder CEO exit. I calculated the proportion of the firm's board of director (BOD) seats controlled by investors and independent observers (Ewen & Marx, 2018; Wasserman, 2017). Firms with higher outside director power had more than 50% investors and independent observers (i.e., outsiders) on their boards of directors. SEC filings (i.e., Form Ds, S-1s, 8-Ks, 10-Qs, and10-Ks) served as primary sources of BOD data. Of firms that experienced founder CEO exit and were not living

dead, 87.5% also had higher outside director power at the time of exit. I considered founder CEO exit as voluntary and coded the nature of exit "0" for amicable if the focal firm had both lower outside director power at replacement and was not found to be living dead within a year prior to replacement (n = 47). I also coded core founder CEO exits as amicable if the exit was due to a founder's death (n = 1). For amicable exit conditions, I did not consider further the post-replacement role of the core founder.

I considered the other 51 founder CEO exits as involuntary, including exits that occurred when outside director power was higher at the time of exit and/or focal firms were considered living dead within the year prior to replacement. To further determine whether involuntary exits were adversarial or accommodating, I first established whether the core founder CEO separated from the firm before a new, permanent CEO was hired, such as when a remaining cofounder, executive, or board member served as interim CEO or I found other evidence of a gap between the founder CEO's exit date and the permanent replacement CEO's start date. I coded founder exits as adversarial (2) when a temporal gap existed between founder CEO exit and the newly hired CEO replacement (i.e., Founder Exit-New Hire Gap, n = 7).

When no evidence of a Founder Exit-New Hire Gap existed, I continued by assessing the roles that core founder CEOs retained after replacement, if any. If the core founder transitioned to a post-replacement position on the firm's board of directors or a different executive position with the firm (e.g., CTO, CXO), then I coded the nature of exit as "1" for accommodating (n = 10), provided the founder remained in the post-replacement position for at least one year (Ewen & Marx, 2018; Hellmann & Puri, 2002). I coded the nature of exit as "2" for adversarial if the core founder either did not retain a

post-replacement executive or director position with the firm or the core founder left the post-replacement position within one year of exiting the CEO position (n = 34).

To determine the nature of exit conditions, I collected and analyzed data collected from CEO, founder, and board member LinkedIn profiles, news reports and company press releases, and firms' SEC filings.

Control variables. Following best practices, I included control variables when I could theoretically justify their inclusion (Becker, 2005; Bernerth & Aguinis, 2012). I thus consulted extant research to identify theoretically relevant control variables for each outcome (i.e., valuation, profitability, and failure). For all hypotheses, I controlled for variance due to portfolio *firm age* (M = 8.75, SD = 4.82), which Wasserman (2017) and Jain et al. (2008) found to be positively associated with firm valuation and profitability, respectively, and Delmar and Shane (2004) found to be negatively associated with firm failure. I calculated firm age by subtracting each firm's founding date (month and year) from the last founding date possible for sample inclusion (i.e., December 2010), regardless of failure status prior to the latter. For instance, firm age for two firms founded in July 1990 would be calculated as 20.52 years, even if one of those firms failed in November 2008.

I also controlled for the positive and negative effects of portfolio *firm size* on profitability (Jain et al., 2008) and firm failure (Delmar & Shane, 2004; Haveman, 1993), respectively. The number of reported employees represented firm size for the year. For profitability analyses, I considered firm size for each observation year (M = 545.5, SD = 1321.85). For failure analyses, I considered firm size the year before founder CEO exit

occurred (M = 355.80, SD = 1005.65). Finally, I controlled for *industry* effects in failure analyses, coded to represent each industry sampled (Guenther et al., 2016).

Based on Wasserman (2017), I included several additional control variables in the valuation models. I added *outside director power*, observed each year (M = .75, SD = .10). I controlled for both *prior founding experience of the core founder CEO* (M = .38, SD = .49) and *previous executive experience of the replacement CEO* (M = .85, SD = .35), which represents the quality of the replacement CEO. I coded both variables (1) for prior experience or (0) for none. Most core founder CEOs (61.33%) had no previous founding experience. The overwhelming majority (85.86%) of replacement CEOs had previous executive experience. Additionally, because resource-rich startup "hubs" may be more conducive to value creation, I controlled for the *location* of portfolio firms' headquarters, coding (2) for top-tier states (i.e., California, Massachusetts), (1) for mid-tier states (i.e., Illinois, New Jersey, New York, Texas), and (0) for all other states (Wasserman, 2017). Most sampled firms were located in top-tier states (53.8%). Another 8.2% of the sample was from mid-tier states, with the remaining 37.9% located across the other 44 states. I also accounted for the positive effects of *founding team size* (i.e., number of people listed as founders on the startup team) on valuation (Wasserman, 2017). Founding teams ranged in size from solo entrepreneurs to six-person teams (M = 2.17, SD = 1.06). Most teams (41.2%) included two founders. Only 10% of founding teams included more than three people. Less than 10% of sampled firms (n = 15) had a female founder CEO, with most of those having a two-person founding team (53.33%). Nearly half of founding teams (47.5%) included all first-time entrepreneurs, and 18.8% of teams included all serial entrepreneurs.

Table 2

Summary of variables

Variable	Description	Source
Valuation	Market capitalization (end-of-year outstanding common stock*end-of-year stock price)	SEC Filings; Investing.com; StockAnalysis.com; COMPUSTAT; VentureXpert
Profitability	Operating profit (i.e., earnings before interest and taxes)	SEC Filings; Investing.com; StockAnalysis.com; COMPUSTAT; VentureXpert
Failure	(0) no change in status; (1) failure	SEC filings; online news reports; Crunchbase; Pitchbook; VentureXpert
Founder CEO exit	(1) core founder no longer holds the CEO position; (0) core founder remains in the CEO position	SEC filings; online news reports; firm press releases; Crunchbase; LinkedIn
Exit timing	Years since venture founding/incorporation: (0) ≤ 3 years; (1) 4-6 years; (2) 7-9 years; (3) 10-12 years; (4) ≥ 13 years	SEC filings; online news reports; Crunchbase; LinkedIn
Nature of exit	(0) no exit; (1) amicable exit; (2) accommodating exit; (3) adversarial exit	SEC filings; online news reports; Crunchbase; LinkedIn
Living dead	(0) no; (1) living dead	SEC filings; Biocentury.com; Pitchbook; Crunchbase; VentureXpert
Outside director power	Proportion of the firm's board of director seats controlled by investors and independent observers	SEC filings; Crunchbase; LinkedIn; VentureXpert; online news reports

Table 2

Summary of variables (cont.)

Variable	Description	Source
Prior founding experience (founder CEO)	(1) prior founding experience; (0) none	LinkedIn; SEC filings; online news reports; Crunchbase
Previous executive experience (replacement CEO)	(1) prior executive experience; (0) none	LinkedIn; SEC filings; online news reports; Crunchbase
Portfolio firm age	Last founding date for sample inclusion minus firm's founding date (month and year)	Crunchbase; SEC filings; Pitchbook; VentureXpert
Portfolio firm location	(2) top-tier states (i.e., California, Massachusetts); (1) mid-tier states (i.e., Illinois, New Jersey, New York, Texas); (0) all other states	LinkedIn; Crunchbase; SEC filings; VentureXpert
Founder team size	Number of people listed as founders on the startup team	Crunchbase; SEC filings
Portfolio firm size	Number of employees	SEC filings
Industry	Self-selected industry category: (1) Life-sciences technology; (2) computer and communications technology; (3) healthcare technology	LinkedIn

Table 3

Summary of hypotheses

Hypothesis	Analysis	Control Variables
H1: Founder CEO exit will have a positive effect on portfolio firm valuation that dissipates over time.	Growth model	Portfolio firm age; founder team size; outside director power; prior founding experience (founder CEO); previous executive experience (replacement CEO); location
H2: The timing of founder CEO exit will have a negative effect portfolio firm failure, such that founder exits at early stages of firm development will increase the likelihood of failure.	Logistic regression	Portfolio firm age; portfolio firm size; industry
H3: The nature of founder CEO exit will have a negative effect on portfolio firm profitability, such that more contentious exits reduce profitability over time.	Growth model	Portfolio firm age; portfolio firm size
H4: The nature of founder CEO exit will have a positive effect on portfolio firm failure, such that more contentious exits increase the likelihood of failure.	Logistic regression	Portfolio firm age; portfolio firm size; industry
H5: The likelihood of failure will be greatest for portfolio firms that experience more contentious founder CEO exits earlier in their life cycles.	Logistic regression	Portfolio firm age; portfolio firm size; industry

Notes. Growth model: Longitudinal mixed effects model; Logistic regression: Multiple hierarchical binary logistic regression

Analyses

Table 3 provides a summary of hypotheses, analytical methods, and respective control variables. Descriptive statistics for model variables are reported in Table 4 (Chapter 4: Results), as well as Appendix A, which includes variables considered in the Nature of Exit coding scheme. Below I discuss analyses conducted.

Growth model analysis. To test valuation (H1) and profitability (H3) hypotheses, I estimated a series of models that fall under the broad umbrella of longitudinal mixed effects models (i.e., growth models) (Bliese & Ployhart, 2002). Growth modeling permits examination of firms' growth trajectories and is appropriate for several reasons. Most notably, growth modeling handles the complex error structure of longitudinal data, which violates many assumptions of classical linear or ordinary least squares (OLS) regression methods. For instance, classical regression assumes linear relationships and normally distributed, independent residuals; however, repeated observations of firm performance are likely correlated and, thus, nonindependent (Bliese & Ployhart, Holcomb et al., 2010). Growth models account for this nonindependence by clustering repeated, time-varying observations (i.e., Level 1) by firm (i.e., Level 2). Importantly, these more advanced modeling techniques allow researchers to examine both within-firm (i.e., random effects) and between-firm (i.e., fixed) differences in change trajectories.

Growth modeling also offers multiple advantages over multilevel random coefficients modeling and latent growth curve modeling (LGM), which is another popular technique for testing longitudinal models. For example, growth modeling allows researchers to model time as a chronologically-ordered independent Level 1 variable), which violates the assumption in multilevel RCM that Level 1 observations are

independent (Bliese & Ployhart, 2002). Additionally, although LGM and growth modeling techniques provide nearly identical parameter estimates in most cases (Bliese & Ployhart, 2002), growth modeling is flexible enough to handle missing data, which is typical in longitudinal studies, and unbalanced data, which characterizes my data due to differing numbers of observations per firm. In growth modeling, parameter estimates are based on available data. Growth models can also be fitted to examine nonlinear relationships (Pinheiro & Bates, 2005), with adaptations to examine quadratic models. Bliese and Ployhart (2002) provide a step-by-step guide to growth modeling that I followed and adapted as necessary. I followed this guide and present results below.

I estimated growth models using the *nlme* package (Pinheiro, Bates, & R Core Team, 2021) in R, an open-sourced analysis platform. Following Bliese and Ployhart (2002), I employed a model-building regression framework to examine the growth trajectories of individual firms (i.e., within-firm variation over time) and differences between firms' growth trajectories (i.e., between-firm variation over time) (Bliese & Ployhart, 2002; Bryk & Raudenbush, 1987; Holcomb et al., 2010; Ployhart, Holtz, & Bliese, 2002). This approach allows researchers to build and compare incrementally complex, competing models to examine: 1) Overall growth patterns observed in the data set; 2) changes in the dependent variable(s) over time for individual firms; and 3) differences in change patterns, or growth trends, between individual firms (Bliese & Ployhart, 2002). This is accomplished by comparing a basic regression model to increasingly more complex models and assessing increases or decreases in model fit to ensure theoretical parsimony (Bliese & Ployhart, 2002).

Other concerns regarding longitudinal data include the potential for residual autocorrelation and heteroscedasticity (Bliese & Ployhart, 2002). Autocorrelation occurs when residual correlations are stronger for observations closer together and weaker for those farther apart. Autocorrelation may result in underestimated standard errors and inflated *t* values. Heteroscedasticity refers to increases and decreases in error variance over time; that is, inconsistent variation in residuals over the observation period. I investigated and accounted for violations of residual independence and homogeneity (Bliese & Ployhart, 2002) to obtain accurate parameter estimates.

Logistic regression analysis. To test failure hypotheses (H2, H4, H5), I conducted a series of hierarchical multiple binary logistic regression analyses using the "glm" function with "binomial" family specification in R's *stats* package (R Core Team, 2021). Binary logistic regression analysis models the probability that a firm will experience one of two outcomes, given a set of predictors that are entered in multiple steps, beginning with a model with control variables, adding each predictor of interest, and lastly, including an interaction term for both predictors. I investigated whether a firm is more likely to experience failure, a dichotomous outcome, but not time to failure, so a multiple binary logistic regression is more appropriate than time to event-based analytical techniques, such as survival analysis, in this case. I was also concerned primarily with the conditions surrounding founder exit, so I modeled the direct effects of the timing and nature of founder CEO exit on the likelihood of failure, as well as the synergistic effect of those conditions, using a nested subset of sampled firms. That is, all firms included in the logistic regression models experienced founder exit.

Consequently, the data structure for testing failure hypotheses included only one observation (i.e., one row) per firm, which contrasts with the more complex panel data structure required for valuation and profitability analyses described above. With this more simplified data structure, some violations of regression assumptions inherent to longitudinal data analysis (e.g., independence of residuals) may be irrelevant. Moreover, there is no doubt regarding the temporal order of, or causal relationship between, the set of predictors and the outcome of interest, as firm failure is a terminal outcome and, thus, founder exit and conditions of exit necessarily precede this outcome. I discuss the results of the logistic regression analysis below.

CHAPTER 4: RESULTS

Descriptives and Correlations

Below I present descriptive statistics and correlations between variables in valuation, profitability, and failure analyses (see Table 4). In Appendix A, I also include correlations between model variables and those used to code Nature of Exit.

I began by examining the associations between valuation, founder CEO exit, and control variables specified in the growth model analysis for H1, as well as other variables considered in profitability and failure analyses. I found that valuation was associated with rather trivial, though significant, relationships with most H1 control variables and founder CEO exit. Firms with larger founding teams (r = .09, p = .02, N = 805), founded earlier in the study period (firm age: r = .15, p = .000, N = 805), that replaced their founder CEOs (founder CEO exit: r_{pb} = .15, p = .000, N = 805) with professionals who had previous executive experience (r_{pb} = .17, p = .000, N = 559) tended to elicit higher valuations, which is consistent with past research referenced earlier. However, firms with founder CEOs with previous founding experience tended to elicit lower valuations (r_{pb} = -.12, p = .001, N = 790), which contradicts past research. Additionally, contrary to expectations, there was no significant relationship between valuation and outside BOD power (r = .01, p = .88, N = 589) or firm location (r_{pb} = .02, p = .63, N = 805). Results also showed that valuation had significant relationships with variables modeled in other analyses, including weak, positive relationships with industry (r_{pb} = .20, p = .000, N = 805) and nature of exit (r_{pb} = .20, p = .000, N = 561). I observed significant weak, negative relationships with exit timing (r_{pb} = -.17, p = .000, N = 561) and founding teams' prior founding experience (r_{pb} = -.17, p = .000, N = 790), as well. Additionally, I

found a significant strong, positive relationship between valuation and firm size (r = .68, p = .000, N = 795). These findings prompted me to conduct post-hoc analyses that controlled for the potential effects of industry, founding teams' prior founding experience, and firm size. However, greater theoretical contemplation is needed to address how the nature and timing of founder exits may affect firm valuations, which is best reserved for future research.

I then examined the relationships between profitability and founder CEO exit, nature of exit, firm age, firm size, and other variables included in valuation and failure analyses. I found that the relationship between profitability and founder CEO exit was negative but non-significant (r_{pb} = -.04, p = .22, N = 1265). The relationships between profitability and nature of exit (r_{pb} = -.07, p = .04, N = 1265) and firm age (r = -.07, p = .03, N = 848) were significant and negative but weak. These findings indicate that lower profitability was associated with more contentious founder CEO exits and firms founded earlier in the study period. The relationship between profitability and firm size, however, was non-significant (r = .03, p = .40, N = 947). The only other variable with a significant correlation with profitability was location, which was positive but weak (r_{pb} = .08, p = .004, N = 1265), suggesting that firms in high-tiered states tended to be more profitable.

For firm failure, I found that founder CEO exit had a significant positive but small association with failure (*phi* = .17, p = .02, N = 182), suggesting firms that retained their founders also tended to survive. Exit timing had a significant positive, moderate relationship with failure (Cramer's V = .22, p = .03, N = 99), suggesting firms that experienced founder exits later in their life cycles also tended to fail. Neither nature of exit (Cramer's V = .09, p = .37, N = 99), firm age (r_{pb} = .04, p = .56, N = 182),

Table 4

Descriptive statistics and correlation matrix

Variable		Mean (SD)	Range	Correlations									
				(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	Valuation[a]	1300e[6] (2538e[6])	2 e[6]-19569e[6]	1									
(2)	Profitability[a]	-95e[6] (1300e[6])	-31235e[6]-1125e[6]	.03	1								
(3)	Failure	.10 (.31)	0-1	-.02[b]	.02[b]	1							
(4)	Founder CEO exit	.54 (.50)	0-1	.15[b]*	-.04[b]	.17[c]**	1						
(5)	Exit timing	1.18 (1.22)	0-4	-.17[b]*	.05[b]	.32[d]**	-	1					
(6)	Nature of exit	.93 (.95)	0-2	.20[b]*	-.07[b]**	.10[d]	-	-.05[e]	1				
(7)	Outside BOD power (yearly)[a]	.75 (.16)	0-1	.01	-.01	.07[b]**	-.07[b]**	.10[b]**	.05[b]	1			
(8)	Prior founding experience (founder CEO)	.39 (.49)	0-1	-.12[b]*	.03[b]	.06[c]	.12[c]	.19[d]	.21[d]	-.13[b]*	1		
(9)	Previous executive experience (replacement CEO)	.86 (.35)	0-1	.17[b]*	.03[b]	.17[c]†	-.04[c]	.13[d]	.16[d]	.11[b]*	.13[c]	1	
(10)	Firm age	8.75 (4.82)	1.25-21.52	.15*	-.06**	.04[b]	.24[b]*	.17[b]†	-.03[b]	.01	-.11[b]	-.14[b]**	1
(11)	Location	1.16 (.95)	0-2	.02[b]	.08[b]*	.10[d]	.27[d]*	-.10[e]	.09[e]	-.06[b]†	.08[d]	.10[d]	.08[b]
(12)	Founding team size	2.16 (1.06)	1-6	.09**	-.02	.06[b]**	.09[b]*	-.11[b]*	.05[b]	-.14*	.11[b]	.01[b]	-.16**
(13)	Firm size[a]	545.47 (1321.85)	2-13060	.68*	.03	.01[b]	.14[b]*	-.13[b]*	.18[b]*	.09**	-.10[b]*	.17[b]*	.22*
(14)	Industry	1.26 (.58)	1-3	.20[b]*	.03[b]	.10[d]	.16[d]†	.21[d]	.26[d]*	-.04[b]	.06[d]	.10[c]	.09[b]

Notes. [a] Time-varying variables unique to the panel data set (means, SDs, and correlations derived from the panel data set); [b] point biserial coefficient; [c] Phi coefficient; [d] Cramer' s V coefficient; [e] Gamma coefficient

*$p < .01$, **$p < .05$, [†] $p < .10$

Table 4

Descriptive statistics and correlation matrix (cont.)

Variable		Correlations		
		(11)	(12)	(13)
(11)	Location	1		
(12)	Founding team size	.19[b]*	1	
(13)	Firm size[a]	.08[b]**	.08**	1
(14)	Industry	.10[d]	.02[b]	.30[b]*

Notes. [a] Time-varying variables unique to the panel data set (means, SDs, and correlations derived from the panel data set); [b] point biserial coefficient; [c] Phi coefficient; [d] Cramer's V coefficient; [e] Gamma coefficient *$p < .01$, **$p < .05$, $^{\dagger}p < .10$

nor industry (Cramer's $V = -.09$, $p = .23$, $N = 182$) had significant relationships with failure. I derived the correlation between failure and firm size from the panel data set; however, the relationship was non-significant ($r_{pb} = .01$, $p = .80$, $N = 950$).

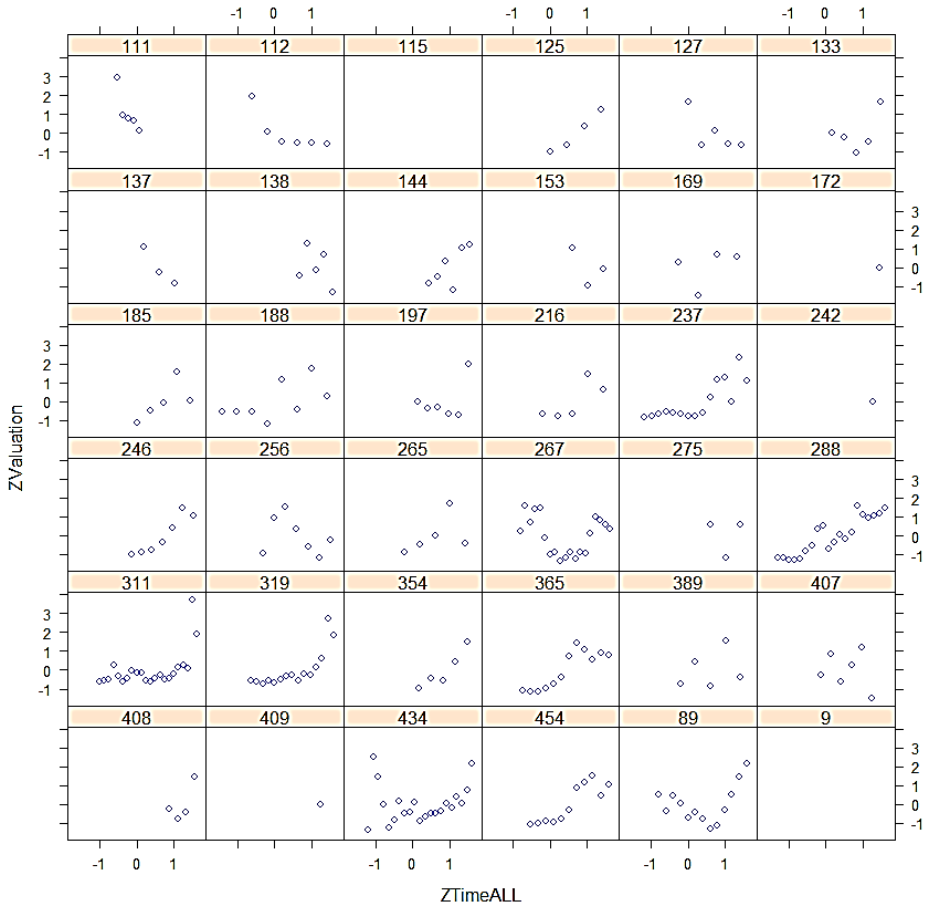
Finally, I assessed the relationships between outcome variables and between non-outcome variables. I found that valuation was not significantly associated with either profitability ($r = .03$, $p = .48$, $N = 805$) or failure ($r_{pb} = -.02$, $p = .60$, $N = 805$). Profitability was also not significantly associated with failure ($r = .02$, $p = .55$, $N = 1265$). Further, none of the correlations between non-outcome variables were large or beyond reasonable expectations.

Growth Model Analyses (Hypotheses 1 and 3)

Before testing valuation and profitability hypotheses, I assessed the distribution of each time-varying interval variable visually using histograms and empirically using Kolmogorov-Smirnov tests. Valuation was positively skewed (3.74, SE = .09) with a

Figure 3

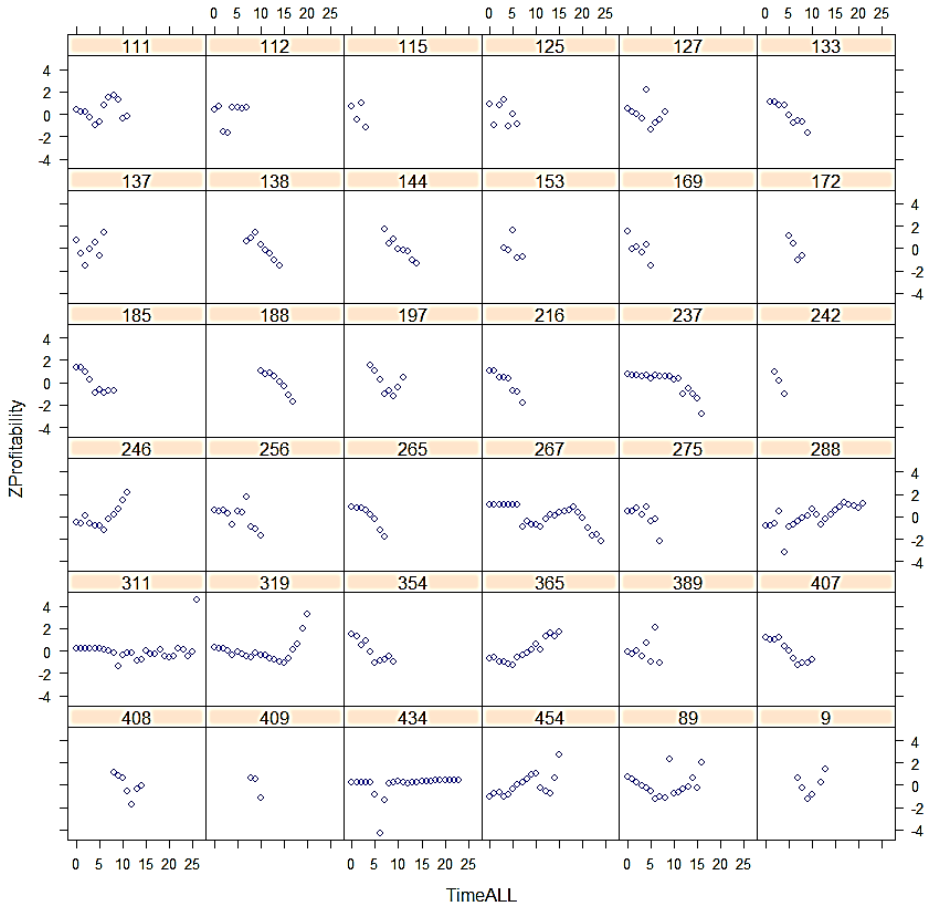
XY plot valuation (z-scores)



long tail and high peak (kurtosis = 16.58, SE = .17). A Kolmogorov-Smirnov test confirmed a non-normal distribution (D (df) = .30 (805), p < .001), consistent with positive valuations for all sampled firms. Profitability was negatively skewed (-19.12, SE = .07) with a long tail and high peak (kurtosis = 391.22, SE =.14). A Kolmogorov-Smirnov test confirmed a non-normal distribution (D (df) = .44 (1265), p < .001). These non-normal distributions were expected, given the population of interest and nature of the variables (e.g., many technology firms can be unprofitable for many years). Other researchers have addressed non-normality by conducting log transformations of the

Figure 4

XY plots profitability (z-scores)



observed values (e.g., Wasserman, 2017), but due to the unbalanced nature of my data, importance of accounting for dependence among observations for each firm, and having negative values for profitability, such transformations were inappropriate. Accordingly, I standardized all time-varying continuous variables within-firm, which addressed the normality issues sufficiently. Upon examining the distribution of valuation z-scores, I found minimal skewness of .88 (SE: .09) and kurtosis of .33 (SE = .17), although a Kolmogorov-Smirnov test indicated a significant non-normal distribution (D (df) = .12 (805), $p < .001$). I identified a similar pattern when examining the distribution of

profitability z-scores, finding acceptable skewness of -.33 (SE = .07) and kurtosis of .69 (SE = .14), despite a significant Kolmogorov-Smirnov test (D (df) = .06 (1265), $p < .001$). For level-2, or time-invariant variables, I standardized continuous variables between-firm. I used the resultant z-scores as continuous variables when estimating growth models. Appendices B and C shows comparative histograms and Q-Q plots for valuation and profitability, respectively, as observed and standardized within firm.

For all growth models, the first phase involved estimating a null model to calculate the interclass correlation coefficient (ICC1) (Bliese & Ployhart, 2002). The ICC1 is an indicator of data nonindependence. A nontrivial degree of nonindependence (> .10) provides evidence of between-firm differences in intercepts, supporting the appropriateness of modeling random intercepts. After running a null model of valuation (i.e., with observed values), I calculated an ICC1 of .56, which indicated that 56% of the change in valuation over time was due to between-firm differences and 44% due to within-firm variation. The ICC1 for profitability (i.e., with observed values) was .16, indicating that between-firm differences accounted for 16% of the changes in profitability over time and 84% was due to within-firm variation. Normally, these between-firm differences would suggest sufficient between-firm variance to allow random intercepts in subsequent models. However, because I standardized these variables within-firm and then used z-scores in the models, I found negligible between-firm variance when calculating ICC1 using z-scores, despite differences depicted visually in XY plots (see subset of firms in Figure 3 and Figure 4 for valuation and profitability, respectively). I was thus prompted to compare fixed intercepts (FI) and random intercepts (RI) models. I explain this in greater detail below when discussing the second phase of model building.

The second phase involved building a parsimonious Level 1 model for each hypothesis, wherein I investigated the relationship between each DV and time (Bliese & Ployhart, 2002). This phase establishes whether the outcome variable indeed varies over time and accounts for nonlinearity and problems with error structures (i.e., residual autocorrelation and heteroscedasticity). Time is modeled as a separate variable in these models and represents each year of observation, where Year 0 is the first observation of each firm (i.e., Time 0) and Year *i* is the final observation year for each firm (i.e., Time *i*) (Holcomb et al., 2010). For each Level 1 model, I regressed the z-score of each DV onto the z-score of time; determined the form of the growth trend (i.e., fixed functions for time); included random effects when appropriate (i.e., growth parameters); adjusted for autocorrelation and heteroscedasticity as needed (i.e., error structures); and estimated the effects of time-varying predictors/controls on each respective DV. At each step, I assessed model improvement by comparing log likelihood values of the current and previous models using the ANOVA function in R or examining the statistical significance of parameter estimates, which applies when comparing different forms of growth trajectories. I began by identifying whether valuation and profitability have linear, quadratic, or cubic relationships with time by estimating models for each form of trajectory. I also compared models with FI and RI to evaluate differences in fit. I adopted Level 1 models that were consistent with theory and best fit the data.

The third phase included building predictor models that included covariates and interaction terms (Bliese & Ployhart, 2002). Time-varying (level-1) and time-invariant (level-2) variables were added simultaneously, based on their expected effects on the intercepts of valuation and profitability (i.e., predict intercept differences), as well as

linear and quadratic slopes (collectively, cross-level interactions that predict differences in growth patterns). I modeled the effects of control variables in intercept predictor models only, consistent with past research that assumes fixed slopes (e.g., Wasserman, 2017). Like previous steps, I assessed improvement in fit by comparing the most recent models.

Valuation. For valuation, results indicated a significant, positive linear change in valuation over time, which was identical for models with FI and RI (β (SE) = .43 (.04), t = 9.90, p = 0). ANOVA tests revealed no statistically significant differences in fit between the FI and RI models (AIC (FI) = 2100.56, AIC (RI) = 2102.56; BIC (FI) = 2114.63, BIC (RI) = 2121.31; χ^2 = .001, p = .97). I then added a quadratic term for time. Results showed a significant, positive quadratic change in valuation over time, which again, was identical for models with FI and RI (β (SE) = .26 (.06), t = 4.49, p = 0). Again, ANOVA tests revealed no statistically significant improvement in fit when intercepts varied randomly (AIC (FI) = 2086.46, AIC (RI) = 2088.46; BIC (FI) = 2105.20, BIC (RI) = 2111.89; χ^2 = .001, p = .97). Finally, I modeled a cubic term for time, but results indicated a non-significant effect for both FI and RI models (β (SE) = .02 (.08), t = .23, p = .82). Although ANOVA tests revealed no difference in fit between FI and RI models, regardless of the form of change in valuation over time modeled, a RI model is most consistent with the amount of between-firm variance found when evaluating observed values, which is also most consistent with theory. Parameter estimates were also identical either way. Accordingly, I adopted a Level 1 base model of valuation that included a quadratic fixed function for time, random intercepts (RI), and fixed slopes (FS): VModel

RI-FS. I then evaluated differences in fit between models when allowing slopes to vary randomly. Table 5 provides fit statistics for each of these Level 1 base valuation models.

I began by comparing VModel RI-FS to a model with RI, random linear slopes (RL), and fixed quadratic slopes (FQ): VModel RI-RL-FQ. I then considered a model with RI and random linear and quadratic slopes (RS): VModel RI-RS. Allowing linear slopes to vary randomly resulted in a significant improvement in model fit ($\chi^2 = 81.80$, $p < .0001$). However, the model with both linear and quadratic random slopes (i.e., VModel RI-RS) fit the data significantly better when compared to either VModel RI-FS ($\chi^2 = 132.00$, $p < .0001$) or VModel RI-RL-FQ ($\chi^2 = 50.20$, $p < .0001$). I thus adopted Model RI-RS.

Subsequently, I investigated the error structure for both autocorrelation (C) and heteroscedasticity (H): VModel RI-RS-C and VModel RI-RS-C-H, respectively. ANOVA test results showed that models correcting for correlated errors ($\chi^2 = 81.80$, $p < .0001$) and heterogeneous errors ($\chi^2 = 81.80$, $p < .0001$) fit the data better than VModel RI-RS. Additionally, the lag 1 correlation (*phi* = .13) indicated a low-to-moderate degree of autocorrelation. However, given the low Delta estimate for heteroscedasticity (.07), I continued with a base growth model that corrected for autocorrelation only: VModel RI-RS-C. Results for VModel RI-RS-C indicated that valuation increases moderately over time, but the change is non-linear (β (SE) = .30 (.10), $t = 2.90$, $p = .004$).

I continued to build the predictor model in multiple stages. I began by modeling the relationships between time-varying (level-1) and time-invariant (level-2) control variables and valuation intercepts (i.e., Intercept Control VModel 1). Analysis revealed that none of the control variables had a significant relationship with valuation intercepts.

Table 5

Comparing base valuation models

VModel DV: Valuation	RI-FS	RI-RL-FQ	RI-RS	RI-RS-C (VModel 0)	RI-RS-C-H
AIC	2088.46	2010.66	1966.45	1960.42	1951.19
BIC	2111.89	2043.47	2013.33	2011.98	2007.43
logLik (df)	-1039.23 (5)	-998.33 (7)	-973.23 (10)	-969.21 (11)	-963.59 (12)
Likelihood ratio (reference: RI-FS)		81.80*	132.00*	140.03*	151.27*
Likelihood ratio (reference: RI-RL-FQ)			50.20*		
Likelihood ratio (reference: RI-RS)				8.03*	19.27*
Likelihood ratio (reference: RI-RS-C)					11.23*
Lag 1 correlation estimate (phi)				.13	
Delta estimate					.07

Notes. firms: 100/observations = 805. VModel: Valuation Model; RI-FS: Random intercepts, fixed slopes; RI-RL-FQ: Random intercepts, random linear slopes, fixed quadratic slopes; RI-RS: Random intercepts, random (linear and quadratic) slopes; RI-RS-C: Random intercepts and slopes with autocorrelation correction; RI-RS-C-H: Random intercepts and slopes with corrections for autocorrelation and heteroscedasticity.
*$p < .01$

Listwise deletion resulted in the removal of 47% of cases from the sample and 53% of observations due to missingness, which decreased power substantially, potentially leading to unstable parameter estimates.

I then evaluated the relationships between founder CEO exit and valuation intercepts (i.e., Intercept Predictor VModel 2), as well as linear (Linear Predictor VModel 3) and quadratic changes in valuation (Quadratic Predictor VModel 4). The final model tested a curvilinear relationship between founder CEO exit and valuation (i.e., cross-level

Table 6

Effects of founder exit on firm valuation over time

VModel DV: Valuation (H1)	Base Growth VModel 0 (VModel RI-RS-C)				Intercept Control VModel 1				Intercept Predictor VModel 2			
	β (SE)	t	CI		β (SE)	t	CI		β (SE)	t	CI	
			2.5%	97.5%			2.5%	97.5%			2.5%	97.5%
Intercept	-.24* (.06)	-4.03			-.23 (.19)	-1.22	-.59	.14	-.21 (.57)	-.60	-1.32	.91
Level 1 Variables												
Time	.07 (.13)	.51	-.19	.32	.28* (.11)	2.52	.06	.49	.28* (.11)	2.54	.06	.49
Time²	.30* (.10)	2.90	.10	.50	.01 (.10)	.08	-.20	.21	.01 (.10)	.06	-.20	.21
Outside director power					-.02 (.07)	-.34	-.15	.11	- .02 (.05)	-.34	-.15	.11
Level 2 Variables												
Firm age					-.01 (.06)	-.15	-.13	.11	-.01 (.06)	-.15	-.13	.11
Founder team size					-.02 (.05)	-.40	-.13	.08	-.02 (.05)	-.40	-.13	.08
Founder CEO foundingX					.06 (.12)	.52	-.17	.29	.06 (.12)	.51	-.17	.30
Replacement CEO's execX					.05 (.16)	.31	-.26	.36	.05 (.16)	.30	-.27	.36
Location					-.002 (.07)	-.03	-.13	.13	-.001 (.07)	-.01	-.13	.13
Founder Exit									-.02 (.56)	-.04	-1.11	1.07
Pseudo-R²					.20				.20			
AIC (AICc)	1960.42 (1960.76)				963.72 (965.48)				965.04 (967.02)			
BIC	2011.98				1030.06				1035.24			
Log Likelihood	-969.21				-464.86				-464.52			
Residual variance (SD)	.52 (.52)				.62 (.79)				.62 (.78)			

Notes. VModel: Valuation model; RI-RS-C: Random intercepts and slopes with correction for autocorrelation; CI: Confidence Intervals; AICc: Akaike Information Criterion (corrected); BIC: Bayesian information criterion

*$p < .01$, **$p < .05$, † $p < .10$

Table 6

Effects of founder exit on firm valuation over time

VModel DV: Valuation (H1)	Linear Slope Predictor VModel 3				Full H1 Quadratic Slope Predictor VModel 4			
	β (SE)	t	CI		β (SE)	t	CI	
			2.5%	97.5%			2.5%	97.5%
Intercept	1.51 (1.31)	1.15	-1.07	4.08	5.24† (2.89)	1.81	-.42	10.90
Level 1 Variables (df)								
Time	-.2.11 (1.66)	-1.28	-5.36	1.13	-14.68† (8.83)	-1.66	-31.98	2.62
Time^2	.02 (.10)	.16	-.19	.22	8.66 (5.96)	1.45	-3.03	20.34
Outside director power	-.02 (.07)	-.33	-.15	.11	-.02 (.07)	-.32	-.15	.11
Level 2 Variables (df)								
Firm age	-.01 (.06)	-.13	-.13	.11	-.01 (.06)	-.13	-.13	.11
Founder team size	-.02 (.05)	-.39	-.13	.08	-.02 (.05)	-.39	-.13	.08
Founder CEO foundingX	.06 (.12)	.50	-.17	.29	.06 (.12)	.50	-.17	.29
Replacement CEO's execX	.04 (.16)	.28	-.27	.36	.05 (.16)	.28	-.27	.36
Location	-.001 (.07)	-.01	-.13	.13	-.001 (.07)	-.01	-.13	.13
Founder Exit	-1.74 (1.31)	-1.33	-4.31	.83	-5.47† (2.89)	-1.89	-11.13	.19
Linear Interaction								
Time*Founder Exit	2.93 (1.66)	1.45	-.85	5.64	14.96† (8.83)	1.70	-2.33	32.26
Quadratic Interaction								
Time^2*Founder Exit					-8.64 (5.96)	-1.45	-20.33	3.04
Pseudo-R^2	.20				.20			
AIC (AICc)	962.11 (964.32)				956.61 (959.06)			
BIC	1036.16				1034.50			
Log Likelihood	-462.06				-458.30			
Residual variance (SD)	.62 (.79)				.62 (.79)			
Number of observations	375				375			
Number of firms	63				63			

Notes. VModel: Valuation model; CI: Confidence Intervals; AICc: Akaike Information Criterion (corrected); BIC: Bayesian information criterion
*$p < .01$, **$p < .05$, † $p < .10$

quadratic slope effect), in which an expected positive effect dissipates over time (i.e., Hypothesis 1). Table 6 summarizes results for all tested valuation predictor models.

VModel 4 results indicate that firms that replace their founder CEOs experience lower valuations than firms that retain them. That is, founder CEO exit is negatively associated with firm valuation intercepts, although the effect is not statistically significant in this sample (β (SE) = -5.47 (2.89), t = -1.89, p = .06). Standardized linear growth (β (SE) = 14.96 (8.27), t = 1.70, p = .09) and quadratic growth (β (SE) = -8.64 (5.96), t = -1.45, p = .15) coefficients suggested that founder CEO exit is associated with positive growth in firm valuation that decelerates over time. Neither slope term, however, was statistically significant. Additionally, pseudo-R^2 remained unchanged, but other fit statistics (i.e., AIC, AICc, and BIC) indicated increasingly better fit. Although these results generally demonstrate the expected relationships between founder CEO exit and valuation, they were statistically non-significant. Accordingly, I was unable to reject the null hypothesis and thus conclude that H1 was not supported.

Profitability. For profitability, results indicated a significant, negative linear change in profitability over time, which was identical for models with FI and RI (β (SE) = -.30 (.03), t = -10.90, p = 0). ANOVA tests revealed no statistically significant differences in fit between the FI and RI models (AIC (FI) = 3379.06, AIC (RI) = 3381.06; BIC (FI) = 3394.48, BIC (RI) = 3401.63; χ^2 = .001, p = .98). I then added a quadratic term for time. Results showed a small, significant, positive quadratic change in profitability over time, which again, was identical for both FI and RI models (β (SE) = .10 (.03), t = 3.09, p = .002). Again, ANOVA tests revealed no statistically significant improvement in fit when intercepts varied randomly (AIC (FI) = 3376.58, AIC (RI) =

Table 7

Comparing base profitability models

PModel DV: Profitability	RI-FS	RI-RL-FQ	RI-RS	RI-RS-C	RI-RS-C-H (PModel 0)
AIC	3378.58	3125.92	3021.47	2946.81	2877.86
BIC	3404.29	3161.90	3072.88	3003.35	2939.54
logLik (df)	-1684.29 (5)	-1555.96 (7)	-1500.73 (10)	-1462.40 (11)	-1426.93 (12)
Likelihood ratio (reference: RI-FS)		256.66*	367.11*	443.78*	514.72*
Likelihood ratio (reference: RI-RL-FQ)			110.45*		
Likelihood ratio (reference: RI-RS)				76.67*	147.61*
Likelihood ratio (reference: RI-RS-C)					70.95*
Lag 1 correlation estimate (phi)				.29	.32
Delta estimate					.14

Notes. firms: 109/observations = 1265. PModel: Profitability Model; RI-FS: Random intercepts, fixed slopes; RI-RL-FQ: Random intercepts, random linear slopes, fixed quadratic slopes; RI-RS: Random intercepts, random (linear and quadratic) slopes; RI-RS-C: Random intercepts and slopes with autocorrelation correction; RI-RS-C-H: Random intercepts and slopes with corrections for autocorrelation and heteroscedasticity.
*$p < .01$

3378.58; BIC (FI) = 3397.14, BIC (RI) = 3404.29; $\chi^2 = .0001$, $p = .98$). Finally, I modeled a cubic term for time, but results indicated a non-significant effect in both FI and RI models (β (SE) = -.06 (.04), $t = -1.70$, $p = .09$). Although ANOVA tests revealed no difference in fit between FI and RI models, regardless of the form of change in valuation modeled, a RI model was most consistent with the amount of between-firm variance found when evaluating observed values, which was also most consistent with theory. Additionally, parameter estimates were identical. Accordingly, I adopted a Level

1 base model of valuation that included a quadratic fixed function for time, random intercepts (RI), and fixed slopes (FS): PModel RI-FS. I then evaluated differences in fit between models when allowing slopes to vary randomly. Table 7 provides fit statistics for each of these Level 1 base profitability models.

I began by comparing PModel RI-FS to a model with random linear slopes (RL) and fixed quadratic slopes (FQ): PModel RI-RL-FQ. I then considered a model with RI and both linear and random quadratic slopes (RS): PModel RI-RS. Allowing linear slopes to vary randomly resulted in a significant improvement in model fit ($\chi^2 = 256.66$, $p < .0001$). However, the model with both linear and quadratic random slopes (i.e, PModel RI-RS) fit the data significantly better when compared to either PModel RI-FS ($\chi^2 = 367.11$, $p < .0001$) or PModel RI-RL-FQ ($\chi^2 = 110.45$, $p < .0001$). I thus adopted PModel RI-RS.

I then investigated the error structure for both autocorrelation (i.e., PModel RI-RS-C) and heteroscedasticity (i.e., PModel RI-RS-C-H). ANOVA test results showed that both restricted models fit the data better than PModel RI-RS ($p < .0001$), with the lag 1 correlation estimate for PModel RI-RS-C ($\varphi = .29$) and delta estimate for PModel RI-RS-C-H ($\delta = .14$) indicating a moderate and low-to-moderate degree of autocorrelation and heteroscedasticity, respectively. Accordingly, I continued with a model that corrected for both (i.e., PModel RI-RS-C-H).

I built the predictor model in multiple stages. Table 8 summarizes results for all tested profitability models, which I began by modeling effects of time-varying (i.e., firm size) and time-invariant (i.e., firm age) control variables on profitability intercepts (i.e., Intercept Control PModel 1). Results showed that firm size has a significant moderate,

negative relationship with profitability (β (SE) = -.32 (.04), t = -7.75, p = .00), but firm age did not (β (SE) = .02 (.03), t = .64, p = .52). Listwise deletion resulted in the removal of 25% of observations due to missingness, but no cases were deleted.

I then evaluated the effects of founder CEO exit on profitability intercepts (i.e., Intercept Predictor PModel 2), linear slopes (i.e., Linear Predictor PModel 3), and quadratic slopes (i.e., Quadratic Predictor PModel 4). PModel 4 examined the direct effects of founder CEO exit on profitability intercepts and slopes. Results showed that firm size remained significantly and negatively associated with firm profitability intercepts (β (SE) = -.32 (.04), t = -7.73, p = .00), suggesting that profitability decreases as portfolio firms grow in size (i.e., number of employees), perhaps due to labor expenses increasing without matched increases in sales. Founder CEO exit, however, had non-significant relationships with profitability intercepts (β (SE) = -22 (.13), t = -1.71, p = .44), linear growth in profitability over time (β (SE) = .13 (.16), t = .84, p = .40), and quadratic change in profitability over time (β (SE) = -.08 (.13), t = -.61, p = .54). The negative intercept coefficient indicated that portfolio firms that experienced founder CEO exits may be less profitable, compared to portfolio firms that retained their founder CEOs. The positive linear growth coefficient, coupled with the negative quadratic growth coefficient, indicated that founder CEO exit may be associated with an initial linear increase in firm profitability over time, but this growth trend decelerates over time. Together, these variables accounted for 21% of the variation in portfolio firm profitability over time. Yet, again, the relationship between founder CEO exit and portfolio firm profitability was non-significant, suggesting the conditions surrounding replacement may provide more meaningful insights.

Table 8

Effects of nature of founder exit on firm profitability over time

PModel DV: Profitability (H3)	Base Growth PModel 0 (RI-RS-C-H)				Intercept Control PModel 1				Intercept Predictor PModel 2			
	β (SE)	t	CI		β (SE)	t	CI		β (SE)	t	CI	
			2.5%	97.5%			2.5%	97.5%			2.5%	97.5%
Intercept	-.04 (.05)	-.80	-.13	.05	-.17* (.06)	-2.98	-.27	-.06	-.20* (.07)	-3.02	-.34	-.07
Level 1 Variables												
Time	-.37* (.06)	-6.61	-.48	-.26	-.13† (.08)	-1.68	-.29	.02	-.13† (.08)	-1.71	-.29	.02
Time^2	.07† (.04)	1.65	-.01	.16	.07 (.06)	1.06	-.06	.19	.07 (.06)	1.06	-.06	.19
Firm size					-.32* (.04)	-7.75	-.39	-.24	-.32* (.04)	-7.76	-.39	-.24
Level 2 Variables												
Firm age					.02 (.03)	.64	-.04	.08	.01 (.03)	.40	-.05	.07
Founder exit									.06 (.07)	.91	-.07	.19
Pseudo-R^2						.21				.21		
AIC (AICc)		2877.86 (2878.11)				2292.74 (2293.19)				2297.48 (2298)		
BIC		2939.54				2360.62				2370.19		
Log Likelihood		-1426.93				-1132.37				-1133.74		
Residual variance (SD)		.42 (.65)				.42 (.65)				.42 (.65)		
Observations		1265				947				947		
Firms		109				109				109		

Notes. PModel: Profitability model; RI-RS-C-H: Random intercepts and slopes with corrections for autocorrelation and heteroscedasticity; CI: Confidence Intervals; AICc: Akaike Information Criterion (corrected); BIC: Bayesian Information Criterion

*$p < .01$, **$p < .05$, † $p < .10$

Table 8

Effects of nature of founder exit on firm profitability over time (cont.)

PModel DV: Profitability (H3)	Linear Predictor PModel 3				Quadratic Predictor PModel 4				Nested Intercept Predictor PModel 5			
	β (SE)	t	CI		β (SE)	t	CI		β (SE)	t	CI	
			2.5%	97.5%			2.5%	97.5%			2.5%	97.5%
Intercept	-.19* (.07)	-2.60	-.33	-.05	-.22* (.09)	-2.48	-.39	.05	-.12† (.07)	-1.74	-.26	.02
Level 1 Variables												
Time	-.21 (.13)	-1.63	-.45	.04	-.22 (.13)	-1.71	-.47	.03	-.09 (.10)	-.92	-.28	.10
Time^2	.07 (.06)	1.06	-.06	.19	.12 (.04)	1.12	-.09	.33	.03 (.08)	.41	-.12	.18
Firm size	-.31* (.04)	-7.72	-.39	-.23	-.32* (.04)	-7.74	-.40	-.24	-.30* (.05)	-6.05	-.39	-.20
Level 2 Variables												
Firm age	.01 (.03)	.44	-.05	.07	.01 (.03)	.47	-.05	.07	.01 (.04)	.28	-.06	.08
Founder exit	.04 (.08)	.48	-.11	.18	.08 (.11)	.77	-.12	.29				
Nature of exit									.04 (.04)	.94	-.04	.11
Linear Interaction												
Time*Founder Exit	.11 (.15)	.73	-.19	.41	.13 (.16)	.84	-.18	.44				
Quadratic Interaction												
Time^2*Founder exit					-.08 (.13)	-.61	-.34	.18				
Pseudo-R^2	.21				.21				.20			
AIC (AICc)	2300.83 (2301.42)				2304.70 (2305.36)				1598.56 (1599.43)			
BIC	2378.37				2387.06				1665.51			
Log Likelihood	-1134.42				-1135.35				-784.28			
Residual variance (SD)	.42 (.65)				.42 (.65)				.42 (.65)			
Observations	947				947				647			
Firms	109				109				69			

Notes. PModel: Profitability model; CI: Confidence Intervals; AICc: Akaike Information Criterion (corrected); BIC: Bayesian Information Criterion
*$p < .01$, **$p < .05$, † $p < .10$

Table 8

Effects of nature of founder exit on firm profitability over time (cont.)

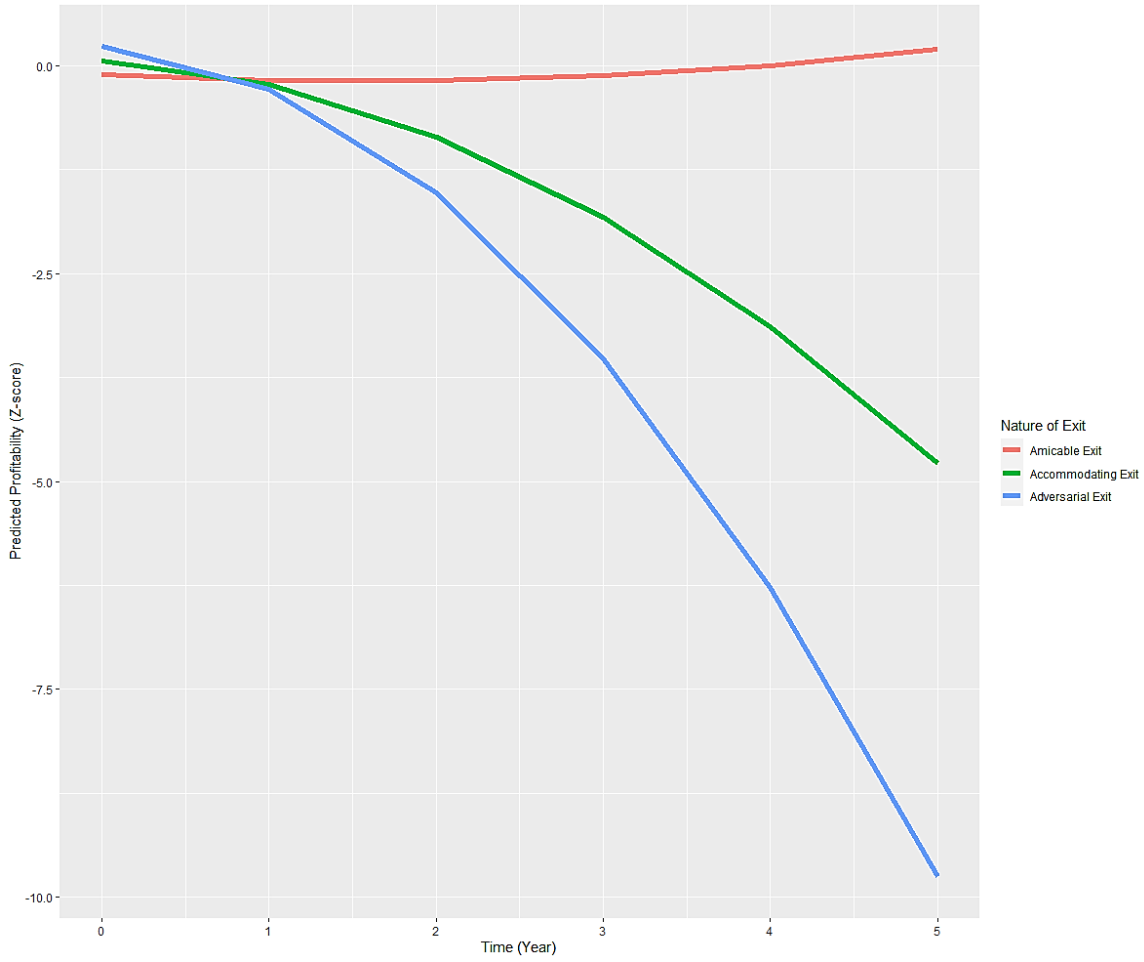
PModel DV: Profitability (H3)	Nested Linear Predictor PModel 6				H3 Nested Quadratic Predictor PModel 7			
	β (SE)	t	CI		β (SE)	t	CI	
			2.5%	97.5%			2.5%	97.5%
Intercept	-.13† (.07)	-1.76	-.26	.01	-.12† (.07)	-1.69	-.25	.02
Level 1 Variables								
Time	-.09 (.10)	-.92	-.28	.10	-.10 (.10)	-1.04	-.29	.09
Time^2	.03 (.08)	.39	-.12	.18	.03 (.07)	.44	-.11	.17
Firm size	-.30* (.05)	-6.09	-.39	-20	-.31* (.05)	-6.33	-.40	-.21
Level 2 Variables								
Firm age	.01 (.04)	.30	-.06	.08	.01 (.04)	.20	-.06	.08
Nature of exit	.05 (.04)	1.15	-.03	.13	.17* (.06)	2.83	.05	.29
Linear Interaction								
Time* Nature of exit	-.06 (.09)	-.64	-.25	.12	-.02 (.10)	-.21	-.20	.16
Quadratic Interaction								
Time^2* Nature of exit					-.20* (.07)	-2.83	-.34	-.06
Pseudo-R^2	.20				.20			
AIC (AICc)	1603.20 (1604.07)				1601.01 (1601.69)			
BIC	1674.59				1676.83			
Log Likelihood	-785.60				-783.50			
Residual variance (SD)	.42 (.65)				.43 (.65)			
Observations	647				647			
Firms	69				69			

Notes. PModel: Profitability model; CI: Confidence Intervals; AICc: Akaike Information Criterion (corrected); BIC: Bayesian Information Criterion
*$p < .01$, **$p < .05$, †$p < .10$

Finally, I examined nested models that evaluated intercept (i.e., Nested Intercept Predictor PModel 5), linear slope (i.e., Nested Linear Predictor PModel 6), and quadratic slope (i.e., Nested Linear Predictor PModel 7; Hypothesis 3) effects of the nature of founder CEO exit, as more or less contentious, on portfolio firm profitability over time.

Figure 5

Predicted profitability due to nature of exit



The sample included only portfolio firms that replaced their founders, which resulted in approximately 32% less observations (n = 647) and cases (i.e., 69 firms) than models estimating the effects of founder CEO exit itself. Results from the final model (PModel 7) showed that the nature of exit has a significant positive but small effect on profitability intercepts (β (SE) = .17 (.06), t = 2.83, p = .006); a non-significant linear effect on profitability over time (β (SE) = -.02 (.10) , t = -.21, p = .83); and a small, negative, significant quadratic effect on profitability over time (β (SE) = -.20 (.07) , t = -2.83, p =

.005). These findings suggest that portfolio firms experience more profit losses over time when founder CEOs are replaced under adversarial conditions than when founder CEO exits are amicable, supporting Hypothesis 3. Figure 5 visually depicts that more contentious exits (i.e., Adversarial Exit) results in a greater decline of profitability over time, compared to less contentious exits. Amicable exits were associated with increased profitability over time.

Hierarchical Multiple Logistic Regression Analyses (Hypotheses 2, 4, and 5)

To test Hypotheses 2, 4, and 5, I then analyzed a series of hierarchical multiple (binary) logistic regression models. I began by examining the effects of control variables on the likelihood of failure. FModel 0a included the effects of firm size, firm age, and industry (reference industry: Life-Sciences Industry). However, firm size data for firms prior to founder exits was unavailable for the vast majority of sampled firms (73.74%), creating a substantial loss of power. I thus examined a control model that included firm age and industry but excluded firm size (i.e., FModel 0b). FModel 0b showed that neither control variable had a significant effect on the likelihood of portfolio firm failure. Because sampled firms were all from high-technology industries, meaningful variation in failure due to industry membership may not be expected, in contrast to previous studies in which more distinct industries were sampled. Accordingly, I removed industry as a control variable and examined a third control model that included firm age only (i.e., FModel 1). Results from FModel 1 showed that firm age has a non-significant effect on the likelihood of portfolio firm failure in this sample (B (SE): .03 (.05), $z = .60$), but given its theoretical relevance, I retained firm age in predictive models. Predictive models examined the effects of founder CEO exit and the context of founder exit (i.e., timing and

Table 9

Effects of timing and nature of founder exit on portfolio firm failure

FModel DV: Failure (H2, H4, H5)	Control FModel 0a			Control FModel 0b			Control FModel 1		
	B (SE)	Wald z	OR (CI)[a]	B (SE)	Wald z	OR (CI)[a]	B (SE)	Wald z	OR (CI)[a]
Intercept	-1.88 (1.47)	-1.28	.15 (.004 – 2.07)	-2.30* (.51)	-4.50	.10 (.03 - .26)	-2.41* (.52)	-4.68	.09 (.03 - .23)
Firm age	.03 (1.33)	.26	1.03 (.83 – 1.29)	.03 (.04)	.55	1.03 (.93 – 1.13)	-.03 (.05)	.60	1.03 (.93 – 1.13)
Industry [b]					.16				
Computer & Communications Tech	.25 (1.33)	.19	1.28 (.05 – 15.04)	-.32 (.81)	-.40	.72 (.11 – 2.97)			
Healthcare Tech	-	-	-	-15.50 (1096.28)	-.01	.000 (NA – 60e24)			
Firm size	.000 (.000)	.94	1.00 (1.00 – 1.00)						
Pseudo-R^2		.79*			.03			.003	
Model Chi-square		2.56			3.41			.34	
Log likelihood (df)		-12.77 (4)			-59.20 (4)			-60.73 (2)	
AIC (AICc)		33.53 (35.44)			126.40 (126.62)			125.53 (125.53)	
Number of firms		26			182			182	

Notes. [a]OR: Odds Ratio (CI: Confidence Intervals (2.5% - 97.5%)); [b]Reference Industry: Life-Sciences Technology
*$p < .01$, **$p < .05$, † $p < .10$

Table 9

Effects of timing and nature of founder exit on portfolio firm failure (cont.)

FModel DV: Failure (H2, H4, H5)	Predictor FModel 2			H2: Nested Timing Predictor FModel 3			H4: Nested Nature Predictor FModel 4		
	B (SE)	Wald z	OR (CI)[a]	B (SE)	Wald z	OR (CI)[a]	B (SE)	Wald z	OR (CI)[a]
Intercept	-3.00* (.64)	-4.70	.05 (.01 - .16)	-2.05* (.67)	-3.09	.13 (.03 - .44)	-1.96* (.69)	-2.82	.20 (.05 - .82)
Firm age	.002 (.05)	.05	1.00 (.90 – 1.10)	-.04 (.06)	-.60	.96 (.84 – 1.08)	-.003 (.06)	-.07	.99 (.88 – 1.10)
Founder exit	1.25** (.60)	2.11	3.51 (1.18 – 12.94)						
Exit timing				.49** (.23)	2.11	1.63 (1.04 – 2.63)			
Nature of exit							.27 (.30)	.90	1.13 (.62 – 2.10)
Pseudo-R^2	.05†			.05†			.01		
Model Chi-square	5.53			4.61			.83		
Log likelihood (df)	-58.14 (3)			-39.80 (3)			-41.69 (3)		
AIC (AICc)	122.28 (122.41)			85.60 (85.85)			89.29 (89.64)		
Number of firms	182			99			99		

Notes. [a]OR: Odds Ratio (CI: Confidence Intervals (2.5% - 97.5%))
*$p < .01$, **$p < .05$, † $p < .10$

Table 9

Effects of timing and nature of founder exit on portfolio firm failure (cont.)

FModel DV: Failure (H2, H4, H5)	Nested Both Predictors FModel 5			H5: Nested Moderated FModel 6		
	B (SE)	Wald z	OR (CI)[a]	B (SE)	Wald z	OR (CI)[a]
Intercept	-2.36* (.76)	-3.10	.09 (.02 - .39)	-2.34* (.86)	-2.72	.10 (.02 - .47)
Firm age	-.03 (.06)	-.54	.97 (.85 – 1.09)	-.03 (.06)	-.53	.97 (.85 – 1.09)
Exit timing	.49** (.23)	2.11	1.63 (1.04 – 2.62)	.47 (.35)	1.35	1.60 (.80 – 3.28)
Nature of exit	.27 (.31)	.89	1.32 (.72 – 2.43)	.25 (.50)	.51	1.28 (.49 – 3.56)
Exit timing* Nature of exit				.01 (.23)	.05	1.01 (.64 – 1.61)
Pseudo-R^2	.06			.06		
Model Chi-square	5.41			5.41		
Log likelihood	-39.40 (4)			-39.40 (5)		
AIC (AICc)	86.81 (87.23)			88.81 (89.45)		
Number of firms	99			99		

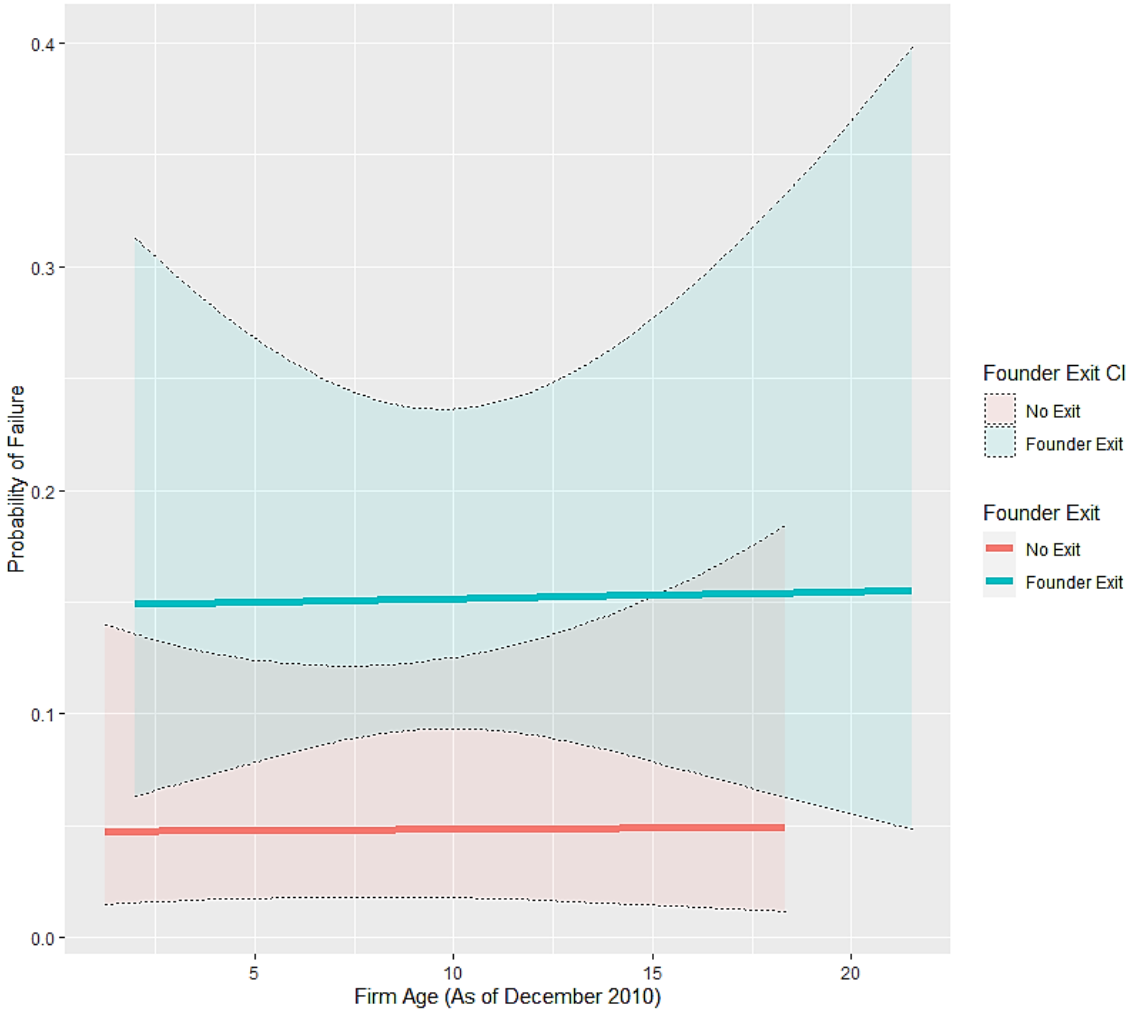
Notes. [a]OR: Odds Ratio (CI: Confidence Intervals (2.5% - 97.5%))
*$p < .01$, **$p < .05$, $^{\dagger}p < .10$

nature of founder exit), while accounting for the effects of firm age. Table 9 summarizes these results.

I began by modeling the direct effects of founder CEO exit on the likelihood of failure (i.e., FModel 2). Results from FModel 2 revealed a positive, significant effect of founder CEO exit on the likelihood of failure (B (SE): 1.38 (.60), z = 2.29, OR = 3.51) when firm age is held constant. The odds ratio indicated that, holding firm age constant, the odds of firm failure was 3.5 times higher for portfolio firms that replaced their founder CEOs than portfolio firms that retained their founder CEOs. Similarly, I found that the predicted probability (PP) of failure was higher for sampled firms with replaced

Figure 6

Predicted probability of failure due to founder exit

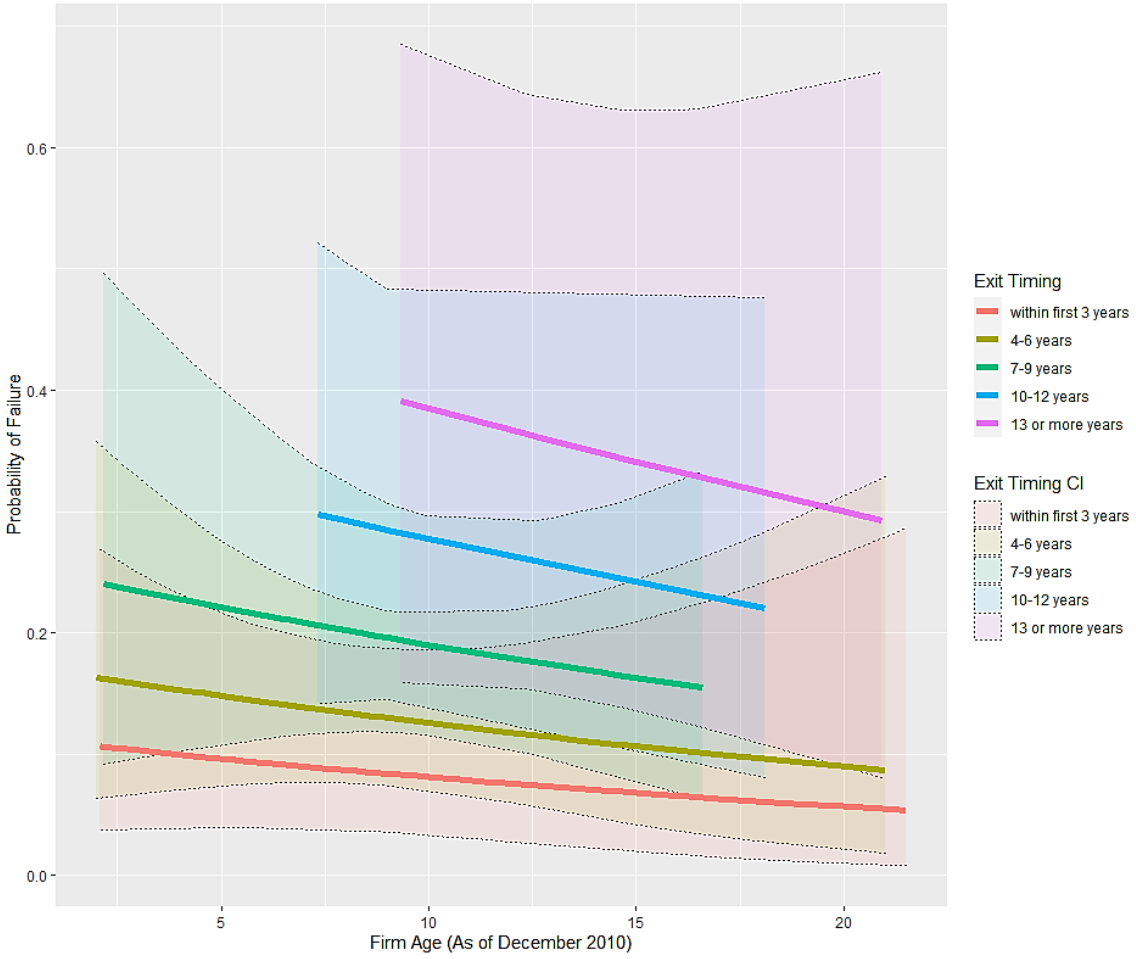


founder CEOs (PP: .15, CI: .09 - .24) than firms that retained them (PP: .05, CI: .01 - .12), holding firm age constant. Figure 6 shows predicted probabilities of failure due to founder CEO exits at various firm ages.

Subsequent nested models examined the direct effect of timing of exit (i.e., H2, FModel 3); the nature of exit (i.e., H4, FModel 4); and both timing and nature of exit

Figure 7

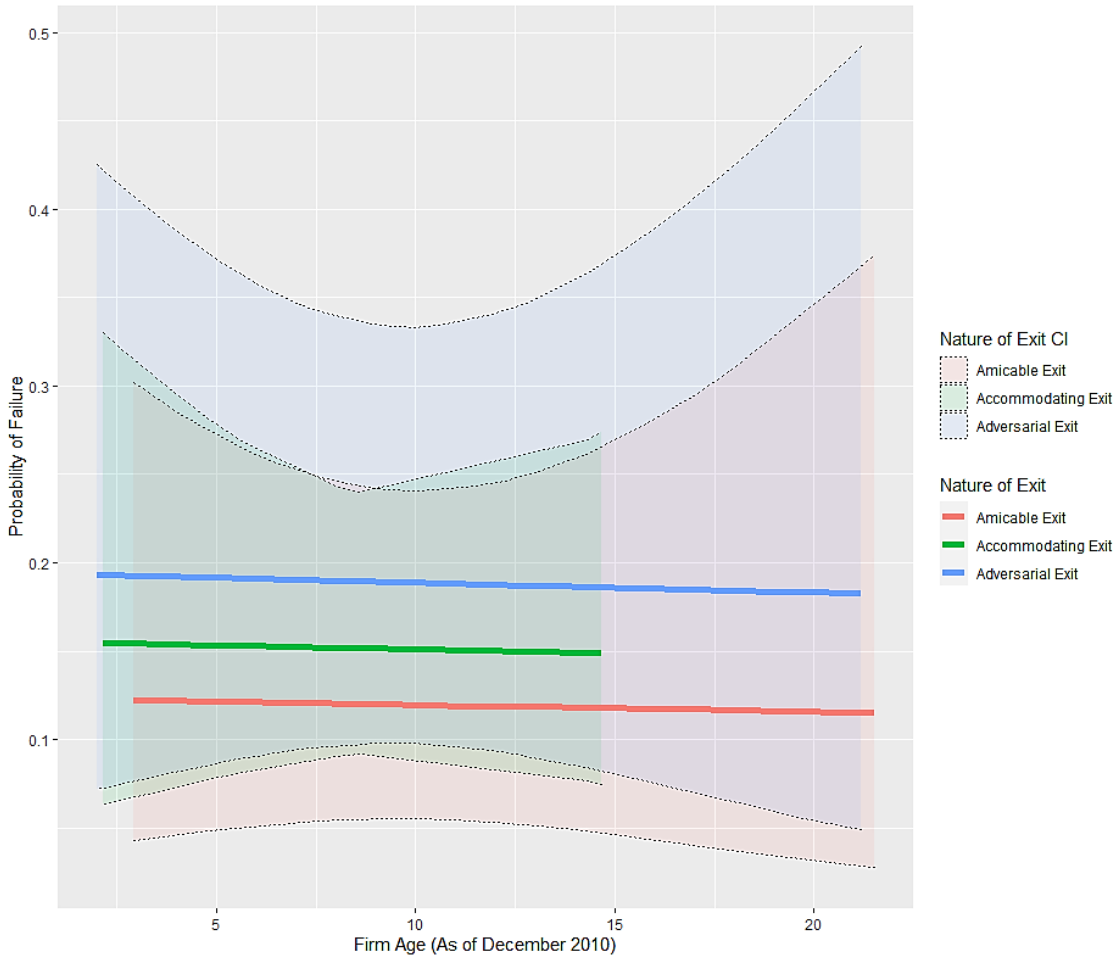
Predicted probabilities of failure due to exit timing



(i.e., FModel 5). Results from FModel 3 showed that the timing of founder CEO exit has a positive, significant effect on the likelihood of portfolio firm failure (B (SE): .49 (.23), z = 2.11, OR = 1.63), accounting for firm age. For portfolio firms that replaced their founder CEOs, the odds of firm failure increased .63 times for every unit increase (i.e., 3 years) in the timing of exit.

Figure 8

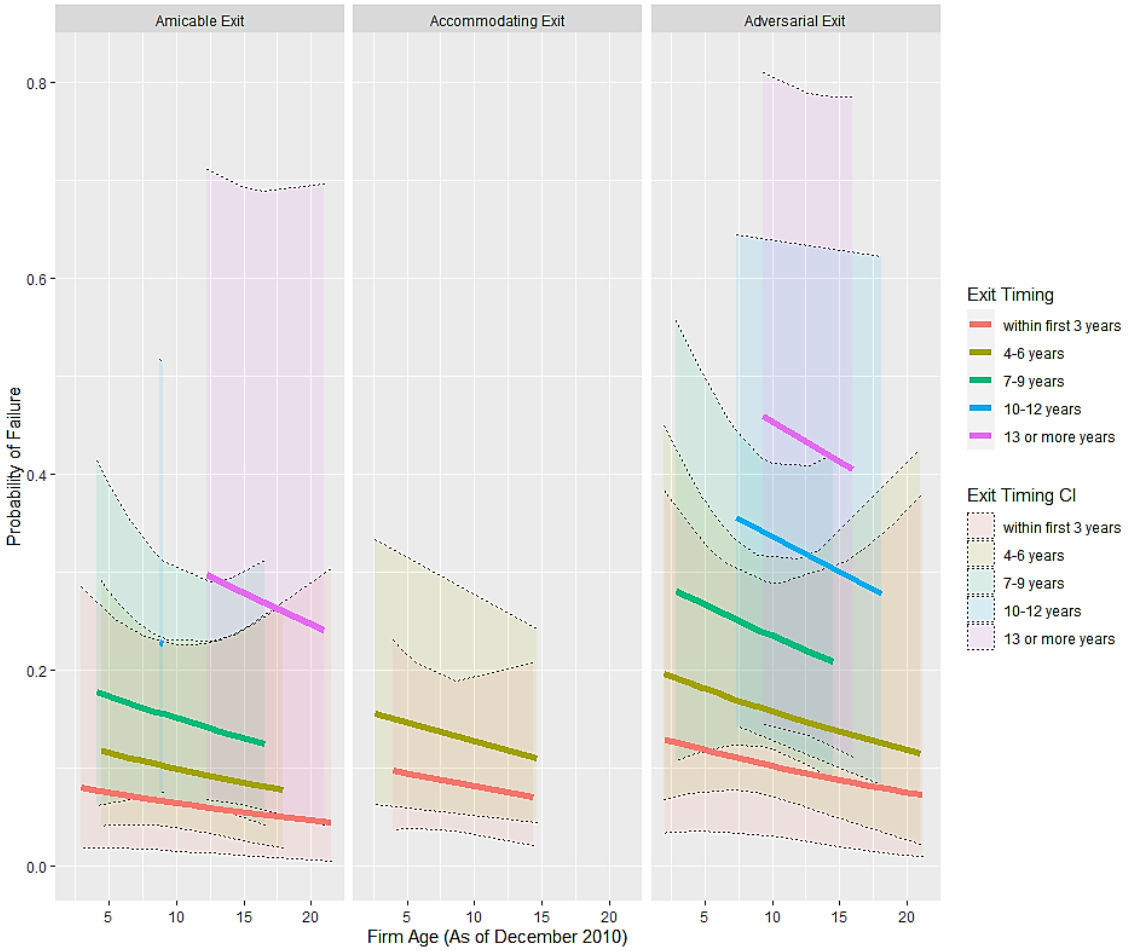
Predicted probabilities of failure due to nature of exit



Predicted probabilities provided additional evidence of this relationship, indicating that the likelihood of firm failure is greater the later founder CEO replacement occurs. That is, holding firm age constant, firms that replaced their founder CEOs within the first three years had the least likelihood of failure (PP: .08, CI: .03 - .19), compared to portfolio firms that experienced founder CEO exits 4-6 years after founding (PP: .13, CI: .07 - .22), 7-9 years after founding (PP: .19, CI: .12 - .30), and 10-12 years after founding

Figure 9

Predicted probability of failure due to timing and nature of exit



(PP: .28, CI: .14 - .47). Firms that waited 13 or more years after founding to replace their founder CEOs had the greatest probability of failure in my sample (PP: .39, CI: .16 - .68). Figure 7 visually depicts the predicted probabilities of failure, depending on the timing of exit, allowing firm age to vary. Importantly, the direction of the relationship between timing of founder CEO exit and portfolio firm failure was opposite of what I proposed in H2, so H2 was not supported in this sample.

Table 10

Probability of portfolio firm failure due to timing and nature of exit

	Predicted Probabilities[a] (CI[b])				
Timing of Exit	≤ 3 Tears	4-6 Years	7-9 Years	10-12 Years	≥ 13 years
Nature of Exit					
Amicable Exit	.07 (.02 - .23)	.10 (.04 - .22)	.15 (.07 - .30)	.22 (.08 - .50)	.32 (.07 - .74)
Accommodating Exit	.08 (.03 - .19)	.13 (.07 - .22)	.19 (.12 - .30)	.28 (.14 - .47)	.39 (.16 - .68)
Adversarial Exit	.10 (.03 - .29)	.16 (.07 - .31)	.24 (.12 - .41)	.34 (.14 - .61)	.46 (.14 - .81)

Notes. [a] Constant = Firm Age; [b] CI = Confidence Intervals (2.5% - 97.5%)

Results from FModel 4 indicated no significant effect of the nature of exit on the likelihood of firm failure (B (SE): .27 (.30), z = .90, OR = 1.13). The coefficient and odds ratio, however, though non-significant, suggested an increased likelihood of failure when the nature of exit is more contentious, as expected. Upon calculating predictive probabilities, I found that adversarial founder CEO exits presented the greatest likelihood of failure among portfolio firms (PP: .19, CI: .10 - .33), holding firm age constant, compared to amicable exits (PP: .12, CI: .06 - .24) and accommodating exits (P5: .19, CI: .09 - .24). Nonetheless, H4 was not supported in this sample. Figure 8 visualizes the predicted probabilities of failure as the nature of exit differs and firm age varies, but it should be emphasized that the confidence intervals overlap.

FModel 5 examined the direct effects of both conditions of founder CEO exit on portfolio firm failure. Results showed that the timing of exit was a significant predictor of failure (B (SE): .49 (.23), z = 2.11, OR = 1.63), holding firm age constant, but the effect

of the nature of exit was non-significant (B (SE): .27 (.31), z = .89, OR = 1.32). These findings are consistent with results from FModel 3 and FModel 4. I then examined the moderated, synergistic effects of timing and nature of exit on the likelihood of portfolio firm failure (i.e., H5, FModel 6). FModel 6 results showed that neither timing of exit (B (SE): .47 (.35), z = 1.35, OR = 1.60), nature of exit (B (SE): .25 (.50), z = .51, OR = 1.28), nor the interaction between timing and nature of exit (B (SE): .01 (.23), z = .05, OR = 1.01) were significant predictors of failure, although the coefficients and odds ratios for timing and nature of exit were similar to previous models. Predictive probabilities provided some evidence that adversarial founder CEO exits may present the greatest likelihood of failure among portfolio firms, regardless of the timing of exits, holding firm age constant (see Table 10). Figure 9 graphically depicts the predicted probabilities of failure for each condition of founder CEO exit, when allowing firm age to vary. Together, these results suggest that my sample may be insufficient for testing this more complex model with an interaction effect. Nonetheless, the null hypothesis could not be rejected, so H5 was not supported in this study.

Post-Hoc Analyses

Valuation. Retaining control variables in growth models of valuation led to substantial loss of power and "noise" that could affect results. Accordingly, I ran a series of post-hoc growth models to explore whether the relationship between founder CEO exit over time may differ when excluding control variables. However, there was no change in significance of effects for these models.

Additionally, although industry and firm size were not initially considered as control variables in valuation analyses, I found that the significant correlations between

them and valuation warranted additional examination. Accordingly, I examined a series of growth models, accounting for potential effects of these variables on valuation, along with other hypothesized control variables. Adding the additional control variables to the full quadratic model revealed effects similar to those observed in the hypothesized model, in magnitude and direction, but, interestingly, the effects of founder CEO exit on valuation intercepts (β (SE) = -7.17 (2.90), t = -2.48, p = .02), linear slope (β (SE) = 20.07 (8.88), t = 2.26, p = .03), and quadratic slope (β (SE) = -12.01 (6.00), t = -2.00, p = .05) were all significant. Of the control variables modeled, only firm size had a significant effect on valuation, which was positive and rather moderate (β (SE) = .29 (.06), t = 4.51, p = .000). No additional variance was explained by this model.

Profitability. Finally, as a robustness check, I analyzed a quadratic growth model of profitability that included all control variables used in profitability, valuation, and failure analyses. Results were consistent with the hypothesized model, indicating that the nature of exit has a significant positive, small effect on profitability intercepts (β (SE) = .17 (.06), t = 2.77, p = .008); a non-significant linear effect on profitability over time (β (SE) = -.04 (.09) , t = -.43, p = .67); and a significant small, negative quadratic effect on profitability over time (β (SE) = -.18 (.07) , t = -2.74, p = .006). The effect of firm size was also significant but unchanged (β (SE) = -.31 (.05) , t = -6.31, p = .000). The other control variables had no significant effect on profitability, nor did they explain additional variance in profitability.

CHAPTER 5: DISCUSSION

Venture capitalists invest in high-risk, high-potential firms, working closely with founders to add value above and beyond the financial capital they provide. An empirical review of the literature (e.g., Rosenbusch et al., 2013), however, is equivocal about the realized value of VC. I aimed here to provide greater insight into why some innovation-driven portfolio firms may benefit more from VC than others by exploring the salient, intervening phenomenon of founder CEO exit to professionalize those firms. I was particularly interested in the longer-term consequences of poorly timed exits and the implications of forced founder CEO exits. I investigated two related research questions: 1) *How does founder CEO exit affect portfolio firms' performance (i.e., valuation and profitability) over time and likelihood of failure?* and 2) *How do the conditions of founder CEO exit – namely, the timing and nature of the exit event (i.e., amicable, accommodating, or adversarial) – influence these same firm outcomes?*

To answer these questions, I offered a meso-level theoretical framework grounded in previous literature on venture capital, founder exit, institutional logics, and psychological contracts. I proposed that a dominant institutional logic (IL) of new venture professionalization shapes venture capitalists' beliefs about founders' managerial limitations and options they consider when working with portfolio firms. Further, founder CEO exit in portfolio firms may be an institutionalized reorganizing practice, commonly prescribed by venture capitalists to professionalize new firms (Hellmann & Puri, 2002; Wasserman, 2003) and appear legitimate among institutional actors. I posited that the IL of new venture professionalization often drives a rather rigid implementation of founder CEO exit strategy in portfolio firms that may be decoupled from efficiency goals,

prompting paradoxical effects on firm outcomes. That is, founder CEO exits may improve some firm outcomes (i.e., valuation), at least in the short term, especially when influenced by other institutional actors' (i.e., "the market's") perceptions of legitimacy, which are also guided by the IL of new venture professionalization. Alternatively, founder CEO exits may imperil other firm outcomes (i.e., profitability and odds of survival), especially if the exit is involuntary or forced. Forced exits, in particular, may increase perceptions of psychological contract breach and feelings of violation, create inherently contentious relational dynamics that may undermine critical cooperation between founders and venture capitalists, spill over to affect observers of those relationships, and contribute to a negative sociopolitical climate within portfolio firms that threatens longer-term firm success. When combined with founder exits that occur early in a firm's life cycle, more adversarial exits may greatly diminish or even reverse the potential strategic value of professionalization in portfolio firms.

From this framework, I derived five hypotheses. I tested these hypotheses by analyzing a unique data set that included 182 high-technology portfolio firms, founded over two decades (1990-2010), from the life-sciences technology, computer and communications technology, and healthcare technology industries. Firm performance and leadership changes were tracked over multiple years (1990-2018). Overall, results provided mixed support for hypotheses. Below, I discuss research findings, theoretical and practical contributions and avenues for future research, and study limitations.

Research Findings

I first investigated the effects of founder CEO exit on valuation, profitability, and failure. I proposed that the IL of new venture professionalization may lead some venture

capitalists to replace founder CEOs as a way of improving more investor-centric metrics of portfolio firm performance (i.e., valuation), but such performance improvements are not sustained over time. Analyses of growth models provided evidence that initial valuations (i.e., market capitalization) tend to be lower for portfolio firms that replace their founders. Additionally, founder CEO exit was associated with an increase in valuation over time, but this boost was temporary, followed by declining valuation. Although these relationships were statistically non-significant in the hypothesized model, results from post-hoc analyses indicated the relationships were indeed significant when the effect of firm size on valuation was also accounted for. Overall, these results support Hypothesis 1 and are consistent with past research that shows firms with professional CEOs at IPO underperform over time, compared to peers that retain their founder CEOs (Hendricks & Miller, 2014). That is, portfolio firms that experience founder CEO exit may indeed experience higher valuations over time, but this "head start" does not last.

I also examined the effects of founder CEO exit on profitability and failure. Results from multiple hierarchical binary logistic regression analysis revealed that founder CEO exit significantly increased the odds of portfolio firm failure by 3.5 times, compared to firms that retained them. Analyses of growth models, however, showed that the occurrence (or not) of founder CEO exit alone does not affect portfolio firm profitability significantly. Together, these results supported further investigation of the circumstances, or conditions, of founder exit in VC-backed firms.

I subsequently proposed that the IL of new venture professionalization may influence the conditions of founder CEO exit, particularly its timing and nature as more or less contentious, and have implications for portfolio firm profitability and failure. For

instance, venture capitalists may develop an institutionalized preference for replacing founder CEOs with professional managers after certain growth milestones. If founder CEOs are replaced too early in a firm's development, the resulting disruption could be detrimental and increase the likelihood of portfolio firm failure. Analyses of multiple hierarchical binary logistics regression models provided evidence that the timing of founder CEO exit affects the likelihood of failure, but results indicated that exits later in a portfolio firms lifecycle (i.e., more than 12 years after founding) posed the greatest threat. Accordingly, Hypothesis 3 was not supported.

These results are consistent with research that suggests founder CEOs' managerial capabilities become exceeded as their firms grow more complex (Boeker & Karichalil, 2002; Boeker & Wiltbank, 2005; Carsrud & Johnson, 1989; Sexton, 1986; Sexton & Bowman, 1985), putting firms that fail to transition to professional management until much later in their life cycles at higher risk of eventual failure. However, I was surprised to see no significant effect of early founder CEO exits, given other research reports an early, sensitive period of firm development, during the imprinting process (Johnson, 2007; Marquis & Tilcsik, 2013; Stinchcombe, 1965), when they are more vulnerable to failure (Guenther et al., 2016). Perhaps when founder CEOs are technologists, as in the case of many high-technology firms, they have less-than-expected influence on the imprinting process and, consequently, their firms' more enduring, post-founding organizational forms. Instead, their primary influence may be on the enduring core characteristics of their firms' innovation or technology, particularly if these technology-oriented founder CEOs concede majority ownership to investors with rigid beliefs about founders' managerial limitations, and especially if such concessions are made early in

portfolio firms' life cycles. These powerful investors may curb founder CEOs' influence on other aspects of firm development. Alternatively, such founder CEOs may rely more on shared leadership in a way that, perhaps informally, address their managerial deficiencies (Carson, Tesluk, & Marrone, 2007; Chen, Chen, & Huang, 2020; Ensley, Hmieleski, & Pearce, 2006; Lyndon & Pandley, 2021), wherein other members of the founding team also contribute to the early imprinting process based on their talents, expertise, and passions. Either possibility may dilute the influence of founder CEOs on the imprinting process and thus buffer portfolio firms against potential negative effects of early founder CEO exits. Both possibilities are fruitful areas for future research to explore.

I also proposed that more contentious, forced founder CEO exits may inherently create a negative sociopolitical climate within portfolio firms. An adversarial exit may be associated with lower portfolio firm profitability over time and a higher likelihood of failure if founders and employees experience psychological contract violation leading up to, during, or after the exit event. Although research about the psychological contracts of venture capitalists, founders, and employees of new entrepreneurial firms is scarce (e.g., Parhankangas & Landström, 2004; van Dijk et al., 2014), an abundance of research on employees in more established companies indicates that violation is associated with cognitive, affective, and behavioral reactions that would be detrimental to a new firm's ability to profit and survive (Andersson, 1996; Antoncic & Antoncic, 2011; Chun et al., 2013; Collewaert & Fassin, 2013; Gong et al., 2010; Hagedorn et al., 1999; Rousseau & McLean Parks, 1993; Morrison & Robinson, 1997; Rousseau, 1989, 1995; Turnley & Feldman 2000). Additionally, firms in which founder CEOs are replaced under

adversarial conditions may have difficulty recruiting and retaining talent they need to survive and succeed. Analyses of growth models of profitability provided evidence that more adversarial founder CEO exits are indeed associated with reduced profitability, with lower initial observations of profitability and lower trajectories of profitability over time. Hypothesis 2 was thus supported. Analyses of multiple hierarchical binary logistics regression models, however, indicated that the nature of exit has no statistically significant effect on the likelihood of portfolio firm failure. Accordingly, Hypothesis 4 was not supported, although the results trended in the hypothesized direction.

Finally, I proposed that founder CEO exits that both occur early in a portfolio firm's development and are adversarial in nature increase the likelihood of firm failure. I thus examined the synergistic effects of the timing and nature of founder CEO exit on portfolio firm failure through multiple hierarchical binary logistics regression analysis. However, I found no support for Hypothesis 5, which is consistent with analyses testing the effects of these variables separately. I discuss the implications and limitations of these findings below.

Contributions

Despite finding mixed empirical evidence of the effects of founder CEO exit and its conditions on portfolio firm valuation, profitability, and failure, this study contributes to existing theory and practice in multiple ways and offers opportunities for future research. First, I contribute to growing research on the microfoundations of strategy and organizational theory (Felin, et al., 2015). In the entrepreneurship domain, institutional research often concentrates on the influence of regulatory systems and government institutions on new venture creation and strategy and entrepreneurial success (e.g.,

Kistruck, Webb, Sutter, & Bailey, 2015; Lerner & Tag, 2013; Li & Zahra, 2012). Here, I expanded the focus of institutional research on entrepreneurial strategy, offering a meso-level theoretical framework for understanding the interactions between a firm's external and internal environments that focuses on relational mechanisms. This is the first known study to integrate institutional logics and psychological contracts theories to explain how institutionally-driven power structures external to the firm may be reified in practice within firms to achieve institutional legitimacy, with implications for organizational strategy; internal sociopolitical dynamics; members' cognitions, affect, and behaviors; and venture success. I thus answer the call by previous researchers to consider more "mid-range theories" (Jennings, Greenwood, Lounsbury, & Suddaby, 2013: 3) and bridge the long-lamented macro-micro divide (e.g., House, Rousseau, & Thomas-Hunt, 1995; Rousseau, 1985).

Second, and relatedly, this is the first work that identifies an institutional logic (IL) of new venture professionalization. By examining the institutional environment in which high-technology firms develop (e.g., Amit et al., 1998; Busenitz et al., 2004; Certo et al., 2001; Christensen et al., 2009; Croce et al., 2013; Hellmann & Puri, 2002; Kaplan & Strömberg, 2003; Landström, et al., 1998; Sahlman, 1990; Sapienza & De Clercq, 2000; Wasserman, 2003, 2012, 2017; Willard et al., 1992) and drawing on research that describes how venture capitalists engage portfolio firms (e.g., Boeker and Wiltbank, 2005; Broughman, 2010; Chen & Thompson, 2015; Collewaert & Fassin, 2013; Ewen & Marx, 2018; Fiet et al., 1997; Parhankanga et al., 2005; Wasserman, 2003; Zacharakis et al., 2010), I explained how this dominant logic shapes venture capitalists' and other powerful actors' rather rigid beliefs about portfolio firm development, including founder

CEOs' transitory roles in governing them. Although I emphasized how the IL of new venture professionalization shapes the venture capitalist-founder CEO relationship and founder exit strategy, this logic undoubtedly influences a variety of strategies venture capitalists employ to gain broader support for more professional management roles, policies, and routines. Future research is needed to examine this broader range of strategies and, most importantly, how they influence relational dynamics among the other parties. For example, a qualitative investigation may provide insights into the types of politicking venture capitalists employ to persuade other founders to support founder CEO replacement, which may affect sensemaking (Balogun, Bartunek, & Do, 2015; Hoyte, Noke, Mosey, & Marlow, 2019; Weick, 1995; Weick, Sutcliffe, & Obstfeld, 2006) and relational dynamics within founding teams (Lim, Busenitz, & Chidambaram, 2013). Additionally, research on how the IL of new venture professionalization manifests in other industries would be valuable.

Third, I contribute to the broader literature on founder succession, which has received relatively little attention in the context of portfolio firms (van Dijk et al., 2014). I reconciled divergent views of founder exit – as strategic and beneficial (e.g., Boeker & Karichalil, 2002) or disruptive and detrimental (e.g., Lerner, 1994; Guenther et al., 2016) – by examining boundary conditions associated with the IL logic of new venture professionalization that moderate its effects on firm performance. Founder exits in portfolio firms have the potential to improve firm efficiency when strategically enacted, according to the matching principle central to life cycle theory (Boeker & Karichalil, 2002; Boeker & Wiltbank, 2005; Carsrud & Johnson, 1989; Sexton, 1986; Sexton & Bowman, 1985), but may threaten future firm outcomes when decoupled from efficiency

goals to increase legitimacy (DiMaggio & Powell, 1983). The rigidity in venture capitalists' strategies to professionalize the top management structure of portfolio firms suggests a decoupling that contributes to suboptimal exit conditions, in which founder CEO exits may be poorly timed and adversarial in nature. In the current study, I moved beyond the antecedents of founder exit (e.g., Dalton & Kesner, 1985; Fiet et al., 1997; Fredrickson, Hambrick, & Baumrin, 1988; Jung, 2014; Wasserman, 2003; Wennberg et al., 2010) to identify and examine the implications of these exit conditions on firm performance (Dyck, Mauws, Starke, & Mischke, 2002; Wang & Song, 2016). I concluded that adversarial founder CEO exits, which accounted for over half the exits in my sample, negatively affect the longer-term trajectories of portfolio firms' profitability. I also provided some evidence that adversarial exits increase the likelihood of portfolio firm failure, but these findings are limited by methodological constraints that I discuss in greater detail below. Although I did not examine the effects of poorly timed and/or adversarial founder CEO exits on portfolio firms' valuation trajectories, the exit event itself was associated with declining valuation over time. This finding prompts additional concerns about the effects of suboptimal founder exit strategies on valuation and suggests a need for future research to explore these effects.

Overall, I advance the notion that portfolio firms' performance over time and risk of failure may be associated with suboptimal founder succession strategies implemented much earlier in the firm's life, especially when compelled by venture capitalists to gain legitimacy, not efficiency, and increase short-term returns for their limited partners. I thus answered Wasserman's (2003) calls for research to consider the survival effects of founder exit on portfolio firms, as well as the implications of founders exiting their firms

entirely or remaining in a different role, which I addressed when operationalizing the nature of exit variable. Practically, this study suggests that other investors should cautiously consider the conditions of founder CEO replacements when conducting due diligence on professionally managed portfolio firms, including those that go public. Together, greater understanding of these conditions encourages researchers and practitioners alike to consider the value of more functional founder exits, just as the broader management literature considers functional employee turnover (see Batt & Colvin, 2011). Indeed, future research should consider the complex interplay between exit conditions to identify founder CEO succession profiles that optimize both the short-term and long-term performance of portfolio firms. Similar research in firms with different early governance structures may be valuable, as well.

Finally, I advance an ongoing scholarly conversation about the value of VC and venture capitalists to portfolio firms. From an institutional lens, I reconsidered the value-added proposition prominent in the venture capital literature (Berglund, 2011; Bertoni, et al., 2011; Busenitz et al., 2004; Hellmann, 2000; Krishnan et al., 2011; Lee & Wahal, 2004) by exploring venture capitalists' rigidities, as driven by the IL of new venture professionalization. I explained how those rigidities may influence portfolio firm performance over time, including post-IPO. (Nearly all observations of valuation and profitability were at or post-IPO.) Findings from this study reiterate the practical and economic value of founder-venture capitalist trust and cooperation (Cable & Shane, 1997; De Clerq & Sapienza, 2001; Manigart et al., 2002; Timmons & Bygraves, 1986; Uzzi, 1999), even during the process of professionalization, in fostering portfolio firms'

long-term profitability and survival and offer important boundary conditions on the value-added proposition.

Future research should explore practical ways of moderating the effects of venture capitalists' strategic rigidities with respect to professionalization for more successful outcomes. Understanding how communication and other relational factors affect congruence between founders' and venture capitalists' psychological contracts, and thus cooperation between them, may be insightful. For example, early, ongoing, and candid dialogue about what professionalization entails and when a portfolio firm may expect to transition to professional management could foster more realistic expectations about founders' changing roles as their firms develop, resulting in less perceived psychological contract breaches and felt violation. In turn, venture capitalists and founders could develop a positive emotional tone (Gooty, Thomas, Yammarino, Kim, & Medaugh, 2019) that maximizes critical cooperation between them, contributes to a more positive sociopolitical climate within portfolio firms, and fosters more functional founder successions. Future research is needed to develop and test more meso-level theories that account for these complex, intermediating relational mechanisms when explaining how characteristics of portfolio firms' institutional environments, including the IL of new venture professionalization, influence performance outcomes (DiMaggio & Powell, 1983; Felin, et al., 2015; Jennings et al., 2013; Selznick, 1996; Thorton et al., 2012).

Limitations

Survival bias and power. Despite these contributions, conclusions drawn from this study are limited for multiple reasons. First, my data set included relatively few failed portfolio firms (i.e., 10%), compared to the 40-60% failure rate reported in other

studies (e.g., Hellmann & Puri, 2002; Kaplan et al., 2009; Wasserman, 2003, 2012), resulting in an apparent survival bias and reduced power for analyses. Data for entrepreneurship studies are "difficult to obtain" (Shane & Venkataraman, 2000: 219; Wasserman, 2017), especially at the earliest stages of firm development, when early, pre-IPO financing decisions are made, boards of directors are established, founder CEO exits often occur, and firms are most susceptible to failure. I expected difficulty with data collection to some extent, initially proposing that valuation and profitability hypotheses may be tested on a sample of public firms. However, I anticipated collecting more complete historical records about both public and private portfolio firms from Crunchbase, which employs a data collection methodology that includes contributions from founders, investors, and executives of portfolio firms, rather than compilations of publicly available data alone. Yet, I found that early historical records for firms listed in the Crunchbase database were often missing, incomplete, or inaccurate, especially for firms founded prior to 2005. I found similar issues with the PrivCo database. (VentureXpert was not a substantial source for non-financial historical data about firm governance changes, regardless of founding year.)

I then scoured the internet to hand-collect archival data about portfolio firms cross-listed in at least two of the three databases from which I initially collected data. These data collection efforts included review of thousands of webpages, with most having irrelevant information. Only those firms that I could determine founder CEO exit status were retained in the sample, which meant that retained firms, at minimum, either attracted some accessible media attention, filed accessible forms with the SEC, or maintained a website that referred to a core founder CEO for whom I could confirm

tenure. More information – and thus, founder data – was available for portfolio firms that went public or otherwise had an active media presence, so firms that replaced their founder CEOs and/or failed without a traceable media record were excluded. This resulted in a convenience sample that included more vetted, scrutinized public firms than potentially vulnerable private firms, as well as firms that likely retained their founder CEOs longer. Relatedly, many executive changes are announced by firms' media relations associates. If turnover at the CEO level is controversial or unplanned, then a private firm may avoid putting a media spotlight on the event. I may have thus inadvertently excluded some private firms that experienced more adversarial founder CEO exits and failed because such turnover events are simply underreported in the media.

Having so few failed firms in my sample made failure a relatively rare event for this study, despite previous studies observing failure in approximately half of firms. When examining the effect of founder CEO exit on failure, I estimated the model using my full sample and found a positive, significant effect. However, when examining the effects of the conditions of founder CEO exit, I estimated models using a subset of my full sample (i.e., only firms that experienced founder CEO exit), which included nearly 50% less firms. When examining the relationship between nature of exit and failure in this subset, only eight firms (8.08%) experienced an adversarial exit. Among those eight firms, only three (3%) experienced exit within the first three years after founding. Combined, survival bias and sample subsetting contributed to increasingly diminished statistical power, which can increase Type II error. Results from failure analyses should be interpreted with these caveats in mind. Future studies should consider survey-based

research designs that permit data collection earlier in a portfolio firm's life cycle, potentially reducing survival bias and thus offering more definitive conclusions.

Endogeneity. Second, this study does not test empirically for potential endogeneity attributable to omitted-variable bias or reverse causality (in the case of growth models of valuation and profitability). However, I reduced the risk of confounds by controlling for the fixed effects of firm-level characteristics, as documented in previously published studies (Delmar & Shane, 2004; Guenther et al., 2016; Haveman, 1993; Jain et al., 2008; Wasserman, 2017). Additionally, poor firm performance is one reason why founder CEOs are replaced (Ewen & Marx, 2018), suggesting the potential for reciprocity in relationships between founder CEO exit and performance outcomes over time. In this study, I accounted for poor past performance in the nature of exit variable (i.e., living dead status), as determined by a portfolio firm's ability to raise equity capital, relative to its peers (Ewen & Marx, 2018). Nonetheless, best practices for addressing potential endogeneity due to reverse causality include the use of instrumental variables in two-stage least squares (2SLS) regression models (Antonakis, Bendahan, Jacquart, & Lalive, 2010; Semadeni, Withers, & Certo, 2014). Using archival data as I did, however, presented tremendous challenges to identifying and accessing suitable instruments for remedying endogeneity post-hoc (Semadeni et al., 2014). Findings from this study should be viewed accordingly. Future survey-based, longitudinal studies may be better able to track firm performance from founding and identify and access strong instruments a priori.

Nature of exit operationalization. Third, I operationalized the nature of exit construct based on insights from published research and interviews of founder CEOs,

venture capitalists, and advisors that I conducted for a separate, ongoing study. While the coding scheme I developed accurately represents these insights, there may be other aspects of the construct that this coding scheme does not capture. Future grounded theory research (Locke, 2001; Medaugh, 2016; Straus & Corbin, 1998) is needed to better develop the nature of exit construct and more fully understand its association with the relational mechanisms I conceptualize in this study. Survey research could then follow to capture relevant perceptions, behaviors, and performance outcomes quantitatively, in real time, over time.

Psychological contracts and sociopolitical climate. Finally, and relatedly, I integrated research about psychological contracts and the founder-venture capitalist relationship to explain how the nature of founder CEO exit influences profitability and failure. I proposed that breaches of the psychological contracts between founder CEOs and venture capitalists, the experience of violation, and subsequent behaviors in response to violation contributes to a contentious sociopolitical climate within portfolio firms that negatively affects their performance. From the broader research on founder-venture capitalist relationships and psychological contracts, I inferred how founders and employees react affectively and behaviorally to perceived psychological contract breaches by venture capitalists, as well as the firm-level implications of those reactions. However, the state of the psychological contracts literature is currently inadequate for sufficiently ruling out alternative explanations with great confidence.

Most notably, psychological contracts are chronically understudied in the context of entrepreneurial firms, much less in portfolio firms. Published studies are remarkably investor-centric, focusing almost exclusively on venture capitalists' psychological

contracts and their affective and behavioral reactions to breaches (e.g., Parhankangas & Landström, 2004), while disregarding the lived experiences and perspectives of founders and other early employees (see van Dijk et al. (2014) for an exception). The value of such one-sided presentations is limited in research concerned with the relational mechanisms that influence portfolio firm performance. Accordingly, future qualitative research is needed to open the black box of psychological contracts in portfolio firms and other young entrepreneurial firms. More expansive research should examine the terms of psychological contracts between founders, between founders and employees, and between founders and venture capitalists, including how they develop and change over time. Additionally, research is needed to understand how, explicitly, founder CEOs, other founders, and employees perceive and react to breaches, including those potentially related to power struggles between founder and other powerful investors, or even members of the founding team, that spillover into the workplace. With the absence of such multifaceted research in the extant literature, I did not empirically examine the related, underlying causal mechanisms that ground my hypotheses about the nature of exit, which further limits the implications of the current study.

In conclusion, the current research offers a theoretical blueprint for better understanding relationships between a firm's external institutional environment and its internal sociopolitical environment, including how both contribute to the firm's success over time. Despite mixed empirical results, I found overall support for my proposition: Rigid implementation of founder CEO exit strategy in portfolio firms may improve some short-term metrics of performance (i.e., valuation), while imperiling other longer-term outcomes (i.e., profitability and odds of survival). However, methodological limitations

and the rather nascent state of research on the microfoundations of entrepreneurial strategy suggest caution when interpreting results of the current study and investigating these relationships in the future. Qualitative and less investor-centric examinations of founder CEO exit strategy in innovation-driven firms are needed to adequately explore the relational mechanisms that contribute to firm outcomes. Such research should focus on the lived experiences of founders and early employees prior to, during, and following the exit event, as well as their beliefs about each other's and venture capitalists' roles and obligations as firms develop over time.

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APPENDIX A: DESCRIPTIVES AND CORRELATIONS WITH NATURE OF EXIT CODING SCHEME VARIABLES

Descriptive statistics and correlations with nature of exit coding scheme variables

Variable		Mean (SD)	Range	Correlations									
				(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	Valuation[a]	1300e[6] (2538e[6])	2 e[6]-19569e[6]	1									
(2)	Profitability[a]	-95e[6] (1300e[6])	-31235e[6]-1125e[6]	.03	1								
(3)	Failure	.10 (.31)	0-1	-.02[b]	.02[b]	1							
(4)	Founder CEO exit	.54 (.50)	0-1	.15[b]*	-.04[b]	.17[c]**	1						
(5)	Exit timing	1.18 (1.22)	0-4	-.17[b]*	.05[b]	.32[d]**	-	1					
(6)	Nature of exit	.93 (.95)	0-2	.20[b]*	-.07[b]**	.10[d]	-	-.05[e]	1				
(7)	Living dead	.07	0-1	.04[b]	-.001[b]	-.03[c]	.12[c]	.19[d]	.34[d]*	1			
(8)	Outside BOD power (yearly)[a]	.75 (.16)	0-1	.01	-.01	.07[b]**	-.07[b]**	.10[b]**	.05[b]	-.13[b]*	1		
(9)	Outside BOD power (at exit)	.70 (.18)	0-.91	.24*	.02	-.02[b]	.03[b]	.07[b]	.57[b]*	.08[b]	-.08[b]†	1	
(10)	Prior founding experience (founder CEO)	.39 (.49)	0-1	-.12[b]*	.03[b]	.06[c]	.12[c]	.19[d]	.21[d]	.04[c]	-.13[b]*	.13[b]	1
(11)	Previous executive experience (replacement CEO)	.86 (.35)	0-1	.17[b]*	.03[b]	.17[c]†	-.04[c]	.13[d]	.16[d]	-.06[c]	.11[b]*	-.05[b]	.13[c]
(12)	Firm age	8.75 (4.82)	1.25-21.52	.15*	-.06**	.04[b]	.24[b]*	.17[b]†	-.03[b]	-.06[b]	.01[b]	-.25[b]**	-.11[b]
(13)	Location	1.16 (.95)	0-2	.02[b]	.08[b]*	.10[d]	.27[d]*	-.10[e]	.09[e]	.08[d]	-.06[b]†	.02[b]	.08[d]
(14)	Founding team size	2.16 (1.06)	1-6	.09**	-.02	.06[b]**	.09[b]*	-.11[b]*	.05[b]	.12[b]*	-.14[b]*	.23[b]**	.11[b]
(15)	Firm size[a]	545.47 (1321.85)	2-13060	.68*	.03	.01[b]	.14[b]*	-.13[b]*	.18[b]*	-.05[b]	.09[b]**	.14[b]*	-.10[b]*
(16)	Industry	1.26 (.58)	1-3	.20[b]*	.03[b]	.10[d]	.16[d]†	.21[d]	.26[d]*	.14[d]	-.04[b]	-.03[b]	.06[d]
(17)	Founder exit-new hire gap	.17 (.38)	0-1	-.11[b]*	.03[b]	.25[c]*	-	.21[d]	.15[d]	-.07[c]	.08[b]**	-.03[b]	.03[c]
(18)	Cofounder exit	.56 (.50)	0-1	.15[b]*	.16[b]*	.15[c]	.32[c]*	.29[d]	.24[d]	.12[c]	.07[b]	-.46[b]*	-.12[c]
(19)	Core founder post-exit position	.71 (.46)	0-1	-.11[b]*	-.06[b]†	-.16[c]	-	.18[d]	.28[d]	.14[c]	-.31[b]*	-.09[b]	.12[c]
(20)	Core founder post-exit tenure	.23 (.42)	0-1	-.16[b]*	.04[b]	.02[c]	-	.18[d]	.77[d]*	-.11[c]	.06[b]	-.18[b]	.23[c]†

Notes. [a] Time-varying variables unique to the panel data set and correlations derived from that data set; [b] point biserial measure of association; [c] Phi measure of association; [d] Cramer's V measure of association; [e] Gamma measure of association

*p < .01, **p < .05, † p < .10

APPENDIX A (cont.)

Descriptive statistics and correlations with nature of exit coding scheme variables (cont.)

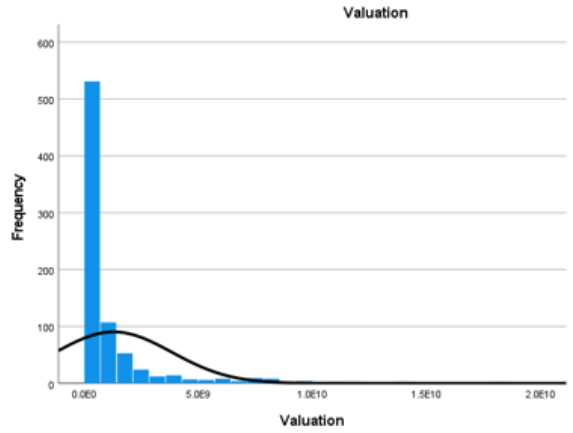
Variable		Correlations								
		(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(12)	Firm age	-.14[b]*	1							
(13)	Location	.10[d]	.08[b]	1						
(14)	Founding team size	.01[b]	-.16**	.19[b]*	1					
(15)	Firm size[a]	.17[b]*	.22*	.08[b]**	.08**	1				
(16)	Industry	.10[c]	.09[b]	.10[d]	.02[b]	.30[b]*	1			
(17)	Founder exit-new hire gap	-.04[c]	-.01[b]	.07[d]	.11[b]	-.06[b]	.04[c]	1		
(18)	Cofounder exit	.15[c]	.25[b]**	.27[d]**	.12[b]	.16[b]*	.16[c]	.12[c]	1	
(19)	Core founder post-exit position	-.14[c]	-.08[b]	.07[d]	-.15[b]	-.20[b]*	.11[c]	-.29[c]*	.000[c]	1
(20)	Core founder post-exit tenure	.15[c]	.03[b]	.05[d]	.01[b]	.02[b]	.21[c]	-.07[c]	-.22[c]	-

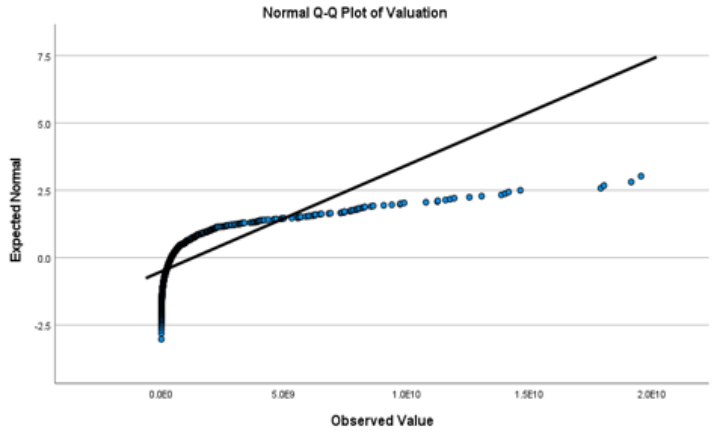
Notes. [a] Time-varying variables unique to the panel data set and correlations derived from that data set; [b] point biserial measure of association; [c] Phi measure of association; [d] Cramer's V measure of association; [e] Gamma measure of association
*p < .01, **p < .05, † p < .10

APPENDIX B: STANDARDING VALUATION

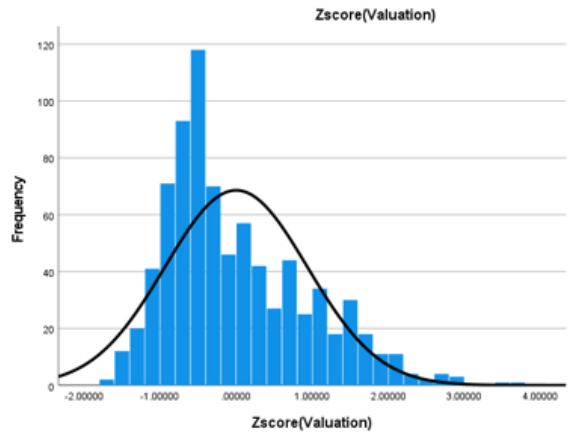
Distributions of observed and standardized valuation scores

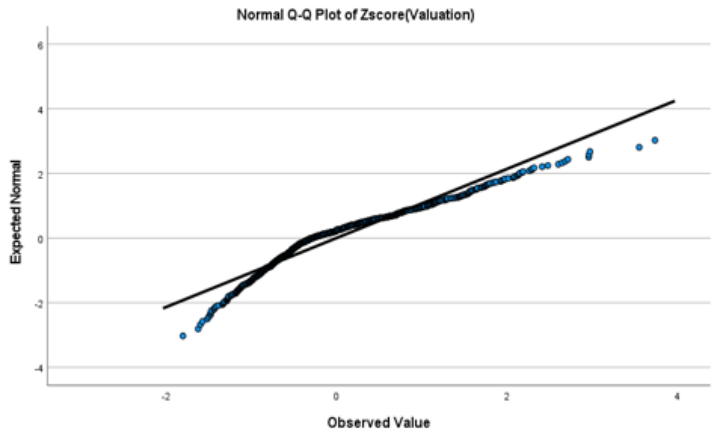
Valuation





Valuation (Z-Scores)

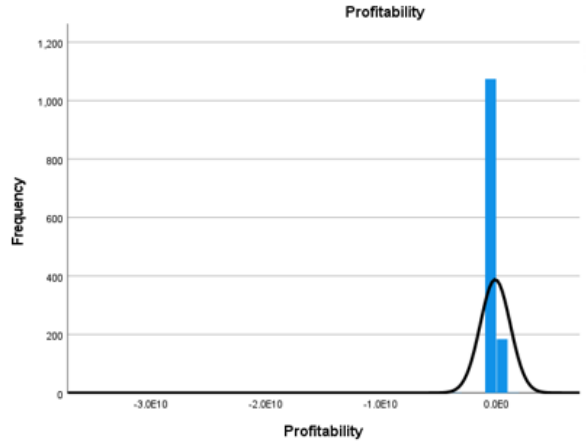


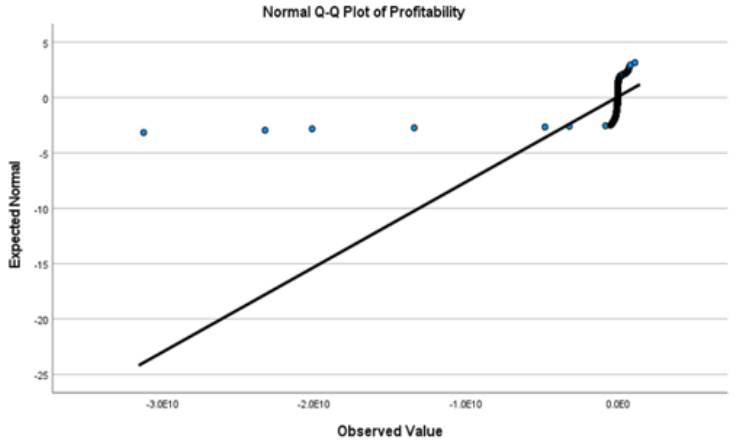


APPENDIX C: STANDARDIZING PROFITABILITY

Distributions of observed and standardized profitability scores

Profitability





Profitability (Z-Scores)