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Cash for contingencies: How the organizational task environment shapes the cash-performance relationship

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ABSTRACT

What influence do external contingencies have on the strategic value of cash holdings? Employing a contingent perspective on resource-performance relationships, we test how the three dimensions of organizational task environments – environmental complexity, dynamism, and munificence – influence the strategic value of cash holdings. We argue that as versatile resources, cash holdings are most useful in complex and dynamic settings, as they facilitate strategic fit between firm and environment. By contrast, the value of cash is weakened in resource-rich environments, as the environment itself provides the resources for strategic fit. Results from our dynamic fixed-effects panel analyses support our theorizing, as they show that environmental complexity and dynamism strengthen the positive link between cash and performance, while environmental munificence attenuates it. We conclude that key environmental contingencies of a firm's organizational task environment indeed shape the cash-performance relationship.

Introduction

What is the strategic value of cash holdings? Scholars disagree on why firms choose to hoard cash. A common position explains cash holdings as a value-creating, strategic asset (Fresard, 2010; Kim and Bettis, 2014). Relatedly, abundant cash is said to provide firms with deep pockets and hence is a crucial facilitator of corporate actions (Benoit, 1984; Telser, 1966). Cash is said to be a precautionary buffer against challenges arising from the environment (Almeida et al., 2014). Examining the importance of cash holdings recalls seminal work by Penrose (1959) on the theory of the growth of the firm. She discusses cash as a versatile and important resource that can be converted into a wide range of services that satisfy the firm's idiosyncratic needs, resulting in competitive advantage and higher firm performance. Despite numerous benefits of holding excess cash, scholars also emphasize that there are downsides to maintaining large cash holdings, such as that it can trigger opportunistic behavior among managers (Fama, 1980; Jensen, 1997, 1986).

The tension between the benefits and costs of cash holdings raises the question of under what circumstances these versatile resources drive firm performance. Scholars show that the performance implications of resources – cash holdings in particular – rely not only on the attributes of those resources themselves, but also on internal and external contingencies (e.g., Brush and Artz, 1999; Fainshmidt et al., 2019). Prior studies focused on internal contingencies, such as organizational capabilities and R&D intensity, that influence the value of versatile cash holdings (Aragon-Correa and Sharma, 2003; Brush and Artz, 1999; Marcus and Geffen, 1998; O'Brien and Folta, 2009; Pinkowitz et al., 2006). A notable exception is the study by Nason and Patel (2016), which examines the

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effect of recessionary pressure as an external contingency on the cash-performance relationship.

Following the rationale of a contingent view on resource-performance relationships, this study provides a holistic perspective of the moderating role of the organizational task environment on the link between cash and performance. Dess and Beard (1984) classify the organizational task environment along three dimensions: complexity, dynamism, and munificence. Synthesizing the characteristics and challenges associated with these environmental conditions, we argue that each dimension of the organizational task environment influences the strategic value of cash holdings as a versatile resource. We build on the concept of strategic fit between the firm and its external environment (e.g., Fainshmidt et al., 2019; Zajac et al., 2000) to argue that cash plays a facilitating role in aligning the firm and its environment. In general, we suggest that the strategic value of cash holdings is high in environmental conditions that are challenging. Specifically, we argue that cash is valuable in complex and dynamic task environments, as these contexts require firms to constantly adapt to ensure their strategic fit with the environment. By contrast, we expect a munificent task environment to decrease the strategic value of cash holdings, as firms in such contexts face "minimal competitive pressures" (Castrogiovanni, 1991, p. 543), and typically have access to sufficient external capital.

To analyze the contingencies influencing the link between cash holdings and firm performance, we created a unique longitudinal data set of 85,075 U.S. firm-year observations from 1988 to 2014. Our firm fixed-effects regression analyses generally indicate a quadratic relationship between cash holdings and performance, as suggested in related prior works (e.g., Kim and Bettis, 2014). We extend these findings by showing that all three of the dimensions that we study of a firm's organizational task environment, i.e., environmental complexity, dynamism, and munificence, moderate the cash-performance relationship. Our findings suggest that cash holdings exhibit high strategic value under conditions of environmental complexity and dynamism, while their value is weakened under conditions of munificence.

This article contributes to strategic management literature in at least three important ways. First, we examine the role of external contingencies in resource-performance relationships, and cash holdings in particular. Building on a contingent view of resource-performance relationships, we argue that the strategic value of cash holdings lies in their supporting role for achieving fit between a firm and its environment. Second, building on work by Dess and Beard (1984), we disentangle the organizational task environment. We show that the dimensions of a firm's task environment indeed influence the cash-performance relationship: while cash holdings are of particular strategic value in environments that are complex and dynamic, they are less valuable in environments that are munificent. Finally, we make use of a set of advanced empirical measures to approximate the firm's task environment in an encompassing manner. From a methodological point of view, this study provides fine-grained insights on a firm's environment and its associated moderating effects on the cash-performance relationship.

Theoretical background

Cash holdings and performance

Hitherto, the literature has provided numerous theories and collections of evidence related to the benefits and costs of cash holdings. The scholarly discussion so far has suggested that cash holdings can have a positive or negative effect on firm performance, and describe them either as important strategic assets for achieving competitive advantage (Fresard, 2010; Kim and Bettis, 2014) or as dead money (Fama, 1980; Jensen, 1997, 1986). The latter perspective suggests that excess cash that goes beyond transactional needs incurs high opportunity costs for shareholders, and should thus be reinvested in new jobs or business opportunities (Kim and Bettis, 2014), or paid out to shareholders. Moreover, large cash holdings might trigger opportunistic behavior among managers, who use them to act in their own self-interest, maximizing their personal utility (Jensen, 1986). This opportunistic behavior can indeed diminish firm performance.

In contrast to this rather negative view, some scholars suggest and find that cash holdings can be of high strategic value to firms (e.g., Deb et al., 2017; George, 2005; O'Brien and Folta, 2009), and thus increase firm performance. This literature stream is mostly based on the behavioral theory of the firm (Cyert and March 1963), which postulates that slack resources are useful for managers and firms to engage in problemistic or slack search to satisfy their predefined performance aspirations (Kim and Bettis, 2014). According to Cyert and March (1963), firms consist of various political coalitions of individuals with competing interests. These conflicts can be solved if slack resources are available and can be distributed across the different political coalitions and business units of the firm. Cash as a slack resource is of particular value for resolving these conflicts, as it is versatile and flexible (Markman et al., 2009) and can be easily redeployed for other purposes (Anand and Singh, 1997; Karim et al., 2016). Versatility implies that resources are convertible to a multitude of organizational services (Penrose, 1959). Versatile resources do not embody three out of four characteristics of resources that confer competitive advantage (Barney, 1991) – while they are valuable, they are neither rare, inimitable, nor non-substitutable. However, they still do confer competitive advantage due to their potential for flexible and fast deployment and redeployment (George, 2005).

Synthesizing the positive and negative views of cash holdings, Kim and Bettis (2014) suggest that the cash-performance relationship is quadratic, resulting from the trade-off between these two countervailing perspectives. Almeida et al. (2014) describe this as a tension between the "bright side" of future investment flexibility and the "dark side" of associated agency costs. Similarly, John et al. (2016) note that cash holdings can be kept for important "precautionary needs," or they can be spent wastefully. Although we acknowledge the contributions of these literature streams, we posit that the relationship between cash holdings and performance is context-dependent and thus more complex. As such, cash holdings might only be of value to firms that operate under particular contingencies which demand flexibility and adaptation.

Contingencies of resource-performance relationships

Contingency theory is interested in the question of how two or more organizational factors influence each other and result in performance differences (Sirmon et al., 2007). As for resources, Aragon-Correa and Sharma (2003) suggest that their influence on firms' performance is largely dependent on *internal contingencies*, such as organizational capabilities, search strategies, technology investment choices, and culture (Brush and Artz, 1999; Majumdar and Marcus, 2001; Marcus and Geffen, 1998), as well as *external contingencies*, meaning the environment surrounding the organization (Dess and Beard, 1984; this point is also made by Fainshmidt et al., 2016); thus, it is necessary to include these divergent factors when assessing resource-performance relationships. In this study, we focus on external contingencies, and follow Aragon-Correa and Sharma (2003) in suggesting that the link between resources and firm performance depends to a large extent on contingencies of a firm's task environment. It is thus the combination of the resource and the organizational task environment that influences firm performance.

There have been numerous attempts to identify and describe dimensions of a firm's environment (e.g., Child, 1972; Jurkovich, 1974; Mintzberg, 1979; Pfeffer and Salancik, 1977; Starbuck, 1976). Despite several differences, there seems to be a loose consensus on a trio of environmental dimensions (Sharfman and Dean, 1991). Hence, we follow the seminal work of Dess and Beard (1984) and focus on the organizational task environment, classified by them across the three dimensions of complexity, dynamism, and munificence. Specifically, we argue that the value of cash holdings depends on how complex, turbulent, and resource-rich the external environment is. Dess and Beard (1984) conceptualize *environmental complexity* as the degree of dispersion of a firm's environment (Duncan, 1972; Pennings, 1975; Tung, 1979) and thus "the heterogeneity of and range of an organization's activities" (Child, 1972, p. 3), discussing industries that require many different inputs and/or produce a broad range of outputs, which implies that firms must interact with a large number of other organizations. Management scholars suggest that complex environments are more difficult to manage and are thus detrimental to firm performance, as they bring multiple challenges (Poulis and Poulis, 2016).

Environmental dynamism is the second dimension of a firm's task environment, and can be broken down into two components: *rate of change*, i.e., instability or volatility, and *uncertainty of change*, i.e., unpredictability, turbulence, or the absence of patterns (Dess and Beard, 1984; Jurkovich, 1974; Miles et al., 1974; Miller and Friesen, 1983). Firms that operate in dynamic task environments will find it difficult to anticipate how fast and in which direction the market will develop (Jurkovich, 1974; Miles and Snow, 1978). *Environmental munificence* denotes the level at which a firm's task environment supports growth through the presence of opportunities and the abundance of external resources for firms (Castrogiovanni, 1991; Rosenbusch et al., 2013; Starbuck et al., 1978). Industries with high environmental munificence are thus attractive for their members (Wernerfelt and Montgomery, 1986).

Cash holdings and strategic fit

The concept of strategic fit derives from literature on contingent views of strategy and resources (Venkatraman 1989). Zajac et al. (2000, p. 429) describe strategic fit as a core concept in strategy formulation, and suggest that "the appropriateness of a firm's strategy can be defined in terms of its fit, match, or congruence with the environmental or organizational contingencies facing the firm." Likewise, Scholz (1987) reasons that strategic fit describes a situation in which elements internal and external to the firm are aligned. Several researchers emphasize that such a fit between a firm and its environment is crucial, and yields desirable performance implications (Fainshmidt et al., 2019; Zott, 2003).

Building on Fainshmidt et al. (2019), our study's definition of strategic fit comes from Ginsberg and Venkaraman (1985, p. 421): "matching organizational resources with the corresponding environmental context." Thus, strategic fit means matching the entire firm, as a bundle of corporate resources, with the various environmental contingencies that impact firm performance. We stress the importance of cash holdings, and suggest that in complex and dynamic environments, cash holdings are of particular value, as their flexibility is critical for managers struggling to constantly adapt to changes in the environment. Strategic fit is the underlying mechanism for understanding the link between cash holdings as versatile resources and firm performance. We consider versatile resources to be of special importance for strategic fit in times of environmental change, as they provide firms with the necessary flexibility to endeavor to realign to these changes (Duncan, 1972; Hofer, 1975; Lawrence and Lorsch, 1967). When environments are munificent, though, firms typically have access to sufficient external finance and face "minimal competitive pressures" (Castrogiovanni, 1991, p. 543) – a situation conducive to strategic fit, and one which decreases the strategic value of cash holdings in resource-rich settings.

Hypotheses

Environmental complexity

Management scholars depict complexity's "uniformly dark side," with complex environments declared "inherently detrimental" (Poulis and Poulis, 2016, p. 506) and associated with multiple challenges. To cope with these challenges, firms may either try to achieve a better level of fit with the external environment, i.e., to reduce the complexity, or try to become increasingly autonomous from it through insourcing, i.e., to absorb the complexity (Boisot and Child, 1999). Boisot and Child (1999) and Lengnick-Hall and Beck (2005) suggest that firm resources shape the firm's ability to *reduce*, to *absorb*, or even to *disregard* complexity. Based on these three alternatives, we suggest three ways that firms can deal with environmental complexity and what role resources play in doing so. We argue that excess resources such as cash holdings are ways to cope with environmental complexity (Poulis and Poulis, 2016). Accordingly, we suggest that environmental complexity increases the strategic value of cash holdings.

First, cash holdings bear features that *reduce* competitive pressures that come from complex environments. Their versatility renders firms more flexible in reacting to competitive threats. This can create fear of retaliation among competitors (Kim and Bettis, 2014), even if the firm does not intend to take competitive action at all. This phenomenon is the "deep pocket" effect (Telser, 1966): cash holdings enable firms to preemptively deter competitive attacks (Benoit, 1984). Particularly in atomistic environments, in which a firm cannot tailor competitive actions or reactions to each market incumbent, firms may pursue a defensive strategy of deterrence against aggressive competitors. With large cash holdings signaling financial strength and readiness to respond, firms reduce the likelihood of attacks (Josefy et al., 2015). This deterrence likely also works against competitive threats posed by potential market entrants, as large cash holdings signal the readiness of incumbents to react to entrants' threats. Cash holdings constitute an entry barrier deterring competition (Salop, 1979).

Second, versatile cash holdings can support firms in *absorbing* environmental complexity. Complexity absorption means that a firm "maintains a broad repertoire of options and enough action flexibility to create an effective response for emerging contingencies" (Lengnick-Hall and Beck, 2005, p. 745). It is thus not about achieving a tight fit between a firm and its environment but about creating responsiveness through maintaining a broad spectrum of potential actions and reactions to a complex environment. The plethora of external and internal contingencies influencing firm performance in complex markets cannot be fully monitored and anticipated. Thus, complex environments increase the demand for continuous strategic action (Aldrich, 1979). Versatile cash holdings provide firms with strategic flexibility to cope with these circumstances. A versatile resource base allows firms to develop and introduce new products and resist the pressures arising from high product interdependency.

Third, cash holdings can help firms to *disregard* challenges associated with environmental complexity, as they safeguard firms from making unwanted changes that can be necessary in periods of distress, such as selling off assets (Lang et al., 1995). Scholars suggest that firms are adaptive systems requiring constant alignment with their external environments to ensure survival (Ashby and Stein, 1954; Boisot and Child, 1999; Poulis and Poulis, 2016). In that regard, cash holdings constitute a buffer against external threats (Pfeffer and Salancik, 1977) and an important resource to create fit between firm and environment. While they enable firms to diversify their acquisitions (Duchin, 2010), cash holdings can also help them to become strategically more complex without making irreversible, possibly detrimental, resource commitments (Ghemawat, 1991), as they enable firms to take a real-options approach that does not lead to strategic lock-ins (Kim and Bettis, 2014). Such a cushion sometimes allows firms to simply disregard the challenges of complex environments.

Despite their strategic value, cash holdings could also have adverse effects on performance in complex environments. For instance, the possession of a substantial cash buffer may render a firm a potential takeover target, coherently to firms with high free cash flow that have a higher likelihood to become takeover targets (Jensen, 1986). Hence, in complex environments with many competitors, more firms are at the ready to put competitive pressures on cash-rich firms via takeover attempts. Moreover, while cash allows a firm to actively react by providing a set of competitive response capabilities, their active use may induce competitors to engage in an adverse cascade of competitive actions and reactions (D'Aveni et al., 2010). Finally, cash may induce a firm to become inert and lethargic, undermining agility and dampening performance, as cash holdings often allow firms to simply ignore challenges associated with complexity. In this regard, cash holdings as a slack resource render a firm's management complacent (Bromiley, 1991; George, 2005). Still, we believe that in complex environments, the benefits of cash outweigh the drawbacks, given its ability to align the firm with the complex environment. Overall, we hypothesize that:

Hypothesis 1. Environmental complexity increases the positive effect of cash holdings on firm performance.

Environmental dynamism

After complexity, the second dimension of a firm's task environment is dynamism. Hitt et al. (1998) identified environmental dynamism as one of the most important external influences on firm performance. Environmental dynamism is generally detrimental to performance (Baum and Wally, 2003). It can be broken down into two sub-dimensions: the rate of change, i.e., instability or volatility, and the unpredictability of change, i.e., uncertainty, turbulence, or the absence of patterns (Dess and Beard, 1984; Jurkovich, 1974; Miles et al., 1974; Miller and Friesen, 1983). We look at these two sub-dimensions in terms of their relevance to the performance implications of cash holdings.

Environmental instability results from nonlinear industry dynamics (Bettis and Hitt, 1995), and from changes of the environment that are frequent (Posen and Levinthal, 2012), turbulent (Volberda, 1996), and abrupt (McCarthy et al., 2010). Examples of environmental instability are technology discontinuities, changes in customer demand, and quickly changing competitor behavior (Rosenbusch et al., 2013). These circumstances make it important for firms to be flexible (Davis et al., 2009). Cash provides firms with the necessary ability to adapt to challenges arising from instability (Sharfman et al., 1988), and facilitates change (Kraatz and Zajac, 2001), and thus safeguards firms from the consequences of unstable environments (Thompson, 1967). Simerly and Li (2000) show that a suitable capital structure supports firms in aligning with unstable environments. Cash holdings allow firms to be more responsive to rapid environmental discontinuities (Bettis and Hitt, 1995; Cheng and Kesner, 1997), and to exploit emerging growth opportunities more effectively (Faulkender and Wang, 2006). The latter is particularly important, as on dynamic markets, opportunities can quickly disappear (Rosenbusch et al., 2013) and firms often need to take immediate action to sustain their performance.

Environmental uncertainty is associated with higher unpredictability (Bradley et al., 2011; Simerly and Li, 2000; Starbuck et al., 1978; Zahra, 1993). Scholars suggested that environmental uncertainty is "the essence of dynamism" (Anderson and Tushman, 2001), and coping with it is a key challenge for firms (Thompson, 1967). While environmental instability may be associated with rapid changes, these changes can be predictable and thus create no uncertainty (Dess and Beard, 1984; Milliken, 1987). For instance,

market demand may vary, but in a predictable way. Hence, an unstable environment can exhibit low uncertainty (Storper, 1996). By contrast, environmental uncertainty suppresses both the firm's ability to predict the effect of future environmental conditions on itself, and its ability to predict the consequences and utility of potential responses to such conditions (Buchko, 1994; Milliken, 1987).

As unpacked by Anderson and Tushman (2001), environmental uncertainty contains at least three challenges, which firms holding versatile resources can more easily confront. First, when firms attempt to respond to, or to achieve fit with, expected external conditions, they often make investments that are difficult to undo (Ghemawat, 1991). Such investments may quickly become undesirable. Cash holdings have an option-like property (Kim and Bettis, 2014) that facilitates adaptation without potentially undesirable up-front investments. Second, success is fragile in uncertain environments. With more shallow learning curves in uncertain environments, firms may need to revise expectations, which can entail substantial costs that need to be buffered. Cash holdings can help by flexibly covering these costs (Salge and Vera, 2013). Third, environmental uncertainty creates turbulence even within the firm. This reduces a firm's capacity to deal with environmental uncertainty (O'Reilly et al., 1989). Cash holdings can cushion such internal pressures, for instance by supporting peaceful relations among members of the top management team (Bourgeois and Singh, 1983).

Taking all factors into consideration, the negative effects of unexpected and detrimental events may be ameliorated by cash as a safety buffer (George, 2005). This buffer ensures flexibility and renders a firm ready to respond to unexpected changes. The detrimental event can potentially even be turned around to improve financial performance in the aftermath, which may include the development of new products, or an entry into new markets (Barker and Duhaime, 1997). When facing uncertain environments, cash can enable a firm to "innovate out" (Nason and Patel, 2016, p. 4243) of an unexpected adverse event and renew its capabilities (Inkpen and Choudhury, 1995). This application of cash is particularly useful when discontinuous changes in technology and innovation result in a particularly hazardous form of uncertainty that forces firms to engage in innovation to renew their resource base (Tushman and Anderson, 1986; Zahra, 1993). Pressures to innovate are stronger in such uncertain environments (Miles et al., 2000), enhancing the strategic value of cash holdings (e.g., Brown and Petersen, 2011; Lyandres and Palazzo, 2016; Schroth and Szalay, 2009).

It should be noted, though, that the possession of cash holdings can also entail negative performance effects in dynamic environments. First, in dynamic environments, cash holdings may tempt firms to take action when it would be better to refrain from taking action (Stieglitz et al., 2016). For example, Nason and Patel (2016) find that pressures arising from a recession diminish the strategic value of cash holdings. Thus, a more flexible, change-oriented resource base may diminish performance. Second, cash-rich firms confronted with unexpected exogenous shocks may remain inert and decide not to act, as cash can buffer associated effects (Thompson, 1967), which renders the firm complacent. This may have the potential to undermine competitive advantage and diminish firm performance in the end. However, as noted above, we reason that the benefits associated with cash holdings outweigh the potential downsides and allow firms to ensure strategic fit with dynamic environments. In sum, we hypothesize that:

Hypothesis 2. Environmental dynamism increases the positive effect of cash holdings on firm performance.

Environmental munificence

Environmental munificence denotes the level at which a firm's task environment supports growth through the existence of opportunities and the abundance of external resources (Castrogiovanni, 1991; Rosenbusch et al., 2013; Starbuck et al., 1978). The notion of environmental munificence for firms has been described as "resourcefulness" (Pennings and Tripathi, 1978), "industry attractiveness" (Wernerfelt and Montgomery, 1986), "favorability" (Osborn et al., 1980), and "opportunity" (Beard and Dess, 1981). All these terms add up to munificence, a favorable environment for the firm. Munificence is conceptually different from environmental complexity and dynamism, which tend to make the task environment more challenging and difficult to manage. We argue that munificence does not enhance the cash-performance relationship, as it smooths turbulences in the environment and consequently diminishes or even eliminates the importance of the adaptive and deterrent nature of cash.

Environmental munificence implies that firms have sufficient access to critical external resources. A munificent environment thereby offers enough "capacity" (Aldrich, 1979) for other firms to flourish without necessarily lowering the growth potential of the focal firm. It comes as no surprise that munificent environments tempt new firms to enter the market (Randolph and Dess, 1984). Munificence can become a catalyst for firm diversity in an industry, as firm survival is possible when going alternative paths resulting in lower exit rates (Brittain and Freeman, 1980; Tushman and Anderson, 1986). Munificence facilitates the survival of firms, even if the density of organizations that compete for the same resources increases (Dess and Beard, 1984; Hambrick, 1983; Yasai-Ardekani, 1989). For this reason, a munificent environment may act as a substitute for large cash holdings, and is associated with "minimal competitive pressures" and "relative harmony" among firms (Castrogiovanni, 1991, p. 543). Hence, the upside potential of cash holdings to deter competitive forces is attenuated in such munificent environments.

Beyond that, environmental munificence increases stability and reduces the need for alignment. Rosenbusch et al. (2013, p. 652) regard munificence as "the most favorable environmental condition." On the other hand, when munificence is low, cash holdings help firms create value by allowing them to enter new markets or diversify their portfolios (Bettis, 1981). In lean times, while cash-poor firms are highly dependent on existing domains, and may suffer from not being able to diversify (Keats and Hitt, 1988) so as to leave resource-scarce markets, cash-rich firms may move ahead to reduce overall risk and increase performance (Bettis, 1981). This benefit of cash holdings does not emerge in munificent environments. We argue that in the absence of challenges associated with low munificence that require firms to adapt and change (Opler et al., 1999), the strategic benefits of cash cannot fully materialize. For instance, Brush et al. (2000) find a negative interaction between a firm's level of free cash flow and a firm's growth rate in sales. This

tentatively indicates that in munificent environments, the strategic value of cash holdings diminishes. This does not mean that the existence of opportunities associated with growth offered by munificent environments does not require adaptation. However, even if the adaptive benefits of cash holdings are still available, firms can merely absorb resources and build up slack on-the-fly, for example from benevolent financial markets. In this regard, Faulkender and Wang (2006) find that the marginal value of cash diminishes when there is better access to capital markets. Hence, accumulating and maintaining substantial cash holdings for rainy days under munificence may constitute a rather unnecessary and costly safety net.

It is unclear, however, whether the strategic value of cash holdings always decreases in munificent environments, as munificence might encourage managers to reduce the general amount of resources held in the firm. Firms that do not save in munificent times may be under severe pressure to accumulate cash holdings in non-munificent times, such as during a financial crisis in which financial resources dry up in the markets and are difficult to absorb from external parties (Duchin et al., 2010). It has been shown that building up a substantial buffer under munificent conditions helps firms to emerge even stronger out of a recession (Gulati et al., 2010). Thus, cash holdings may have a positive value for shareholders even in good times, and are welcome as insurance for bad times. Still, we expect that the strategic value of cash is lower in munificent environments. We therefore hypothesize that:

Hypothesis 3. Environmental munificence attenuates the positive effect of cash holdings on firm performance.

Methods

Data and sample

Our analyses build on panel data from the CRSP-Compustat Merged database (CCM) between 1988 and 2014. We followed common data cleaning processes as used in Brush et al. (2000), O'Brien and Folta (2009), and Villalonga (2004). Accordingly, we dropped (1) firm-year observations in cases where assets are below $10 million; (2) observations for which data on the standard industrial classification (SIC) codes is missing; (3) observations for highly regulated industry sectors, i.e., financial institutions (SIC codes: 6000 to 6999), government, including finance (SIC codes: 9100 to 9199), and non-classifiable establishments (SIC codes: 9900 to 9999); and (4) observations with R&D or advertising ratios higher than one. All extracted variables were winsorized at the first and 99th percentile to eliminate the influence of outliers. Table 1 shows the summary statistics for the final baseline sample and statistics on moderators in their respective sample. We built our main analyses on five different sub-samples (see Table 2), as we constructed our moderating variables with data from various other sources including the Hoberg and Phillips Data Library.

Measures

Dependent Variable. To assess the returns to cash, we followed Kim and Bettis (2014) and O'Brien and Folta (2009), in using Tobin's *q* as the dependent variable. This is well justified, given that a market-based measure of firm value is superior in capturing shareholders' opportunity costs and benefits (Villalonga, 2004). Tobin's *q*, based on the market-to-book ratio, as proposed by Richard et al. (2009), denotes the market value of the firm divided by total assets, with the denominator approximating replacement costs via the book value of a firm's total assets. We calculated the market value of the firm as the sum of calendar year-end value of a company's common stock, the market value of a company's preferred stock, the book value of a company's long-term debt, and the book value of a company's short-term debt with a maturity of less than one year. We used calendar year-end values of a company's common stock (Brush et al., 2000), and we followed Deb et al. (2017) in dropping observations exceeding a threshold of 10. To use a market-based measure via the current value of common stock aligns with the efficient market hypothesis, which argues that a firm's stock price responds to the firm's actions in year *t* and not the subsequent year. Thus, we use non-lagged predictors, as justified by, among others, Nason and Patel (2016). This common practice aligns with studies examining the strategic value of cash holdings (e.g., Deb et al., 2017; Kim and Bettis, 2014).

Explanatory Variables. Our main explanatory variable is *cash*, as measured by the ratio of cash and short-term investments to total assets (Haushalter et al., 2007; Opler et al., 1999). We followed prior work (Kim and Bettis, 2014) in including the squared term of cash, denoted as *cash squared*, to account for the diminishing returns associated with cash.

To capture the task environment, we build on the tripartite classification laid out by Dess and Beard (1984), who distinguish between complexity, dynamism, and munificence. As there is little consensus on how each of these dimensions of a firm's task environment should be measured (Harris, 2004; Sharfman et al., 1988), we synthesize prior theorizing and propose a set of two moderators per dimension. By examining more than one measure for each moderating dimension, and ensuring that the measures tapped are grounded in solid theoretical reasoning, we want to avoid the possibility that a specific proxy rather than the underlying conceptual construct drives our results.

Dess and Beard (1984) interpret *environmental complexity* in terms of market concentration and dispersion, such that complexity relates to the degree of heterogeneity or diversity of a firm's environment (Aldrich, 1979; Child, 1972; Duncan, 1972). A highly dispersed set of market players induces a firm to interact with each of these players and consequently engage in a broad and heterogeneous range of strategic activities. The lower the market concentration, the more fragmented it is, and the higher the number of potential competitive ties is between firms; this renders the environment more complex (Anderson and Tushman, 2001; Starbuck et al., 1978). To account for the underlying rationale, we introduce *market dispersion* and *product interdependency* as proxies for environmental complexity.

We capture *market dispersion* with the inverted Herfindahl-Hirshman Index (HHI), which is a commonly used proxy for market

Table 1
Means, standard deviations, and correlations.

		Mean	SD	1	2	3	4	5	6	7	8
1	Tobin's *q*	1.392	1.097	1							
2	Lagged Tobin's *q*	1.454	1.160	0.727*	1						
3	Industry Tobin's *q*	1.452	0.583	0.484*	0.384*	1					
4	R&D intensity	0.039	0.083	0.259*	0.272*	0.367*	1				
5	Advertising intensity	0.010	0.025	0.079*	0.086*	0.081*	0.013*	1			
6	Capital expenditure	0.064	0.069	0.067*	0.106*	−0.058*	−0.141*	−0.053*	1		
7	Firm growth	0.103	0.297	0.216*	0.247*	0.105*	−0.044*	−0.017*	0.177*	1	
8	Cash flow	0.046	0.121	0.111*	0.059*	−0.029*	−0.319*	−0.040*	0.115*	0.170*	1
9	Leverage	0.238	0.201	−0.212*	−0.205*	−0.209*	−0.230*	−0.026*	0.067*	−0.004	−0.106*
10	Absorbed slack (NWC)	0.090	0.189	−0.049*	−0.059*	−0.088*	−0.095*	−0.035*	−0.192*	0.001	0.213*
11	Absorbed slack (SG&A)	0.287	0.265	0.225*	0.252*	0.329*	0.610*	0.201*	−0.104*	−0.085*	−0.504*
12	Firm size	0.305	2.002	−0.038*	−0.053*	−0.121*	−0.192*	0.062*	−0.074*	−0.020*	0.285*
13	Cash	0.142	0.168	0.346*	0.340*	0.327*	0.502*	0.069*	−0.156*	0.001	−0.137*
14	Cash squared	0.048	0.102	0.303*	0.305*	0.285*	0.486*	0.061*	−0.146*	−0.004	−0.158*
15	Market dispersion	0.942	0.023	0.135*	0.140*	0.282*	0.208*	−0.022*	0.036*	0.050*	−0.078*
16	Product interdependency	2.974	3.291	0.211*	0.244*	0.287*	0.412*	−0.020*	0.206*	0.090*	−0.095*
17	Instability	−0.956	0.894	0.101*	0.120*	0.252*	0.116*	−0.037*	0.149*	0.108*	−0.048*
18	Uncertainty	0.916	0.619	0.182*	0.217*	0.150*	0.159*	0.005	0.030*	0.117*	−0.005
19	Capacity	0.940	0.618	−0.063*	−0.079*	−0.178*	−0.025*	0.031*	−0.200*	−0.116*	0.004
20	Growth	1.364	1.266	−0.065*	−0.075*	−0.053*	−0.050*	−0.016*	−0.021*	−0.025*	0.031*

	9	10	11	12	13	14	15	16	17	18	19	20
1												
2												
3												
4												
5												
6												
7												
8												
9	1											
10	−0.206*	1										
11	−0.184*	−0.162*	1									
12	0.125*	−0.013*	−0.328*	1								
13	−0.425*	−0.170*	0.419*	−0.230*	1							
14	−0.337*	−0.166*	0.409*	−0.241*	0.936*	1						
15	−0.087*	−0.090*	0.203*	−0.280*	0.184*	0.165*	1					
16	−0.086*	−0.214*	0.276*	−0.139*	0.313*	0.310*	0.185*	1				
17	−0.055*	−0.051*	0.094*	−0.200*	0.099*	0.091*	0.177*	0.223	1			
18	−0.049*	−0.047*	0.067*	0.172*	0.144*	0.114*	0.051*	0.176*	0.097	1		
19	−0.007	0.004	−0.016*	0.147*	0.007	−0.002	−0.093*	−0.190*	−0.860*	−0.095*	1	
20	0.006*	0.022*	−0.066*	0.054*	−0.038*	−0.044*	−0.091*	−0.039*	−0.042*	−0.033*	0.130*	1

Notes. All means, standard deviations, and correlations relate to the sub-sample with the highest number of observations (environmental dynamism/munificence; 85,075 firm-year observations). Values for market dispersion, product interdependency, instability, uncertainty, capacity, and growth are based on the respective samples used. Statistically significant correlations ($p < 0.05$; two-tailed tests) are marked with an asterisk. The variables firm size and firm growth are logged. For all variables, unstandardized variables are reported.

Table 2
Fixed effects regression analyses explaining the effects of cash holdings and environmental complexity, dynamism, and munificence on firm performance.

Dependent variable: Tobin's *q*	Environmental complexity				Environmental dynamism				Environmental munificence			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Controls												
Lagged Tobin's *q*	0.266***	0.266***	0.294***	0.294***	0.331***	0.330***	0.338***	0.336***	0.331***	0.330***	0.348***	0.348***
	(0.009)	(0.009)	(0.010)	(0.010)	(0.007)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)	(0.008)	(0.008)
Industry Tobin's *q*	0.667***	0.666***	0.663***	0.661***	0.619***	0.618***	0.594***	0.592***	0.619***	0.618***	0.603***	0.602***
	(0.017)	(0.017)	(0.018)	(0.018)	(0.013)	(0.013)	(0.015)	(0.015)	(0.013)	(0.013)	(0.014)	(0.014)
R&D intensity	−0.079	−0.083	−0.099	−0.120	−0.030	−0.026	0.110	0.114	−0.028	−0.026	−0.070	−0.066
	(0.215)	(0.215)	(0.225)	(0.224)	(0.162)	(0.162)	(0.191)	(0.192)	(0.162)	(0.162)	(0.172)	(0.172)
Advertising intensity	−1.096***	−1.086***	−0.675	−0.677	−0.878***	−0.910***	−0.813**	−0.854**	−0.883***	−0.913***	−0.865***	−0.884***
	(0.398)	(0.398)	(0.504)	(0.505)	(0.315)	(0.315)	(0.367)	(0.370)	(0.315)	(0.316)	(0.319)	(0.319)
Capital expenditure	0.782***	0.783***	0.617***	0.628***	0.636***	0.639***	0.569***	0.581***	0.636***	0.640***	0.592***	0.593***
	(0.091)	(0.091)	(0.107)	(0.107)	(0.070)	(0.071)	(0.084)	(0.084)	(0.071)	(0.071)	(0.072)	(0.072)
Firm growth	0.280***	0.280***	0.268***	0.267***	0.236***	0.236***	0.261***	0.259***	0.235***	0.235***	0.235***	0.234***
	(0.018)	(0.018)	(0.021)	(0.021)	(0.014)	(0.014)	(0.017)	(0.017)	(0.014)	(0.014)	(0.014)	(0.014)
Cash flow	1.221***	1.222***	0.965***	0.966***	0.947***	0.947***	1.057***	1.052***	0.946***	0.947***	0.945***	0.946***
	(0.070)	(0.070)	(0.075)	(0.075)	(0.052)	(0.052)	(0.065)	(0.065)	(0.052)	(0.052)	(0.055)	(0.055)
Leverage	−0.078*	−0.079*	−0.160***	−0.161***	−0.076**	−0.075**	−0.178***	−0.181***	−0.076**	−0.075**	−0.077**	−0.077**
	(0.041)	(0.041)	(0.046)	(0.046)	(0.032)	(0.032)	(0.037)	(0.037)	(0.032)	(0.032)	(0.033)	(0.033)
Absorbed slack (NWC)	0.122***	0.122***	0.126**	0.123**	0.142***	0.142***	0.104**	0.107***	0.141***	0.141***	0.147***	0.145***
	(0.046)	(0.046)	(0.053)	(0.053)	(0.035)	(0.035)	(0.041)	(0.041)	(0.035)	(0.035)	(0.036)	(0.036)
Absorbed slack (SG&A)	0.163**	0.164**	0.112	0.110	0.136***	0.136***	0.104	0.107*	0.136***	0.136***	0.154***	0.153***
	(0.080)	(0.080)	(0.075)	(0.075)	(0.049)	(0.049)	(0.065)	(0.065)	(0.049)	(0.049)	(0.051)	(0.051)
Firm size	−0.131***	−0.132***	−0.140***	−0.140***	−0.111***	−0.111***	−0.119***	−0.119***	−0.111***	−0.111***	−0.107***	−0.107***
	(0.010)	(0.010)	(0.013)	(0.013)	(0.008)	(0.008)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)
Explanatory												
Cash	0.190***	0.189***	0.185***	0.190***	0.179***	0.178***	0.174***	0.174***	0.178***	0.178***	0.173***	0.174***
	(0.013)	(0.013)	(0.014)	(0.014)	(0.010)	(0.010)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)
Cash squared	−0.025***	−0.028***	−0.025***	−0.029***	−0.022***	−0.023***	−0.020***	−0.021***	−0.022***	−0.022***	−0.020***	−0.020***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)
Market dispersion	0.020*	0.028**										
	(0.012)	(0.013)										
Product interdependency			−0.018	−0.030								
			(0.019)	(0.019)								
Instability					−0.023***	−0.022**						
					(0.008)	(0.009)						
Uncertainty							0.034***	0.035***				
							(0.004)	(0.004)				
Capacity									0.017**	0.016**		
									(0.007)	(0.007)		
Growth											0.000	−0.001
											(0.003)	(0.003)
Interactions												

(*continued on next page*)

Table 2 (*continued*)

Dependent variable: Tobin's *q*	Environmental complexity				Environmental dynamism				Environmental munificence			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Cash × Market dispersion		0.026***										
		(0.010)										
Cash × Product interdependency				0.020*								
				(0.010)								
Cash × Instability						0.014**						
						(0.007)						
Cash × Uncertainty								0.026***				
								(0.005)				
Cash × Capacity										−0.013**		
										(0.007)		
Cash × Growth												−0.014***
												(0.004)
Intercept	−0.044	−0.043	−0.033	−0.030	0.013	0.014	0.046	0.052	0.007	0.010	−0.016	−0.013
	(0.037)	(0.037)	(0.043)	(0.043)	(0.028)	(0.028)	(0.032)	(0.032)	(0.028)	(0.028)	(0.028)	(0.028)
F	233.521	226.165	252.949	245.084	342.074	334.097	287.416	281.558	342.097	334.64	325.078	317.796
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R^2	0.311	0.311	0.347	0.347	0.359	0.36	0.37	0.371	0.359	0.36	0.372	0.373
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	50,272	50,272	46,348	46,348	85,075	85,075	64,973	64,973	85,075	85,075	77,157	77,157

Notes. The variables firm size and firm growth are logged. Time and year fixed effects are not reported. Unstandardized coefficients are used, except for the variables included interactions. Standard errors are robust and clustered by firm. Two-tailed tests are used. Statistical significance is reported as *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

complexity (e.g., Cannon and John, 2007; Shughart, 1990). In general, the HHI measure is defined as one minus the sum of squared market shares approximated by sales of the firms in the same industry (Giroud and Mueller, 2011). We employ a more advanced two-step procedure as used in Hoberg and Phillips (2010). In this particular case, the industry HHI of the Commerce Department is regressed on the Compustat public-firm-only HHI and the average number of employees per firm. Afterwards, the coefficient estimates from this regression are used to compute fitted HHI for all other industries. Most notably, while basic Compustat-based concentration measures are problematic given their low correlations with census-based measures, our improved measure ameliorates four major shortcomings (Keil, 2017) by (1) accounting for all firms in an industry, (2) avoiding biases due to accounting practices related to sales data, (3) circumventing inaccurate assignment practices to only the main business line of for large, multi-segment firms, and (4) considering that sales derived from other geographical locations do not inflate a firm's market share.

Environmental complexity can also stem from the interconnectedness or interdependence among environmental elements (Child, 1972; Starbuck, 1976). As firms compete on product markets (including service markets) that react to changes in the competitors' product portfolios, we argue that interdependencies among firms occur on a product level. For instance, a firm's environment becomes more complex if the firm diversifies into a new market (Hitt et al., 1994). Even if a rival does not produce perfect substitutes, an overlap in product market space may be sufficient to create pronounced interdependencies associated with substantial competitive pressures (Panzar and Willig, 1981). We therefore suggest that a higher product overlap with competitors indicates similarly higher interdependencies among competitors capturing increased environmental complexity. Accordingly, we capture *product interdependency* as the overlap of a firm's product space with its product market competitors (Hoberg and Phillips, 2016), obtained from the Hoberg and Phillips Data Library. Our measure denotes the sum of the firm-by-firm pairwise overlap of product words used within 10-K business descriptions between the focal firm and all potential competitors in the product market space in a given year. Accordingly, the higher this score is, the higher is the overlap of the focal firm's product portfolio to those of all its competitors.

We want to emphasize a specific methodological feature, namely that the measurement of product interdependency draws on text-based industry classification. This measure identifies competitors based on their proximity in product space, as described in firms' product descriptions in their annual 10-K statements. Based on this proximity, we assigned a unique set of direct and distinct competitors for each individual firm.[1] Product interdependency is measured based on the overlap in the product portfolios (Hoberg and Phillips, 2010), i.e., through the relative numbers of words that firms have in common with all sample firms. It thus indirectly also accounts for the number of firms with which the firm interacts, which is a common materialization of environmental complexity (Cannon and John, 2007; Kostova and Zaheer, 1999). This measure has at least three advantages that stem from text-based industry classification instead of a fixed-industry classification scheme (e.g., SIC).

First, text-based industries are non-transitive, such that only because Firm 1 and Firm 2 are in an industry, another firm that is similar to Firm 1, but not to Firm 2 is not assigned to Firm 2's industry. This permits the identification of a more fine-grained, more accurate, and more individual set of competitors for each firm, which increases the adequacy of assessing product interdependency. Second, as a continuous measurement of pairwise interdependencies between firms, product interdependency ameliorates shortcomings of assuming zero distance of firms within an industry. Third, because firms update their product descriptions yearly, the text-based approach takes into account changes in industry composition resulting from firms' actions of altering their product portfolio or enhancing or reducing their product market spheres. Firms' flexible membership of an industry is disregarded by "fixed-industry" classifications. In sum, our approach for assessing environmental complexity via product interdependency can be considered state-of-the-art and is based on sophisticated text-based industry classification that is superior to its traditional counterparts.

Dess and Beard (1984) theorize that *environmental dynamism* comprises two dimensions, namely environmental *instability* (the rate of change) and environmental *uncertainty* (the unpredictability of change or turbulence). Following related literature (Boyd, 1995; Dess and Beard, 1984; Levinthal and Myatt, 1994; Sirmon et al., 2007), we conceptualize *instability* as instability of market demand and measure it as the volatility of industry sales (4-digit SIC level) over the prior five years. Accordingly, we regressed industry sales over five years against time. We extracted the standard errors of the regression coefficients related to time dummies, divided them by the mean industry sales, and calculated the logarithm to account for skewness.

Environmental *uncertainty* accounts for deviations from expected market patterns (such as market demand) and the associated challenges for firms to adequately forecast future market developments (Kovach et al., 2015). Environmental uncertainty is captured via stock market beta (β) as a measure of uncertainty in capital asset pricing models and helps to assess unpredictable events such as inflation and recessions that affect whole economies (Lintner, 1965; Sharpe, 1964). Stock market beta assesses the variation of a firm's stock value compared to its industry and is measured as the co-movement of a firm's stock with the market. A market beta greater than one means the stock has more systematic risk (i.e., uncertainty) than the market and vice versa. A market beta of one indicates that the firm's systematic risk is the same as the market's systematic risk. To estimate beta, we used the four-factor model (Carhart, 1997): $r_{i,t} - rf_t = \alpha_i + \beta_{i,mkt}(mktrf_t - rf_t) + \beta_{i,smb}SMB_t + \beta_{i,hml}HML_t + \beta_{i,umd}UMD_t + \varepsilon_{i,t}$ where $r_{i,t}$ denotes the firm/stock i return, rf_t indicates the risk-free rate, $mktr_t$ denotes the excess return on the market, SMB_t describes the size factor during period t, HML_t indicates the value factor during period t, and UMD_t denotes the momentum factor during period t. We estimated firms' market betas with daily frequency for both regular return data and log return data. For a given firm-year observation, we assigned the calendar-year end estimates of systematic risk as our predictor. In sum, systematic risk (β) refers to the estimated effect size of the excess return on the market during period t.

The third environmental dimension as laid out by Dess and Beard (1984) is *environmental munificence*, conceptualized as

[1] Hoberg and Phillips (2016) describe this text-based industry classification as a network approach, comparing the competitive sphere of a firm to a circle of friends on a social media network such as Facebook.

environmental *capacity* and environmental *growth*. While complex and dynamic environments bring challenges, environmental munificence is favorable for the focal firm, as external opportunities are plenty and critical resources are abundant (Aldrich, 1979; Salancik and Pfeffer, 1978; Staw and Szwajkowski, 1975). First, we measured environmental *capacity* as the time coefficient of the regressions of industry sales against time (see the procedure for determining environmental dynamism), which is divided by the mean value of industry sales. As we use natural logarithms of industry sales as our dependent variable, we took the antilog of the regression slope coefficient to obtain our final proxy for environmental capacity. Second, environmental munificence is associated with the relative change in related growth opportunities (Cameron et al., 1987; Castrogiovanni, 1991). In this regard, it can be understood as "the ability to support a population of firms" (Hambrick and D'Aveni, 1988, p. 3). As a first order market indicator of munificence, we follow the related literature (Keats and Hitt, 1988; Peng and Luo, 2000; Yasai-Ardekani, 1989) and use environmental *growth* in net sales, measured as the ratio of the mean value of industry sales of the current year divided by the mean value of industry sales of the prior year.

Control Variables. To account for serial correlation, we introduced a one-year lag of the dependent variable *lagged Tobin's q*. To consider industry-level effects, we introduced *industry Tobin's q*, the mean value of the dependent variable based on its industry classification at the four-digit SIC level. Furthermore, we accounted for *R&D intensity* and *advertising intensity*, defined as R&D expenditures and advertising expenditures scaled by sales with missing values set to zero (Hall, 1993) and a cap at one. We also controlled for *capital expenditures*, scaled by total assets because they drive firm value. Further, we included *firm growth*, defined as the natural logarithm of the ratio of $sales_{i,t}$ and $sales_{i,t-1}$, where i is the firm and t is the year (Brush et al., 2000). In line with Deb et al. (2017), and Kim and Bettis (2014), we accounted for *cash flow*, defined as operating income before depreciation, minus total income taxes, minus the yearly change in deferred taxes, minus gross interest expenses on total debt, minus the amount of preferred dividends on cumulative preferred stock and dividends on noncumulative preferred stock, minus dividends paid on common stock, and scaled by total assets. *Leverage* is defined as total debt scaled by total assets. It should be noted, though, that increasing values denote low potential slack that can be observed from external markets, and that observations exceeding one were dropped, as under such conditions, a firm would be bankrupt (Alti, 2006). *Absorbed slack (net working capital, NWC)* and *absorbed slack (sales and general administration expenses, SG&A)* denote NWC scaled by total assets and SG&A scaled by sales, respectively. These measures help to differentiate between the effects of absorbed and unabsorbed slack on firm value, both cleaned for values below zero and above one, which indicate incorrect data entries. *Firm size* was defined as the natural logarithm of the number of total employees (Bharadwaj et al., 1999). Further, we introduced *cash squared* to account for decreasing marginal returns of liquid resources on Tobin's *q* (George, 2005; Kim and Bettis, 2014; Tan and Peng, 2003). Finally, we accounted for unobserved heterogeneity in time, such as that due to economic downturns or government interventions, by including year fixed effects. Summary statistics and correlations are depicted in Table 1.

Analysis

To control for unobserved time-constant determinants of cash holdings and firm performance, we made use of the panel dimension of our data. We decomposed the structural error term into a firm-specific disturbance and an independent and identically distributed error term. The firm-specific disturbance can either be fixed over time for each firm (a fixed-effects model) or vary randomly over time for each firm (a random-effects model). Because the Hausman specification tests are significant (e.g., for the baseline model: Chi-squared statistics: 17,218; $p = 0.000$), a random-effects model is inadequate to describe firm-level effects. Therefore, we chose a firm-fixed effects model, which is common for studies assessing the strategic value of cash holdings (e.g., Deb et al., 2017; O'Brien and Folta, 2009). A modified Wald test for groupwise heteroscedasticity found that our firm fixed-effects model exhibited heteroscedasticity, which we considered by reporting robust standard errors and clustered on the firm level. We addressed time effects via time dummies and estimated standard errors clustered on firm effects to increase the efficiency of our estimates. An Arellano-Bond test confirmed the presence of first-order autocorrelation. Thus, we followed Greene (2011) in using a dynamic fixed effects model by introducing a lagged dependent variable to all of our models (Barnett and Salomon, 2012). Our regression framework closely aligns with the recent technique of assessing the strategic value of cash holdings (e.g., Kim and Bettis, 2014). The direction of causality goes from our proxy of cash holdings to firm performance as indicated by a Granger causality test (Granger, 1969). All interaction variables were standardized to reduce multicollinearity and to increase the interpretability of the estimates. The variance inflation factors (VIFs) ranged between 1.75 and 2.17, well below critical thresholds of multicollinearity.

Results

Results from regression analyses

Table 1 shows the descriptive statistics for the baseline sample (environmental instability and capacity). The statistics of each moderating variable refer to the respective sample. The regression results testing the link between cash holdings and firm performance are depicted in Table 2, including results on the moderating effects of environmental complexity (Model 2 and 4), dynamism (Model 6 and 8), and munificence (Model 10 and 12). All models in Table 2 show a significantly positive but diminishing direct effect of cash holdings on firm performance, decreasing at the margin. In accordance with our expectations from earlier research (Kim and Bettis, 2014; Welbourne and Andrews, 1996), several controls exhibit significant positive effects, i.e. lagged Tobin's *q*, industry Tobin's *q*, capital expenditure, firm growth, cash flow, and absorbed slack (both NWC and SG&A), and significant negative effects, i.e. advertising intensity, leverage, firm size, and cash squared, on Tobin's *q*.

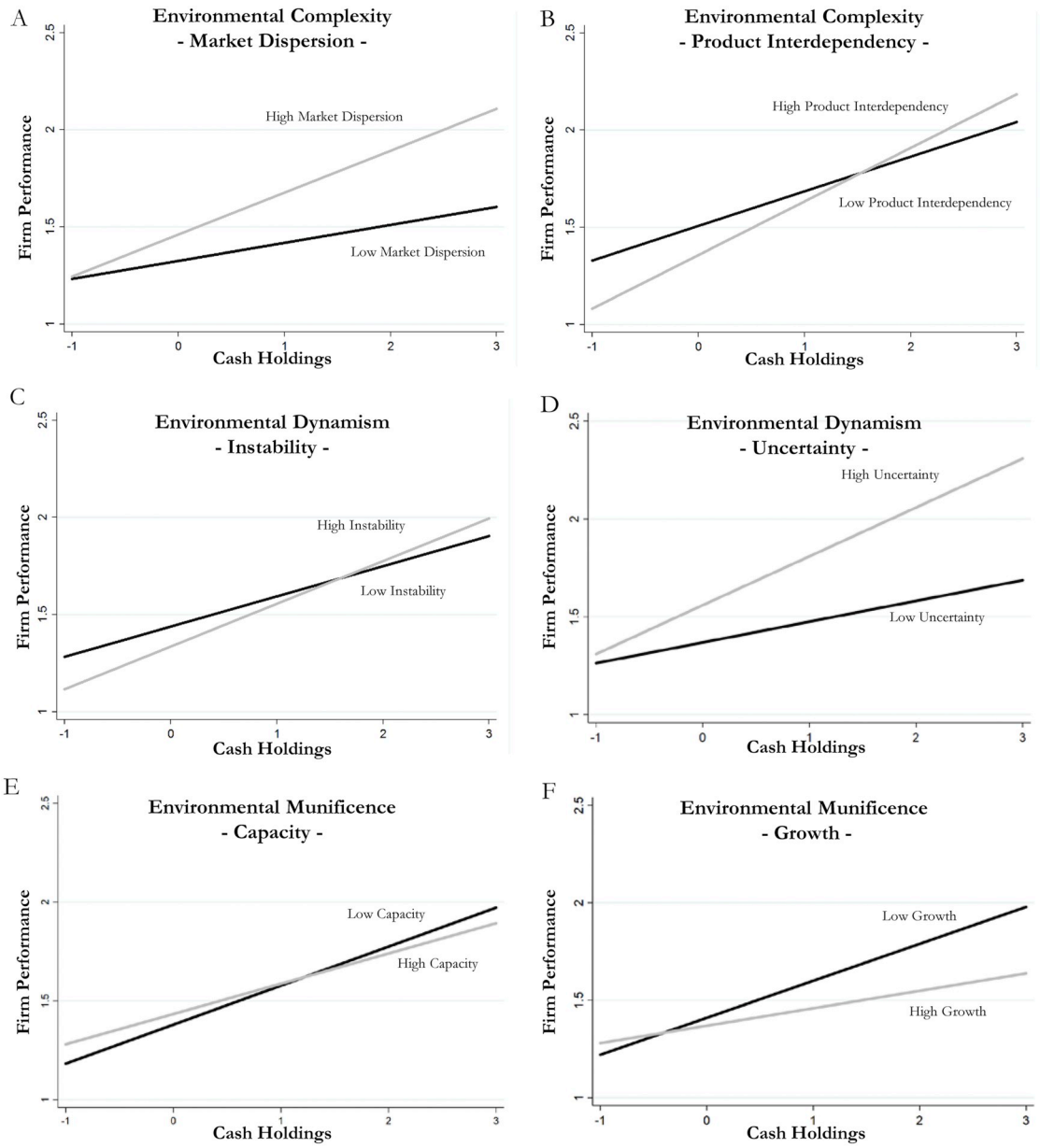

Fig. 1. Panels A to F visualize the various moderating effects of a firm's task environment. The graphs were generated by using the margins command (and marginsplot) in STATA. Each plot shows the firm performance (vertical axis) as measured by Tobin's *q* in relation to cash holdings (horizontal axis). The boundaries apply to the rounded minimum and maximum value of cash holdings (standardized). We use the 1st and 99th percentiles of the moderating variables as indications for a low scenario and high situational context (i.e. relating to environmental complexity, dynamism, or munificence) respectively. Please note also that both interacting variables are standardized.

Model 2 in Table 2 shows that the interaction of market dispersion and cash is positive and significant ($\beta = 0.0259$; $p = 0.010$). A visualization in Panel A in Fig. 1 shows that the slope of change in firm performance was steeper when the industry is more dispersed. Model 4 shows that the coefficient of the interaction term of product interdependency and cash is also positive and statistically significant at the 10% significance level ($\beta = 0.0197$; $p = 0.051$). The visualization in Panel B of Fig. 1 shows a steeper cash-performance relationship for firms with high product interdependency. In sum, these findings support Hypothesis 1, that environmental complexity increases the positive effects of cash holdings on firm performance.

As for environmental dynamism, we find a positive and statistically significant interaction term of environmental instability and cash in Model 6 ($\beta = 0.0139$; $p = 0.045$). Panel C of Fig. 1 visualizes the steeper slope for firms in environmentally unstable settings. Model 8 in Table 2 indicates a positive and significant interaction term of cash holdings and environmental uncertainty ($\beta = 0.0264$; $p = 0.000$). This moderating impact is visualized in Panel D of Fig. 1. These prior two results support Hypothesis 2, that

environmental dynamism increases the positive effects of cash holdings on firm performance.

As for environmental munificence, Model 10 in Table 2 shows that environmental capacity attenuates the value of cash holdings (β = -0.0131; p = 0.046). This is also indicated by the flatter slope of the graph in Panel E of Fig. 1 if environmental capacity is high. Model 12 in Table 2 shows that environmental growth significantly diminishes the value of cash holdings (β = -0.0138; p = 0.000). This negative moderation effect of environmental growth is visualized in Panel F of Fig. 1. Hence, we find support for Hypothesis 3, that environmental munificence attenuates the positive effects of cash holdings on firm performance.

The results are economically significant, as a one-standard deviation increase in one of six environmental moderators affects the performance implications of cash by up to 15 percent. We find, for example, that an increase of one standard deviation in environmental uncertainty enhances the effect size on Tobin's *q* by 15.19 percent. The other relative effect sizes for a one standard deviation increase of the respective moderators are of economic importance as well, i.e. market dispersion (13.70%), product interdependency (10.36%), instability (7.78%), capacity (−7.35%), and growth (−7.98%).

Robustness checks

To validate our findings, we performed several robustness checks. First, we used alternatives for Tobin's *q* as a measure for firm performance, such as fiscal-year end values instead of calendar-year end values (Gatchev et al., 2010), and when not considering long- and short-term debt (Nason and Patel, 2016). Because Tobin's *q* does not account for intangible capital, we also tested the robustness of our results using Total *Q* as an alternative measure for firm performance. Building on data provided by Peters and Taylor (2017) to capture Total *Q*, we reran our analyses. Our findings are fully robust. Further, we examined return on assets (ROA) and return on equity (ROE), two accounting-based performance measures, and found that our results do not hold. However, the fact that the effects of cash holdings differ between accounting-based and market-based performance measurements differ is not new (see, e.g., Nason and Patel, 2016). For our research question, it is important to take a forward-looking, market-based perspective rather than a backward-looking, accounting-based perspective. We therefore trust the robust findings based on the market-based firm performance measures.

Second, we tried to circumvent concerns that the value of cash was substantially driven by the presence of severe recession years in our sample. The financial crisis (2007-2009) was an exogenous shock that caused banks to withhold lending money, which in turn increased the value of cash holdings. Consequently, we reran our analyses separately by (1) excluding the crisis year 2008 and (2) excluding the entire period potentially affected by the financial crisis (2007-2009). Our results are fully robust.

Third, we examined the influence of industry performance. Our results hold when controlling for industry performance as the median value of Tobin's *q* among industry incumbents on the four-digit SIC level.

Fourth, we tested other proxies for market dispersion as an indication of environmental complexity (Cannon and John, 2007; Golan et al., 1996; Shughart, 1990). We computed two alternative HHI based on sales data from Compustat on the 3- and 4-digit-SIC levels and two measures based on the four-firm concentration ratio (Giroud and Mueller, 2011), i.e. 1 minus the total market share of the four largest firms in an industry (both on the 3- and 4-digit SIC level respectively). These alternate proxies also indicated positive interactions with cash holdings, thus confirming the robustness of our results [HHI (3-digit-SIC): β = 0.0145; p = 0.028; HHI (4-digit-SIC): β = 0.0205; p = 0.001; 4-firm concentration ratio (3-digit-SIC): β = 0.0304; p = 0.000; 4-firm concentration ratio (4-digit-SIC): β = 0.1621; p = 0.033)].

Fifth, we examined alternate approximations for environmental uncertainty: (1) the traditional CAPM market model, (2) the Fama-French three factor model (Fama and French, 1993), and (3) the Scholes-Williams approach (Scholes and Williams, 1977). Results confirmed the robustness of our findings [$\text{beta}_{\text{CAPM Market Model}}$: β = 0.0323, p = 0.000; $\text{beta}_{\text{3-Factor-Model}}$: β = 0.0270, p = 0.000; $\text{beta}_{\text{Scholes William}}$: β = 0.0315, p = 0.000]. The results also hold when using log returns to estimate environmental uncertainty.

Sixth, we approximated growth on other levels of industry granularity to test the robustness of environmental munificence. Our results hold on the 2-digit (β = -0.0233; p = 0.000) and 3-digit SIC level (β = -0.0118; p = 0.012).

Seventh, we tested the interactions of each moderator and cash squared to our models. Despite the higher multicollinearity, the interaction effects with cash remain similar in magnitude, and statistically significant in five out of six cases.

Eighth, we tested the results when including one proxy of each of the three environmental characteristics to a model, as we have two proxies for each of the three environmental characteristics (complexity, dynamism, and munificence). Our results are robust.

Finally, we wanted to rule out that any standardizing of our variables artificially has an impact on our results. Accordingly, we used unstandardized variables, reran our analyses, and found that our results hold.

Discussion

Following a contingent perspective on resource-performance relationships, we add to a growing literature (e.g., Combs et al., 2011) suggesting that the value of resources is depending on contingencies. Unlike most of the prior studies that examined internal contingencies, ours focuses on external contingencies and suggests that cash holdings are of strategic value, as they assist firms in achieving alignment with the environment. Indeed, we find that the value of cash holdings is contingent on a firm's task environment, including environmental complexity, dynamism, and munificence (Dess and Beard, 1984). Our results support the assumption that cash holdings not only deter competitors, but also enhance a firm's set of response capabilities, and constitute a buffer to ward off competitive pressures. Thus, cash holdings are particularly beneficial in complex environments. Likewise, we reason that cash holdings catalyze a firm's responsiveness to change and can help to deal with uncertainty in various ways. In contrast to prior

researchers (Bradley et al., 2011; Wiklund and Shepherd, 2005), we find that dynamic environments positively moderate the cash-performance relationship, a finding which holds for dynamics that stem from both instability and uncertainty. We find that munificence, however, attenuates the strategic value of cash holdings.

Overall, our findings suggest that the public discussion on the costs and benefits of cash holdings for shareholders should account for the focal firm's environmental context. Is the market highly complex? Is it being affected by disruption and turbulence? What about the availability of resources in the industry? Since such major external contingencies influence the cash-performance relationship, it is important to note that the strategic value of resources is contingent on them (Aragon-Correa and Sharma, 2003; Brush and Artz, 1999). This theoretical extension also echoes Penrose (1959) by showing how versatile resources can trigger competitive advantages depending on specific contingencies.

Contribution

This article contributes to the strategic management literature in several ways. First, we examine the role of contingencies that influence the strategic value of cash holdings. We thereby respond to calls for examining external contingencies of resource-performance relationships (Crook et al., 2008; Nason and Patel, 2016; Nason and Wiklund, 2018). Furthermore, through a theoretical focus on versatile resources and their multifaceted external contingencies, we extend studies (e.g., Eddleston et al., 2008) suggesting that resources have a contingent value. We conclude that the performance implications of firm resources require the consideration of environmental contingencies.

Second, prior research examined mostly internal contingencies of the cash-performance relationship such as organizational governance (Pinkowitz et al., 2006) and R&D intensity (O'Brien and Folta, 2009). We provide a holistic analysis of the moderating role of the organizational task environment, including environmental complexity, dynamism, and munificence (Dess and Beard, 1984). To provide an encompassing analysis of the external environment, we disentangle these three dimensions to gain a deeper understanding of how they shape the cash-performance relationship. Our findings indicate that environmental complexity and dynamism act as contingencies that enhance the cash-performance relationship. Munificence, however, acts as a damper on that relationship. Notably, a firm with a dynamic strategy in response to those external conditions can also increase the performance implications of its cash holdings. Our encompassing and fine-grained assessment enables researchers to do better than inadequate and narrow operationalization of the organizational task environment.

Third, we make use of innovative and more precise measures to capture the environmental task environment. For instance, we use product market level data and text-based industry classification to measure product interdependency. Further, our advanced census-based measure of market dispersion has advantages over traditional concentration measures. We took the full range of companies into account, not only those that were publicly listed. Furthermore, we avoided accounting distortions related to sales data and inaccurate industry assignment, which supports the strength of our analyses.

Practical implications

Taking a more context-sensitive approach, our analyses of the contingencies of the cash-performance relationship lead to several important practical implications about the decision-making process of building up and managing cash holdings. We recommend that managers carefully examine environmental contingencies when considering the appropriate level for their cash holdings. Our results advocate against understanding cash holdings as a simple buffer against macroeconomic pressures (Nason and Patel, 2016), and in favor of employing cash as a strategic resource that can provide valuable support in addressing the challenges arising from a complex and dynamic firm environment.

Firms often state that they are holding financial reserves to provide response flexibility to an uncertain macroeconomic environment (Nason and Wiklund, 2018). Our study clarifies that this focus on environmental dynamism is limiting, as all three key dimensions of a firm's task environment – complexity, dynamism, and munificence – affect the value of cash holdings. In line with contingency theory (e.g., Aragon-Correa and Sharma, 2003; Brush and Artz, 1999; Fainshmidt et al., 2019), we stress that there is not one best, generic way to strategically organize and accumulate cash holdings, particularly as different firms are confronted with different levels of external complexity, dynamism, and munificence. From a shareholder perspective, our results imply that large cash holdings are not to be sanctioned *per se*, but that information on the firm's environment should be accounted for when evaluating cash holdings. Based on our findings, the downsizing of cash holdings may be an option in environments that are not complex, but stable, and resource-rich.

Limitations and future research

The results of our study need to be viewed against the backdrop of some limitations. First, the generalizability of our findings is limited, given that the CRSP-Compustat merged database (CCM) considers only listed firms that differ in their nature from privately held firms. In this regard, Kim and Bettis (2014) show that firm size plays an important role in determining the strategic potential of cash holdings for deterring competitors. Therefore, we encourage future studies to test whether our results hold for non-listed firms, as well as small and medium-sized ones.

Second, although we provide clear-cut motivations for the hypotheses on the three dimensions suggested by Dess and Beard (1984), i.e. complexity, dynamism, and munificence, these dimensions are likely interrelated (Dess and Rasheed, 1991; Rasheed and Prescot, 1992). For example, complexity that stems from competition may be regarded as dynamic *per se* (Chen and Miller, 2012), as

"[i]t is hard to imagine a market where high levels of competition did not result in any change" (Sharfman and Dean, 1991, p. 687). Further, dynamism is the outcome of several external forces operating simultaneously (Simerly and Li, 2000). The same may apply to competitors' capabilities (including strategic orientation) changing over time (Helfat and Peteraf, 2003), which may result in a landscape of increased dynamism (Bettis and Hitt, 1995). In consequence, we recommend further the assessment of network-style encompassing interrelationships. Relatedly, a further-disaggregated view of the dimensions of a firm's task environment may be required, as studies can only inadequately capture all relevant aspects of the environmental dimensions. This holds for environmental complexity, with its multiple underlying dimensions (Cannon and John, 2007), and for munificence, which could be assessed at least at five levels (Castrogiovanni, 1991, p. 554).

Third, we cannot fully rule out endogeneity, given the potential simultaneity of firm performance and our main independent variable. However, we control for observed time-varying confounders, time-constant firm heterogeneity, year effects, and dynamics in firm performance. Fourth, there are some limitations based on a restricted data availability. We had, for example, access only to local product market data and could therefore not measure complexity arising from foreign competitors. Future studies may extend our analyses by providing similar analyses for other markets or countries. In addition, a firm's environment is broader than its industry. Next to the contingency factors analyzed within this study, the contingent moderating forces of cultural, economic, political, and legal institutions may be of concern. For example, Vanacker et al. (2017) find that creditor rights negatively moderate the resources-performance relationship.

Fifth, future studies could incorporate the impact of time by verifying whether the moderating effects fade out. Cash holdings as a versatile resource may only constitute a temporary competitive advantage that can diminish over time. Sixth, next to external contingencies, managers may be crucial for activating the strategic value of cash holdings, perhaps both by accumulating and by deploying them. We therefore encourage future researchers to examine internal contingencies on the firm level, such as the moderating role of the managers' skill (Holcomb et al., 2009), the managers' experience (Simsek, 2007), and the managers' personal attitudes (Malmendier and Tate, 2005).

Conclusion

In this article, we theorize and find that the firm's task environment comprises essential contingencies that moderate the cash-performance relationship. Cash is of high strategic value in complex and dynamic environments, while it is less valuable under munificent conditions. We contribute to the strategic management literature by advocating in favor of a contingent perspective on resource-performance relationships, as a suitable lens to assess under which environmental contingencies versatile resources such as cash holdings are of pronounced value. Our analyses underline the impact of environmental factors on the performance of resources. The public debate on the desirability of large cash holdings should consider the contexts when evaluating corporate cash holdings. We suggest future research to shed light on the role of the top management in this regard.

References

Aldrich, H.E., 1979. Organizations and Environments. Prentice-Hall, Englewood Cliffs, NJ.

Almeida, H., Campello, M., Cunha, I., Weisbach, M.S., 2014. Corporate liquidity management: a conceptual framework and survey. Annual Review of Financial Economics 6, 135–162.

Alti, A., 2006. How persistent is the impact of market timing on capital structure? J. Financ. 61, 1681–1710.

Anand, J., Singh, H., 1997. Asset redeployment, acquisitions and corporate strategy in declining industries. Strat. Manag. J. 18, 99–118.

Anderson, P., Tushman, M.L., 2001. Organizational environments and industry exit: the effects of uncertainty, munificence and complexity. Ind. Corp. Chang. 10, 675–711.

Aragon-Correa, J.A., Sharma, S., 2003. A contingent resource-based view of proactive corporate environmental strategy. Acad. Manag. Rev. 28, 71–88.

Ashby, R., Stein, P.R., 1954. Design for a brain. Phys. Today 7, 24.

Barker III, V.L., Duhaime, I.M., 1997. Strategic change in the turnaround process: theory and empirical evidence. Strat. Manag. J. 18, 13–38.

Barnett, M.L., Salomon, R.M., 2012. Does it pay to be really good? Addressing the shape of the relationship between social and financial performance. Strat. Manag. J. 33, 1304–1320.

Barney, J.B., 1991. Firm resources and sustained competitive advantage. Journal of Management 17, 99–120.

Baum, R.J., Wally, S., 2003. Strategic decision speed and firm performance. Strat. Manag. J. 24, 1107–1129.

Beard, D.W., Dess, G.G., 1981. Corporate-level strategy, business-level strategy, and firm performance. Acad. Manag. J. 24, 663–688.

Benoit, J.-P., 1984. Financially constrained entry in a game with incomplete information. Rand J. Econ. 15, 490–499.

Bettis, R.A., 1981. Performance differences in related and unrelated diversified firms. Strat. Manag. J. 2, 379–393.

Bettis, R.A., Hitt, M.A., 1995. The new competitive landscape. Strat. Manag. J. 16, 7–19.

Bharadwaj, A.S., Bharadwaj, S.G., Konsynski, B.R., 1999. Information technology effects on firm performance as measured by Tobin's q. Manag. Sci. 45, 1008–1024.

Boisot, M., Child, J., 1999. Organizations as adaptive systems in complex environments: the case of China. Organ. Sci. 10, 237–252.

Bourgeois III, L.J., Singh, J.V., 1983. Organizational slack and political behavior among top management teams. In: Academy of Management Proceedings 1983, pp. 43–47.

Boyd, B.K., 1995. CEO duality and firm performance: a contingency model. Strat. Manag. J. 16, 301–312.

Bradley, S.W., Shepherd, D.A., Wiklund, J., 2011. The importance of slack for new organizations facing 'tough' environments. J. Manag. Stud. 48, 1071–1097.

Brittain, J.W., Freeman, J.H., 1980. Organizational Proliferation and Density Dependent Selection: Organizational Evolution in the Semiconductor Industry. Institute of Industrial Relations, University of California.

Bromiley, P., 1991. Testing a causal model of corporate risk taking and performance. Acad. Manag. J. 34, 37–59.

Brown, J.R., Petersen, B.C., 2011. Cash holdings and R&D smoothing. J. Corp. Financ. 17, 694–709.

Brush, T.H., Artz, K.W., 1999. Toward a contingent resource-based theory: the impact of information asymmetry on the value of capabilities in veterinary medicine. Strat. Manag. J. 20, 223–250.

Brush, T.H., Bromiley, P., Hendrickx, M., 2000. The free cash flow hypothesis for sales growth and firm performance. Strat. Manag. J. 21, 455–472.

Buchko, A.A., 1994. Conceptualization and measurement of environmental uncertainty: an assessment of the Miles and Snow perceived environmental uncertainty scale. Acad. Manag. J. 37, 410–425.

Cameron, K.S., Kim, M.U., Whetten, D.A., 1987. Organizational effects of decline and turbulence. Adm. Sci. Q. 32, 222–240.
Cannon, A.R., John, C.H.S., 2007. Measuring environmental complexity: a theoretical and empirical assessment. Organ. Res. Methods 10, 296–321.
Carhart, M.M., 1997. On persistence in mutual fund performance. J. Financ. 52, 57–82.
Castrogiovanni, G.J., 1991. Environmental munihcence; a theoretical assessment. Acad. Manag. Rev. 16, 542–565.
Chen, M.-J., Miller, D., 2012. Competitive dynamics: themes, trends, and a prospective research platform. Acad. Manag. Ann. 6, 135–210.
Cheng, J.L.C., Kesner, I.F., 1997. Organizational slack and response to environmental shifts: the impact of resource allocation patterns. J. Manag. 23, 1–18.
Child, J., 1972. Organizational structure, environment and performance: the role of strategic choice. Sociology 6, 1–22.
Combs, ., Ketchen Jr., D.J., Shook, C.L., Short, J.C., 2011. Antecedents and consequences of franchising: past accomplishments and future challenges. J. Manag. 37, 99–126.
Crook, T.R., Ketchen Jr., D.J., Combs, J.G., Todd, S.Y., 2008. Strategic resources and performance: a meta-analysis. Strat. Manag. J. 29, 1141–1154.
Cyert, R.M., March, J.G., 1963. A Behavioral Theory of the Firm. Englewood Cliffs, NJ 2.
D'Aveni, R.A., Dagnino, G.B., Smith, K.G., 2010. The age of temporary advantage. Strat. Manag. J. 31, 1371–1385.
Davis, J.P., Eisenhardt, K.M., Bingham, C.B., 2009. Optimal structure, market dynamism, and the strategy of simple rules. Adm. Sci. Q. 54, 413–452.
Deb, P., David, P., O'Brien, J., 2017. When is cash good or bad for firm performance? Strat. Manag. J. 38, 436–454.
Dess, G.G., Beard, D.W., 1984. Dimensions of organizational task environments. Adm. Sci. Q. 29, 52–73.
Dess, G.G., Rasheed, A.M.A., 1991. Conceptualizing and measuring organizational environments: a critique and suggestions. J. Manag. 17, 701–710.
Duchin, R., 2010. Cash holdings and corporate diversification. J. Financ. 65, 955–992.
Duchin, R., Ozbas, O., Sensoy, B.A., 2010. Costly external finance, corporate investment, and the subprime mortgage credit crisis. J. Financ. Econ. 97, 418–435.
Duncan, R.B., 1972. Characteristics of organizational environments and perceived environmental uncertainty. Adm. Sci. Q. 17, 313–327.
Eddleston, K.A., Kellermanns, F.W., Sarathy, R., 2008. Resource configuration in family firms: linking resources, strategic planning and technological opportunities to performance. J. Manag. Stud. 45, 26–60.
Fainshmidt, S., Pezeshkan, A., Frazier, M.L., Nair, A., Markowski, E., 2016. Dynamic capabilities and organizational performance: a meta-analytic evaluation and extension. J. Manag. Stud. 53, 1348–1380.
Fainshmidt, S., Wenger, L., Pezeshkan, A., Mallon, M.R., 2019. When do dynamic capabilities lead to competitive advantage? The importance of strategic fit. J. Manag. Stud. 56 (4), 758–787.
Fama, E.F., 1980. Banking in the theory of finance. J. Monet. Econ. 6, 39–57.
Fama, E.F., French, K.R., 1993. Common risk factors in the returns on stocks and bonds. J. Financ. Econ. 33, 3–56.
Faulkender, M., Wang, R., 2006. Corporate financial policy and the value of cash. J. Financ. 61, 1957–1990.
Fresard, L., 2010. Financial strength and product market behavior: the real effects of corporate cash holdings. J. Financ. 65, 1097–1122.
Gatchev, V.A., Pulvino, T., Tarhan, V., 2010. The interdependent and intertemporal nature of financial decisions: an application to cash flow sensitivities. J. Financ. 65, 725–763.
George, G., 2005. Slack resources and the performance of privately held firms. Acad. Manag. J. 48, 661–676.
Ghemawat, P., 1991. Commitment. Simon & Schuster, New York, NY.
Ginsberg, A., Venkatraman, N., 1985. Contingency perspectives of organizational strategy: A critical review of the empirical research. Academy of Management Review 10, 421–434.
Giroud, X., Mueller, H.M., 2011. Corporate governance, product market competition, and equity prices. J. Financ. 66, 563–600.
Golan, A., Judge, G.G., Perloff, J.M., 1996. Estimating the size distribution of firms using government summary statistics. J. Ind. Econ. 44, 69–80.
Granger, C.W.J., 1969. Investigating causal relations by econometric models and cross-spectral methods. Econometrica 37, 424–438.
Greene, W.H., 2011. Econometric Analysis: International edition, seventh ed. Pearson Education Limited, Harlow.
Gulati, R., Nohria, N., Wohlgezogen, F., 2010. Roaring out of recession. Harv. Bus. Rev. 88, 62–69.
Hall, B.H., 1993. The stock market's valuation of R&D investment during the 1980's. Am. Econ. Rev. 83, 259–264.
Hambrick, D.C., 1983. An empirical typology of mature industrial-product environments. Acad. Manag. J. 26, 213–230.
Hambrick, D.C., D'Aveni, R.A., 1988. Large corporate failures as downward spirals. Adm. Sci. Q. 33, 1–23.
Harris, A., 2004. Distributed leadership and school improvement: leading or misleading? Educ. Manag. Adm. Leadersh. 32, 11–24.
Haushalter, D., Klasa, S., Maxwell, W.F., 2007. The influence of product market dynamics on a firm's cash holdings and hedging behavior. J. Financ. Econ. 84, 797–825.
Helfat, C.E., Peteraf, M.A., 2003. The dynamic resource-based view: capability lifecycles. Strat. Manag. J. 24, 997–1010.
Hitt, M.A., Hoskisson, R.E., Ireland, R.D., 1994. A mid-range theory of the interactive effects of international and product diversification on innovation and performance. J. Manag. 20, 297–326.
Hitt, M.A., Keats, B.W., DeMarie, S.M., 1998. Navigating in the new competitive landscape: building strategic flexibility and competitive advantage in the 21st century. Acad. Manag. Perspect. 12, 22–42.
Hoberg, G., Phillips, G., 2016. Text-based network industries and endogenous product differentiation. J. Political Econ. 124, 1423–1465.
Hoberg, G., Phillips, G., 2010. Product market synergies and competition in mergers and acquisitions: a text-based analysis. Rev. Financ. Stud. 23, 3773–3811.
Hofer, C.W., 1975. Toward a contingency theory of business strategy. Acad. Manag. J. 18, 784–810.
Holcomb, T.R., Holmes Jr., R.M., Connelly, B.L., 2009. Making the most of what you have: managerial ability as a source of resource value creation. Strat. Manag. J. 30, 457–485.
Inkpen, A., Choudhury, N., 1995. The seeking of strategy where it is not: towards a theory of strategy absence. Strat. Manag. J. 16, 313–323.
Jensen, M.C., 1997. Eclipse of the public corporation. Harv. Bus. Rev. 67, 61–74.
Jensen, M.C., 1986. Agency costs of free cash flow, corporate finance, and takeovers. Am. Econ. Rev. 76, 323–329.
John, K., Li, Y., Pang, J., 2016. Does corporate governance matter more for high financial slack firms? Manag. Sci. 63, 1872–1891.
Josefy, M., Kuban, S., Ireland, R.D., Hitt, M.A., 2015. All things great and small: organizational size, boundaries of the firm, and a changing environment. Acad. Manag. Ann. 9, 715–802.
Jurkovich, R., 1974. A core typology of organizational environments. Adm. Sci. Q. 19, 380–394.
Karim, S., Folta, T.B., Helfat, C.E., 2016. Examining resource redeployment in multi-business firms. In: Resource Redeployment and Corporate Strategy, Advances in Strategic Management. Emerald Group Publishing Limited, pp. 1–17.
Keats, B.W., Hitt, M.A., 1988. A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance. Acad. Manag. J. 31, 570–598.
Keil, J., 2017. The trouble with approximating industry concentration from Compustat. J. Corp. Financ. 45, 467–479.
Kim, C., Bettis, R.A., 2014. Cash is surprisingly valuable as a strategic asset. Strat. Manag. J. 35, 2053–2063.
Kostova, T., Zaheer, S., 1999. Organizational legitimacy under conditions of complexity: the case of the multinational enterprise. Acad. Manag. Rev. 24, 64–81.
Kovach, J.J., Hora, M., Manikas, A., Patel, P.C., 2015. Firm performance in dynamic environments: the role of operational slack and operational scope. J. Oper. Manag. 37, 1–12.
Kraatz, M.S., Zajac, E.J., 2001. How organizational resources affect strategic change and performance in turbulent environments: theory and evidence. Organ. Sci. 12, 632–657.
Lang, L., Poulsen, A., Stulz, R., 1995. Asset sales, firm performance, and the agency costs of managerial discretion. J. Financ. Econ. 37, 3–37.
Lawrence, P., Lorsch, J., 1967. Organization and Environment. Harvard Business School Press, Boston, MA.
Lengnick-Hall, C.A., Beck, T.E., 2005. Adaptive fit versus robust transformation: how organizations respond to environmental change. J. Manag. 31, 738–757.
Levinthal, D., Myatt, J., 1994. Co-evolution of capabilities and industry: the evolution of mutual fund processing. Strat. Manag. J. 15, 45–62.
Lintner, J., 1965. The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. Rev. Econ. Stat. 47, 13–37.

Lyandres, E., Palazzo, B., 2016. Cash holdings, competition, and innovation. J. Financ. Quant. Anal. 51, 1823–1861.
Majumdar, S.K., Marcus, A.A., 2001. Rules versus discretion: the productivity consequences of flexible regulation. Acad. Manag. J. 44, 170–179.
Malmendier, U., Tate, G., 2005. CEO overconfidence and corporate investment. J. Financ. 60, 2661–2700.
Marcus, A., Geffen, D., 1998. The dialectics of competency acquisition: pollution prevention in electric generation. Strat. Manag. J. 19, 1145–1168.
Markman, G.D., Gianiodis, P.T., Buchholtz, A.K., 2009. Factor-market rivalry. Acad. Manag. Rev. 34, 423–441.
McCarthy, I.P., Lawrence, T.B., Wixted, B., Gordon, B.R., 2010. A multidimensional conceptualization of environmental velocity. Acad. Manag. Rev. 35, 604–626.
Miles, M.P., Covin, J.G., Heeley, M.B., 2000. The relationship between environmental dynamism and small firm structure, strategy, and performance. J. Mark. Theory Pract. 8, 63–78.
Miles, R., Snow, C., 1978. Organizational Strategy, Structure, and Process. McGraw-Hill, New York, NY.
Miles, R.E., Snow, C.C., Pfeffer, J., 1974. Organization-environment: concepts and issues. Industrial relations. A Journal of Economy and Society 13, 244–264.
Miller, D., Friesen, P.H., 1983. Strategy-making and environment: the third link. Strat. Manag. J. 4, 221–235.
Milliken, F.J., 1987. Three types of perceived uncertainty about the environment: state, effect, and response uncertainty. Acad. Manag. Rev. 12, 133–143.
Mintzberg, H., 1979. The Structuring of Organizations. Prentice-Hall, Englewood Cliffs, NJ.
Nason, R.S., Patel, P.C., 2016. Is cash king? Market performance and cash during a recession. J. Bus. Res. 69, 4242–4248.
Nason, R.S., Wiklund, J., 2018. An assessment of resource-based theorizing on firm growth and suggestions for the future. J. Manag. 44, 32–60.
O'Brien, ., Folta, T.B., 2009. A transaction cost perspective on why, how, and when cash impacts firm performance. Manag. Decis. Econ. 30, 465–479.
O'Brien, J., Folta, T., 2009. Sunk costs, uncertainty and market exit: a real options perspective. Ind. Corp. Chang. 18, 807–833.
Opler, T., Pinkowitz, L., Stulz, R., Williamson, R., 1999. The determinants and implications of corporate cash holdings. J. Financ. Econ. 52, 3–46.
O'Reilly III, C.A., Caldwell, D.F., Barnett, W.P., 1989. Work group demography, social integration, and turnover. Adm. Sci. Q. 34, 21–37.
Osborn, R., Hunt, J.G., Jauch, L.R., 1980. Organization Theory: an Integrated Approach. John Wiley & Sons.
Panzar, J.C., Willig, R.D., 1981. Economies of scope. Am. Econ. Rev. 71, 268–272.
Peng, M.W., Luo, Y., 2000. Managerial ties and firm performance in a transition economy: the nature of a micro-macro link. Acad. Manag. J. 43, 486–501.
Pennings, J.M., 1975. The relevance of the structural-contingency model for organizational effectiveness. Adm. Sci. Q. 20, 393–410.
Pennings, J.M., Tripathi, R.C., 1978. The organization-environment relationship: dimensional versus typological viewpoints. Organ. Environ. 171–195.
Penrose, E.T., 1959. The Theory of the Growth of the Firm. Wiley, New York, NY.
Peters, R.H., Taylor, L.A., 2017. Intangible capital and the investment-q relation. J. Financ. Econ. 123, 251–272.
Pfeffer, J., Salancik, G.R., 1977. Organizational context and the characteristics and tenure of hospital administrators. Acad. Manag. J. 20, 74–88.
Pinkowitz, L., Stulz, R., Williamson, R., 2006. Does the contribution of corporate cash holdings and dividends to firm value depend on governance? A cross-country analysis. J. Financ. 61, 2725–2751.
Posen, H.E., Levinthal, D.A., 2012. Chasing a moving target: exploitation and exploration in dynamic environments. Manag. Sci. 58, 587–601.
Poulis, K., Poulis, E., 2016. Problematizing fit and survival: transforming the law of requisite variety through complexity misalignment. Acad. Manag. Rev. 41, 503–527.
Randolph, ., Dess, G.G., 1984. The congruence perspective of organization design: a conceptual model and multivariate research approach. Acad. Manag. Rev. 9, 114–127.
Rasheed, A.M.A., Prescot, J.E., 1992. Towards an objective classification scheme for organizational task environments. Br. J. Manag. 3, 197–206.
Richard, P.J., Devinney, T.M., Yip, G.S., Johnson, G., 2009. Measuring organizational performance: towards methodological best practice. J. Manag. 35, 718–804.
Rosenbusch, N., Rauch, A., Bausch, A., 2013. The mediating role of entrepreneurial orientation in the task environment–performance relationship: a meta-analysis. J. Manag. 39, 633–659.
Salancik, G.R., Pfeffer, J., 1978. The External Control of Organizations: A Resource Dependence Perspective. Harper and Row.
Salge, T.O., Vera, A., 2013. Small steps that matter: incremental learning, slack resources and organizational performance. Br. J. Manag. 24, 156–173.
Salop, S.C., 1979. Strategic entry deterrence. Am. Econ. Rev. 69, 335–338.
Scholes, M., Williams, J., 1977. Estimating betas from nonsynchronous data. J. Financ. Econ. 5, 309–327.
Scholz, C., 1987. Corporate culture and strategy: the problem of strategic fit. Long. Range Plan. 20, 78–87.
Schroth, E., Szalay, D., 2009. Cash breeds success: the role of financing constraints in patent races. Rev. Finance 14, 73–118.
Sharfman, M.P., Dean Jr., J.W., 1991. Conceptualizing and measuring the organizational environment: a multidimensional approach. J. Manag. 17, 681–700.
Sharfman, M.P., Wolf, G., Chase, R.B., Tansik, D.A., 1988. Antecedents of organizational slack. Acad. Manag. Rev. 13, 601–614.
Sharpe, W.F., 1964. Capital asset prices: a theory of market equilibrium under conditions of risk. J. Financ. 19, 425–442.
Shughart, W., 1990. The Organization of Industry. Irwin, Boston, MA.
Simerly, R.L., Li, M., 2000. Environmental dynamism, capital structure and performance: a theoretical integration and an empirical test. Strat. Manag. J. 21, 31–49.
Simsek, Z., 2007. CEO tenure and organizational performance: an intervening model. Strat. Manag. J. 28, 653–662.
Sirmon, D., Hitt, M., Ireland, R.D., 2007. Managing firm resources in dynamic environments to create value: looking inside the black box. Acad. Manag. Rev. 32, 273–292.
Starbuck, W.H., 1976. Organizations and their environments. In: Dunnette, Marvin D. (Ed.), Handbook of Industrial and Organizational Psychology. Rand McNally, Chicago, pp. 1069–1123.
Starbuck, W.H., Greve, A., Hedberg, B., 1978. Responding to crises. J. Bus. Adm. 9, 111–137.
Staw, B.M., Szwajkowski, E., 1975. The scarcity-munificence component of organizational environments and the commission of illegal acts. Adm. Sci. Q. 20, 345–354.
Stieglitz, N., Knudsen, T., Becker, M.C., 2016. Adaptation and inertia in dynamic environments: adaptation and inertia. Strat. Manag. J. 37, 1854–1864.
Storper, M., 1996. Innovation as collective action: conventions, products and technologies. Ind. Corp. Chang. 5, 761–790.
Tan, J., Peng, M.W., 2003. Organizational slack and firm performance during economic transitions: two studies from an emerging economy. Strat. Manag. J. 24, 1249–1263.
Telser, L.G., 1966. Cutthroat competition and the long purse. J. Law Econ. 9, 259–277.
Thompson, J.D., 1967. Organizations in Action: Social Science Bases of Administrative Theory. Transaction Publishers, New York, NY.
Tung, R.L., 1979. Dimensions of organizational environments: an exploratory study of their impact on organization structure. Acad. Manag. J. 22, 672–693.
Tushman, M.L., Anderson, P., 1986. Technological discontinuities and organizational environments. Adm. Sci. Q. 31, 439–465.
Vanacker, T., Collewaert, V., Zahra, S.A., 2017. Slack resources, firm performance, and the institutional context: evidence from privately held European firms. Strat. Manag. J. 38, 1305–1326.
Venkatraman, N., 1989. The concept of fit in strategy research: Toward verbal and statistical correspondence. Academy of Management Review 14, 423–444.
Villalonga, B., 2004. Intangible resources, Tobin's q, and sustainability of performance differences. J. Econ. Behav. Organ. 54, 205–230.
Volberda, H.W., 1996. Toward the flexible form: how to remain vital in hypercompetitive environments. Organ. Sci. 7, 359–374.
Welbourne, T.M., Andrews, A.O., 1996. Predicting the performance of initial public offerings: should human resource management be in the equation? Acad. Manag. J. 39, 891–919.
Wernerfelt, B., Montgomery, C.A., 1986. What is an attractive industry? Manag. Sci. 32, 1223–1230.
Wiklund, J., Shepherd, D., 2005. Entrepreneurial orientation and small business performance: a configurational approach. J. Bus. Ventur. 20, 71–91.
Yasai-Ardekani, M., 1989. Effects of environmental scarcity and munificence on the relationship of context to organizational structure. Acad. Manag. J. 32, 131–156.
Zahra, S.A., 1993. Environment, corporate entrepreneurship, and financial performance: a taxonomic approach. J. Bus. Ventur. 8, 319–340.
Zajac, E.J., Kraatz, M.S., Bresser, R.K.F., 2000. Modeling the dynamics of strategic fit: a normative approach to strategic change. Strat. Manag. J. 21, 429–453.
Zott, C., 2003. Dynamic capabilities and the emergence of intraindustry differential firm performance: insights from a simulation study. Strat. Manag. J. 24, 97–125.

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