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The Performance Effects of Independent Directors: A Large-Scale Study of Danish New Ventures

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ABSTRACT

Research Question/Issue: This study investigates the effects of independent outside directors on the performance of new venture firms. We also study several factors moderating the relationship between the percentage of independent directors on boards and the new ventures' performance.

Research Findings/Insights: Using a large-scale sample of 5183 Danish new ventures active in 2015–2020, we find support for our hypothesis that the percentage of independent directors has an inverted U-shaped effect on new venture performance. The results also show that firm-level factors, that is, founder equity and venture age, cushion and amplify this nonlinear effect.

Theoretical/Academic Implications: Drawing on resource dependence theory as an exchange theory, we propose that increasing the proportion of independent directors yields linearly increasing gains (i.e., resource-provisioning benefits) but also induces costs of sacrificing managerial control, which accelerate nonlinearly. Our findings show that a smaller proportion of independent directors benefits new ventures, but as their proportion grows, the performance gains become smaller, eventually leading to negative marginal effects.

Practitioner/Policy Implications: Practitioners will find our findings of interest because, contrary to the recommendations of policymakers and many prior studies, they show that having a high proportion of independent directors on the boards of new ventures does not always improve new venture performance. Founders of new ventures should be aware of the trade-off between the benefits of obtaining additional resources and the costs of sacrificing managerial control.

1 | Introduction

A common view of boards in new ventures is that they provide access to human, social, and economic capital and thus benefit new ventures who suffer from the liabilities of newness and scarce strategic resources (Certo et al. 2001; Hillman and Dalziel 2003; Kor and Sundaramurthy 2009; Pollock et al. 2010; Vandenbroucke et al. 2016). This dominant understanding, however, has both empirical and theoretical limitations.

From an empirical perspective, we lack evidence on the role of boards in the large "core" population of new ventures, which are small, nonlisted, and not financed by venture capital (VC) investors. Research on new ventures is severely restricted by a lack of data (Shane and Venkataraman 2000). Often, it is limited to small-scale studies of new ventures in specific sectors, predominantly the tech sector, or studies of ventures' IPO performance, which means that data sampling is heavily skewed toward successful ventures in high-growth industries. Furthermore, many studies consider only the boards of ventures with VC and other types of investors. As stated by Ewens and Malenko (2022), there is a fundamental lack of knowledge on the role and effect of traditional independent new venture directors,[1] that is, directors who are not also investors. In order to address this

important gap in the literature, we analyze a large-scale dataset of new ventures in Denmark in the period of 2015–2020 that have boards with independent directors. An advantage of our unique dataset is that our results are applicable to a much larger population of new ventures than the results of previous studies, given that our sample is not restricted to recently listed firms (IPOs), high-tech new ventures, or firms with VC investors. It thus allows us to extend the hitherto limited research on the role of traditional independent directors in new ventures and their effect on new venture performance.

Theoretically, prior research on venture boards is largely grounded in either the resource-based view, resource dependence theory (RDT), social capital theory, or human capital theory (e.g., Arthurs et al. 2009; Barroso-Castro et al. 2020; Knockaert and Ucbasaran 2013; Kor and Sundaramurthy 2009; Vandenbroucke et al. 2016). As such, work in this research tradition highlights the resource-provisioning role of outside directors, including investor-directors who are not "independent." Among the four theories, which have been referred to collectively as "resource theories" (Hezun et al. 2020), RDT stands out as it takes an exchange view of the resource acquisition process (Garg and Eisenhardt 2017; Katila et al. 2008; Wasserman 2017). In short, RDT posits that new ventures trade control in exchange for outside resources, because new venture CEOs are forced to relinquish managerial control when adding outside directors to the board.

The application of resource dependence theory to new ventures has primarily focused on theorizing about trade-offs that involve financial resources provided by investor-directors. We extend this to independent directors who, by virtue of being independent, are outside the direct control of CEOs and who demand information about, and provide input to, the strategic decisions taken by the venture CEO. Moreover, independent directors in new ventures are more likely to have proprietary, industry-related knowledge (Yao and O'Neill 2022), which often makes them more involved in the strategic decision-making process than investor-directors (Fiegener 2005). This expertise and involvement can be a benefit for new ventures in line with resource arguments, but it also reduces the autonomy and managerial discretion of new venture CEOs.

In line with the suggested exchange-oriented perspective, we propose that the balance between the benefits of additional resources and the costs of sacrificing managerial control is contingent on the proportion of independent directors on the board. Specifically, we theorize that there are increasing marginal costs to appointing independent directors as higher percentages tilt the balance of power away from new venture CEOs, increasing the likelihood of CEO–board conflicts and motivational loss for CEOs. These nonlinearly increasing costs will begin to eat away at the benefits as percentages of independent directors increase—for high percentages reaching a point beyond which the overall marginal effects of increasing the proportion of independent directors become negative. Our baseline logic hence predicts an inverted U-shaped relationship between the percentage of independent directors and new venture performance.

The resource gains associated with adding (independent) outside directors to new venture boards are well documented in the literature (e.g., Beckman et al. 2014; Kor and Sundaramurthy 2009; Vandenbroucke et al. 2016). However, the costs of, for instance, reduced CEO autonomy and heightened CEO–board conflicts remain relatively underexplored. We address this gap and contribute to a deeper understanding of the associated trade-offs, by specifically exploring drivers of these costs. Our core logic proposes that the costs of appointing larger proportions of independent directors to the board accelerate as the CEOs' responses to changes in the power balance turn increasingly negative. Because such responses are affected by a CEO's founder status, the amount of equity held by founders, and venture age, we further investigate how these factors moderate the nonlinear effect predicted by our baseline hypothesis. Importantly, while our theorizing focuses on the accelerating costs of independent director appointments, we assume resource gains to be relatively constantly increasing.

Our results confirm the existence of an inverted U-shaped relationship between the percentage of independent directors and new venture performance. We do not find that a CEO's founder status moderates this relationship, but we do find that higher levels of founder equity significantly reduce the negative effects of high proportions of independent directors on the board. Finally, we find that venture age affects the perceived costs of independent director appointment, indicating that early-stage ventures are less negatively affected by a loss of managerial control when the percentage of independent directors is high.

Our findings contribute to the literature on corporate governance and entrepreneurship. First, we enrich the corporate governance literature by shedding light on when and how entrepreneurial firms benefit from having independent directors. By highlighting shifts in the balance between benefits and costs, we reveal critical boundary conditions of the well-established resource-provisioning role of independent directors (Hillman and Dalziel 2003; Hillman et al. 2009). Second, we extend past entrepreneurship research on venture boards by taking a renewed focus on the trade-offs related to appointing independent directors, drawing on resource dependence theory as an exchange theory (Garg and Eisenhardt 2017). Our study extends current knowledge by providing a more nuanced understanding of the conditions under which independent directors contribute to new venture performance.

2 | Theoretical Background

There is a general consensus in the literature that the primary role of boards in new ventures—unlike those in larger, more established firms—is to provide support and resources rather than to monitor firm management (Garg 2013, 2020; Knockaert and Ucbasaran 2013; Vandenbroucke et al. 2016; Vandenbroucke et al. 2019). This unique role of new venture boards arises because new ventures face greater resource constraints but fewer agency problems (Garg 2020). Consequently, research in this area draws primarily on "resource theories," an umbrella term covering the resource-based view, resource dependence theory, and theories of social and human capital (Hezun et al. 2020). Agency theory is less emphasized because of the limited focus on monitoring. The literature also shows that new venture boards are more actively involved

in day-to-day operations than are the boards of larger firms. Unlike those in established firms, boards in new ventures function as a part or extension of the top management team (Krause and Bruton 2014; Zhang et al. 2011). This means that directors are not just active in board meetings but have a greater day-to-day presence and, correspondingly, deeper involvement.

Resource-based research portrays boards as critical providers of resources and capabilities (Hillman and Dalziel 2003). By providing advice, legitimacy, and network connections, board directors are expected to fill gaps in the new venture's resource base and thus positively influence venture survival (Hillman et al. 2009). Much of this strand of research documents the performance-enhancing effects of outside directors in new ventures. For instance, studies show that directors' human capital in the form of industry experience and industry ties positively influences firms' accounting performance (Daily and Dalton 1993), sales growth (Kor and Sundaramurthy 2009), product development (Vandenbroucke et al. 2016), short-term strategic orientation (Bruneel et al. 2022), and post–IPO market valuation (Arthurs and Busenitz 2006; Kroll et al. 2007). Other work explores the value of directors' social capital, documenting that well-connected directors (i.e., those with large personal networks or board seats in multiple organizations) enhance venture firms' alliance building (Beckman et al. 2014) and facilitate the recruitment of managers and additional outside directors (Amornsiripanitch et al. 2019).

Despite their benefits, an increased reliance on independent directors also introduces costs for new ventures. These generally arise because a higher proportion of independent directors on the board restricts the CEO's discretion and decision-making autonomy (Fiegener et al. 2000), potentially kindling CEO–board conflicts. As such, appointing independent directors involves critical trade-offs that balance the benefits of director resources with the costs of restricted managerial discretion and CEO–board conflicts. In this paper, we draw on resource dependence theory, because, unlike other resource theories, it is an exchange theory (Drees and Heugens 2013; Hillman et al. 2009) and thus straddles the two conflicting dynamics described previously. The theory hence allows us to take a combined view of the benefits (resources) and costs (loss of managerial control) of appointing independent directors to venture boards. The next section will elaborate more carefully on these mechanisms.

3 | Hypotheses

With regard to the resource-provisioning aspects, which RDT shares with other resource theories, RDT holds that independent directors provide value to new ventures in four ways: advice and counsel, channels to (external) information, channels for resource provision, and legitimacy (Pfeffer and Salancik 2003). Independent directors are sufficiently distanced from new venture CEOs to be able to provide these resources (Johnson et al. 2013). In contrast, directors who are too close to or dependent on the CEO will probably not possess supplementary human or social capital nor be perceived by stakeholders as signaling credibility. They may also struggle to assert themselves in discussions with the CEO, which reduces the value of their contributions.

RDT further proposes that, to attract the most valuable carriers of strategic capabilities, new venture CEOs must relinquish part of their control and power. Faced with such restrictions on their autonomy and decision-making discretion, CEOs may lose motivation, and conflicts between CEOs and boards may become more likely (Collewaert and Sapienza 2016; Fiegener et al. 2000). We thus suggest that the negative effects of appointing independent directors may occur on both psychological and social levels. With this multilevel approach, our theorizing is in line with newer developments in RDT, which offer a multilevel perspective on the trade-offs involved in exchanges (Biermann and Harsch 2017; Hillman et al. 2009).

On a psychological level, boards with a greater proportion of independent directors reduce managerial discretion (Hambrick and Finkelstein 1987), and CEOs may consequently suffer from a loss of motivation. This loss of motivation may be particularly acute in a new venture setting where most CEOs embody an entrepreneurial identity (Radu-Lefebvre et al. 2021) or, in the case of founders, a founder identity (Baker and Powell 2021). Individuals carrying such identities often place great value on individual autonomy (Amit et al. 2001). Consequently, a (perceived) loss of autonomy may be detrimental for motivation.

Although there is a rich literature on entrepreneurial identity, motivation, and passion (for reviews cf. Lee and Herrmann 2021; Murnieks et al. 2020; Radu-Lefebvre et al. 2021), the link between autonomy and motivation has been largely unexplored in the context of new venture boards. Research in this stream does however strongly hint at the adverse effects of loss of autonomy on entrepreneurial passion, motivation, and identity. For example, scholars have suggested that most entrepreneurs are highly intrinsically motivated (Amit et al. 2001; Murnieks et al. 2020) and that this intrinsic motivation comes with a desire for autonomy (Ryan and Deci 2000). For CEOs, independent directors may thus constitute an extra work burden or even distraction, as a CEO has to provide reports and other material for board meetings and deal with input from multiple directors who each demand a certain level of attention (Fabio et al. 2023). It has furthermore been suggested that new venture CEOs, and especially founder-CEOs, may resent having to heed the advice of independent directors whom they perceive as limiting their autonomy or even questioning their competence (Collewaert 2012).

On a social level, the division of power between new venture CEOs and independent directors may result in conflicts (Brettel et al. 2013; Khanin and Turel 2015). As the proportion of independent directors increases, the balance of power, formally, but also informally, will swing away from the venture CEO. This is not because we expect independent directors to share opinions or vote *en bloc*, but there will be more dissenting opinions and more possibilities of coalitions forming that do not include the CEO. CEOs who feel reined in by independent directors may actively seek to counter this influence by seeking, through various means, to control the board (Bebchuk and Fried 2006). The result of that will likely be conflicts, which will reduce the contribution and efficacy of the board. While the social and psychological aspects can be separated, they will in many cases interact, often creating a vicious cycle.

The costs of CEO motivational loss and enhanced CEO–board conflicts will ultimately affect venture performance. Given that it is a common performance measure in similar studies of new venture firms (Ertug et al. 2020; Gruber et al. 2024), we focus on yearly sales as a straightforward indicator of success for newly established firms. Reduced motivation can affect sales because demotivated CEOs will spend less time and effort seeking new customers and business opportunities. In other words, a demotivated CEO is less likely to engage in the high-energy, hands-on leadership required to drive sales in a resource-constrained startup environment. Demotivated CEOs are also likely to be less able to motivate others who are directly involved in sales. In line with the arguments provided previously, the link between CEO motivational loss and venture performance will be especially detrimental in new ventures, because the CEOs' entrepreneurial or founder identity is closely tied to the firm's direction and performance (Amit et al. 2001).

Likewise, conflicts have been shown to lower new venture performance (Brettel et al. 2013; Higashide and Birley 2002). In general, persistent conflicts not only consume valuable time and resources but also disrupt decision-making processes, delaying critical sales-oriented initiatives such as product launches or market expansions. In extreme cases, these tensions can lead to gridlock, with directors and CEOs unable to align on strategic actions. As such, prolonged conflicts can stall or derail key initiatives, weakening the firm's ability to respond to market demands or capitalize on growth opportunities. If such conflicts are affective, that is, disagreement is emotional and focuses on personal incompatibilities (Brettel et al. 2013; Jehn 1995, 1997), it can further disrupt director–CEO interaction and thus negatively impede on the directors' service role (Vandenbroucke et al. 2019). It was argued previously that new venture directors are deeply involved in the new venture's operation and may therefore be seen as an extension of the new venture's top management team (Zhang et al. 2011). Examples of such involvement include entrepreneurs bringing directors to sales meetings. Such involvement, however, hinges on a relatively harmonious relationship between directors and executives. In the presence of affective conflicts, we expect such involvement to be drastically reduced in intensity, ultimately impacting performance.

In sum, we propose that appointing independent directors to new venture boards brings gains in the form of added strategic resources but that higher proportions of independent directors lead to accelerating CEO motivational losses and CEO–board conflicts. Given these increasing marginal *costs* of higher proportions of independent directors, with marginal *gains* in regard to resource provisioning being stable, we argue that the relationship between the proportion of independent directors and venture performance is nonlinear. At lower proportions of independent directors, the costs associated with CEO motivational loss and CEO–board conflicts are low. However, as the proportion of independent directors increases, the accelerating costs begin to eat away at the resource gains up to a point beyond which overall performance benefits decrease. We therefore hypothesize:

Hypothesis 1. *The relationship between the percentage of independent directors on the board and new venture performance is inverted U-shaped: A smaller percentage of independent directors is beneficial for new venture performance, but a larger percentage reduces the positive impact.*

As outlined earlier, our theorizing assumes the costs of appointing independent directors to accelerate as the proportion of independent directors on the board increases. The following moderating hypotheses extend our core theoretical argument by focusing on factors that may moderate either the power balance itself or the CEO's responses to the power balance changing. These factors hence alter the rate at which the costs accelerate, while the resource benefits are held to be unaltered. Our moderating hypotheses are therefore focused on the right-hand side of the nonlinear curve predicted in Hypothesis 1.

The first moderating factor we investigate is the presence of a founder-CEO. Compared with non–founder-CEOs, founder-CEOs are more likely to have a strong emotional attachment to the new venture (Baker and Powell 2021; Certo et al. 2001; Radu-Lefebvre et al. 2021). As such, they feel a greater sense of psychological ownership (Collewaert 2012) and see ownership and independence as important to their self-identity. This is likely to create not only more conflicts but also, specifically, more *affective* conflicts with independent directors. While cognitive conflicts—professional disagreements over decisions—may lead to better decision-making, affective conflicts have been found to be harmful for new venture performance (Higashide and Birley 2002). We expect this to further increase the marginal costs of higher proportions of independent directors as founder-CEOs respond more negatively to the resulting loss of control. We thus formulate a hypothesis that makes predictions only for the right-hand latent function of the inverted U-curve:

Hypothesis 2. *The negative effects of a larger percentage of independent directors on new venture performance are augmented by the presence of a founder-CEO (i.e., the slope of the right-hand latent function of the inverted U-curve is steepened).*

The equity held by all founders of a new venture may also moderate the trade-off proposed in Hypothesis 1. Founder ownership, particularly at high levels, has been associated with improved venture performance (Dawson et al. 2018; Miller et al. 2007). This is commonly attributed to founders acting as stewards (Dawson et al. 2018), providing both professional and emotional stability to the venture.

This stewardship may take the form of one of the founders (or the sole founder) staying on in the role of CEO. Even where this is not the case, founder-owners still play a crucial role. Their stewardship provides a stable foundation for the CEO, reducing the CEO's vulnerability to the presence of a high proportion of independent directors. As long-term, committed stakeholders with great influence over the venture, founder-owners reduce the impact of independent directors, potentially also mitigating the loss of autonomy experienced by the CEO. Simply put, we expect founder-owners to have a strong grip on the new venture, which reduces the CEO's perception of independent directors changing the balance of power.

This effect is also driven by founder ownership providing emotional stability to CEOs. The long-term and enduring

involvement of founder-owners fosters a shared understanding with the CEO about the venture's beliefs, values, and strategic priorities, thereby reducing uncertainty for CEOs. Founders with substantial ownership stakes are moreover likely to serve on the board, as they, like other investors, seek board positions to monitor and control their investments (Krause and Bruton 2014; Park and Steensma 2014; Politis 2008). Their presence on the board will further provide stability for the CEO. Additionally, high founder ownership means that founder-owners control the appointment of both independent directors and the CEO. This control fosters alignment between CEOs and independent directors and thus reduces affective conflicts between them.

In sum, we expect higher levels of founder ownership to reduce the costs of high proportions of independent directors. Consequently, we propose that high founder ownership reduces the steepness of the downward sloping curve beyond the inflection point.

Hypothesis 3. *The negative effects of a larger percentage of independent directors on new venture performance are reduced by higher levels of founder equity (i.e., the slope of the right-hand latent function of the inverted U-curve is flattened).*

In Hypotheses 2 and 3, we theorize on the CEO's responses to board dynamics that accompany an increase in the percentage of independent directors. It is important to note that CEO–board relationships also change as the new venture evolves (Dyer 1988; Fiegener 2005). Expansion and growth bring added complexities that strain the resources of CEOs and make it necessary to obtain inputs from other parties, such as independent directors. Consequently, boards generally become more involved as new ventures grow (Fiegener 2005). Simoulatenously, CEOs become increasingly likely to accept delegation and sharing of control, including with the board. This acceptance will reduce CEO–board conflicts and CEO motivational loss. The marginal negative effects of a higher percentage of independent directors will therefore be smaller for more mature ventures. In the case of founder-CEOs, the impact of founder identity will wane as the venture grows (Dobrev and Barnett 2005), reducing the negative impacts of a large proportion of independent directors. In sum, more mature new ventures will be less negatively affected by a larger percentage of independent directors. This leads us to the final hypothesis:

Hypothesis 4. *The negative effects of a larger percentage of independent directors on new venture performance are reduced for mature ventures (i.e., the slope of the right-hand latent function of the inverted U-curve is flattened).*

4 | Data and Methods

4.1 | The Danish Context

The most common forms of incorporation for Danish firms are as an entrepreneurial new venture (Danish abbreviation IVS), limited liability company (ApS), or share-owned company (A/S).[2] Of these, only A/S firms (and some ApS firms with more than 35 employees) are mandated to have a board of directors (or, in some cases, an oversight committee).[3] In recent years, small- and medium-sized Danish enterprises have come under increasing normative pressure to instate and "professionalize" boards. Therefore, it has become common for new ventures to form a board of directors, even if they are not mandated to do so by law. This pressure to professionalize boards has also affected their composition. Until recently, many directors of Danish new ventures lacked the capabilities and resources necessary for a directorship, as they were recruited from limited local social networks, founders' personal acquaintances, or even founders' families (Neville 2011). However, over the past decade, the pressure to professionalize has led many Danish new ventures to move away from these so-called "aunt boards," a term describing the previously common practice of installing a board of directors and staffing it with the relatives of the new venture's managing owner.

4.2 | Sample

Our sample merges data from the Danish Business Authority's Central Business Register (CVR) and Statistics Denmark's research database to form a unique dataset of the population of incorporated Danish new venture firms. For all Danish new venture firms established after 2008, we identify owners and stakeholders, including all equity holders, managers, board members, and employees. Our data sources furthermore permit the identification of each firm's initial owners (founders) and any ensuing owners or investors in the firm's life cycle. Finally, we identify top managers and board members for each firm year. Based on their employment status, we classify directors as either insiders or outsiders.

In building our dataset, we exclude firms from the primary sector (ISIC-1: agriculture, forestry, and fishing)[4] and firms from the public sector (ISIC-9: public administration, defense, education, human health, and social work activities). We also exclude firms that are active in the financial and insurance (ISIC-6) and real estate (ISIC-7) industries. These firms generally serve as passive investment or intermediary ownership vehicles (i.e., holding companies). Although firm data on Danish new ventures are available from 2008, we chose the period of 2015–2020, because the data on ownership of new ventures are largely incomplete before 2015. It is, however, important to note that excluded firms are still considered when we identify new ventures' ultimate owners, a procedure explained in detail in the Notes section.[5] Finally, we restrict the sample to new ventures founded by no more than five individuals. Overall, the initial dataset consists of 117,046 firm-year observations from 34,082 Danish new venture firms.

To focus on the effect of independent directors in new ventures, we restrict our sample to firms that have a board in at least one of our sample years. Although doing so reduces our final dataset to 19,793 firm-year observations of 5183 new venture firms, this restriction excludes the very large number of new ventures from our analysis that never established a board at all. If included, these firms would enter our calculations consistently throughout all sample years with a percentage of independent directors of 0, causing severe problems with multicollinearity.

In line with their size (mean number of employees is 9.69), the new ventures in our sample mostly have small boards. The total number of board members ranges from 0 to 8, and its mean is 2.72 board members (inside and independent) with a standard deviation of 1.35. In the sample, 50% of firms have a total of

three directors, and only 1.2% of firms have more than five directors on their board.

4.3 | Variables

4.3.1 | Dependent Variable

Our dependent variable, *Firm Sales*, is measured by the focal firm's annual sales (in 1000 DKK), as reported by Statistics Denmark. To reduce skewness, we used the natural log of this variable in our calculations. In line with the reasoning of Lumpkin and Dess (1996), we use sales rather than sales growth as our dependent variable, given that the sample firms are very small (averaging 9.69 employees) and were only recently founded (averaging 5.54 years old). Such young and small firms are likely to emphasize overall performance rather than traditional accounting measures, such as growth rate, which rely on the assumption that a new venture is only successful if it performs better than in the prior period. According to Lumpkin and Dess (1996), small and privately owned firms are more inclined to judge their success by more basic types of financial criteria.

4.3.2 | Independent Variables

Our first independent variable is the *Percentage of Independent Directors*, measured as the number of board members who have no relationship with the new venture other than their role as director (e.g., Srinivasan 2005) divided by the total number of board members. To distinguish employee representatives, managers, and other internal directors from independent directors, we identify employees using employment and salary data and also assume that independent directors receive an honorarium for their services. The typical honorarium of external board members in Denmark is less than 100,000 DKK per year. We therefore use this amount as the threshold to identify independent directors. Furthermore, we verify that they did not receive any salary from the firm before becoming board members. We do not account specifically for the family connections of board members to founders in our measurement of this variable. However, we include additional control variables to account for such potential relationships, which would impede the independence of directors, as explained next.

Our second independent variable, *Founder-CEO*, is a dummy variable with the value of 1 if the new venture's current CEO is a founder, and 0 otherwise. We classify all initial equity owners as founders, provided that they are all identified as individuals and do not exceed five in number. We operationalize our third independent variable, *Founder Equity*, as the total amount of equity held by all founders divided by the total amount of equity invested in the focal venture in a particular firm year. Our fourth independent variable, *Venture Age*, is measured by the number of years since the new venture's establishment.

4.3.3 | Control Variables

To account for alternative factors that could influence new venture sales performance, we include several control variables suggested by prior research. The first is *Sales Growth*. We control for sales growth because new ventures that have had a breakthrough and are in a growth phase are likely to leverage this growth for continuing high levels of sales. We measure this variable as the difference between sales in year t minus sales in year $t - 1$, divided by sales in year $t - 1$. Our second control variable is the *Number of Employees* (full-time employed), which we include because we expect larger ventures to have higher sales (Bahadir et al. 2009; Chandy and Tellis 2000). We also include *Employee Growth*, which we measure as the difference between the number of employees in year t and the year $t - 1$, divided by the number of employees in $t - 1$. We control for employee growth because new ventures that have increased their staff numbers are likely to leverage these added resources for pursuing higher levels of sales. In addition, we control for *Ownership Experience*, measured as the number of distinct firms owned cumulatively by all of the owners of a new venture firm in a particular year. Research suggests that prior ownership experience may enhance early new venture performance (Deb and Wiklund 2017; Eckhardt et al. 2006). Furthermore, we add *Insider Equity* to our analysis, operationalized as the amount of equity held by all insider owners, comprising founders and later employee-investors. We expect that higher inside ownership will reduce short-term performance pressure on the new venture firm (Deb and Wiklund 2017; Hechavarría et al. 2016).

Additionally, we include *Number of Fiduciary Owners* as we expect this type of ownership to influence owners' performance expectations (Hellmann and Puri 2002; Peng et al. 2014). Moreover, we control for *Number of Fund Owners* in the expectation that fund ownership may influence a new venture's focus on early performance (Deb and Wiklund 2017; Gompers 1995). We also control for *CEO Duality* (a dummy variable valued at 1 if the CEO simultaneously serves as board chairperson, and 0 otherwise).

As mentioned previously, family relations may reduce the independence of directors. It has been a common practice in new ventures, both in Denmark and elsewhere (Fiegener et al. 2000; Neville 2011), to staff boards with family members such as spouses, unmarried partners, or parents. In fact, in our sample, there are 5307 firm-year observations where one or more family members of founders serve as board members. Specifically, there are 1670 firm years with father-directors, 994 firm years with mother-directors, and 4050 firm years where a (married) spouse or (unmarried) partner serves as a director on the board. In all of these cases, the family members were not themselves the founders of the new venture. We include the three variables *Father Boardmember*, *Mother Boardmember*, and *Spouse or Partner Boardmember* in our calculations to reflect insights from prior studies, suggesting that family representatives in a firm's governance may perform a strategic control function and therefore have an influence on firm outcomes (Anderson and Reeb 2004; Combs et al. 2010; Molly et al. 2019).

Finally, we add dummy variables for the three firm types in our sample (A/S, ApS, and IVS) to control for differences in legal regulations for establishing boards, which may translate into different levels of board efficacy. Furthermore, year dummy variables are included in all of the models.

4.4 | Analytical Procedure

We estimate how the percentage of independent directors affects new venture performance using a random-effects panel design. Although results of a Hausman test were significant, we opted against a fixed-effects regression because some of our independent variables (e.g., *Percentage of Independent Directors* or *Founder-CEO*) and control variables (e.g., *Number of Fund Owners* or *CEO Duality*) did not vary across time within the groups. The data are clustered, and robust standard errors are calculated using the Huber–White sandwich estimator (White 1980) to account for possible autocorrelation problems.

We test our moderation hypotheses in three ways. First, we run random-effects panel regressions and interpret the significance of the interaction term between the *Percentage of Independent Directors*^{2} and each of the moderating variables, respectively, that is, *Founder-CEO* (H2), *Founder Equity* (H3), and *Venture Age* (H4). However, the interpretation of the coefficient of an interaction term when moderation involves nonlinear terms is not straightforward, because the directional influence and relative impact of the moderator may change at different levels of the explanatory variables (Hoetker 2007). We, therefore, in a second step, follow recommended practice and use predictive margins to derive the validity of our hypotheses (Hoetker 2007; Mize 2019). Using predictive margins allows us to interpret the effect of the theorized moderating conditions at theoretically and practically relevant values of our *Percentage of Independent Directors* variable instead of setting this variable at its mean. When calculating predictive margins, we keep all other continuous variables at their mean and all categorical variables at their most common value in the data. Third, we compute the difference in predictive margins between the two levels of a moderator and test their significance at all values of our explanatory variable. The test of differences in predictive margins allows us to clarify *where* (if anywhere), across the range of values of the explanatory variable, the moderator causes significant differences. Our approach is similar to recently published studies in the broader management field (Audretsch et al. 2023; Dorobantu et al. 2024; Sobrepere i Profitós et al. 2022).

5 | Results

Table 1 summarizes the means, standard deviations, and correlation coefficients of all of the variables. The variance inflation factors and condition indices are well below the respective critical values of 5 (the highest is 2.04) and 30 (the highest is 20.55). We can therefore be confident that multicollinearity is not an issue in our data. In our calculations, we standardize all metric independent and control variables, that is, all variables other than the dummy variables. We use standardized rather than nonstandardized values of the variables in all of our calculations and figures, because calculations using nonstandardized values suffer from high levels of multicollinearity.

Table 2 displays the results of our random-effects regression analyses. While Model 1 includes the control variables only, Model 2 adds the independent variables. The results in Model 2 show that the square of the *Percentage of Independent Directors* is significantly and negatively related to *Firm Sales* (−0.028, $p = 0.019$), suggesting that the relationship between the percentage of independent board outsiders and a firm's sales performance has an inverted U-shape. The inflection point of this shape occurs at 1.74 (standardized value of the *Percentage of Independent Directors*). When using nonstandardized values, firm sales peak at a value of 76% independent directors on the board. To further explore the nonlinear shape of the curve estimated in Model 2, we test whether the slope is sufficiently steep at both ends of the data range (Haans et al. 2016). For values below the inflection point of 1.74, the slopes are positive and significant at a $p < 0.001$ level. For values above this inflection point, the slopes are negative, although not significant ($p > 0.1$). The calculation of predictive margins, however, confirms our finding that firm sales peak at a (standardized value of) *Percentage of Independent Directors* of 1.74 and decrease after this point. Figure 1 provides a graphical display of this investigation, in which we plot the predicted outcomes in *Firms Sales* for all values of the *Percentage of Independent Directors* that occur in our sample (e.g., 0%, 20%, 40%, 50%, 60%, and 80%). Figure 1 shows an inverted U-shaped relationship between the *Percentage of Independent Directors* and *Firm Sales*. Taken together, these results lend support for Hypothesis 1.

Models 3–5 test the moderating hypotheses by adding an interaction term between the *Percentage of Independent Directors*^{2} and *Founder-CEO* (Model 3), *Founder Equity* (Model 4), and *Venture Age* (Model 5), respectively. Hypothesis 2 proposes that the negative effect of a larger percentage of independent directors on new venture performance is augmented by the presence of a founder-CEO, predicting an effect on the right-hand latent function of the inverted U-shaped relationship. The results displayed in Model 3 do not lend direct support to Hypothesis 2, as the coefficient of the interaction term between *Founder-CEO* with the *Percentage of Independent Directors*^{2} is not significant. To further investigate this result, we applied the second and third tests discussed previously. Figure 2 plots the predicted outcomes in sales for firms with versus without a *Founder-CEO* at different values of the *Percentage of Independent Directors*. Figure 2 shows that when the *Percentage of Independent Directors* variable takes on values above the inflection point, predicted *Firm Sales* begin to decrease, and they do so at a faster rate for new ventures that have a *founder-CEO* compared to firms that do not have a *founder-CEO*. Although this pattern is consistent with Hypothesis 2, the difference in predictive margins for firms with a founder-CEO versus firms without a founder-CEO is not statistically significant across the full range of values of the *Percentage of Independent Directors*. In sum, our findings do not indicate support for Hypothesis 2.

As predicted by Hypothesis 3 and shown in Model 4 of Table 2, the interaction term between *Founder Equity* and the *Percentage of Independent Directors*^{2} has a significant positive effect on *Firm Sales* (0.022, $p = 0.003$). This suggests that high founder equity cushions the decline in sales performance caused by increasing percentages of independent directors. Figure 3, a plot of the predictive margins obtained from Model 4, confirms this finding. Above the inflection point, a higher *Percentage of Independent Directors* has a positive effect on *Firm Sales* when *Founder Equity* is high. Indeed, the curve for high founder equity increases continuously as firms move up the ranges of

TABLE 1 | Descriptive statistics and correlations.

	Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	*Firm sales*	21,690.13	121,746.37	1.00																		
2	*Sales growth*	7.40	825.72	0.04	1.00																	
3	*Number of employees*	9.69	19.26	0.25	0.00	1.00																
4	*Employee growth*	0.16	0.98	0.05	0.01	0.08	1.00															
5	*Ownership experience*	11.62	80.15	0.04	0.00	0.04	0.02	1.00														
6	*Insider equity*	0.95	0.15	−0.05	0.00	−0.09	−0.02	−0.27	1.00													
7	*Number of fiduciary owners*	0.09	0.38	0.14	0.04	0.11	0.01	0.12	−0.15	1.00												
8	*Number of fund owners*	0.00	0.06	0.02	−0.00	0.02	0.02	0.35	−0.21	0.22	1.00											
9	*CEO duality*	0.08	0.27	−0.04	−0.00	−0.09	−0.02	−0.02	0.03	−0.05	−0.01	1.00										
10	*Father boardmember*	0.08	0.28	0.02	−0.00	0.01	−0.01	−0.02	0.01	0.05	−0.02	−0.07	1.00									
11	*Mother boardmember*	0.05	0.22	−0.02	−0.00	−0.04	−0.02	−0.03	0.04	0.01	−0.01	−0.05	0.10	1.00								
12	*Spouse or partner boardmember*	0.20	0.40	−0.02	−0.00	−0.04	−0.03	−0.05	0.06	0.04	−0.03	−0.10	0.15	0.30	1.00							
13	*A/S*	0.43	0.50	0.09	0.01	0.16	−0.04	−0.04	0.05	0.08	−0.01	−0.25	0.14	0.13	0.27	1.00						
14	*ApS*	0.53	0.50	−0.08	−0.01	−0.13	0.03	0.04	−0.04	−0.07	0.01	0.19	−0.12	−0.12	−0.24	−0.94	1.00					
15	*IVS*	0.03	0.18	−0.03	−0.00	−0.06	0.02	0.00	−0.03	−0.03	0.01	0.17	−0.05	−0.03	−0.07	−0.16	−0.20	1.00				
16	*Percentage of independent directors*	0.27	0.29	0.06	0.00	0.07	−0.01	0.07	−0.07	0.24	0.09	−0.19	0.17	0.08	0.18	0.27	−0.25	−0.05	1.00			
17	*Founder-CEO*	0.84	0.37	−0.06	0.00	−0.04	0.01	−0.03	0.13	−0.11	−0.02	0.07	−0.02	0.03	−0.02	0.00	−0.01	0.03	−0.01	1.00		
18	*Founder equity*	0.88	0.25	−0.03	0.00	−0.06	−0.01	−0.14	0.58	−0.09	−0.12	0.01	−0.01	0.04	0.07	0.08	−0.07	−0.02	−0.01	0.48	1.00	
19	*Venture age*	5.54	2.88	0.06	−0.00	0.12	−0.18	−0.02	−0.06	0.02	−0.01	−0.10	0.06	0.05	0.09	0.13	−0.07	−0.16	0.06	−0.02	−0.07	1.00

TABLE 2 | Results of random-effects regression models.

	1	2	3	4	5
DV: *Firm sales*					
Sales growth	0.300**	0.296**	0.296**	0.295**	0.296**
	(0.110)	(0.108)	(0.108)	(0.108)	(0.108)
Number of employees	0.465**	0.454**	0.454**	0.454**	0.455**
	(0.147)	(0.144)	(0.144)	(0.144)	(0.145)
Employee growth	0.086***	0.091***	0.091***	0.091***	0.091***
	(0.019)	(0.020)	(0.020)	(0.020)	(0.020)
Ownership experience	−0.009	−0.009	−0.009	−0.007	−0.009
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Insider equity	−0.021^{+}	−0.014	−0.014	−0.014	−0.014
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Number of fiduciary owners	0.014	0.002	0.001	0.003	0.002
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Number of fund owners	0.011	0.011	0.011	0.012	0.011
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
CEO duality	−0.211***	−0.194***	−0.195***	−0.195***	−0.193***
	(0.051)	(0.050)	(0.050)	(0.050)	(0.050)
Father boardmember	0.079*	0.031	0.031	0.027	0.031
	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)
Mother boardmember	−0.050	−0.083	−0.082	−0.080	−0.083
	(0.053)	(0.055)	(0.055)	(0.055)	(0.055)
Spouse or partner boardmember	0.035	−0.011	−0.010	−0.013	−0.012
	(0.030)	(0.031)	(0.031)	(0.031)	(0.031)
A/S	0.744***	0.666***	0.666***	0.668***	0.667***
	(0.053)	(0.050)	(0.050)	(0.051)	(0.051)
IVS	−1.078***	−0.904***	−0.904***	−0.904***	−0.907***
	(0.089)	(0.087)	(0.087)	(0.087)	(0.087)
Founder-CEO		0.023	0.027	0.021	0.023
		(0.038)	(0.044)	(0.038)	(0.038)
Founder equity		−0.004	−0.004	−0.029^{+}	−0.004
		(0.013)	(0.014)	(0.016)	(0.013)
Venture age		0.189***	0.189***	0.190***	0.197***
		(0.021)	(0.021)	(0.021)	(0.022)
Percentage of independent directors		0.098***	0.112***	0.097***	0.098***
		(0.014)	(0.029)	(0.014)	(0.014)
Percentage of independent directors^{2}		−0.028*	−0.026	−0.021^{+}	−0.028*
		(0.012)	(0.021)	(0.012)	(0.012)

(Continues)

TABLE 2 | (Continued)

	1	2	3	4	5
Percentage of independent directors^2 × *founder-CEO*			−0.004		
			(0.025)		
Percentage of independent directors^2 × *founder equity*				0.022**	
				(0.007)	
Percentage of independent directors^2 × *venture age*					−0.007
					(0.009)
Constant	8.274***	8.346***	8.343***	8.341***	8.345***
	(0.036)	(0.049)	(0.050)	(0.049)	(0.049)
N	19,793	19,793	19,793	19,793	19,793
R^2	0.34	0.35	0.35	0.35	0.35
Wald χ^2	1297 ***	1587 ***	1589***	1601 ***	1560***

Note: Standard errors in parentheses. Year dummies are included in all models.
$^+p<0.10$, $^*p<0.05$, $^{**}p<0.01$, and $^{***}p<0.001$.

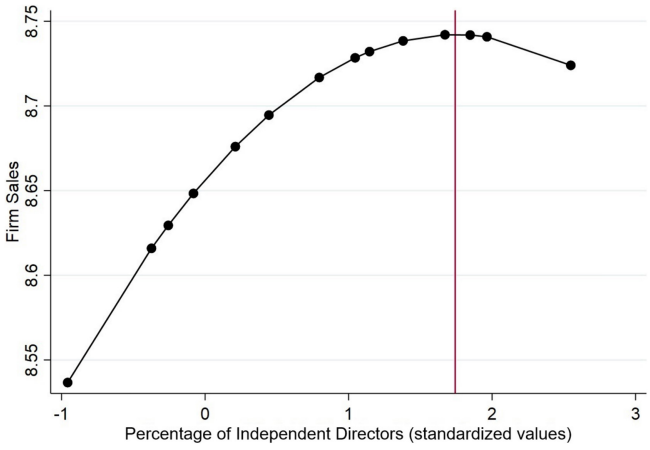

FIGURE 1 | Effect of the *Percentage of Independent Directors* on *Firm Sales*.The solid, vertical line indicates the inflection point at 1.74 standardized values of the *Percentage of Independent Directors*. [Colour figure can be viewed at wileyonlinelibrary.com]

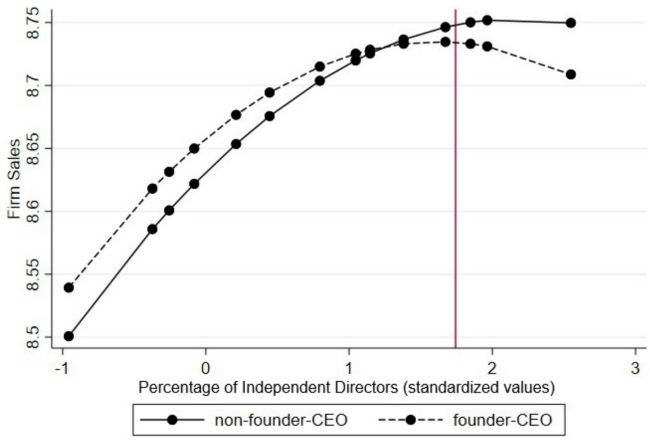

FIGURE 2 | Effect of the *Percentage of Independent Directors* on *Firm Sales* for ventures with a *non-founder CEO* versus ventures with a *founder-CEO*.The solid, vertical line indicates the inflection point at 1.74 standardized values of the *Percentage of Independent Directors*. [Colour figure can be viewed at wileyonlinelibrary.com]

independent directors. This suggests that high founder equity attenuates the costs of CEO motivational loss and CEO–board conflicts more effectively than initially theorized. In contrast, when *Founder Equity* is low, firms increasing the ratio of independent directors will experience declining firm sales, resulting in the hypothesized inverted U-shaped curve. The difference in predictive margins between low and high *Founder Equity* is significant for the upper range of values of the *Percentage of Independent Directors* (standardized values greater than 1.9). This indicates that *Founder Equity* only moderates the relationship between the *Percentage of Independent Directors* and *Firm Sales* for high values of the explanatory variable, as suggested by Hypothesis 3. In sum, the three tests conducted offer support for Hypothesis 3.

Hypothesis 4 proposes that, for mature ventures compared to early-stage ventures, sales performance will less rapidly decline at larger percentages of independent directors. In Table 2, Model 5 shows that the interaction term between *Venture Age* and the *Percentage of Independent Directors*^{2} has no significant effect on firm sales. We thus rely on predictive margins for further interpretation, which are illustrated in Figure 4. Interestingly, we find that *Venture Age* elevates the entire curve such that the slope for mature ventures is generally situated at a higher level of firm sales than the slope for early-stage ventures (predicted firm sales range from 8.72 to 8.93 for mature ventures and from 8.35 to 8.57 for early-stage ventures). By implication, mature ventures earn higher sales than their younger peers at all levels of the *Percentage of Independent Directors*. This indicates that mature ventures have developed an established market presence, have built a reliable customer base, and are engaged in scaling sales operations to ensure sustainable revenue growth. Early-stage ventures, on the other hand, are primarily concerned with attracting customers and defining target markets. Their limited

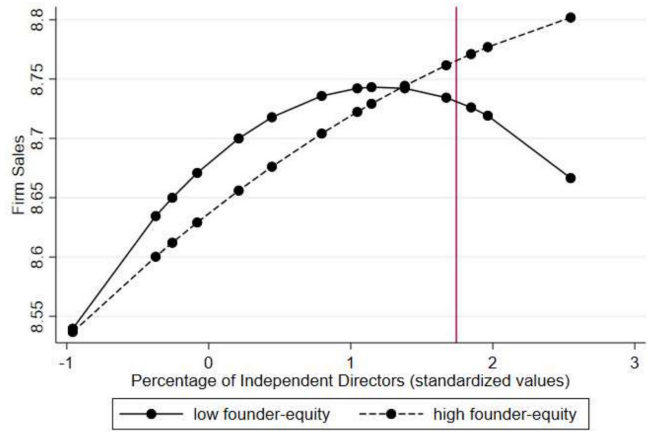

FIGURE 3 | Effect of the *Percentage of Independent Directors* on *Firm Sales* for ventures with low versus high *Founder Equity*.Low values of *Founder Equity* were calculated at one standard deviation below the mean; high values of *Founder Equity* correspond to the maximum value in the data, which equals roughly half a standard deviation above the mean. The solid, vertical line indicates the inflection point at 1.74 standardized values of the *Percentage of Independent Directors*. [Colour figure can be viewed at wileyonlinelibrary.com]

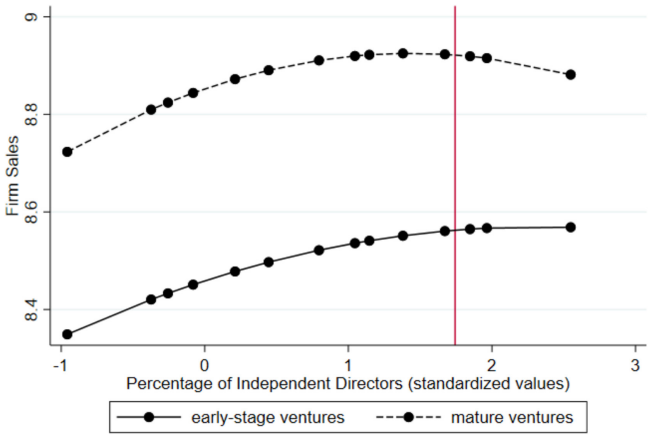

FIGURE 4 | Effect of the *Percentage of Independent Directors* on *Firm Sales* for *early-stage* versus *mature* ventures. High and low values of *Venture Age* were calculated at one standard deviation below or above the mean, respectively. The solid, vertical line indicates the inflection point at 1.74 standardized values of the *Percentage of Independent Directors*. [Colour figure can be viewed at wileyonlinelibrary.com]

market presence thus explains an overall lower level of absolute sales for early-stage ventures.

Importantly, the curves also differ in another respect. While sales performance for mature ventures peaks at standardized values of 1.37 of the *Percentage of Independent Directors* variable, early-stage ventures have constantly increasing sales in the observed data range. This runs counter to Hypothesis 4, which suggested that the curve for early-stage ventures would have a more negative slope at higher proportions of independent directors. The interpretation of this result is that higher venture age makes the negative effects of a larger *Percentage of Independent Directors* more pronounced while early-stage ventures (operationalized as <3 years) are less negatively affected by a loss of managerial control when the percentage of independent directors on their board is high. The results are statistically robust as the difference in predictive margins between mature and early-stage ventures is significant ($p<0.01$) at all data points of the explanatory variable, which suggests that venture age truly moderates the relationship between the percentage of independent directors and firm sales. We discuss this in the Discussion section.

5.1 | Robustness Tests

To further increase confidence in our results, we perform several robustness tests.

First, we conduct an instrumental variable regression to mitigate endogeneity concerns regarding the basic relationship between the percentage of independent directors and firm sales. One possible endogeneity concern, for example, could be that a new venture's percentage of independent directors may be determined by the venture's current or previous performance. As indicator variables, we use the following two external instruments: (1) the new venture's amount of *Relative Firm Sales* vis-à-vis the mean of firm sales in the municipality. Denmark is divided into a total of 98 municipalities, each identified by a three-digit code provided in our sample. This variable allows us to measure the sales performance of new ventures relative to other new ventures in their local community. (2) The yearly *Mean Number of Independent Directors* in all new ventures of the municipality. This variable not only addresses how common having independent board members on a new venture's board is within a particular local community but also captures the availability of independent board members in that municipality. Using the two indicator variables in 2SLS estimation using STATA's ivregress command, we see that the results for H1 remain unchanged vis-à-vis our primary regression model with the direction and significance of the coefficients for the percentage of independent directors and its squared term staying the same.

The results of the 2SLS estimation also support the validity and strength of our instruments and therefore give us confidence that our results are not biased by endogeneity issues. The first-stage F-statistic is robust at above 10 for both the *Percentage of Independent Directors* (109.16, $p<0.000$) and the *Percentage of Independent Directors*^{2} (12.86, $p<0.000$) (Cragg and Donald 1993; Stock and Yogo 2005). A test of overidentifying restrictions shows significant results ($\chi^2(2)=54.48$, $p<0.000$) and therefore additionally confirms that our instruments are valid and that our model is specified correctly. Altogether, these results suggest that any potential bias due to possible endogeneity is limited.[6]

Furthermore, we test the robustness of our results with regard to industry effects by substituting our dummy variables for the three firm types in our sample (A/S, ApS, and IVS) by industry dummy variables. As industry controls, we used the 21 sections of NACE codes (A–U). NACE codes ("Statistical Classification of Economic Activities in the European Community") are the standard industry classification system in the European Union. Using these control variables does not change the results of our regression models.

6 | Discussion

The results of our panel regression analysis confirm that an inverted U-shaped relationship exists between the percentage of independent directors and new venture sales, so that sales performance is maximized at moderate proportions of independent director representation. We theorize that the reason for this nonlinear effect lies in the trade-off between gains of resources and the costs of sacrificing managerial control when appointing independent directors. Independent directors provide access to important human, social, and economic resources, thereby reducing the venture firm's external uncertainty and helping it to manage critical interdependencies (e.g., Certo et al. 2001; Hillman and Dalziel 2003; Kor and Sundaramurthy 2009; Pollock et al. 2010; Vandenbroucke et al. 2016). This will initially boost performance. However, the performance effect of appointing independent directors is determined by the overall balance between benefits and costs. Regarding costs, larger percentages of independent directors will shift managerial power away from the CEO, resulting in greater, and accelerating, CEO motivational loss and increased risk of CEO–board conflicts. Under the assumption that the resource benefits contributed by independent directors increase linearly, such accelerating costs will drive the hypothesized inverted U-shaped relationship between the proportion of independent directors and performance.

As our theorizing centers on psychological and social factors influencing motivation and conflicts, we hypothesized that a CEO's founder status, founder equity, and venture age will moderate the inverted U-shaped relationship. We argued that Founder-CEOs should be more sensitive to a loss of control, given their emotional attachment to the venture. However, the test of a moderating effect of CEO's founder status was insignificant. A plausible explanation for the lack of support lies in founder-CEOs having more diverse entrepreneurial motives and exit strategies than we initially assumed. Some entrepreneurs may have exit strategies centered on financial harvest, while others have more long-term, stewardship-oriented motives related to the venture (DeTienne et al. 2015). Our argument about founder-CEOs having an emotional investment in the venture applies to the latter group, less so to the first.

With regard to founder equity, we find support for our theoretical conjecture that CEOs are more encapsulated against the negative effects of high percentages of independent directors when founders jointly hold larger equity stakes. This creates stability, which makes CEOs less negatively impacted by higher proportions of independent directors. In fact, the stability seems to be so great that the performance curve for high levels of founder equity does not dip at all but instead increases more or less linearly. We infer from this that the effect of high founder equity is not only to reduce the acceleration of the costs but also to eliminate acceleration altogether, resulting in a (close to) linear relationship between the proportion of independent directors and performance. Our theorized mechanism is thus stronger than expected.

Our test of a moderation by venture age led to significant results that, however, run counter to our expectation that mature ventures should be less negatively affected by higher percentages of independent directors. We believe that the explanation for this is that CEOs of early-stage ventures are more inclined to tolerate a loss of autonomy because they have a greater need for resources. Early-stage ventures, that is, those in the initial phases of their development, are vulnerable to the liability of newness (Kor and Misangyi 2008), which necessitates the attraction of critical resources from the outside (Baum and Oliver 1991; Shane and Stuart 2002). In order to secure those crucial outside resources, CEOs of young venture firms may be more likely to accept a sharing of control (Wasserman 2017). This acceptance will reduce the costs associated with CEO–board conflicts and CEO motivational loss, which is why the marginal costs of a higher percentage of independent directors are lower for early-stage ventures. As a result, we see in our data that firm sales peak and then decline for mature ventures, while sales for early-stage ventures continuously increase. In addition to these observed differences in the curves' shape, we found that the predictive margins for mature ventures were significantly higher than for early-stage ventures over the whole data range of our explanatory variable—not only at higher proportions of independent directors, which was our theoretical focus. This suggests that venture age also impacts firm sales in ways not related to board composition, suggesting that more mature ventures capitalize on a greater market presence (witnessed by significant direct effects of venture age in Table 2). We thus hold the different shapes to be evidence of the moderating effects of venture age while the different levels are evidence of the direct effects of age.

The results of our study suggest important extensions to past studies of new venture boards in the resource dependence literature. First, we provide a new and unique empirical analysis of the effects of independent directors on new venture performance building on a large-scale dataset. Where studies hitherto have relied on IPO performance or have drawn on smaller datasets from selected industries, we provide results from a comprehensive dataset of new ventures with independent directors in one country. Second, we extend the current theory on the role of independent directors on venture boards. While past research emphasizes how resource interdependencies drive entrepreneurial firms to form boards to access critical resources, these works largely overlook the fact that the formation of such ties also creates costs, such as new venture CEOs having to give up control in exchange for needed resources. By focusing solely on boards' resource-provisioning role (Hillman et al. 2009), prior studies tend to assume a "the more, the better" approach (e.g., Certo et al. 2001; Paik and Woo 2017; Vandenbroucke et al. 2016), implying that increasing the proportion of independent directors generally creates cumulative benefits in terms of value added to the venture. We take departure in studies exploring the nature and consequences of conflicts in investor–entrepreneur interactions (Appelhoff et al. 2016; Brettel et al. 2013; Collewaert and Sapienza 2016; Higashide and Birley 2002) and show that not only investors but also a large proportion of independent directors on new venture boards can have negative effects. Hence, our results support a theoretical emphasis on the exchange processes and trade-offs involved in the appointment of independent directors, which, we believe, is the most important theoretical contribution of our study.

Our study also has valuable practical implications. For instance, contrary to the recommendations of policymakers and many prior works, our results show that adding independent directors to the boards of new ventures does not always improve new venture performance. Founders of new ventures should be aware

of the trade-off between the benefits of obtaining additional resources and the costs of sacrificing managerial control. This entails, on the one hand, an awareness of any potential conflicts that may originate from independent directors' personal aims and interests in the new venture, while, on the other hand, founders of new ventures need to be conscious of their own motivations and how these could potentially be influenced by a (perceived) loss of autonomy.

Future research can not only productively address some of this study's limitations but may also build on our results. Our theorizing predicts venture performance based on the balance between resource provisioning and the costs of appointing an increasing percentage of independent directors. We focus on determining the functional form of the independent director–venture performance relationship and on theorizing when and how the cost–benefit balance begins to shift; we do not empirically test the underlying causal mechanisms. This is largely explained by the large-scale registry-based data we use: Although our dataset enables robust longitudinal analysis of firm performance across a representative population of venture firms, it prevents us from capturing some of the microlevel processes included in our theory. It would be fruitful to measure the different types of costs—CEO perceptions of autonomy loss, CEO–board conflict, and group behaviors—that venture firms incur when they increase their percentage of independent directors. Scholars could also explore whether and how the types of resources contributed by independent directors differently influence the trade-off between resource provisioning and costs. Venture firms differ in their resource needs, and some resources (e.g., human, social, or financial) may exert greater pressure on firms to form outside board ties (Katila et al. 2008). This suggests that the cost–benefit balance will shift with the varying resource needs of the focal firm.

Acknowledgements

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from Statistics Denmark. Restrictions apply to the availability of these data, which were used under license by Statistics Denmark.

Endnotes

[1] In this paper, we use the term independent directors to refer to board members who (a) are external to the new venture, that is, outside directors, and (b) do not hold equity stakes in the venture. Independent directors have no relationship with the focal new venture other than their directorship (e.g., Srinivasan 2005); thus, they are neither founders, investors, nor employees. Many studies of venture boards include investor-directors. These are typically referred to as outside directors, in that they, prior to investing in the new venture, have no relationship with the venture. However, they are, due to their investment ties, not independent. When discussing studies that include such outside directors, we use the term "outside directors."

[2] "Share-owned" does not necessarily mean publicly listed; indeed, the majority of share-owned firms are unlisted.

[3] Three types of firms are relevant for our study: A/S, ApS, and IVS. A/S firms have a capital requirement of 250,000 DKK and are mandated to form a board with at least three directors. ApS firms have a capital requirement of 50,000 DKK; they are not required to establish a board of directors. IVS firms have a capital requirement of 1 DKK and do not need to form a board. As explained in the section on the Danish context, it has become common in Denmark for these firms to establish a board of directors, regardless of whether they are legally required to do so.

[4] ISIC is the International Standard Industrial Classification of All Economic Activities.

[5] To build our dataset and construct our variables, it is essential to identify founders and outside investors for each firm. This is difficult, because the ownership of limited liability companies (LLCs) is often organized through multiple layers of holding companies, with the aim of diversifying risk and reducing taxation. Therefore, we use an iterative process tracing equity and voting rights through several levels of ownership to identify a new venture's ultimate owners, that is, those individuals or other legal entities that have no further owners. In the Danish context, funds, government institutions, cooperatives, and foreign corporations are classified as such self-contained entities and therefore can be considered as final owners. LLCs and L/Ps, by contrast, have identifiable—and thus, ultimate—owners. These firms are required to disclose all direct owners (individuals or other firms controlling over 5% of equity or voting rights) and their respective ownership stakes. Ownership is provided in the database in intervals: 5%–10%, 10%–15%, 15%–20%, 20%–25%, 25%–33%, 33%–50%, and so on. For our measure of ownership, we use the lower boundary and calibrate shares to add up to 100%. We iterate through all levels of ownership, using the available information recursively until we identify the ultimate owners of the focal new venture firm (level zero firm). For a small subset of LLCs, the ultimate owners cannot be identified, because ownership is highly dispersed (e.g., publicly owned firms). When these firms appear as ultimate owners in our iteration process, they are labeled as "unidentified owner." We also do this for firms with unidentified control (less than 50% identified) and firms appearing in the 10th level of iterated ownership. This process covers up to 10 levels of intermediate ownership, although for most firms, ultimate owners are identified within four levels. In addition to identifying the ultimate owners of all of the firms in our sample, we carefully observe the corporations through which ownership passes at each level. This is important because not all newly established LLCs are truly organic or independently founded new ventures. Rather, a new LLC could also be a subsidiary of an existing enterprise. To avoid the presence of such cases in our sample, we exclude all new ventures for which, at the time of their establishment, any iteration of the identification process of ultimate ownership passes through a corporation with more than five employees.

[6] Testing our full models, including interactions, would require multiple instruments for both the single and squared term of the *Percentage of Independent Directors* as well as their interactions with each of the moderating variables. Given the difficulty of identifying enough sufficiently strong, valid instruments for these many terms and the desire to avoid the bias inherent in using too many instruments, we investigate potential endogeneity bias in our baseline model containing the *Percentage of Independent Directors* variables and moderating variables but not their interactions (Gopal and Koka 2012; Hoetker and Mellewigt 2009).

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