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# The Double-Edged Sword of Entrepreneurial Orientation: A Configurational Perspective on Failure in Newly Public Firms

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**Abstract**

This study draws on the notion of entrepreneurial orientation-as-experimentation to investigate the relationship between entrepreneurial orientation (EO) and firm failure. For the context of newly public firms after their initial public offering, we hypothesize that EO reduces firm failure particularly in specific configurations of EO, working capital efficiency, and technological turbulence. In a sample of 2578 firms that went public between 1997 and 2018, we find support for this configurational perspective. We contribute to the entrepreneurship literature by showing that the relationship between EO and firm failure needs to be understood in the context of organizational and environmental factors.

**Keywords**

entrepreneurial orientation, firm failure, configurational approach, initial public offerings, computer-aided text analysis

## Introduction

Entrepreneurship research has gathered abundant evidence for the positive effect of entrepreneurial orientation (EO) on performance, innovation, and other organizational outcomes (e.g., Rauch et al., 2009). However, few studies indicate the exploratory elements of EO which increase the variance of outcomes and, in turn, the risk of firm failure (Wiklund & Shepherd, 2011). Following such an "EO-as-experimentation" perspective (Wiklund & Shepherd, 2011), EO has metaphorically been described as a double-edged sword: it enables growth opportunities while increasing firms' risk of failure (Mousa & Wales, 2012).

However, we still have a limited understanding of the specific configurations of factors that determine whether the opportunity-enabling or the failure-enhancing edge of EO prevails. While

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configurational analyses are not new to the field (e.g., Wiklund & Shepherd, 2005), related studies focus on performance outcomes. Such a focus might underestimate the potential downsides of engaging with EO (Wiklund & Shepherd, 2011). To overcome these limitations, we apply a configurational perspective and investigate the relationship between EO and firm failure in a particularly demanding environment—namely, in newly public firms after their initial public offering (IPO). Newly public firms face pressure from novel challenges and a mandate for growth—they also exhibit long-term underperformance (Certo et al., 2009). As a result, a high share of firms delist within the first years after their IPO (Feng et al., 2020; Gounopoulos & Pham, 2018). Newly public firms, however, also receive substantial resource infusions which enable them to use their resource-intensive EO (Mousa & Wales, 2012).

Building on the resource-based view, we consider EO as a dynamic capability that allows firms to engage in new entry initiatives (Wales et al., 2021). We argue that the way in which this capability affects the likelihood of firm failure is contingent upon the specific resource allocation approach of the firm, reflected in its working capital efficiency. While prior research suggests that the general availability of financial resources allows firms to exploit the opportunities detected through their EO (Wiklund & Shepherd, 2005), a misallocation of such resources might also have detrimental effects (Mishina et al., 2004). Such misallocations can be particularly problematic in times of higher organizational vulnerability caused by the transformational changes related to an IPO (Fischer & Pollock, 2004). In this study, we hence focus on the ways in which firms high in EO allocate their resources and analyze the contingent role of post-IPO working capital efficiency in the EO–failure relationship. With this focus on resource allocation, our approach differs from previous studies that explore the direct relationship between EO and the financial resources gained during the IPO (e.g., Mousa et al., 2015). Moreover, the impact of the resource allocation on the EO–failure relationship is likely shaped by environmental factors (Kraatz & Zajac, 2001). Firms high in EO facing technological turbulence are challenged to adapt quickly, which exposes them to stress and risk (March, 1991; Wiklund & Shepherd, 2005, 2011). However, technological turbulence might also disclose new opportunities (Saboo & Grewal, 2013). As keeping pace with technological advances requires firms to venture, technological turbulence is relevant when analyzing working capital efficiency and EO. Accordingly, we explore how technological turbulence shapes the impact of working capital efficiency on the EO–failure relationship. Against this backdrop, we develop a perspective on the EO–failure relationship in the IPO context, taking into account configurations of organizational and environmental factors. We aim to answer three research questions: (a) *How does EO relate to firm failure in newly public firms?*; (b) *How does the level of working capital efficiency moderate the relationship between EO and firm failure in newly public firms?;* (c) *How does technological turbulence moderate the contingent role of working capital efficiency?* To answer these questions, we draw on a multisource panel dataset of 2578 firms that went public between 1997 and 2018. We use computer-aided text analysis (CATA) of a unique set of IPO prospectuses to measure firms' level of EO (McKenny et al., 2018a) and examine how different configurations of EO, working capital efficiency, and technological turbulence are associated with the likelihood of firm failure.

This study contributes to the entrepreneurship and strategic management literature. First, extending earlier findings on the failure-preventing effect of EO in the context of IPOs (Feng et al., 2020; Mousa & Wales, 2012), we advance theory by identifying factors which influence the outcome variance generated by EO and, through this, firms' likelihood of failure. As EO decreases the likelihood of firm failure, we find support for the opportunity-enabling effect of EO and therefore introduce the IPO context as a boundary condition to the EO-as-experimentation perspective. This effect is strengthened in the presence of higher working capital efficiency. In turn, if firms with lower working capital efficiency face high technological turbulence, EO even increases the likelihood of failure. Thus, the effect of EO on failure seems to be dependent on specific configurations. Second, our study also has theoretical implications for considering EO as a dynamic capability (Wales et al., 2021). In our post-hoc analysis that captures EO on an annual basis instead of at the IPO, the relation between EO and firm failure becomes unaffected by working capital efficiency and technological turbulence. This indicates that the farther newly public firms move away from the IPO event, the lower are the benefits of high working capital efficiency. These findings suggest a potential learning process within newly public firms, meaning the effect of EO on failure might change over time. Third, our study also offers implications for the IPO literature. Prior research investigating IPO success has focused on the effects of quality signals (e.g., Gounopoulos & Pham, 2018) or on social capital and power (e.g., Fischer & Pollock, 2004). Complementing these insights, we underline the importance of configurational perspectives on factors determining the failure of firms after their IPO. Finally, managers of newly public firms can learn about the detrimental effects of engaging in entrepreneurial behavior in specific configurations—they need to be cautious about the adverse impacts of lower working capital efficiency. Investors, in turn, should monitor both firms' working capital and technological turbulence to inform their strategic decisions.

## Theoretical Background

### The Nature of Entrepreneurial Orientation

Grounded in Miller's (1983) work, EO has emerged as a key concept in entrepreneurship research (e.g., Covin & Wales, 2019). Entrepreneurially oriented firms are guided by "processes, practices and decision-making activities that lead to new entry" (Lumpkin & Dess, 1996, p. 136). Miller (1983) conceptualizes EO as a reflective, unidimensional firm-level construct with three subdimensions—risk-taking, innovativeness, and proactiveness. The dimension of risk-taking describes firms' willingness "to make large and risky resource commitments—i.e., those which have a reasonable chance of costly failure" (Miller & Friesen, 1978, p. 923). Innovativeness refers to "a firm's tendency to engage in and support new ideas, novelty, experimentation, and creative processes that may result in new products, services, or technological processes" (Lumpkin & Dess, 1996, p. 142). Proactiveness reflects "behavior in relation to participation in emerging industries, continuous search for market opportunities and experimentation with potential responses to changing environmental trends" (Venkatraman, 1989, p. 949).

Wales et al. (2020) suggest three levels at which EO might manifest: in a top management style, in an organizational configuration, or in new entry initiatives. While the latter denotes the actual behavior of venturing into new markets, the former two relate to goals, decision-making, and organizational processes that support such behavior. As such, EO can be seen as a strategic orientation that unfolds its effect directly or indirectly through new market entry (Wales et al., 2015). A dominant theoretical perspective on EO is the resource-based view (RBV) (Barney, 1991). It suggests that EO allows firms to achieve resource combinations that fulfill the criteria of being valuable, rare, costly to imitate, and organized (VRIO) (Barney & Mackey, 2018). Given the notion that EO helps firms reconfigure existing resources and "identif[y] new and better ways of achieving performance and growth," Wales et al. (2021, p. 571) propose that EO can be regarded as a dynamic capability (cf. Eisenhardt & Martin, 2000; Kreiser, 2011). Hence, EO creates value as a capability that itself fulfills the VRIO criteria (Wales et al., 2013). While such a view pertains to specific processes and routines as part of an organizational configuration (cf. Lee et al., 2001), it should also be manifest in the top management style (Wales et al., 2021). As Wales et al. (2020, p. 645) note, this "[o]rganizational configuration draws upon top management style, which helps shape how organizational elements are configured." Thus, a dynamic capabilities view considers EO a strategic orientation that corresponds to a specific, value-creating organizational configuration while emphasizing that EO helps firms dynamically configure resources to enable repeated venturing. Such emphasis is particularly appropriate when firms face transformational changes, as is the case in the post-IPO context. Based on the RBV (Barney, 1991) and its extension, the dynamic capabilities view (Teece, 2007), EO is expected to influence firm performance positively. In view of the role performance plays for firm survival, this theoretical perspective would also predict that EO lowers firms' risk of failure. Previous research refers to this reasoning more generally as the EO-as-advantage perspective (Wiklund & Shepherd, 2011).

In contrast, to discover those resource combinations most suited to exploit new entry opportunities, experimenting is necessary (Wales et al., 2021). Leveraging the dynamic capability of EO can hence also turn into a costly endeavor that does not result in the desired performance gains. Such considerations are summarized under the EO-as-experimentation perspective (Wiklund & Shepherd, 2011), which builds on exploration and exploitation in organizational learning theory (March, 1991). Whereas the EO-as-advantage perspective would predict a performance-mean-enhancing effect, the EO-as-experimentation perspective rather suggests a performance-variance-enhancing effect (Patel et al., 2015; Wiklund & Shepherd, 2011). More specifically, while experimentation and the pursuit of uncertain projects offer the chance of high returns, they also pose a risk to firms' survival in case of failure. As firms face higher variance of outcomes with increasing EO, firm failure might become more likely (Wiklund & Shepherd, 2011). The experimenting enabled by the dynamic capability of EO thus also has a dark side—hence, the double-edged sword reputation (Mousa & Wales, 2012). While prior research finds support for the EO-as-experimentation perspective, our knowledge of how firms can effectively manage the ensuing variance in outcomes remains limited (Patel et al., 2015; Wiklund & Shepherd, 2011). We address this gap as we investigate configurations of EO and organizational and environmental factors in the IPO context, in which firms have received large cash infusions. Such resource munificence allows firms to experiment while compensating for the resource-consuming edge of EO. Consequently, this context presents a boundary condition for the EO-as-experimentation perspective.

### *The Importance of a Configurational Approach to Entrepreneurial Orientation*

Based on the notion of EO-as-experimentation, we analyze the factors that further delineate the configurations under which EO increases or decreases the likelihood of firm failure. While researchers have begun to investigate the EO–performance relationship with a configurational approach (e.g., Wiklund & Shepherd, 2005), a differentiated understanding of the link between EO and failure could offer essential insights for firms engaging in entrepreneurial behavior (Mousa & Wales, 2012). We argue that firms' resource allocation approach and the degree of technological turbulence create configurations that considerably shape the EO–failure relationship.

Complementing prior research suggesting that the availability of financial resources enables entrepreneurial firms to pursue their agenda of experimenting, exploring, and innovating (Miller, 1983; Wiklund & Shepherd, 2005), we shift focus to the allocation of resources within the firm. In view of the double-edged sword character of EO, the selection of an appropriate resource allocation approach is not a trivial task. Entrepreneurially oriented firms might use available resources either to strengthen internal structures and processes or to enable increased market exploration (cf. Bradley et al., 2011b; Stevenson & Gumpert, 1985). While the former indicates a more conservative stance towards resource use, the latter implies higher aggressiveness in venturing (Fombrun & Ginsberg, 1990; Williams & Lee, 2009). In line with previous research (Bradley et al., 2011a; Mishina et al., 2004), we argue that the propensity towards one or the other approach is reflected in firms' working capital. Working capital denotes the difference between current assets and current liabilities, and therefore "measures the net resources the organization has tied up in current or operating assets (...)" (Moses, 1992, p. 43). Firms with high amounts of working capital are considered to have less efficient working capital structures, which indicates that firms' day-to-day operations are rather costly (Mousa & Reed, 2013). However, less efficient working capital structures might also enable firms to build buffers to protect current business and operations (Mishina et al., 2004; Tan & Peng, 2003). Against this backdrop, finding the appropriate degree of working capital efficiency can create tensions: capital bound in operations might not be easily redeployed (Mousa & Reed, 2013; Tan & Peng, 2003) and might already be embedded within firms' routines and tasks (Love & Nohria, 2005).

In addition, we reason that the interaction between EO and working capital efficiency is dependent on the degree of technological turbulence a firm faces. While technological turbulence potentially offers a large variety of opportunities (Wiklund & Shepherd, 2005), the uncertainty associated with such turbulence might also pose considerable challenges (Staw et al., 1981). Experimenting and learning, but also buffering of existing operations, become more prevalent in technologically turbulent environments; therefore, the role of working capital efficiency can be assumed to change as well. As such, the extent to which a given resource allocation approach supports the entrepreneurially oriented goals, decision-making, and organizational processes within the firm should vary with the degree of technological turbulence. Hence, we include technological turbulence as a moderator of the effect working capital efficiency has on the EO–failure relationship. In conclusion, our configurational analysis goes beyond previous investigations of the general association between EO and failure. We observe this relationship in newly public firms—a context that, due to its resource munificence, represents a boundary condition for the EO-as-experimentation perspective. Considering working capital efficiency and technological turbulence as configurations that alter the EO–failure relationship, we provide a nuanced understanding of how entrepreneurial, newly public firms can effectively manage the variance of venturing outcomes. Figure 1 illustrates our research model.

## Hypotheses

### *The Relationship between Entrepreneurial Orientation and Failure*

We reason that EO essentially reflects a dynamic capability that helps firms reconfigure their resources to find new paths to performance and growth (Wales et al., 2021). In general, the EO-as-experimentation perspective suggests that higher levels of EO increase the likelihood of firm failure (Wiklund & Shepherd, 2011). The stronger goals, decision-making, and organizational processes are geared towards entrepreneurial behavior, the more intensively firms will pursue new market entry, thereby increasing the variance of venturing outcomes and making failure more likely. However, for the context of IPOs, we argue that EO is related to a lower likelihood of failure as newly public firms differ from other firms. While they may achieve competitive advantage through their IPO, they also face several challenges: they "suffer a liability of market newness" which entails that they are confronted with rising external pressure, stricter operational scrutiny,

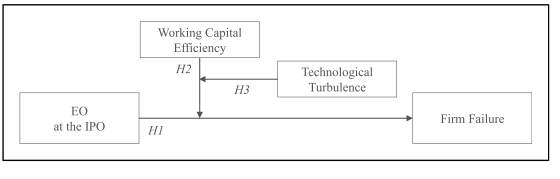


**Figure 1.** Research model.

and new reporting requirements (Certo et al., 2009, p. 1341). Research shows that in the long run, newly public firms underperform compared to their peers (Loughran & Ritter, 1995) and eventually exhibit an increased risk of firm failure. Under these circumstances, adherence to and development of a strategic orientation such as EO presents a valuable coping approach (e.g., Mousa & Wales, 2012). We see two reasons for this claim. First, the resource-exhausting effects of EO are mitigated by the significant cash infusions from IPO proceeds (Feng et al., 2020; Mousa & Wales, 2012). Mousa and Wales (2012, p. 317) suggest that in such "munificent contexts," engaging in risky endeavors and potentially costly failures can be better compensated for by firms. In contrast, firms engaging in risky endeavors without having such cash infusions increase their likelihood of failure. As such, the "sudden" cash infusion generated by an IPO enables firms to commit fully to the potentially costly use of the dynamic capability of EO.

Second, as firms prepare their IPO, they significantly need to adapt structures and processes to meet the requirements for public firms. As Fischer and Pollock (2004) note, such a transformational change requires new learning in a number of domains. Therefore, newly public firms should be more flexible and adaptable (Mousa et al., 2013), which helps them learn how to better select and seize the opportunities detected through their EO. Such development might be crucial to maintaining the strong competitive momentum the firms built before the IPO (Feng et al., 2020). As a dynamic capability, EO in newly public firms still facilitates new entry initiatives, but continuous learning might decrease the likelihood of negative outcomes. Indeed, Wales et al. (2021, p. 571) state that "with each new entry, information is transferred back to the firm which enables it to learn, refine, pivot, and develop new resources with greater potential to be valuable, rare, and inimitable." This process positively shapes the variance of outcomes, making the failure of newly public firms less likely. In sum, we argue that the specific context of IPOs creates a boundary condition for the EO-as-experimentation view: newly public firms are not only able to compensate for the resource-exhausting effect of EO, but also well equipped to learn quickly how to focus entrepreneurial efforts after the IPO, thereby skewing the distribution of outcomes towards the positive end (cf. Wiklund & Shepherd, 2011) and reducing the risk of firm failure. Hence:

***Hypothesis 1:*** *EO at the IPO is negatively associated with the failure of newly public firms.*

### The Moderating Role of Working Capital Efficiency

We reason that newly public firms' post-IPO resource allocation approach, reflected in their working capital efficiency, influences the EO–failure relationship. As the IPO re-exposes them to a liability of newness (Fischer & Pollock, 2004), newly public firms' capacity to harness their EO is particularly vulnerable to resource misallocations. We argue that in the case of newly public firms, a relative propensity towards higher post-IPO working capital efficiency (i.e., low amounts of working capital) amplifies the failure-preventing effect of EO at the IPO. It is important to note that such propensity does not assume the complete absence of working capital. Rather, it implies a lower degree of working capital relative to competitors.

In line with their EO, newly public firms need to ensure that the chosen resource allocation approach supports their goals to identify and exploit new opportunities. Mishina et al. (2004, p. 1187) note that a resource allocation approach associated with lower working capital efficiency implies "that the firm has excess resources that are not being used for productive purposes, and is instead keeping cash and other current assets at a higher level than is necessary." Accordingly, increasing working capital efficiency frees up resources that firms can apply to other (more productive) purposes (cf. Nason & Wiklund, 2018). Newly public firms with goals and processes aligned with their EO can assign such resources to venturing activities. Consistent with the resource-based theory (Penrose, 2009) and the dynamic capabilities view (Teece, 2007), we reason that resources not bound in operations can be used to better capitalize on the opportunities newly public firms detect through their EO (Bradley et al., 2011b; Penrose, 2009). In fact, when firms struggle to leverage opportunities, it can put them at a disadvantage with their competitors and eventually lead to failure. Even if such firms pursue goals supporting entrepreneurial behavior, they may have too few resources to implement those goals. From that perspective, higher working capital efficiency can help firms better accomplish what Penrose has referred to as the "entrepreneurial ambition" (Penrose, 2009, p. 35; Mishina et al., 2004). For newly public firms, we hence argue that higher post-IPO working capital efficiency supports the failure-preventing effect of EO. While in general, higher working capital efficiency entails the acceptance of short-term losses for the benefit of future revenues (Bradley et al., 2011a), newly public firms are well equipped to deal with such losses in view of the recent cash infusion. This is different for private firms or firms publicly listed for a longer period of time, which act entrepreneurially but lack such cash infusions. Where resource munificence is not given, a stronger focus on resource conservation might be warranted. In the context of newly public firms, however, matching EO with a more efficient working capital approach helps better capitalize on detected opportunities, boost venturing efforts, and hence reduce the likelihood of failure.

This effect is less pronounced in newly public firms with lower levels of EO which pursue the exploration of opportunities less intensively. With higher degrees of EO at the IPO, however, such firms increasingly engage in explorative and riskier initiatives, which renders corresponding outcomes more uncertain (Wiklund & Shepherd, 2011). To fully harness the dynamic capability of EO and the learning entailed therein, entrepreneurial, newly public firms need to allocate relatively high amounts of resources to venturing purposes. Drawing on higher post-IPO working capital efficiency thus enables such firms to further skew the distribution of venturing outcomes to the positive end, which reduces the likelihood of failure. We hypothesize:

> ***Hypothesis 2:*** *The relationship between EO at the IPO and failure of newly public firms is moderated by post-IPO working capital efficiency, such that the negative relationship is stronger (i.e., more negative) when post-IPO working capital efficiency is higher.*

## *The Configuration of EO, Working Capital Efficiency, and Technological Turbulence*

We expect technological turbulence to have an ambivalent effect on the impact of working capital efficiency. With a higher working capital efficiency, newly public firms can better capitalize on multiple and varied opportunities and more flexibly adjust their investment focus if necessary (Bradley et al., 2011b). When technological turbulence is high, "opportunitites become abundant" (Wiklund & Shepherd, 2005, p. 77), and flexibility is particularly valuable for entrepreneurially oriented firms after their IPO when they encounter novel or changing technological demands. More frequent shifts in technological investments might also help such firms learn more quickly from failed initiatives (McGrath, 1999; Saboo & Grewal, 2013). The necessity to deal actively with high degrees of (technology-induced) uncertainty is especially pronounced for newly public firms: after the "organizational trauma" of the IPO, they quickly need to find ways to adjust to the new requirements of being public (Fischer & Pollock, 2004, p. 478). This is very important for firms high in EO, as their venturing activities expose them to even higher degrees of uncertainty. Accordingly, we argue that under higher technological turbulence, firms high in EO can better harness the benefits that high working capital efficiency provides after their IPO. Therefore, variances in entrepreneurial outcomes become more skewed to the positive end, and the likelihood of failure declines. In turn, newly public firms with a less pronounced EO conduct fewer explorative venturing activities, because their goals, decision-making, and processes are less geared towards entrepreneurial behavior. Thus, they may miss promising opportunities (Wiklund & Shepherd, 2011). The benefits that accrue under such conditions are hence limited if EO is lower.

We argue for a different effect when newly public firms exhibit less working capital efficiency. Such a resource allocation approach hinders firms to capitalize fully on the opportunities detected through their EO. Investment decisions towards venturing are more selective and require more time (Bradley et al., 2011b; Stevenson & Gumpert, 1985). However, when technological turbulence is high, firms might need to shift technology investments, discontinue some technology-related growth intiatives, or start new ones after their IPO (Saboo & Grewal, 2013). Hence, while firms with a lower working capital efficiency after their IPO appear to have an initial advantage in dealing with turbulent environments due to the buffers they have created in their operations, they fall behind as soon as more strategic, technology-related changes are required. The tendency towards resource conservation might even increase in response to the perceived threats of technological turbulence (cf. Sengul et al., 2019; Staw et al., 1981). Accordingly, resources deployed for venturing activities are further reduced, and newly public firms struggle more to leverage opportunities. As a result, the variance of outcomes grows, making firm failure more likely. In fact, the above reasoning suggests a configuration under which a low level of EO is more beneficial to newly public firms: when technological turbulence is higher and working capital efficiency is lower, implementing goals, decision-making, and processes to support entrepreneurial behavior results in venturing patterns that eventually increase the variance in outcomes to an extent in which the likelihood of failure increases. Put differently, the losses newly public firms can realize might be so large that the initial cash infusion is quickly exhausted. In sum, we expect that with increasing technological turbulence, firms with a higher working capital efficiency experience an increase in the failure-preventing effect of EO at the IPO, whereas firms with a lower working capital efficiency are more likely to fail. We hypothesize:

> ***Hypothesis 3:*** *There is a three-way interaction between EO at the IPO, technological turbulence, and post-IPO working capital efficiency: (a) the relationship between EO at the IPO and failure of newly public firms is more negative (failure-preventing) when technological turbulence is higher and working capital efficiency is higher, whereas (b) the relationship is positive (failure-enhancing) when technological turbulence is higher and working capital efficiency is lower.*

## Methodology

### Sample

Our sample consists of firms with IPOs in the U.S. market between 1997 and 2018. We gleaned information on the IPOs from the Thomson Reuters SDC Platinum New Issues database. In line with prior research, we investigate firm failures within a 5-year window after the IPO (Feng et al., 2020; Gounopoulos & Pham, 2018). We consequently track newly public firms for up to 5 years after their IPO, or till the end of 2019 (Fama & French, 2004). We correct mistakes in the IPO data as suggested by Loughran and Ritter (1995). We exclude small IPOs (proceeds below USD 1 million) as well as American Depository Receipts (ADRs), real estate investment trusts (REITs), unit offers, financial firms (SIC codes: 6000–6999), and public administration firms (SIC codes: 9000–9999) (Chadwick et al., 2016; Gounopoulos & Pham, 2018). We restrict our sample to firms for which no stock data is available before the issuance date and which issue "common shares", "ordinary shares", or "class A shares". We add accounting and financial data from Compustat and firm founding years from Ritter's website (Loughran & Ritter, 1995).

We construct our measure of EO through IPO prospectuses (filing type S-1) which we collected from the SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system and use CATA. Prior research relying on CATA largely uses annual reports (e.g., Boling et al., 2016) or shareholder letters (e.g., Kindermann et al., 2021), which are not available for privately held firms. Typically, the IPO prospectus is the first official document that contains reliable and accurate information on business model, strategy, or current state of the firms going public (Hanley & Hoberg, 2010). In general, text analysis is based on two theoretical assumptions: First, the Sapir-Whorf hypothesis states that the frequency with which a word occurs determines the direction and intensity of management's attention to a certain topic (Sapir, 1944; Whorf, 1956). Second, firm behavior is an outcome of management's attention, such that the frequent use of words related to EO is associated with the focus on EO (McKenny et al., 2018a). Matching all data sources, our final sample comprises an unbalanced panel of 2578 firms with 10,069 firm-year observations.

## *Measures*

*Dependent Variable.* To identify firm failure, we rely on data from the Center for Research in Security Prices (CRSP). We investigate the delisting codes provided for firms that involuntarily leave the stock market for negative delisting reasons (Chadwick et al., 2016): we classify a firm as failed if it is involuntarily liquidated (CRSP delisting codes: 400–499) or does not meet the exchange's requirements for being listed (CRSP delisting codes: 500–599). However, firms delisting due to the move to a different exchange (CRSP delisting codes: 501–520) or firms going private (CRSP delisting code: 573) are not classified as failed (Demers & Joos, 2007; Feng et al., 2020). In line with prior research, we explicitly do not classify as firm failure delistings due to mergers and acquisitions: firms going public may be motivated by the subsequent sale of the company, which does not qualify as a firm failure (Brau et al., 2006; Gounopoulos & Pham, 2018). Our sample of 2578 firms includes 273 firm failures (10.6%), which is in line with prior studies (Demers & Joos, 2007; Feng et al., 2020; Gounopoulos & Pham, 2018).

*Independent Variable.* To obtain our variable for EO at the IPO, we rely on a CATA-based approach and follow Miller's (1983) three-dimensional operationalization of EO consisting of risk-taking, innovativeness, and proactiveness. While CATA might capture manifestations of EO as a top management style communicated in written texts, related measurements still reflect EO as an organizational attribute (Wales et al., 2020). We use the CAT Scanner and the dictionaries provided by McKenny et al. (2018a). In line with adjacent research (Grühn et al., 2017; Wales et al., 2015; Wang et al., 2021), we follow a multi-step procedure to generate our measure of EO. We set up relative measures for the three subdimensions of EO to account for the document length and standardize each measure to 1000 words. To obtain the final measure of EO at the IPO, we sum the subdimensions and subtract the industry mean on a two-digit SIC level to correct for industry specifics such as firms from industries with a systematically higher level of EO. To minimize distortions through outliers, we winsorize at the 0.5% level on both tails.

*Moderating Variables.* We measure our moderating variable of post-IPO working capital efficiency as the difference in current assets and current liabilities (Mousa et al., 2013). We compute a relative measure that is comparable across industries (Campello, 2006; Kurt & Hulland, 2013). We calculate the difference between the firm's post-IPO working capital and the average post-IPO working capital in the industry and standardize this difference by the standard deviation of all firms' post-IPO working capital in the industry on a two-digit SIC level. Positive (negative) values indicate that firms exhibit relatively low (high) working capital efficiency. Our second moderating variable of technological turbulence captures the rate of technological advances in an industry, meaning that high technological turbulence is present in industries in which the percentage of companies' revenues allocated to research and development (R&D) is large (Saboo & Grewal, 2013). We measure technological turbulence as the average ratio of R&D expenditures to total sales of the firms in the same two-digit SIC level as the focal firm (Osborn & Baughn, 1990; Saboo & Grewal, 2013). We thus adjust R&D expenditure and sales for the specifics of firms operating in the same industry. We measure both moderating variables after the IPO and lag them by one year for each given firm-year observation to attenuate potential simultaneous causality (Hill et al., 2021). We winsorize both variables at the 0.5% level on both tails.

*Control Variables.* We control for effects on firm, IPO, and environmental level that may affect newly public firms' likelihood of failure. On the firm level, we account for the following: as larger and more profitable firms are less likely to fail (e.g., Ortiz-Villajos & Sotoca, 2018), we control for firm size measured as the logarithm of total assets and for firm profitability measured as return on assets. We control for financial leverage through the ratio of long-term leverage to total assets as highly leveraged firms are even more constrained and are more likely to fail (Demers & Joos, 2007). We control for R&D intensity and advertising intensity since firms with high R&D and advertising expenditures may be more likely to fail because of higher resource constraints and commitments (Segarra & Callejón, 2002). We substitute missing values for R&D or advertising expenditures by zero (Miller & Le Breton-Miller, 2011). We control for use of proceeds, as the intended use of funds impacts uncertainty ex ante and thus might affect firm failure (Leone et al., 2007). We measure the variable by counting the words in the use of proceeds section of the IPO prospectuses related to the specific purpose of growth, production, or financing (Wyatt, 2013) and subtract the industry mean on a two-digit SIC level. Higher numbers indicate a higher specificity of the intended usage of funds (Leone et al., 2007). We control for risk factors, as firms reporting higher risk face higher volatility of stock returns and trading volumes, which could influence firm failure (Kravet & Muslu, 2013). We measure a firm's risk position by using the total word count of the risk factors section of the IPO prospectuses and adjust it for the industry mean (e.g., Mousa & Reed, 2013). We control for CEO duality with a dummy variable (1 if the CEO is also chairman of the board; 0 if not), as such a corporate governance structure affects the value creation of entrepreneurially oriented firms (Keil et al., 2017). We control for high-tech firms as technological turbulence might affect the likelihood of post-IPO failure of high-versus low-tech firms differently. We classify firms as high-tech based on their four-digit SIC level (Ritter, 2022). On the IPO level, we control for the amount of IPO proceeds, as firms may be better positioned with more financial resources (Feng et al., 2020). We control for firm age at the IPO as firms with a longer history of being private are less likely to fail (Fama & French, 2004). We control for VC backing with a dummy variable (1 if the IPO is venture backed; 0 if not) as VC backing is positively related to firm survival (Khurshed, 2000). We control for underwriter reputation following Gounopoulos and Pham (2018) as companies backed by prestigious underwriters are less likely to fail (Carter et al., 1998). On the environmental level, we control for market competition as firms in competitive markets may exhibit a higher risk of failure (Demers & Joos, 2007). All control variables are lagged by one year for each given firm-year observation to reduce simultaneity issues, and continuous variables are winsorized at the 0.5% level on both tails to minimize the influence of outliers. We include year- and industry-fixed effects at the one-digit SIC level in all models.

## Results

Table 1 shows the descriptive statistics and correlations for our model. We follow the suggestions of Kalnins (2018) and do not find indications of multicollinearity. We estimate our hypotheses with Cox proportional hazards models (Feng et al., 2020; Gounopoulos & Pham, 2018). This

**Table 1.** Summary and Correlation Statistics.

| | | Min | Max | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Firm failure | 0 | 1 | 0.027 | 0.162 | 1.000 | | | | | | | | | | | | | | | | | |
| 2 | EO at the IPO | −4.548 | 5.873 | 0.035 | 1.649 | −0.004 | 1.000 | | | | | | | | | | | | | | | | |
| 3 | Working capital efficiency | −1.584 | 1.602 | 0.122 | 0.269 | −0.043 | 0.095 | 1.000 | | | | | | | | | | | | | | | |
| 4 | Tech. turbulence | 0 | 0.114 | 0.049 | 0.035 | −0.023 | −0.019 | −0.114 | 1.000 | | | | | | | | | | | | | | |
| 5 | Firm size | 0.179 | 9.651 | 5.309 | 1.511 | −0.095 | −0.183 | −0.069 | −0.299 | 1.000 | | | | | | | | | | | | | |
| 6 | Firm profitability | −4.602 | 0.401 | −0.207 | 0.497 | −0.247 | −0.101 | 0.059 | −0.274 | 0.410 | 1.000 | | | | | | | | | | | | |
| 7 | Financial leverage | 0 | 1.485 | 0.155 | 0.232 | 0.048 | −0.243 | −0.089 | −0.276 | 0.428 | 0.064 | 1.000 | | | | | | | | | | | |
| 8 | R&D intensity | 0 | 157 | 2.315 | 14.025 | 0.006 | 0.034 | −0.008 | 0.181 | −0.111 | −0.176 | −0.042 | 1.000 | | | | | | | | | | |
| 9 | Advertising intensity | 0 | 1.382 | 0.028 | 0.121 | 0.061 | 0.017 | 0.043 | 0.005 | −0.070 | 0.165 | −0.041 | 0.056 | 1.000 | | | | | | | | | |
| 10 | Use of proceeds | −26.578 | 32.221 | −0.068 | 10.952 | 0.048 | 0.309 | 0.069 | −0.025 | −0.251 | −0.106 | −0.196 | −0.000 | 0.038 | 1.000 | | | | | | | | |
| 11 | Risk factors | −11,878 | 17,156 | −290.510 | 5292.72 | −0.040 | −0.102 | −0.009 | 0.065 | 0.216 | 0.002 | 0.055 | 0.052 | 0.025 | −0.338 | 1.000 | | | | | | | |
| 12 | CEO duality | 0 | 1 | 0.484 | 0.500 | −0.004 | −0.052 | −0.002 | −0.116 | 0.057 | 0.089 | −0.005 | −0.065 | −0.004 | 0.009 | −0.048 | 1.000 | | | | | | |
| 13 | High-tech firm | 0 | 1 | 0.329 | 0.470 | 0.013 | 0.132 | −0.033 | 0.228 | −0.141 | −0.036 | −0.164 | −0.078 | −0.041 | 0.086 | −0.034 | 0.021 | 1.000 | | | | | |
| 14 | IPO proceeds | 7.100 | 2024.7 | 144.752 | 242.066 | −0.035 | −0.130 | −0.040 | −0.172 | 0.616 | 0.147 | 0.279 | −0.052 | −0.028 | −0.216 | 0.139 | 0.030 | −0.103 | 1.000 | | | | |
| 15 | Firm age at the IPO | 0 | 165 | 17.067 | 23.155 | −0.044 | −0.149 | −0.049 | −0.261 | 0.396 | 0.218 | 0.299 | −0.070 | −0.073 | −0.228 | −0.001 | −0.013 | −0.177 | 0.298 | 1.000 | | | |
| 16 | VC backing | 0 | 1 | 0.493 | 0.500 | −0.029 | 0.169 | 0.003 | 0.295 | −0.111 | −0.110 | −0.196 | 0.060 | 0.019 | 0.063 | 0.113 | −0.011 | 0.165 | −0.134 | −0.234 | 1.000 | | |
| 17 | Underwriter reputation | 0 | 1 | 0.678 | 0.467 | −0.007 | 0.072 | −0.014 | −0.161 | 0.316 | 0.111 | 0.119 | −0.120 | 0.025 | 0.073 | −0.155 | 0.049 | 0.093 | 0.220 | 0.100 | 0.018 | 1.000 | |
| 18 | Market competition | 0.656 | 0.987 | 0.949 | 0.047 | 0.004 | 0.003 | −0.080 | 0.519 | −0.160 | −0.169 | −0.125 | 0.087 | 0.026 | 0.019 | −0.018 | −0.024 | 0.221 | −0.059 | −0.253 | 0.184 | −0.045 | 1.000 |

*Notes:* $N$ = 10,069. Correlations greater than |.021| are significant at $p < .05$.

methodology has several advantages when analyzing firm failure: it is highly robust, and neither the hazard function nor the distribution of event dates needs to be specified (Kleinbaum & Klein, 2012). Moreover, it accounts for right-censoring, which arises through our restriction to a maximum of five post-IPO years and the end of our sample in 2019 (Kleinbaum & Klein, 2012). This methodology allows us to estimate the hazard ratio of firm failure. We use robust heteroscedasticity-consistent (Huber-White) standard errors and assess the goodness of fit through the log pseudolikelihood and Akaike's information criterion (AIC) (Kleinbaum & Klein, 2012).

Table 2 reports our results. In hypothesis 1, we argue that EO at the IPO is negatively associated with the failure of newly public firms. Our results in Model 2 (Table 2) support this notion ($\beta = -0.252$; p = .001). In terms of the hazard ratio, this implies that a one-standard-deviation increase in EO at the IPO decreases the risk of firm failure by 22.3% (= 100 * (1 - exp(-0.252))). Hypothesis 2 proposes a moderating effect of post-IPO working capital efficiency. Model 3 (Table 2) shows a statistically significant, positive interaction term between EO at the IPO and working capital efficiency ($\beta = 0.120$; p = .006). We interpret this result at low and high levels of the moderator (i.e., one standard deviation below and above the mean) (Figure 2). We find that the slope for high levels of working capital efficiency is different from zero ($\beta = -0.370$; $p < .001$), while the slope for low levels of working capital efficiency is not significant ($\beta = -0.085$; p = .268). Supporting hypothesis 2, we conclude that the negative association between EO at the IPO and firm failure is stronger when post-IPO working capital efficiency is higher.

Hypothesis 3 proposes a three-way interaction between *EO at the IPO*, *post-IPO working capital efficiency*, and *technological turbulence*. Model 4 (Table 2) shows a positive three-way interaction term ($\beta$ = 0.245; $p$ = .004). We plot this result in Figure 3 for the four possible combinations at low and high levels of *technological turbulence* and *working capital efficiency* (i.e., one standard deviation below and above the mean) (e.g., Engelen et al., 2014). We find significant differences between the slopes of "high technological turbulence/high working capital efficiency" and "high technological turbulence/low working capital efficiency" ($p$ = .001). Specifically, we find that at *high technological turbulence* and *high working capital efficiency*, the relationship between EO at the IPO and firm failure is negative ($\beta = -0.846$; $p < .001$) and more negative than for other configurations ($p$ = .009), supporting hypothesis 3a. In addition, we find that at *high technological turbulence* and *low working capital efficiency,* the relationship between EO at the IPO and firm failure is positive ($\beta$ = 0.423; $p$ = .083) and larger than for adjacent configurations (p = .077), supporting hypothesis 3b. In other words, the failure-preventing effect of high post-IPO working capital efficiency on the association between EO at the IPO and firm failure is amplified in environments with higher technological turbulence. In turn, we also find support for an enhanced risk of failure for newly public firms with a pronounced EO when post-IPO working capital efficiency is low and technological turbulence is high, which lends support to an EO-as-experimentation perspective.

## Supplemental Analyses

*Assessing Potential Endogeneity Issues.* Potential endogeneity-related biases may impede the identification of the effect EO at the IPO has on firm failure. We thus address concerns related to simultaneity, omitted variables, sample selection, and measurement error.

First, to attenuate simultaneity concerns, we measure the dependent variable in a time horizon of up to 5 years after the year of the IPO at which we measure the independent variable. In addition, we measure both moderating variables after the IPO and lag them by one year for each given firm-year observation and thus before the dependent variable, thereby mitigating the risk of simultaneity (Hill et al., 2021).

**Table 2.** Cox Proportional Hazards Models for Firm Failure.

| Variables | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| EO at the IPO | | −0.252*** | −0.248*** | −0.184* |
| | | (0.075) | (0.074) | (0.076) |
| Working capital (W. C.) efficiency | −0.183** | −0.167** | −0.172** | −0.394*** |
| | (0.061) | (0.061) | (0.057) | (0.112) |
| EO at the IPO × Working capital efficiency | | | 0.120** | 0.389*** |
| | | | (0.044) | (0.102) |
| Technological turbulence | −0.500*** | −0.536*** | −0.513*** | −0.561*** |
| | (0.140) | (0.138) | (0.140) | (0.139) |
| EO at the IPO × Tech. turbulence | | | | −0.028 |
| | | | | (0.077) |
| Working capital efficiency × Tech. turbulence | | | | −0.182* |
| | | | | (0.090) |
| EO at the IPO × W. C. efficiency × Tech. turb. | | | | 0.245** |
| | | | | (0.084) |
| Firm size | −0.471*** | −0.489*** | −0.480*** | −0.471*** |
| | (0.091) | (0.091) | (0.091) | (0.092) |
| Firm profitability | −0.326*** | −0.336*** | −0.339*** | −0.337*** |
| | (0.029) | (0.029) | (0.029) | (0.029) |
| Financial leverage | 0.277*** | 0.261*** | 0.263*** | 0.261*** |
| | (0.046) | (0.046) | (0.046) | (0.045) |
| R&D intensity | 0.006 | 0.003 | 0.002 | 0.008 |
| | (0.064) | (0.059) | (0.060) | (0.058) |
| Advertising intensity | 0.039 | 0.039 | 0.039 | 0.040 |
| | (0.038) | (0.038) | (0.037) | (0.037) |
| Use of proceeds | 0.055 | 0.089 | 0.095 | 0.094 |
| | (0.067) | (0.066) | (0.066) | (0.067) |
| Risk factors | 0.149 | 0.194 | 0.187 | 0.168 |
| | (0.113) | (0.114) | (0.114) | (0.115) |
| CEO duality | −0.072 | −0.095 | −0.097 | −0.102 |
| | (0.128) | (0.129) | (0.129) | (0.128) |

*(continued)*

**Table 2.** (continued)

| Variables | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| High-tech firm | −0.080 | −0.000 | 0.015 | 0.012 |
| | (0.161) | (0.166) | (0.166) | (0.166) |
| IPO proceeds | 0.077 | 0.091 | 0.095 | 0.084 |
| | (0.097) | (0.091) | (0.090) | (0.092) |
| Firm age at the IPO | −0.008 | −0.008 | −0.008 | −0.008 |
| | (0.004) | (0.004) | (0.004) | (0.004) |
| VC backing | −0.181 | −0.123 | −0.122 | −0.101 |
| | (0.137) | (0.138) | (0.138) | (0.138) |
| Underwriter reputation | −0.222 | −0.202 | −0.210 | −0.191 |
| | (0.150) | (0.152) | (0.151) | (0.152) |
| Market competition | 0.040 | 0.032 | 0.060 | 0.037 |
| | (0.092) | (0.091) | (0.099) | (0.093) |
| Firm-year observations | 10,069 | 10,069 | 10,069 | 10,069 |
| Number of IPO firms | 2578 | 2578 | 2578 | 2578 |
| Number of firm failures | 273 | 273 | 273 | 273 |
| Year effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Industry effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Log pseudolikelihood | −1830 | −1823 | −1821 | −1815 |
| AIC | 3745 | 3734 | 3731 | 3727 |

*Notes.* Robust standard errors in parentheses.
* $p < .05$, ** $p < .01$, *** $p < .001$.

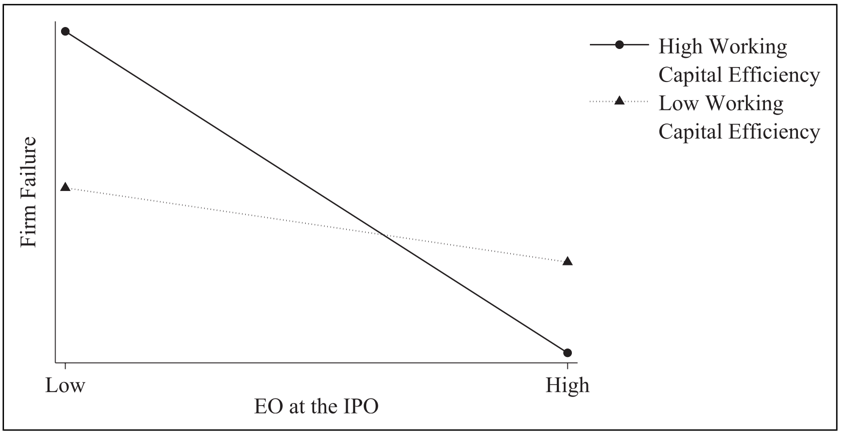


**Figure 2.** The relationship between EO at the IPO and firm failure moderated by working capital efficiency.

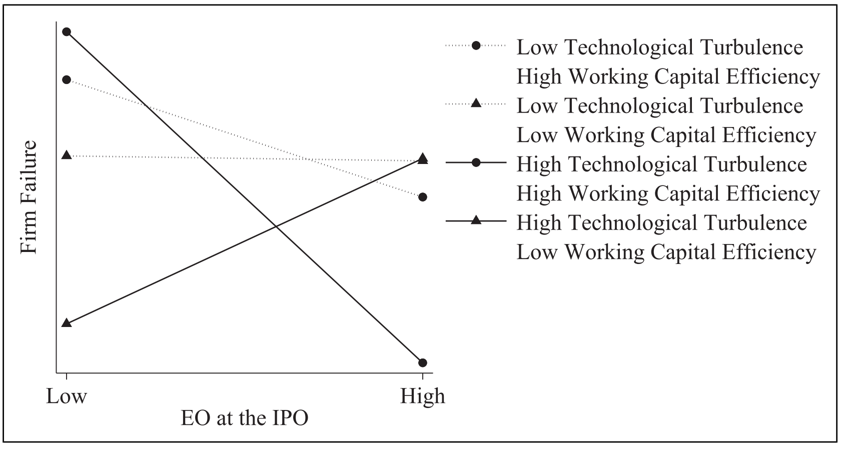


**Figure 3.** The relationship between EO at the IPO and firm failure moderated by working capital efficiency and technological turbulence.

Second, to address a potential bias due to omitted variables, we use the control function approach, which is best suited to control for unobserved variation in Cox models (Papies et al., 2017; Tchetgen et al., 2015). As instrument, we use the *prevalence of EO among industry peers* (cf. Germann et al., 2015), which we calculate by taking the sum of firm observations on the four-digit SIC level and excluding the focal firm. We estimate a first-stage regression by regressing EO at the IPO against all controls, moderators, and the instrument. Results show that the instrument is relevant and strong, as it significantly relates to EO at the IPO ($p < .001$; $R^2_{excl.\ instrument} = 0.17$; $R^2_{incl.instrument} = 0.27$; $F$ (1, 2154) = 210.63, $p < .001$) but can be assumed to be unrelated to the error term, that is firm failure beyond the effects of the focal firms' EO at the IPO and other controls in our study. Based on the first-stage regression, we calculate the predicted residuals, include these in our main model to control for unobserved variation, and approximate the correct standard errors using bootstrapping (Papies et al., 2017). Our conclusions remain robust (H1: $\beta = -0.72$, $p = .023$; H2: $\beta = 0.45$, $p < .001$; H3: $\beta = 0.30$, $p = .001$) and the predicted residuals are insignificant ($p = .127$), indicating that a potential bias due to omitted variables does not drive our main results.

Third, sample-selection-induced endogeneity is a potential concern since we only observe the dependent variable *firm failure* for firms that pursued an IPO, leading to truncation on the dependent variable (Certo et al., 2016). For instance, a firm with certain management characteristics, such as CEO overconfidence, might choose to pursue an IPO and also have a higher likelihood to fail. Since we cannot control for these unobserved factors, we use Heckman's (1979) model. We estimate a probit model for the decision of firms to pursue an IPO or remain private where the dummy variable equals 1 if the firm is publicly listed. We follow Wies and Moorman (2015) and estimate our first-stage model based on firm age as well as year- and industry-fixed effects. To do so, we extended the database by 130,819 firm-year observations of privately held firms using the Thomson Eikon's VentureXpert database. The total sample contains 340,599 firm-year observations. The results reveal that our overall model ($Pseudo\text{-}R2 = 0.08$; $p < .001$) and the variable of firm age are significant ($\beta = 0.02$, $p < .001$). Derived from the probit model, we compute the inverse Mills ratio and include it in our main model. Model 1 (Table 3) shows that the inverse Mills ratio is not significant ($p = .236$) and that all conclusions are unchanged. Thus, we infer that our main analyses are not unduly affected by sample-selection-induced endogeneity.

Fourth, measurement error is a potential endogeneity concern which relates especially to *EO at the IPO* measured using CATA. We address this concern in multiple ways. We check the consistency of our EO variable by computing correlations between the innovativeness subdimension and the intensity of R&D (McKenny et al., 2018b). In the IPO year ($\rho = .055$, $p = .005$) as well as across our sample horizon ($\rho = .042$, $p < .001$), we find significant positive correlations, which provides evidence for the validity of our EO measure. Following McKenny et al. (2018a), we also compare the language of the IPO prospectuses with language from Management Discussion and Analysis (MD&A) sections of 10-K annual reports, which other researchers have also used with CATA (e.g., Boling et al., 2016). The use of 10-K reports fulfills the criteria to check for "consistency of language from texts produced at two points in time" (McKenny et al., 2018a, p. 2914)—in this case, at the IPO as well as after the IPO over a time horizon of up to 5 years. For a sample of 8452 MD&A sections available from the SEC EDGAR system, we find a positive and significant correlation of the EO score with the IPO prospectuses ($\rho = .646$, $p < .001$). This correlation of *EO at the IPO* with *EO after the IPO* remains positive and significant over time for up to 5 years after the IPO ($EO_{t=1}$: $p = .684$, $p < .001$; $EO_{t=2}$: $\rho = .670$, $p < .001$; $EO_{t=3}$: $\rho = .648$, $p < .001$; $EO_{t=4}$: $\rho = .621$, $p < .001$; $EO_{t=5}$: $\rho = .590$, $p < .001$). We conclude that measuring EO in the IPO prospectuses is a reliable measure of firms' EO. Moreover, we employ the EO measure with five dimensions—adding competitive aggressiveness and autonomy—as stated by Lumpkin and Dess (1996). Model 5 in Table 3 underlines that our conclusions remain unchanged. In addition, we adjust EO to the industry using the median (instead of the mean) to rule out distortions through a skewness of the variable. We do not show the results to save space, but our conclusions remain unchanged. Thus, our measure of EO at the IPO is valid, consistent, and reliable and our analysis does not seem to suffer from measurement error. We conclude that endogeneity concerns are not unduly affecting our results.

*Robustness.* To increase the robustness of our results, we estimate further models by using different model specifications and by considering variations of our main model. The Cox models can be used under the proportional hazards assumption, which states that the baseline hazard is some function of time but not of the covariates (Kleinbaum & Klein, 2012). We include our independent variable and moderators as time-varying covariates in the model together with the natural logarithm of time. We do not find significant time-varying covariates, which provides evidence against a violation of the proportional hazard assumption. We also use Schoenfeld residuals to test

**Table 3.** Supplemental Analyses.

| | IPO self-selection bias | Parametric Weibull model | Performance at the IPO | | Five-dim. EO definition |
|---|---|---|---|---|---|
| | | | Under-performer | Over-performer | |
| Variables | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
| EO at the IPO | −0.262* | −0.202** | −0.352* | −0.125 | −0.173* |
| | (0.111) | (0.075) | (0.174) | (0.088) | (0.075) |
| Working capital (W. c.) efficiency | −0.537*** | −0.349** | −0.478* | −0.298* | −0.396*** |
| | (0.154) | (0.109) | (0.223) | (0.139) | (0.112) |
| EO at the IPO × W. c. efficiency | 0.561*** | 0.371*** | 0.640** | 0.361** | 0.398*** |
| | (0.136) | (0.097) | (0.208) | (0.124) | (0.103) |
| Technological turbulence (Tech. turb.) | −0.789*** | −0.451*** | −0.957** | −0.399* | −0.536*** |
| | (0.216) | (0.137) | (0.323) | (0.165) | (0.141) |
| EO at the IPO × Tech. turb. | −0.045 | −0.014 | −0.102 | −0.012 | −0.047 |
| | (0.115) | (0.079) | (0.192) | (0.088) | (0.077) |
| W. c. Efficiency × Tech. turb. | 0.246* | −0.161† | −0.165 | −0.136 | −0.174† |
| | (0.123) | (0.089) | (0.174) | (0.111) | (0.090) |
| EO at the IPO × W. c. Efficiency × Tech. turb. | 0.354*** | 0.236** | 0.373* | 0.221* | 0.234** |
| | (0.102) | (0.079) | (0.165) | (0.109) | (0.087) |
| Firm size | −0.547*** | −0.466*** | −0.743** | −0.397*** | −0.464*** |
| | (0.130) | (0.083) | (0.245) | (0.098) | (0.092) |
| Firm profitability | −0.341*** | −0.307*** | −0.268*** | −0.357*** | −0.334*** |
| | (0.042) | (0.026) | (0.076) | (0.032) | (0.029) |
| Financial leverage | 0.249*** | 0.196*** | 0.076 | 0.225*** | 0.265*** |
| | (0.064) | (0.046) | (0.193) | (0.050) | (0.045) |
| R&D intensity | 0.030 | −0.016 | 0.059 | 0.039 | 0.006 |
| | (0.090) | (0.057) | (0.135) | (0.077) | (0.058) |
| Advertising intensity | 0.050 | 0.088* | 0.088 | 0.002 | 0.041 |
| | (0.051) | (0.036) | (0.065) | (0.049) | (0.037) |

*(continued)*

**Table 3.** (continued)

| | IPO self-selection bias | Parametric Weibull model | Performance at the IPO: Under-performer | Performance at the IPO: Over-performer | Five-dim. EO definition |
|---|---|---|---|---|---|
| Use of proceeds | 0.110 | 0.088 | 0.258† | 0.017 | 0.090 |
| | (0.100) | (0.069) | (0.146) | (0.083) | (0.067) |
| Risk factors | −0.040 | 0.290* | −0.249 | 0.235† | 0.177 |
| | (0.165) | (0.117) | (0.343) | (0.134) | (0.116) |
| CEO duality | 0.071 | −0.188 | 0.242 | −0.230 | −0.097 |
| | (0.192) | (0.126) | (0.303) | (0.146) | (0.129) |
| High-tech firm | 0.029 | 0.046 | −0.051 | 0.036 | 0.024 |
| | (0.240) | (0.166) | (0.358) | (0.192) | (0.167) |
| IPO proceeds | 0.163† | 0.152† | 0.081 | 0.042 | 0.080 |
| | (0.091) | (0.078) | (0.206) | (0.102) | (0.093) |
| Firm age at the IPO | 0.002 | −0.008* | −0.015 | −0.009† | −0.008† |
| | (0.010) | (0.004) | (0.012) | (0.005) | (0.004) |
| VC backing | −0.280 | −0.051 | −0.480 | −0.087 | −0.110 |
| | (0.216) | (0.139) | (0.343) | (0.157) | (0.138) |
| Underwriter reputation | −0.144 | −0.182 | −0.299 | −0.288 | −0.198 |
| | (0.236) | (0.149) | (0.362) | (0.175) | (0.152) |
| Market competition | 0.255 | 0.048 | 0.071 | 0.028 | 0.034 |
| | (0.181) | (0.092) | (0.181) | (0.098) | (0.093) |
| Inverse Mills ratio | 6.248 | | | | |
| | (0.236) | | | | |
| Firm-year observations | 9,170 | 10,069 | 4802 | 5,267 | 10,069 |
| Number of IPO firms | 2411 | 2578 | 2103 | 2404 | 2578 |
| Number of firm failures | 128 | 273 | 54 | 219 | 273 |
| Year and Industry effects | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* |
| Log pseudolikelihood | −806 | −663 | −289 | −1320 | −1816 |
| AIC | 1709 | 1420 | 655 | 2735 | 3727 |

*Notes.* Robust standard errors in parentheses. † $p \le .1$; * $p \le .05$; ** $p \le .01$; *** $p \le .001$

the proportional hazard assumption but, again, do not find evidence against it ($p$ = .479). Moreover, we estimate parametric survival models instead of the semiparametric Cox models. Model 2 of Table 3 reports the results for a Weibull distribution, which allows for an increase or decrease of the hazard function (Kleinbaum & Klein, 2012). As coefficients remain consistent with our main model, we infer that our results are robust. We also employ generalized estimating equations with a binomial distribution of the logit family, which accounts for the serial correlation in panel data (Ballinger, 2004; Liang & Zeger, 1986), and of the probit family, which is also applicable to binary outcome models (Ballinger, 2004). Our results remain consistent but are not reported to save space. Lastly, we exclude the possibility of non-linear relationships following Haans et al. (2016): as the *square term of EO* is insignificant ($\beta$-squared = −0.004; $p$ = .931), it is not likely that an (inverted) U-shape exists within our data.

The performance of a firm may not only influence its chances of survival, but might also require different configurations that shape the EO–failure relationship. To verify our configurational analyses, we split our sample of firms based on return on equity (based on Brown & Caylor, 2009). Firms with a return on equity below (above) the industry mean are denoted as underperformers (overperformers). Models 3 and 4 (Table 3) show that the results of the moderating effects of working capital efficiency and technological turbulence remain significant for both under- and overperformers. Moreover, in the model comparable to model 2 of the main analysis (Table 2), the results remain robust across both groups (underperformers: $\beta$ = −0.350, $p$ = .048; overperformers: $\beta$ = −0.206, $p$ = .017). This underlines that the configuration of working capital efficiency and technological turbulence shapes the EO–failure relationship irrespective of a firm's performance. In addition, we include firms' market orientation (MO) in our model as Feng et al. (2020) underline certain interaction effects of EO and MO in newly public firms' failure. We construct our measure of MO at the IPO as outlined above for EO (McKenny et al., 2018a). The results regarding our hypotheses remain unchanged, but are not reported to save space.

*Post-Hoc Analyses.* Given the dynamic nature of EO (Grühn et al., 2017; Wales et al., 2021), we conduct a post-hoc analysis to examine how the *annual level of EO* in a given year of up to 5 years after the IPO relates to firm failure. We draw on 6692 MD&A sections of 10-K annual reports. The results of the basic model for EO ($\beta$ = −0.177, $p$ = .031) and the moderation model including working capital efficiency (direct effect: $\beta$ = −0.163, $p$ = .039; *moderating effect:* $\beta$ = 0.145, $p$ = .017) are comparable to our main analysis capturing *EO at the IPO*. Interestingly, however, in the full model including technological turbulence, the results change compared to our main analysis: while the main effect of the *annual level of EO* on firm failure remains significant ($\beta$ = −0.152, $p$ = .067), both the moderation of working capital efficiency ($\beta$ = 0.024, $p$ = .881) and the three-way interaction with technological turbulence are insignificant ($\beta$ = −0.063, $p$ = .636). Thus, under conditions of high technological turbulence, the beneficial effect of working capital efficiency appears to diminish with increasing time distance from the IPO. This finding highlights the relevance of configurational settings and situational analysis in EO research.

We conduct two additional post-hoc analyses to gain insights into the configuration of working capital efficiency and technological turbulence and its impact on the EO–failure relationship. Young firms are different from mature firms, for example, in terms of the top management team (e.g., Kroll et al., 2007). Thus, we split our sample in two groups at 50% of the *firm age at the IPO* (i.e., 8 years) and rerun our analyses. We find consistent results compared to our main findings. The moderation of working capital efficiency (young firms: $\beta$ = 0.299, $p$ = .015; mature firms: $\beta$ = 0.602, $p$ = .003) and the three-way interaction with technological turbulence (young firms: $\beta$ = 0.200, $p$ = .059; mature firms: $\beta$ = 0.370, $p$ = .019) remain positive and significant across both groups. In addition, small firms differ from large ones in their firm-specific resources (Carter et al., 1998). Hence, we split our sample in two groups at 50% of the *firm size*, measured as the natural log of sales at the IPO (Chadwick et al., 2016). Again, the results remain consistent regarding the moderation of working capital efficiency (smaller firms: $\beta$ = 0.465, $p$ = .002; larger firms: $\beta$ = 0.359, $p$ = .011) and the three-way interaction with technological turbulence (smaller firms: $\beta$ = 0.285, $p$ = .020; larger firms: $\beta$ = 0.241, $p$ = .055). This suggests that the configuration of working capital efficiency and technological turbulence is relevant for the EO–failure relationship irrespective of the maturity and size of a firm.

## Discussion

### *Theoretical Implications*

Our study has important theoretical implications for the entrepreneurship and strategic management literature. Based on the EO-as-experimentation view, we provide a nuanced perspective on the relationship between EO and firm failure. Our study adds to the debate on the double-edged sword character of EO, which emphasizes that EO both enables growth opportunities and consumes resources—with the latter increasing the risk of firm failure (Wiklund & Shepherd, 2011). We show that the effect of EO can be considered as a matter of configuration and that research benefits from a configurational perspective encompassing both resource allocation and environmental factors. While Feng et al. (2020) and Mousa and Wales (2012) point to the advantageous effect of EO in the context of newly public firms, we show the strong influence that working capital efficiency and technological turbulence have in this context. We find that higher working capital efficiency supports the EO–failure relationship as it allows firms to better capitalize on opportunities. In contrast, the failure-preventing effect of EO decreases with lower levels of working capital efficiency. Our results, therefore, shed new light on the role of resources for EO. We shift focus from the availability of financial resources (Wiklund & Shepherd, 2005) towards the resource allocation within firms. The resource munificence found at the IPO provides a suitable context to study such allocations. Discussing implications of the EO-as-experimentation perspective, Wiklund and Shepherd (2011, p. 939) suggest that firms pursuing EO need to find ways to truncate the distribution of entrepreneurial outcomes on the downside, or skew it "to the positive end." Against this backdrop, the cash infusion at the IPO increases firms' tolerance for negative outcomes, providing more leeway for experimenting. Our results indicate that higher working capital efficiency facilitates skewing the distribution of outcomes further to the positive side. Hence, this study helps reveal how it might unfold to "manag[e] the distribution" of entrepreneurial outcomes (Patel et al., 2015; Wiklund & Shepherd, 2011, p. 939).

We further qualify the effect of working capital efficiency as we show that it depends on technological turbulence. Under conditions of lower working capital efficiency and higher technological turbulence, the detrimental effects of an inappropriate resource allocation approach are more prevalent. This not only nullifies the failure-preventing effects of EO in newly public firms, but even leads firms into a situation where EO increases failure risk. Thus, it is all the more important for newly public firms to uncover opportunities to engage in inexpensive experimenting and mitigate potential downsides of EO (Wiklund & Shepherd, 2011). However, if firms exhibit higher levels of working capital efficiency and face higher technological turbulence, the failure-preventing effect of EO is strengthened. This suggests that, depending on the resource allocation approach, the effect of EO on failure can shift from further enhancing growth opportunities to increasing failure risk, which underlines the role of resource allocation for firms high in EO.

As part of our post-hoc analyses, we find that with the inclusion of the annual level of EO, the effects of working capital efficiency and technological turbulence change, too: while the failure-preventing effect of EO remains, working capital efficiency no longer seems to affect this relationship. As entrepreneurially oriented firms move farther away from the IPO event, the benefits of maintaining an efficient working capital structure that keeps the capital bound in operations low appear to decline. In turn, gradually increasing the relative amount of working capital might be recommended as public firms mature after their IPO. After all, to fully embrace the growth opportunities firms encounter in the first years after their IPO, they also require solid internal operations in later stages. Our findings suggest that the effect of specific configurations of context factors on EO depends on the situation. From a dynamic capability perspective, this implies that firms learn how to make better use of their EO (Anderson & Eshima, 2013; Wales et al., 2021). For EO research, such learning processes point to a more complex configurational pattern under which EO takes effect. The circumstances in which EO unfolds its failure-preventing impact in newly public firms seem to change over time.

Finally, we add to the IPO literature on antecedents of failure. Prior research predominantly centers on quality signals in newly public firms, such as underwriters or venture capitalists (e.g., Jain & Kini, 2000), and explores the effects of social capital and power (e.g., Fischer & Pollock, 2004). Extending previous findings (e.g., Feng et al., 2020), we advance research by examining configurations under which newly public firms' EO affects firm failure. While our study suggests that EO is associated with a reduction in newly public firms' failure, we highlight that an isolated investigation of EO as a strategic orientation may be too narrow to understand such failures.

## Practical Implications

Our study has implications for newly public firms and investors. First, under some circumstances, managers of newly public firms might be well advised to engage in less entrepreneurial approaches. Opting for a less entrepreneurial approach can decrease the likelihood of failure when technological turbulence is high and firms possess inefficient working capital structures. Second, the potentially detrimental effect of lower working capital efficiency suggests that newly public firms need to develop a sense of the adverse impact that large amounts of operationally bound capital have for fully harnessing entrepreneurial opportunities. As a consequence, firms might relocate capital from operational domains towards venturing initiatives. However, over the course of maturation after the IPO, resource allocation approaches might need to be adjusted. Therefore, firms high in EO need to engage in an active management of the resource allocation approach over time. From an investor perspective, our findings underline the importance of monitoring the configurations under which an entrepreneurially oriented firm operates. The EO measure used in this study is based on published texts that are accessible to investors. By inspecting such texts and analyzing them against firms' working capital efficiency, investors can generate the information necessary to translate our findings into practice. Yet, investors need to be aware that written texts can also be used to purposefully create a certain impression (Wang et al., 2021). Investors involved in steering strategic firm directions might be well advised to prevent firms from binding large amounts of resources in operations when technological turbulence is high.

## Limitations, Future Research, and Conclusion

Our study has limitations that offer avenues for future research. First, we acknowledge that EO "is fundamentally a behavioral construct" (Covin & Wales, 2019, p. 8). By using a CATA-based measure of EO, we follow prior research in recognizing EO as a strategic posture (Covin & Wales, 2012; McKenny et al., 2018a). The texts we examined are publicly available and hence also contain deliberate signals to investors (Liu et al., 2019; Wang et al., 2021). However, since investors' reactions to such signals are beyond the focus of this study, future research should differentiate failure-preventing effects stemming from firm-internal mechanisms and investors' reactions. While we focus on firm failure, we call to shed light on further forms of failure, such as project, product, or market failure (e.g., Wiklund & Shepherd, 2011). Moreover, since we cannot rule out survival bias prior to the IPO, we encourage scholars to investigate firm failure in different contexts, such as pre-IPO failure. Second, in terms of the generalizability of our results, it is important to acknowledge the specific character of the post-IPO context. Now facing public scrutiny, newly public firms' top managers might also be inclined to pursue highly innovative ventures to compete with larger firms. Thus, some managers might display a rather high propensity to take risks. Future research needs to uncover the extent to which the configurations discussed in this study apply beyond the IPO context. Third, outside our focus on specific configurations, many configurations remain unexplored. Future research should closely investigate how EO interacts with capabilities of the top management team, other firm resources, and distinct environmental characteristics, and how these combinations influence firm failure (e.g., Engelen et al., 2014; Rauch et al., 2009). Also, our finding that working capital efficiency seems to lose its salience for EO over time points to temporal dynamics. Future studies should hence examine temporal patterns beyond our time frame of 5 years. We hope that, based on our study, future research will develop an even more holistic picture of contingencies and configurations in the context of the EO–failure relationship.

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## References

Anderson, B. S., & Eshima, Y. (2013). The influence of firm age and intangible resources on the relationship between entrepreneurial orientation and firm growth among Japanese SMEs. *Journal of Business Venturing*, *28*(3), 413–429. https://doi.org/10.1016/j.jbusvent.2011.10.001

Ballinger, G. A. (2004). Using generalized estimating equations for longitudinal data analysis. *Organizational Research Methods*, *7*(2), 127–150. https://doi.org/10.1177/1094428104263672

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *17*(1), 99–120. https://doi.org/10.1177/014920639101700108

Barney, J. B., & Mackey, A. (2018). Monopoly profits, efficiency profits, and teaching strategic management. *Academy of Management Learning & Education*, *17*(3), 359–373. https://doi.org/10.5465/amle.2017.0171

Boling, J. R., Pieper, T., & Covin, J. G. (2016). CEO tenure and entrepreneurial orientation within family and nonfamily firms. *Entrepreneurship Theory and Practice*, *40*(4), 891–913. https://doi.org/10.1111/etap.12150

Bradley, S. W., Aldrich, H., Shepherd, D. A., & Wiklund, J. (2011a). Resources, environmental change, and survival: Asymmetric paths of young independent ans subsidiary organizations. *Strategic Management Journal*, *32*(5), 486–509. https://doi.org/10.1002/smj.887

Bradley, S. W., Wiklund, J., & Shepherd, D. A. (2011b). Swinging a double-edged sword: The effect of slack on entrepreneurial management and growth. *Journal of Business Venturing*, *26*(5), 537–554. https://doi.org/10.1016/j.jbusvent.2010.03.002

Brau, J. C., Ryan, P. A., & DeGraw, I. (2006). Initial public offerings: CFO perceptions. *The Financial Review*, *41*(4), 483–511. https://doi.org/10.1111/j.1540-6288.2006.00154.x

Brown, L. D., & Caylor, M. L. (2009). Corporate governance and firm operating performance. *Review of Quantitative Finance and Accounting*, *32*(2), 129–144. https://doi.org/10.1007/s11156-007-0082-3

Campello, M. (2006). Debt financing: Does it boost or hurt firm performance in product markets? *Journal of Financial Economics*, *82*(1), 135–172. https://doi.org/10.1016/j.jfineco.2005.04.001

Carter, R. B., Dark, F. H., & Singh, A. K. (1998). Underwriter reputation, initial returns, and the long-run performance of IPO stocks. *The Journal of Finance*, *53*(1), 285–311. https://doi.org/10.1111/0022-1082.104624

Certo, S. T., Busenbark, J. R., Woo, H., & Semadeni, M. (2016). Sample selection bias and heckman models in strategic management research: Sample selection bias and Heckman models. *Strategic Management Journal*, *37*(13), 2639–2657. https://doi.org/10.1002/smj.2475

Certo, S. T., Holcomb, T. R., & Holmes, R. M. (2009). IPO research in management and entrepreneurship: Moving the agenda forward. *Journal of Management*, *35*(6), 1340–1378. https://doi.org/10.1177/0149206309347375

Chadwick, C., Guthrie, J. P., & Xing, X. (2016). The HR executive effect on firm performance and survival. *Strategic Management Journal*, *37*(11), 2346–2361. https://doi.org/10.1002/smj.2566

Covin, J., & Wales, W. J. (2012). The measurement of entrepreneurial orientation. *Entrepreneurship Theory and Practice*, *36*(4), 677–702. https://doi.org/10.1111/j.1540-6520.2010.00432.x

Covin, J., & Wales, W. J. (2019). Crafting high-impact entrepreneurial orientation research: Some suggested guidelines. *Entrepreneurship Theory and Practice*, *43*(1), 3–18. https://doi.org/10.1177/1042258718773181

Demers, E., & Joos, P. (2007). IPO failure risk. *Journal of Accounting Research*, *45*(2), 333–371. https://doi.org/10.1111/j.1475-679x.2007.00236.x

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, *21*(10/11), 1105–1121. https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::aid-smj133>3.0.co;2-e

Engelen, A., Kube, H., Schmidt, S., & Flatten, T. C. (2014). Entrepreneurial orientation in turbulent environments: The moderating role of absorptive capacity. *Research Policy*, *43*(8), 1353–1369. https://doi.org/10.1016/j.respol.2014.03.002

Fama, E. F., & French, K. R. (2004). New lists: Fundamentals and survival rates. *Journal of Financial Economics*, *73*(2), 229–269. https://doi.org/10.1016/j.jfineco.2003.04.001

Feng, C., Patel, P. C., & Xiang, K. (2020). The well-trodden path: Complementing market and entrepreneurial orientation with a strategic emphasis to influence IPO survival in the United States. *Journal of Business Research*, *110*, 370–385. https://doi.org/10.1016/j.jbusres.2020.01.065

Fischer, H. M., & Pollock, T. G. (2004). Effects of social capital and power on surviving transformational change: The case of initial public offerings. *Academy of Management Journal*, *47*(4), 463–481. https://doi.org/10.5465/20159597

Fombrun, C. J., & Ginsberg, A. (1990). Shifting gears: Enabling change in corporate aggressiveness. *Strategic Management Journal*, *11*(4), 297–308. https://doi.org/10.1002/smj.4250110405

Germann, F., Ebbes, P., & Grewal, R. (2015). The chief marketing officer matters. *Journal of Marketing*, *79*(3), 1–22. https://doi.org/10.1509/jm.14.0244

Gounopoulos, D., & Pham, H. (2018). Specialist CEOs and IPO survival. *Journal of Corporate Finance*, *48*, 217-243. https://doi.org/10.1016/j.jcorpfin.2017.10.012.

Grühn, B., Strese, S., Flatten, T. C., Jaeger, N. A., & Brettel, M. (2017). Temporal change patterns of entrepreneurial orientation: A longitudinal investigation of CEO successions. *Entrepreneurship Theory and Practice*, *41*(4), 591–619. https://doi.org/10.1111/etap.12239

Haans, R. F. J., Pieters, C., & He, Z.-L. (2016). Thinking about U: Theorizing and testing U- and inverted U-shaped relationships in strategy research. *Strategic Management Journal*, *37*(7), 1177–1195. https://doi.org/10.1002/smj.2399

Hanley, K. W., & Hoberg, G. (2010). The information content of IPO prospectuses. *Review of Financial Studies*, *23*(7), 2821–2864. https://doi.org/10.1093/rfs/hhq024

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica*, *47*(1), 153–161. https://doi.org/10.2307/1912352

Hill, A. D., Johnson, S. G., Greco, L. M., O'Boyle, E. H., & Walter, S. L. (2021). Endogeneity: A review and agenda for the methodology-practice divide affecting micro and macro research. *Journal of Management*, *47*(1), 105–143. https://doi.org/10.1177/0149206320960533

Jain, B. A., & Kini, O. (2000). Does the presence of venture capitalists improve the survival profile of IPO firms? *Journal of Business Finance & Accounting*, *27*(9/10), 1139–1176. https://doi.org/10.1111/1468-5957.00350

Kalnins, A. (2018). Multicollinearity: How common factors cause type 1 errors in multivariate regression. *Strategic Management Journal*, *39*(8), 2362–2385. https://doi.org/10.1002/smj.2783

Keil, T., Maula, M., & Syrigos, E. (2017). CEO entrepreneurial orientation, entrenchment, and firm value creation. *Entrepreneurship Theory and Practice*, *41*(4), 475–504. https://doi.org/10.1111/etap.12213

Khurshed, A. (2000). Discussion does the presence of venture capitalists improve the survival profile of IPO firms? *Journal of Business Finance & Accounting*, *27*(9–10), 1177–1183. https://doi.org/10.1111/1468-5957.00351

Kindermann, B., Beutel, S., Garcia de Lomana, G., Strese, S., Bendig, D., & Brettel, M. (2021). Digital orientation: Conceptualization and operationalization of a new strategic orientation. *European Management Journal*, *39*(5), 645–657. https://doi.org/10.1016/j.emj.2020.10.009

Kleinbaum, D. G., & Klein, M. (2012). *Survival analysis: A self-learning text*. Springer.

Kraatz, M. S., & Zajac, E. J. (2001). How organizational resources affect strategic change and performance in turbulent environments: Theory and evidence. *Organization Science*, *12*(5), 632–657. https://doi.org/10.1287/orsc.12.5.632.10088

Kravet, T., & Muslu, V. (2013). Textual risk disclosures and investors' risk perceptions. *Review of Accounting Studies*, *18*(4), 1088–1122. https://doi.org/10.1007/s11142-013-9228-9

Kreiser, P. M. (2011). Entrepreneurial orientation and organizational learning: The impact of network range and network closure. *Entrepreneurship Theory and Practice*, *35*(5), 1025–1050. https://doi.org/10.1111/j.1540-6520.2011.00449.x

Kroll, M., Walters, B. A., & Le, S. A. (2007). The impact of board composition and top management team ownership structure on post-IPO performance in young entrepreneurial firms. *Academy of Management Journal*, *50*(5), 1198–1216. https://doi.org/10.2307/20159920

Kurt, D., & Hulland, J. (2013). Aggressive marketing strategy following equity offerings and firm value: The role of relative strategic flexibility. *Journal of Marketing*, *77*(5), 57–74. https://doi.org/10.1509/jm.12.0078

Lee, C., Lee, K., & Pennings, J. M. (2001). Internal capabilities, external networks, and performance: A study on technology-based ventures. *Strategic Management Journal*, *22*(6–7), 615–640. https://doi.org/10.1002/smj.181

Leone, A. J., Rock, S., & Willenborg, M. (2007). Disclosure of intended use of proceeds and underpricing in initial public offerings. *Journal of Accounting Research*, *45*(1), 111–153. https://doi.org/10.1111/j.1475-679x.2006.00229.x

Liang, K.-Y., & Zeger, S. L. (1986). Longitudinal data analysis using generalized linear models. *Biomttrika*, *73*(1), 13–22. https://doi.org/10.1093/biomet/73.1.13

Liu, K., Tang, J., Yang, K., & Arthurs, J. (2019). Foreign IPOs in the U.S.: When entrepreneurial orientation meets institutional distance. *Journal of Business Research*, *101*(3), 144–151. https://doi.org/10.1016/j.jbusres.2019.04.011

Loughran, T., & Ritter, J. R. (1995). The new issues puzzle. *The Journal of Finance*, *50*(1), 23–51. https://doi.org/10.1111/j.1540-6261.1995.tb05166.x

Love, E. G., & Nohria, N. (2005). Reducing slack: The performance consequences of downsizing by large industrial firms, 1977–93. *Strategic Management Journal*, *26*(12), 1087–1108. John Wiley & Sons, Inc.

Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, *21*(1), 135–172. https://doi.org/10.5465/amr.1996.9602161568

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, *2*(1), 71–87. https://doi.org/10.1287/orsc.2.1.71

McGrath, R. G. (1999). Falling forward: real options reasoning and entrepreneurial failure. *Academy of Management Review*, *24*(1), 13–30. https://doi.org/10.5465/amr.1999.1580438

McKenny, A. F., Aguinis, H., Short, J. C., & Anglin, A. H. (2018a). What doesn't get measured does exist: Improving the accuracy of computer-aided text analysis. *Journal of Management*, *44*(7), 2909–2933. https://doi.org/10.1177/0149206316657594

McKenny, A. F., Short, J. C., Ketchen, D. J., Payne, G. T., & Moss, T. W. (2018b). Strategic entrepreneurial orientation: Configurations, performance, and the effects of industry and time. *Strategic Entrepreneurship Journal*, *12*(4), 504–521. https://doi.org/10.1002/sej.1291

Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science*, *29*(7), 770–791. https://doi.org/10.1287/mnsc.29.7.770

Miller, D., & Friesen, P. H. (1978). Archetypes of strategy formulation. *Management Science*, *24*(9), 921–933. https://doi.org/10.1287/mnsc.24.9.921

Miller, D., & Le Breton-Miller, I. (2011). Governance, social identity, and entrepreneurial orientation in closely held public companies. *Entrepreneurship Theory and Practice*, *35*(5), 1051–1076. https://doi.org/10.1111/j.1540-6520.2011.00447.x

Mishina, Y., Pollock, T. G., & Porac, J. F. (2004). Are more resources always better for growth? Resource stickiness in market and product expansion. *Strategic Management Journal*, *25*(12), 1179–1197. https://doi.org/10.1002/smj.424

Moses, O. D. (1992). Organizational slack and risk-taking behaviour: Tests of product pricing strategy. *Journal of Organizational Change Management*, *5*(3), 38–54. https://doi.org/10.1108/09534819210018045

Mousa, F.-T., Marlin, D., & Ritchie, W. J. (2013). Configurations of slack and their performance implications: An examination of high-tech IPOs. *Management Decision*, *51*(2), 225–247. https://doi.org/10.1108/00251741311301795

Mousa, F.-T., & Reed, R. (2013). The impact of slack resources on high-tech IPOs. *Entrepreneurship Theory and Practice*, *37*(5), 1123–1147. https://doi.org/10.1111/etap.12001

Mousa, F.-T., & Wales, W. J. (2012). Founder effectiveness in leveraging entrepreneurial orientation. *Management Decision*, *50*(2), 305–324. https://doi.org/10.1108/00251741211203588

Mousa, F.-T., Wales, W. J., & Harper, S. R. (2015). When less is more: EO's influence upon funds raised by young technology firms at IPO. *Journal of Business Research*, *68*(2), 306–313. https://doi.org/10.1016/j.jbusres.2014.07.003

Nason, R. S., & Wiklund, J. (2018). An assessment of resource-based theorizing on firm growth and suggestions for the future. *Journal of Management*, *44*(1), 32–60. https://doi.org/10.1177/0149206315610635

Ortiz-Villajos, J. M., & Sotoca, S. (2018). Innovation and business survival: A long-term approach. *Research Policy*, *47*(8), 1418–1436. https://doi.org/10.1016/j.respol.2018.04.019

Osborn, R. N., & Baughn, C. C. (1990). Forms of Interorganizational governance for multinational alliances. *Academy of Management Journal*, *33*(3), 503–519. https://doi.org/10.5465/256578

Papies, D., Ebbes, P., & Van Heerde, H. J. (2017). Addressing endogeneity in marketing models. In P. S. H. Leeflang, J. E. Wieringa, T. H. A. Bijmolt, & K. H. Pauwels (Eds,), *Advanced methods for modeling markets* (pp. 581–627). Springer International Publishing.

Patel, P. C., Kohtamäki, M., Parida, V., & Wincent, J. (2015). Entrepreneurial orientation-as-experimentation and firm performance: The enabling role of absorptive capacity: Entrepreneurial orientation-as-experimentation and firm performance. *Strategic Management Journal*, *36*(11), 1739–1749. https://doi.org/10.1002/smj.2310

Penrose, E. (2009). *The theory of the growth of the firm*. Oxford University Press, Incorporated.

Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice*, *33*(3), 761–787. https://doi.org/10.1111/j.1540-6520.2009.00308.x

Ritter, J. R. (2022). *Initial public offerings: Technology stock IPOs*. Https://Site.Warrington.Ufl.Edu/Ritter/

Saboo, A. R., & Grewal, R. (2013). Stock market reactions to customer and competitor orientations: The case of initial public offerings. *Marketing Science*, *32*(1), 70–88. https://doi.org/10.1287/mksc.1120.0749

Sapir, E. (1944). Grading, a study in semantics. *Philosophy of Science*, *11*(2), 93–116. https://doi.org/10.1086/286828

Segarra, A., & Callejón, M. (2002). New firms' survival and market turbulence: New evidence from Spain. *Review of Industrial Organization*, *20*(1), 1–14. https://doi.org/10.1023/a:1013309928700

Sengul, M., Costa, A. A., & Gimeno, J. (2019). The allocation of capital within firms. *Academy of Management Annals*, *13*(1), 43–83. https://doi.org/10.5465/annals.2017.0009

Staw, B. M., Sandelands, L. E., & Dutton, J. E. (1981). Threat-rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly*, *26*(4), 501–524. https://doi.org/10.2307/2392337

Stevenson, H. H., & Gumpert, D. E. (1985). The heart of entrepreneurship. *Harvard Business Review*, *63*(2), 85–94.

Tan, J., & Peng, M. W. (2003). Organizational slack and firm performance during economic transitions: Two studies from an emerging economy. *Strategic Management Journal*, *24*(13), 1249–1263. https://doi.org/10.1002/smj.351

Tchetgen, E. J., Walter, S., Vansteelandt, S., Martinussen, T., & Glymour, M. (2015). Instrumental variable estimation in a survival context. *Epidemiology*, *26*(3), 402–410. https://doi.org/10.1097/ede.0000000000000262

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*(13), 1319–1350. https://doi.org/10.1002/smj.640

Venkatraman, N. (1989). Strategic Orientation of Business Enterprises: The Construct, Dimensionality, and Measurement. *Management Science*, *35*(8), 942-962. https://doi.org/10.1287/mnsc.35.8.942.

Wales, W. J., Covin, J. G., & Monsen, E. (2020). Entrepreneurial orientation: The necessity of a multilevel conceptualization. *Strategic Entrepreneurship Journal*, *14*(4), 639–660. https://doi.org/10.1002/sej.1344

Wales, W. J., Kraus, S., Filser, M., Stöckmann, C., & Covin, J. G. (2021). The status quo of research on entrepreneurial orientation: Conversational landmarks and theoretical scaffolding. *Journal of Business Research*, *128*, 564-577. https://doi.org/10.1016/j.jbusres.2020.10.046.

Wales, W. J., Parida, V., & Patel, P. C. (2013). Too much of a good thing? Absorptive capacity, firm performance, and the moderating role of entrepreneurial orientation. *Strategic Management Journal*, *34*(5), 622–633. https://doi.org/10.1002/smj.2026

Wales, W. J., Wiklund, J., & McKelvie, A. (2015). What about new entry? Examining the theorized role of new entry in the entrepreneurial orientation–performance relationship. *International Small Business Journal*, *33*(4), 351–373. https://doi.org/10.1177/0266242613506023

Wang, T., Malik, S., & Wales, W. J. (2021). When entrepreneurial rhetoric meets strict regulations: Implications for the valuation of health science firms. *Strategic Entrepreneurship Journal*, *15*(2), 209–230. https://doi.org/10.1002/sej.1396

Whorf, B. L. (1956). *Language, thought, and reality: Selected writings*. Cambridge: MIT press.

Wies, S., & Moorman, C. (2015). Going public: How stock market listing changes firm innovation behavior. *Journal of Marketing Research*, *52*(5), 694–709. https://doi.org/10.1509/jmr.13.0289

Wiklund, J., & Shepherd, D. (2005). Entrepreneurial orientation and small business performance: A configurational approach. *Journal of Business Venturing*, *20*(1), 71–91. https://doi.org/10.1016/j.jbusvent.2004.01.001

Wiklund, J., & Shepherd, D. A. (2011). Where to from here? EO-as-experimentation, failure, and distribution of outcomes. *Entrepreneurship: Theory & Practice*, *35*(5), 925–946. https://doi.org/10.1111/j.1540-6520.2011.00454.x

Williams, C., & Lee, S. H. (2009). Resource allocations, knowledge network characteristics and entrepreneurial orientation of multinational corporations. *Research Policy*, *38*(8), 1376–1387. https://doi.org/10.1016/j.respol.2009.05.007

Wyatt, A. (2013). Is there useful information in the ‘use of proceeds’ disclosures in IPO prospectuses? *Accounting & Finance*, *54*(2), 625–667. https://doi.org/10.1111/acfi.12013