Journal of Management
Vol. XX No. X, Month XXXX 1–26
DOI: 10.1177/0149206316630381

Time Horizon of Investments in the Resource Allocation Process: Review and Framework for Next Steps

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Corporate investment inherently relies on time horizon, as profits result from acquiring assets or developing capabilities that yield future benefits that exceed upfront costs. Despite the importance of time horizon to understanding resource allocation, knowledge about the subject has accumulated slowly. Our review therefore encompasses insights from several research streams that partially address the subject even though time horizon is not the central construct in any of them. We aim to clarify key constructs related to time horizon, organize prior research about the antecedents of time horizon, explain the implications of several theoretical traditions for time horizon, and detail the range of measures that have been used to capture time horizon empirically. By focusing narrowly on this topic but searching broadly for references, we provide integrative summaries of existing research and identify opportunities for new and unique research.

Keywords: *behavioral strategy; resource allocation/management; decision making*

Some of the most useful research advances help scholars better understand how to resolve a tension between seemingly conflicting predictions among one or more theories. Within firm resource allocation processes, existing management scholarship has found it challenging

Acknowledgments: The authors would like to acknowledge financial and intellectual assistance from the Network for Business Sustainability (nbs.net).

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to explain choices about the time horizon of investments as a result of theoretical tensions, such as those between agency theory, real options thinking, and the behavioral theory of the firm (BTOF). For example, real options theory emphasizes a patient but flexible approach to investment horizon, whereas agency theory suggests a more opportunistic preference among managers toward shorter horizon investments.

One result of such theoretical tensions is greater difficulty in offering research-based prescriptions to management practitioners, who often decry the lack of long-term thinking in corporate resource allocation processes (Brochet, Serafeim, & Loumioti, 2012; Brown, 2007; Davis, 2005; Gross & Lewis, 2007; Ignatius, 2014). Supporting this view, nearly 75% of chief financial officers report rejecting profitable investment projects because the expected positive returns were too far into the future (Graham, Harvey, & Rajgopal, 2005). For our part, management scholars also argue that long-term gains too often are sacrificed as managers face pressure to increase short-term returns (Hayes & Abernathy, 1980; Laverty, 1996; Porter, 1992). Yet the tensions across theories have left these conversations largely as unanswered questions.

This review aims to coalesce insights across theories by focusing on the common element: time. Resource allocation decisions are "heavily affected by either references to the past (where the firm has been), or the future (where the firm would like to be)" (Fiegenbaum, Hart, & Schendel, 1996: 227). Because the very conception of investment relies on time, as firms seek to acquire assets or develop capabilities that yield future benefits exceeding upfront costs (Quirin & Wiginton, 1981), authors from many research traditions have addressed time horizon in some way. Some perspectives, such as real options, have an explicitly temporal emphasis. Others, including agency theory and the BTOF, are not primarily focused on time but acknowledge the challenges imposed by time horizon in their attempt to model the decision making of managers. The breadth of coverage across theoretical traditions in the management literature speaks to the fundamental importance of this construct, but it also reveals siloed treatment of time horizon within these theoretical traditions.

Our review of this subject aims to analyze the progress to date in resolving tensions surrounding time horizon in resource allocation and highlights the conceptual and empirical challenges that have inhibited knowledge accumulation. People have an innate tension between the short- and long-term that carries into organizational life. As described by Levinthal and March, "There is no guarantee that short-run and long-run survival are consistent. It is easy to imagine situations in which the only strategies that permit survival in the short run assure failure in the long run and vice versa" (1993: 101). Relatedly, differential benefits for today and tomorrow contribute to a tension between exploration and exploitation. Both of these tensions emanate from the complex phenomenon itself, but scholars must grapple with theoretical tensions as well. One of the major tensions within agency theory involves time horizon, as the long- and short-term interests of managers and owners can diverge. Meanwhile, trade-offs between preemption of resources and resolution of uncertainty (Agarwal & Bayus, 2004), or more colloquially, commitment and flexibility, highlight a tension across the vantage points of different theories. Our review returns to each of these tensions and helps identify new avenues of research that can start to resolve them.

Much of the challenge in understanding time horizon stems from its partial correlation with two other distinct and crucial aspects of resource allocation: risk and uncertainty. Long time horizons involve increased environmental uncertainty that inhibits precise expectations (Maritan, 2001), but above and beyond such variability of outcomes, managers are distinctly

concerned with the timing of returns (i.e., how soon a given investment might achieve payback). As a result, the seminal articles in our review place distinct and explicit emphasis on the role of time in resource allocation. Several themes emerge, including differences in temporal orientation among chief executives (Das, 1987), the causes and effects of short-termism (Laverty, 1996), and the role of horizon as a distinct decision criterion from risk (Souder & Shaver, 2010). Using these focused works as anchor points, we review and organize the nearly 130 scholarly articles in management journals that provide partial insights about time horizon while addressing specific types of resource allocation decisions.

Our review therefore encompasses partial insights from a wide range of research streams. We intend to remain narrowly focused on insights about time horizon even though some research streams have treated temporal preferences as implied features of different constructs. The remainder of the paper is divided into five sections. First, we aim to achieve greater conceptual clarity for the key constructs related to the time horizon of investments resulting from the resource allocation process. Second, we explain how several common theories have incorporated investment horizon in a supporting role. Third, we organize existing research into the antecedents of time horizon choices according to the level of analysis—including macrolevel forces, firm differences, and preferences of decision makers. Fourth, we review the multitude of measurement approaches used to capture investment horizon and related concepts in prior work. Finally, we conclude by discussing several underexplored avenues for research into the time horizon of investments in the resource allocation process.

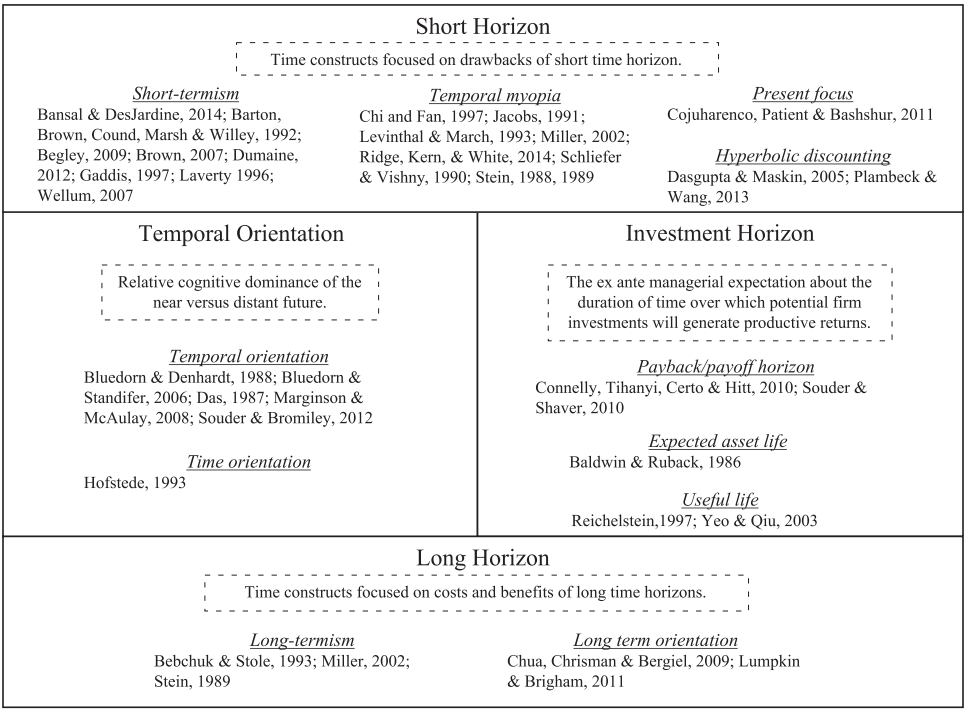
Clarifying Construct Definitions Related to Time Horizon

Management scholars have analyzed time horizon in a variety of ways because of its central influence on resource allocation and the consequences of resulting actions. Research in this stream has varied across the spectrum from how managers think about making firm investments, to the way they incorporate time in their resource allocation process, to how the outcomes of investment choices develop over time. Each of these perspectives on time is useful, and they are complementary rather than mutually exclusive. Our intent is to articulate the subtle distinctions between various terms appearing in prior literature while incorporating insights from relevant literature that addresses time horizon in passing as part of broader studies into particular types of resource allocation. We aim to articulate clear definitions for each construct and explain how they are similar or different. Figure 1 presents an organizing schema that includes definitions for construct categories and a few papers that use each term.

Temporal Orientation

Prior literature defines *temporal orientation* as a "future time perspective" that captures variation across individuals "in terms of the relative cognitive dominance of the near versus distant future" (Das, 1987: 203). The theoretical underpinnings for this work come from psychology and sociology, which argue that the conception of time differs across individuals largely as a result of social construction that varies across cultures (Bluedorn & Denhardt, 1988; Bluedorn & Standifer, 2006). Such individual differences among key decision makers in an organization will influence the allocation of resources between opportunities with more immediate or more deferred payoffs. *Time orientation* has been used synonymously and was identified as one of five cultural dimensions that vary across nations (Hofstede, 1993).

Figure 1
Constructs Related to Time Horizon of Investments



Das concluded that "an individual's general view of the nature of future time could potentially constrain choices about such time-related factors as planning cycles or planning horizons" (1987: 203). Although Das's work defines *temporal orientation* at the individual level of analysis, more recent research has used the same term to describe the firm-level analogue (Marginson & McAulay, 2008; Souder & Bromiley, 2012). Temporal orientation can thus be viewed as a prevailing collective preference of the firm on the basis of both the personal preferences of current managers and their understanding of the firm's own historical patterns. At the firm level, temporal orientation describes an aspect of firm-specific investment policy (Bower, 1970; Bromiley, 1986; Maritan, 2001), similar to the way that firms create policy around investment magnitude and risk (Sanders & Hambrick, 2007) that seems to be more than the sum of many discrete and unrelated decisions. Such policy gets embedded in the corporate culture and decision rules within an organization and, thus, represents one aspect of its dominant logic (Prahalad & Bettis, 1986), which can be revealed through differences between firms in the aggregate rather than any particular project.

Investment Horizon

Whereas temporal orientation describes the mind-set about time attributed to individuals or firms, investment horizon describes the time span associated with firm decision-making

behaviors. In this review, we focus particularly on those present in, and emerging from, the resource allocation processes of firms. *Investment horizon* is defined as the ex ante managerial expectation about the duration of time over which potential firm investments will generate productive returns, and we treat this term as synonymous with *payback* (Connelly, Tihanyi, Certo, & Hitt, 2010) and *payoff horizon* (Souder & Shaver, 2010).

Investment horizon is a forward-looking construct that captures managerial expectations about the timing of future *returns*—as opposed to a factual measurement of when past cash outlays were made. Research suggests that managers pay attention to investment horizon as part of the resource allocation process, such as when they use the expected duration of first mover advantage to make product-related decisions (Choi & Shepherd, 2004). Presumably, a firm's temporal orientation has a strong influence on its observed investment horizon. However, one instance of potential incongruity between temporal orientation and investment horizon might be seen when a firm's managers claim to pursue value in the long term but act in ways that seem to emphasize the short term.

For depreciable assets, accounting standards call for estimates of *useful life* (Reichelstein, 1997; Yeo & Qiu, 2003) or *expected asset life* (Baldwin & Ruback, 1986) that are determined at the time of investment. As discussed below, Souder and Bromiley (2012) invoked this principle to derive a measure of time horizon from accounting statements. Conceptually, however, investment covers many categories other than depreciable assets, and for these other categories, such ex ante assessments are made only informally.

Like temporal orientation, investment horizon has important meaning at multiple levels of analysis. Project-level investment horizon refers to timing expectations for a single investment decision and represents a key input to many financial tools used in resource allocation, such as net present value (NPV) analysis (Brealey & Myers, 1996). One constraint on effective resource allocation is the uncertainty inherent in estimates of future returns, and yet those expected returns often form the basis for comparison between projects competing for scarce corporate resources. At the firm level, investment horizon refers in aggregate to a particular firm's portfolio of investments. Firms that routinely select short horizon projects can be described as having a short investment horizon and vice versa for firms that routinely select longer horizon project alternatives. Because of the difficulty in estimating future returns, firms have the opportunity to adopt heterogeneous approaches to their analysis of investment horizon. Research into corporate budgeting confirms that a wide variety of approaches are observed in practice (Bromiley, 1986; Ross & Westerfield, 1988). Finally, the unique competitive pressures and technological realities of different industries establish norms for industry-level investment horizon that can be captured by aggregating the horizons of firms in the industry. Constructs often associated with industry-level analysis are described in greater detail below when we address the antecedents of time horizon choices in resource allocation processes.

Short Horizon

Many scholars have addressed *short-termism* in both scholarly journals (Bansal & DesJardine, 2014; Barton, Brown, Cound, Marsh, & Willey, 1992; Gaddis, 1997; Wellum, 2007) and popular press accounts (Begley, 2009; Brown, 2007). Laverty (1996) defines *short-termism* as the extent to which investment actions aim at desirable near-term outcomes

at the expense of later outcomes. Literature on short-termism has inherent relevance to investment horizon but tells only part of the story.

Conceptually, we follow the primary usage of the term, in which decision makers realize they are foregoing good long-term opportunities to place emphasis on short-term targets (Marginson & McAulay, 2008), resulting in "demonstrably suboptimal" behavior (Jackson & Petraki, 2011: 11). The essence of the problem comes from knowing better but acting with a short-term mind-set anyway. Some experts have blamed short-termism "for some of the worst excesses of the global financial crisis and an excess of 'public bads' as green economists see environmental damage and other negative externalities to society that aren't represented in financial statements" (Lees & Malone, 2011: 1). As a result, scholars typically assume that a particular organization could achieve advantage relative to its rivals by doing a better job of managing for the future (Hill, Hitt, & Hoskisson, 1992).

Similar ideas have been expressed using the terms *present focus* (Cojuharenco, Patient, & Bashshur, 2011), *hyperbolic discounting* (Dasgupta & Maskin, 2005; Plambeck & Wang, 2013), and *temporal myopia* (Levinthal & March, 1993). Jacobs (1991) emphasizes how myopia serves as a metaphor for short-termism. In their seminal work on learning processes, Levinthal and March describe "the tendency to ignore the long run" (101) as temporal myopia to distinguish it from other ways to invoke the myopia metaphor, such as ignoring the larger picture and ignoring failures, and note "complications in balancing the long and short run" (102) objectives in managing knowledge inventories. Levinthal and March also offer linkages to both decision-making theories and real options thinking in describing a way for managers to resolve the underlying tension: "Organizations sometimes act by solving problems after they arrive. They discover problems, diagnose their causes, experiment with solutions to them, and then implement solutions that appear likely to yield favorable outcomes" (102).

Miller (2002) builds on the notion of temporal myopia in modeling real options and further distinguishes between decisions made when there is (a) limited knowledge about the current state, (b) clarity about the current state but no foresight, or (c) limited foresight. He also considers scenarios in which managers face temporal and spatial myopia concurrently. Chi and Fan (1997) also analyze how cognitive limitations cause managers to underestimate the eventual value of investment opportunities with uncertain development time and total costs. Recent work analyzes the text in annual reports to show that temporal myopia has the effect of making a firm's strategy more persistent and, thus, less adaptive (Ridge, Kern, & White, 2014).

These intraorganizational perspectives are distinct from and yet complementary to market-driven ideas, often associated with agency theory, that managers emphasize shorter term investments to maximize their career value (e.g., Thakor, 1990). Laverty (1996, 2004) further draws a parallel between the reasons why intraorganizational dynamics produce myopic behavior, as described above, and scholarship calling attention to myopia among stock market investors (Schliefer & Vishny, 1990; Stein, 1988, 1989). This idea has been modeled in behavioral economics as myopic loss aversion, with a conclusion that "narrow framing of decisions and narrow framing of outcomes tend to go together, and the combination of both tendencies defines a myopic investor" (Thaler, Tversky, Kahneman, & Schwartz, 1997: 648). Others have noted how the past and the future represent different reference points for managers (Fiegenbaum et al., 1996).

Long Horizon

In discussing temporal myopia, Levinthal and March (1993) note that firms can myopically overemphasize the long term as well as the short term. Real-world examples of such *long-termism* are rarely reported, and the idea has received little attention in empirical research. However, several conceptual papers have identified this scenario and modeled it (Bebchuk & Stole, 1993; Miller, 2002; Stein, 1989). This speaks to one of the ongoing tensions identified in the introduction regarding implicit competition between different strategies for short- and long-run survival.

Also from a long horizon perspective, a sizable literature refers to *long-term orientation*, particularly at the firm level of analysis. For example, long-term orientations are presumed common among family-owned businesses (Chua, Chrisman, & Bergiel, 2009; Lumpkin & Brigham, 2011). We regard this term as representing a subset of temporal orientation with a directional emphasis and not a distinct concept. However, as depicted in Figure 1, many papers focus on the implications of long or especially short horizon in a general way that transcends the other terms described in this review.

Key Takeaways

Time horizon manifests through two key decision-making concerns. First, managers want to know when they can expect to achieve payback on investment alternatives. Second, because uncertainty increases with horizon, managers are also reluctant about the greater variability of expected returns on longer term projects. However, longer horizons are only one source of uncertainty in comparing competing resource allocation alternatives, along with the magnitude of investment and variability of outcomes (Sanders & Hambrick, 2007). To help focus on the unique aspect of time horizon—the question of "when payback can be expected," we recognize the multilevel nature of time horizon and distinguish between managers' general preferences about horizon and how they estimate investment horizon for the purpose of allocating resources. In our judgment, the proliferation of terms to describe similar concepts has obscured connections across studies pertaining to time horizon, and we have aimed to reduce some areas of confusion by making explicit how these terms partly overlap.

Investment Horizon in Different Theoretical Traditions

Earlier we showed how prior literature has used multiple terms to address time horizon in resource allocation. Our review reveals that the proliferation of time horizon constructs may be due in part to the treatment of horizon in several prominent strategic management theories that contribute to our understanding of the resource allocation process. The importance of time horizon is prominently noted in research that analyzes the details of the resource allocation process. Bower (1970) observes that managers must achieve annual profit targets even as they pursue the higher goal of long-run corporate success, creating a potential mismatch between the time span of some investment alternatives and their own time frames to demonstrate success. Similar findings can be found in Bromiley's (1986) description of firms' capital budgeting process, and Maritan's (2001) detailed model of this process isolates time horizon from other sources of uncertainty by distinguishing between environmental (which

increases over longer time spans) and production function uncertainty (which captures the underlying variability of outcomes associated with specific activities independent of time).

Such work describes the entire resource allocation process and, thus, provides a crucial foundation for conducting a deeper review of time horizon as one important aspect of this process. In addition, because expectations about the timing of returns are fundamental to investment policy, concepts related to time horizon appear at least in passing in many theories of strategic management. Whereas the research on resource allocation explicitly refers to time horizon and stands on its own in explaining how it fits into the overall process, some of the other theories leave the implications of time horizon more implicit. Consequently, we articulate the specific role of time horizon in three theories where its importance has been noted but developed only partially—agency theory, real options analysis, and behavioral theory.

Agency Theory

From the perspective of agency theory, managers often allocate resources on the basis of their personal priorities, imposing costs whenever their interests depart from those of the firm's owners. Given that the interests of managers and owners both evolve over time, the underlying tension between such agency costs and the cost of monitoring managers instead has motivated considerable time-related research. Agency theory's focus on "risk" is very broad and includes several constructs that have subsequently been addressed distinctly—including investment horizon, which was described as a possible extension in the seminal work by Jensen and Meckling under the heading "multiperiod aspects of the agency problem" (1976: 351).

It would be false to imply that agency theory primarily explains managerial time horizons. Yet because of the compensation levels involved and corresponding public interest, the famous prescription to grant managers substantial stock options to reduce agency costs (Jensen & Murphy, 1990) is a logical place to start examining the modeling of investment horizon in agency theory. This argument applied to all potential sources of agency costs, including but not limited to differences in investment horizons between owners and managers. After agency theory popularized the idea that options would help managers allocate resources in ways more closely aligned with the long-term interests of owners (Westphal & Zajac, 1993), they were hailed as "long-term incentives." The theory assumes a priori that a firm's risk-neutral owners have optimal investment horizons for the firm, while risk-averse managers have multiple motivations (discussed in detail in a later section) to allocate resources disproportionately toward opportunities with shorter term payoff horizons. However, some scholars have concluded that neither of these assumptions fit the available empirical data (e.g., Devers, McNamara, Wiseman, & Arrfelt, 2008; Souder & Shaver, 2010), calling for more precise and nuanced measurement of investment horizon. We see this work as the beginning stages of an effort to transcend the limits of any single theory and develop theory designed to explain directly the role of investment horizon in the resource allocation process.

Research in the agency tradition also finds that compensation schemes based on multiyear results are a substitute for the long-term incentives presumed for stock options (Gray & Cannella, 1997). Pay-for-performance compensation can be used to encourage long-term

decision making (Walsh & Seward, 1990); specifically, pay schemes based on short-term accounting results have correlated with reduced investment in future competitiveness (Hill et al., 1992), while pay based on nonfinancial measures has associated positively with long-term effort (Matejka, Merchant, & Van der Stede, 2009).

Using compensation to resolve agency tensions represents an alternative to active monitoring of managers by owners. For example, Tihanyi, Johnson, Hoskisson, and Hitt (2003) find higher agency costs in the monitoring of foreign operations. Their logic would likewise predict that monitoring requirements—and, hence, agency costs—would be higher for long-term investments that will not have their full performance outcomes known for multiple years. Beyond simply needing to monitor these investments for a longer period of time, evidence that the investment project is proceeding according to owners' interests is more likely to be ambiguous in long-term projects. Similar to managers coping with role ambiguity by preferring short-term, accounting-based, and highly measurable goals (Marginson & McAulay, 2008), owners' preferences to reduce their need to actively monitor managers may similarly influence firms toward shorter horizon resource allocation decisions.

Board structure also plays an important monitoring role in agency theory, and this also has implications for investment horizon. Prior research finds that oversight by board members with a long-term focus promotes longer term behavior by managers (Arthurs, Hoskisson, Busenitz, & Johnson, 2008). Similarly, family-controlled boards are thought to be more effective in dealing with the ambiguity of long-term investments because they have fewer owners with conflicting priorities. Following this logic, Chua et al. (2009) argue that family firms pay greater attention to noneconomic goals and have longer horizons for strategic decisions even though these tendencies lead to more challenging (subjective, complex, and biased) performance evaluations.

A final example of the tension regarding investment horizon concerns the interface between theoretical assumptions and actual observation. Evidence suggests that real-world managers often have long-term perspectives, while real-world investors often demonstrate short-term behaviors (Stein, 1988, 1989). Such findings are inconsistent with the simplifying assumptions used to generate predictions about stock options. To the extent that board composition, monitoring, or other concepts from agency theory are also thought to promote longer horizons, it seems important to collect empirical evidence supporting or countering these conclusions.

Real Options

Even though time occupies a central role in motivation for and conception of real options theory, it is rarely modeled as a variable in hypothesized relationships. Real options theory attempts to overcome a challenge from the capital budgeting literature in which scholars have found that long horizon projects often get overly discounted for their deferred payoffs (Graham et al., 2005), such that investments with positive long-run NPV are avoided in favor of alternatives with smaller but more immediate returns. By contrast, real options theory notes that when firms are faced with high uncertainty about a strategic path, they can make a small investment in the short term that allows them to "wait and see" whether a larger long-term investment in that direction is merited. Having obtained this option, firms can gather additional information over time before deciding whether to "exercise" the option—by

making further investment—or abandon it (e.g., Bowman & Hurry, 1993; Chatterjee, Lubatkin, & Schulze, 1999; McGrath, 1999; Trigeorgis, 1995). Resource allocation theories relying on traditional analyses, such as NPV analysis, cannot easily account for the value of flexibility provided in this scenario. In this view, what might appear to be a short horizon investment may instead be an investment in a real option to enable a firm to gather data on feasibility or possibly gain resolution on uncertain aspects of their environment before committing to longer horizon aspects of the investment (see Folta, 1998).

Miller (2002) provides the most thorough explanation of horizon issues by utilizing real options theory in his examination of three forms of temporal myopia in a study of knowledge inventories. The general rule implies that the longer a firm can retain its capital and avoid making a funding commitment, the better—provided that managers have a farsighted perspective that entails close monitoring of the smaller initial investment to determine whether and when to pursue the full project. However, if real options are combined with a short-termist perspective, they instead serve as an excuse to avoid investments altogether and lead to subpar outcomes. Taken together, these arguments highlight an apparent tension across theoretical traditions but one that we think can be resolved. Even though real options' flexibility represents a distinct value-creation mechanism from the patience involved in choosing good long horizon investments, these two mechanisms are not mutually exclusive. Consequently, we view them as two complementary levers for managers to limit sunk costs without precluding the potential to achieve a long-term vision in stages.

BTOF

In some theories, investment horizon could be described as a necessary but hard-to-model aspect of resource allocation. As a descriptive theory, the BTOF incorporates the necessity of investment horizon more directly and helps explain how managers try to resolve the tension between differing needs for short- and long-run survival. Cyert and March observe that managers "emphasiz[e] short-run reaction to short-run feedback rather than anticipation of long-run uncertain events. They solve pressing problems rather than develop long-run strategies" (1992: 167). The disproportionate pursuit of shorter horizon investments could easily result from the need to devote inordinate attention to pressing demands (Ocasio, 1997). The BTOF further reminds us that low performers will select higher risk and shorter horizon investments because they have less to lose than their high performing peers, and such choices offer a greater chance of catching up to leaders quickly than do longer horizon options (Souder & Shaver, 2010).

Meanwhile, behavioral accounts of the firm investment process devote considerable space to explaining the challenges managers find in estimating cash flows over time or even in determining how long of a planning period to consider (Bower, 1970; Bromiley, 1986). The heuristics that lead managers to emphasize short horizon investments exemplify a satisficing approach in which managers develop rules of thumb to overcome the computational complexity of analyzing multiple investment opportunities with different expectations for returns, risk, horizon, and other factors (Simon, 1947). Souder and Bromiley (2012) also note that choice of investment horizon can be considered a BTOF routine and is therefore unlikely to vary considerably, especially in more established firms. One exception to this expectation is the behavioral logic when performance aspirations are surpassed. These authors argue that

resources available from above-aspiration performance can be expected to lengthen horizon as such resources do not fit within established resource allocation routines and become more likely to be invested in longer horizon resources than would otherwise be possible. Nelson and Winter's (1982) evolutionary economics, which draws heavily on the BTOF, formalizes many principles for how investments unfold over time, although their analysis focuses mainly on the evolution of industries rather than firms.

Key Takeaways

Time horizon in resource allocation does not belong exclusively to any particular theory. Its importance has been noted prominently in several theories and tangentially in others. For accumulating knowledge about time horizon, this has advantages and disadvantages. On the plus side, there is a broad repository of material available and a variety of useful perspectives on the role of time horizon in general. Yet on the downside, none of these theories has time at its core and, as a result, the depth of analysis is limited. Prior research has done a good job of explaining how time horizon affects other areas of interest, but relatively little work has been devoted to developing and testing arguments pertaining to time horizon itself. As a result, we see opportunities to enrich each theory by analyzing time horizon across theoretical silos.

Antecedents of Investment Horizon Choices

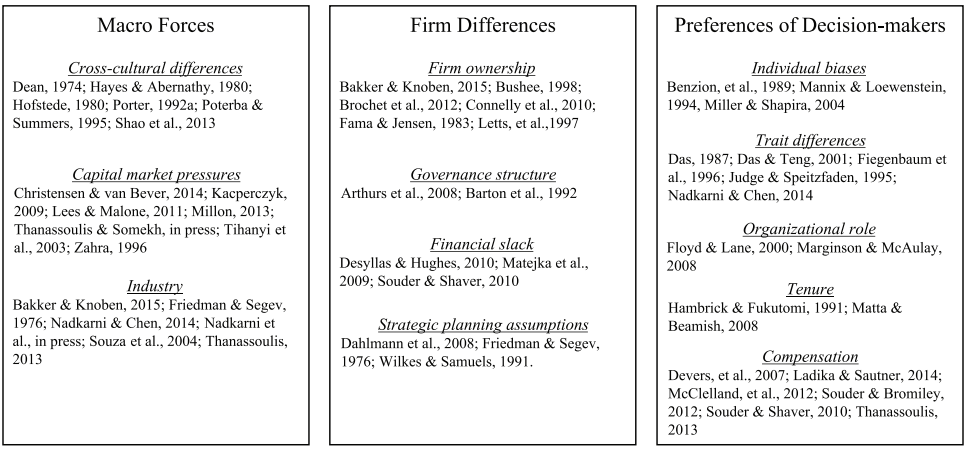
The most common topic of research included in our review helps answer the question, "How is investment horizon determined?" One important guide for answering this question comes from understanding the role of time horizon in key management theories. On the basis of the last section of the review, we build a theory-driven, multilevel approach to reviewing and synthesizing macro-, firm-, and individual-level antecedents to investment horizon choices. We find antecedents related to firm governance driven by agency theory, generated slack emerging from behavioral theory, and decision-making biases highlighted in the myopia literature. Figure 2 summarizes our categories of antecedents for easy reference.

Macroforces

Time orientation is a key differentiating attribute of cross-cultural differences (Hofstede, 1993). For decades, authors have expressed the belief that U.S. managers in particular place excessive weight on the short term (Dean, 1974; Hayes & Abernathy, 1980; Porter, 1992), with supporting evidence from surveys reporting that U.S. managers believe they have a shorter horizon to demonstrate performance and use higher project discount rates than managers in Europe or Asia (Poterba & Summers, 1995). More recent work demonstrates cultural differences across different types of longer term investments. Individualistic countries, such as Western countries, tend to emphasize R&D investments, while collectivistic countries emphasize capital investments (Shao, Kwok, & Zhang, 2013).

Short-termism of U.S. firms is often attributed to capital market pressures. Classic economic theory assumes shareholders take a long-term interest in the companies they own, but a majority of shares in today's U.S. market are held by hedge funds, sovereign wealth funds,

Figure 2
Sample Studies of Antecedents to Time Horizon Choices in the Resource Allocation Process



private equity funds, and others with short-term objectives (Lees & Malone, 2011; Thanassoulis & Somekh, in press). Ownership by pension funds was once linked to longer term thinking (Tihanyi et al., 2003; Zahra, 1996), but more recent articles have suggested that the horizon has shortened, perhaps as a result of their own need for immediate returns to retain assets from flowing to higher-performing rivals (Christensen & van Bever, 2014; Millon, 2013). Furthermore, exogenous increases in takeover protections can provide managers with the opportunity to shift attention toward shareholders that increase long-term shareholder value (Kacperczyk, 2009).

Industry predicts horizon as a result of differences in product or asset life cycles (Friedman & Segev, 1976), the timing of which can be summarized as industry velocity (Nadkarni, Chen, & Chen, in press). Additionally, industries with similarly sized firms overweight short-term results (Thanassoulis, 2013) because the intensity of competition places pressure on firms to accelerate the timing of new product launches, leading them to release a low-quality product into the market just to keep pace with their peers (Souza, Bayus, & Wagner, 2004), an idea described as the industry clock speed. Emerging research also suggests that market dynamism can affect the temporal orientation of decision makers (Nadkarni & Chen, 2014), specifically increasing use of short-term alliances (Bakker & Knoben, 2015).

Firm Differences

Firm governance structure is one key difference that seems to affect investment horizon. As noted, capital markets may influence the timing preferences of publicly traded companies in the United States. However, the range of private organizations' horizon choices may be more limited in comparison to public peers, given that they have less access to capital to pursue long-term growth (Fama & Jensen, 1983). Likewise, nonprofit organizations describe constraints on their ability to have long time horizons (Letts, Ryan, & Grossman, 1997).

Conversely, higher percentage of ownership by more transient investors has been found to reinforce a short-term focus (Connelly et al., 2010). For example, Bushee (1998) found that the more of a firm's equity held by investors with high trading frequency, the more willing its managers became to cut R&D to offset a decline in earnings. Consistently, evidence suggests that investors with short-term goals tend to self-select firms with similar short-term orientations for their capital (Brochet et al., 2012). Moreover, firms may be formed with a short duration in mind, as one component of a larger alliance portfolio (Bakker & Knoben, 2015).

As noted in our discussion of agency theory, governance structure within the organization also has influence over investment horizon choice. U.S.-based research shows that if board members focus on long-term performance, this discourages managers from engaging in short-term behaviors, but board members can be easily enticed by short-term rewards of their own and, thus, lack the requisite long-term orientation (Arthurs et al., 2008). Furthermore, Barton and colleagues (1992) observed that organizational hierarchy exacerbates short-termism by adding increasing pressure down the chain of command.

A firm's financial situation is also an antecedent of its propensity to undertake long-term investments. Prior research supports the idea that longer horizons result from two different types of slack identified by Cyert and March (1992). First, strong recent performance, which can be described as generated slack, leads to increased levels of long-term investments (Souder & Shaver, 2010), while firms decrease long-term investments when times are tight (Matejka et al., 2009). Second, the lack of potential slack that occurs when firms have high levels of debt has been shown to reduce long-term spending on R&D (Desyllas & Hughes, 2010). Relatedly, the firm's choice of discount rate can make a significant difference in the way future opportunities are perceived (Wilkes & Samuels, 1991). Furthermore, firm-level strategic planning assumptions, such as the length of the planning horizon, create differences across firms in investment horizon choice. For example, larger firms tend to have longer planning horizons (Dahlmann, Brammer, & Millington, 2008) because they are less agile (Friedman & Segev, 1976).

Preferences of Decision Makers

As previewed in the introduction, people have an innate tension between short- and long-term orientations. Several experiments reveal seemingly irrational short-term biases (Benzion, Rapoport, & Yagil, 1989; Mannix & Loewenstein, 1994), while others show that people often accept or even prefer deferred future payoffs if they perceive the potential for unusually high returns (Miller & Shapira, 2004). Faced with this tension, research has identified individual differences in temporal preference among managers. Managers can have reference points more focused on the past or the future (Fiegenbaum et al., 1996), as well as individual orientations toward past, present, or future focus (Nadkarni & Chen, 2014). Specifically, executives with a distant future time perspective are more likely to engage in long-range behavior (Das & Teng, 2001; Judge & Speitzfaden, 1995) and are better suited for long-run planning (Das, 1987).

These temporal differences among managers have been linked to organizational role, tenure, and compensation. First, different levels of managers appropriately differ in their time horizons, but this creates potential for misalignment and conflict (Floyd & Lane, 2000).

Strategic renewal has a particularly long horizon, and senior leadership accordingly focuses on this issue. Nonetheless, other research argues that top executives are more short-term because they are closest to capital market pressure (Marginson & McAulay, 2008). Second, upper echelons scholarship tells us that the horizon of individual leaders might change in predictable ways at different points of tenure (Hambrick & Fukutomi, 1991). Most authors assume the CEO's horizon will be short at the beginning of tenure, when quick successes can reinforce confidence in the new CEO, and again as the CEO nears retirement age and may have reduced ongoing interest in the firm's long-term success. In between these times, a longer horizon should be feasible (Matta & Beamish, 2008). Third, levels of CEO stock ownership appear to change managerial behavior (McClelland, Barker, & Oh, 2012), and high residual pay promotes a short-term focus (Thanassoulis, 2013). In contrast to most expectations, stock options tend to *reduce* long-term investing after stock options become exercisable (usually 1–4 years into their 10-year terms; Devers, Wiseman, & Holmes, 2007; Souder & Bromiley, 2012; Souder & Shaver, 2010), especially if the options are in the money (i.e., exercising them would yield an immediate profit). Similarly, accelerated option vesting has been linked with managerial short-termism (Ladika & Sautner, 2014).

Key Takeaways

Prior research identifies numerous factors that influence time horizon in resource allocation—at all levels of analysis, including the individual, firm, industry, and national culture. A thorough understanding of time horizon demands an appreciation for factors at all levels, but focused research also precludes studying all of them at once. One of the challenges in interpreting and conducting new research on time horizon is scoping projects appropriately to include a useful set of factors.

The prevailing sentiment of existing research is that individuals and firms tend to overemphasize short-term considerations and place too little value on long-term outcomes. However, no conceptual or empirical work argues that all individuals or firms exhibit this behavior. Furthermore, a large number of environmental factors and incentive arrangements have been shown to exert influence on an individual or firm's ability to reprioritize the long term. Many of these relationships have been found to have greater complexity than originally assumed, which speaks to the importance and opportunity of this research stream.

Investment Horizon Measurement

Management research has used a wide variety of measures for investment horizon. In our judgment, this variety can be largely explained as a by-product of scholars whose primary interests relate to *different* phenomena or theories but who recognize a crucial role for investment horizon to develop a more complete understanding of their main topic of interest. We do not suggest that management research would be better off to include investment horizon only when it can be measured in an established way, even though such an approach contributes toward high compatibility between investment horizon and other key variables and, thus, greater internal validity for each study. Nevertheless, for a review of investment horizon, the advantages of creativity and flexibility in a single study are at least partly offset by the increased difficulty for accumulating knowledge across studies (Harris, Johnson, & Souder, 2013). Consistent interpretations about investment horizon are unlikely to derive

from a collection of studies that use different—and sometimes very different—measures of the construct.

Asset Life

One way to measure horizon has emerged from accounting requirements to develop estimates of expected asset life for determining amortization schedules for "capital equipment" that is expected to last longer than 1 year. Several studies have captured investment horizon choices by using measures resulting from the resource allocation process for purchasing capital equipment, such as vehicles, machines, and tools (Shao et al., 2013; Souder & Bromiley, 2012; Souder & Shaver, 2010; Martin, Wiseman, & Gomez-Mejia, in press), and for the maintenance and repairs of such equipment (Millon, 2013). Relatedly, industry practices sometimes provide opportunities for more granular measurement, such as the use of biotechnology firms' pipelines to estimate time horizon diversity, which Judge and Speitzfaden (1995) found to correlate positively with firm performance.

Similarly, real options sometimes come with a fixed time frame (e.g., a firm has a specified window to decide whether to make additional investment or else it loses the previously contracted flexibility to collect further information before committing its resources). These situations mirror the terms of the market-traded options that inspired the real options metaphor, and the specified time limit forces a definitive investment decision that eliminates the uncertainty associated with putting off the decision. However, the time-limited window does not resolve the ongoing challenge of estimating future returns from the investment project and the time frame by which they could be achieved.

Research and Development

When a firm is deciding between two new product paths, the timing of expected payoffs across the choices can vary widely. Because the accounting statements of publicly traded companies report R&D spending as a distinct line item, many studies have treated it as the default measure for long-term investment. Scholars using R&D expenditures as a proxy for investment horizon (Chrisman & Patel, 2012; Desyllas & Hughes, 2010; Hopp, 1987; Knott, 2012) reason that firms with greater proportions of R&D spending are making longer horizon choices. Measurement of new product introductions (Souza et al., 2004) is also viewed as capturing information about firm investment horizon; for example, a recent study concluded that early "success traps" can inhibit the development of an exploitation competency with longer term value (Rhee & Kim, 2015). However, Laverty (1996) makes a compelling argument that investment horizon measures using R&D or new product introductions capture only a few of many future-oriented activities. Various authors have identified many examples of activities thought to receive insufficient investment because they involve immediate charges to accounting earnings but corresponding benefits will not be realized for some amount of time (Millon, 2013; Rappaport, 2005).

Stakeholder Relationships

A very different way to measure time horizon in investments focuses on the duration of relationships with external stakeholders that the firm decides to invest in over time. For

example, the strategic alliance literature captures investment horizon by using the durability of joint ventures and alliance partnerships, specifically viewing equity joint ventures as an indicator of longer term orientation than nonequity joint ventures (Buck, Liu, & Ott, 2010; Das, 2006; López-Navarro, Callarisa-Fiol, & Moliner-Tena, 2013). Similarly, there is interest in the role of horizon preferences in investments related to management of supplier relationships (Chung, 2012). Studies of reputation management with groups of stakeholders, such as product users, communities, and employees, measure the symbiotic relationship between customers and firm value over the long term (Su, 2007).

Retroactive Inference

Several studies use backwards-looking measures based on stock market valuations to make inferences about firms' time horizon from archival data. For example, Brammer and Millington (2008) argue that market performance over 10 years provides evidence of long investment horizon in firm practices. Our review uncovered variations on this theme, as Kacperczyk (2009) used market-to-book ratios over 3 years for much the same purpose, while Arthurs et al. (2008) used market pricing choices for public offerings to identify short horizon managerial choices. In a parallel approach, Neubaum and Zahra (2006) use market-based measures of social responsibility to propose that managers should actively court long-term owners rather than try convincing all investors to accept their long-horizon strategy.

None of these measures explicitly captures time; instead, they try to draw inferences about time on the basis of available data. In the absence of more precise and proximal measures, such an approach offers the potential to draw preliminary conclusions about interesting but hard-to-capture constructs. However, as suitable measures with a more explicit treatment of time are developed, it is important for scholars to go back and determine the amount of confidence to place in these conclusions by attempting to replicate the results with the better measures.

Strategic Actions

Other measures attempt to capture time horizon by utilizing proxies related to strategic actions that take a long time and commitment to achieve. For example, Ensley (2006) measured strategic persistence as a long horizon variable by using the coefficient of variation of strategic orientation over a 10-year period. Those whose variability was low were deemed to have maintained long-run consistency and were seen as having made a longer horizon choice of strategy than those who varied more over time. Other work has cast international diversification commitments over time (Tihanyi et al., 2003) and structure of organizational growth (Das & Teng, 2002) as long horizon strategic choices. Each used a variety of indicators to demonstrate the degree of pursuit of long- versus short-horizon strategies over time.

Cognition

Time horizon choices in resource allocation processes reflect the priorities of decision makers. As Kaplan and Orlikowski explain, "Projections of the future are always entangled with views of the past and present, and temporal work is the means by which actors construct and reconstruct the connections among them" (2013: 966). Text analysis techniques allow

scholars to study such cognition, analyzing investment horizon through the words of managers rather than their actions. Examples include use of the word *will* in letters to shareholders as an indicator of CEO future focus (Yadav, Prabhu, & Chandy, 2007), reporting headlines about investment payback horizon (Connelly et al., 2010), or linguistic analysis of conference calls between managers and investors (Eccles, Ioannou, & Serafeim, 2014). One recent paper measures temporal depth by using text from both letters to shareholders and conference calls (Nadkarni et al., in press). In addition, CEO technical awareness, management team locus of control, and strategic issue array size have all been associated with increased time horizon diversity (Judge & Speitzfaden, 1995).

Key Takeaways

Prior literature measures time horizon in multiple ways. Even though Souder and Bromiley (2012) introduced an accounting-based measure that explicitly indexes time, the field is far away from settling on a standard approach. In our view, there is room for a multiplicity of approaches, but scholars should do a better job of articulating the limitations of each approach with reference to the others. High levels of R&D may truly indicate a long time horizon, but this inference should not be made without caution or recognition that it might also indicate other strategic choices. Likewise, researchers should pursue (and editors should encourage) papers that use different measures to confirm—or call into question—findings using any one of these measures.

Directions for Future Research

Scholars and industry experts share a prevailing belief that short time horizons have negative performance consequences, at least in the long term. With that said, managers regularly make short-term focused choices, no doubt as a result of the immediate benefits available. Going forward, the challenge is to design studies that provide insight into how managers can develop more accurate and quantitative forecasts of both long- and short-term outcomes in advance of their key business decisions. Academics need to move beyond lab experiments and anecdotal evidence and find systematic, large-scale evidence to better understand the validity of common beliefs about time horizon in resource allocation decisions. In this final section of the review, we prescribe new directions for research on investment horizon in the resource allocation process that are needed for scholars and managers to advance the field.

Prescription 1: Improve Understanding of the Role of Time Horizon Especially Regarding Widely Held but Untested Beliefs

Many of the papers we reviewed discuss time horizon as a by-product of a deeper analysis of some other resource allocation issue, and we were able to identify implicit patterns in the treatment of time horizon from the existing body of research related to several different theories. Yet the importance of time across these various perspectives demands new research explicitly focused on a robust understanding of time horizon itself. Assumptions about time are often crucial to the application of management theories, and yet because the theoretical insight lies elsewhere, little attention has been paid to articulating the exact basis for time

assumptions. We call for scholarship within each tradition along the lines of *making explicit the role of time horizon in agency theory*, which can help resolve the within-theory tensions that have been identified.

Scholars use and build theory to guide predictions about relations among constructs. While theory-based predictions of antecedents to time horizon choices have emerged from prior work, theory-driven predictions about the consequences of differing horizons have not been offered. Furthermore, the prevalence of time components within numerous theoretical traditions suggests that interesting boundary conditions are likely to emerge when expectations driven by one theoretical tradition bump up against another. Ultimately, it may become interesting to analyze how time horizon gets applied differently from one theory to the next—but such a comparison may be premature until scholars from the various theoretical traditions provide a more explicit analysis in the first place. This can help resolve both phenomenological and cross-theory tensions.

Prescription 2: Isolate Time Horizon From Related Constructs—Especially Investment Risk—via More Precise Construct Definitions and Better Measurement

There has been a prevailing assumption that discounted cash flow analysis, and the NPV rule specifically, adequately capture the role of time horizon in resource allocation decisions. Even though time indeed plays a significant role in the standard NPV formula—the number of years is used as an exponent on the discount rate—we have come to realize that this coarse mathematical treatment is conceptually distinct from the fine-grained, nuanced way managers pay attention to time horizon when determining resource allocations. Similarly, our review reveals that the concepts of time horizon and risk in agency theory research are usually indistinguishable from one another—often using a single variable to capture both ideas.

We urge scholars to conduct research that analyzes time horizon distinctly from risk, uncertainty, project magnitude, and other factors relevant to resource allocation—with the constructs tied together only when the independent properties of each can be maintained (Figure 1 in Souder & Shaver [2010] demonstrates this recommendation). We see particular promise in exploring the spaces where risk and horizon diverge. That is, we think new insight is possible in the space where long horizon, lower risk investments or short horizon, higher risk choices exist. Such work would need to develop distinct measures of each construct and bring new theories to bear in explaining both the circumstances that would lead to such situations and the results for firms that choose them.

Prescription 3: Develop Tools for Practitioners to More Effectively Incorporate Expectations About Time Horizon Into Resource Allocation Decision Models

Building on Prescription 2, we see a need to develop rigorous analytical techniques that managers can use to do a better job of incorporating time horizon into their resource allocations. Put bluntly, we envision problems if practitioners perceive risk as a quantitative or "hard" analysis and consider time horizon to be more of a qualitative or "soft" tool. A complete analysis of risk and time horizon should blend together the hard and soft elements of each.

Although defining universal rules for choosing a firm's best horizon seems unrealistic, it could be useful for researchers to conceive of horizon choices along an efficiency frontier, that is, there are a variety of horizon choices that make sense given specific contextual factors (including the risk and magnitude of the decision under consideration, as well as broader trends in the macroenvironment), but there are also many horizon choices below the frontier that are value destroying. Slawinski and Bansal (2015) offer an interesting insight into managing short- and long-term dimensions. They find that when firms approach climate change as a complex challenge with benefits for business and society, they are able to simultaneously pursue both short- and long-run approaches, compared to efficiency-oriented firms who are more likely to polarize the potential benefits of short- and long-term approaches and choose shorter horizon solutions. Future scholarship could make valuable contributions in this multitemporal approach to strategy (Le Breton-Miller & Miller, 2011) by identifying circumstances for different horizon mixes and priorities.

Resource allocation decisions usually affect multiple firm stakeholders, and the nuanced quantification we envision may be advanced by evaluating alternatives from multiple stakeholder perspectives since determination of which stakeholder interests are favored in the resource allocation process influences investment horizon choices. Investments with differing horizons can exacerbate conflicts between, for example, the firm's interests and the personal interests of executives that sits at the core of agency theory. Quantifying such conflicts can help managers determine how to prioritize between community leaders calling for increased safety standards or sustainability initiatives and union leaders advocating for higher wages. Existing finance-oriented tools are useful for judging alternatives only to the extent that value can be translated into financial terms. Many aspects of value for stakeholders other than shareholders are difficult to quantify this way, making results from existing tools incomplete. There is a clear need for future research to keep developing more nuanced and robust analytical techniques that incorporate the costs associated with stakeholder horizon preferences and further compare investment alternatives with different time horizons.

Prescription 4: Investigate Constructs Assumed to Have Time Horizon Characteristics but That Lack Empirical Evidence to Verify the Assumption

Multiple streams of research actively incorporate assumptions about investment horizon without explicitly testing the validity of these expectations. For example, family-owned businesses are assumed to have relatively long horizons for a wide range of reasons, including an ability to avoid income smoothing (Kappes & Schmid, 2013; Prencipe, Bar-Yosef, Mazzola, & Pozza, 2011) and their greater interest in the fortunes of next generation owners (Chrisman, Chua, & Steier, 2011; Wennberg, Wiklund, Hellerstedt, & Nordqvist, 2011; Zellweger, 2007). However, the question of whether family firms actually have longer horizons is generally taken for granted in these studies and not established with empirical support. Notably, family influence also imposes limits on some long-term activities, such as R&D investments, that conflict with the resource constraints and other socioemotional goals of many family-influenced businesses (Chrisman & Patel, 2012; Munoz-Bullon & Sanchez-Bueno, 2011).

Similarly, firms with more institutional investors are thought to pay greater attention to corporate social performance (Neubaum & Zahra, 2006), while Coyne and Witter (2002) claimed that investors who behave as "fundamental analysts" (such as Warren Buffett) have greater interest in long-term growth projections than immediate results. Likewise, analytical

or angel investors may have the long-term tolerance needed for entrepreneurial success (Sorheim & Landstrom, 2001). Finally, some scholars have argued that corporate entrepreneurship, which has demonstrated a positive relationship with performance, should be considered long-term investment (Zahra, 1996; Zahra & Covin, 1995).

Plausible arguments have been offered for each of these claims, but future research should undertake the challenge of developing empirical support for them as well. Time horizon can be difficult to measure, and we recognize that scholars have made these plausible assumptions so that more easily obtained measures, such as family ownership, can be used as proxies for time horizon. We are not calling for an end to this practice because we understand that it enables analysis of some research questions that would otherwise go unanswered. At the current maturity of this research stream, however, there is great value in going back to tie up the loose ends of proving that these common assumptions enjoy empirical support.

Prescription 5: Improve Empirical Knowledge of Outcomes Related to Investment Horizon

Nearly all of the research on time horizon presumes that longer horizons imply better performance outcomes. There is also a general perception that short-term behaviors by business organizations produce negative consequences for not only their own profitability but also the broader economic, environmental, and social systems in which they operate (Gross & Lewis, 2007; Hayes & Abernathy, 1980; Porter, 1992). On this point again, our review reveals that these assumptions are grounded in plausible deduction rather than empirical evidence. Our final prescription suggests that scholars develop empirical research aimed at understanding outcomes of differing investment horizon choices.

To date, the research on interfirm alliances provides the most corroborating evidence for the value of longer horizons, as longer term choices reduce conflict and increase the durability of an alliance (Dyer, 1997). Also in the realm of reputation management, fostering a long-term orientation has been found to reduce opportunistic exploitation by partners in the supply chain (Das & Rahman, 2010; Lui & Ngo, 2012) and move partnerships closer to becoming full-fledged acquisitions (Das & Teng, 2000). However, these findings are so tightly linked to the alliance context that it seems premature to draw conclusions about the positive effects of investment horizon in general. Additional evidence is emerging that long-term investments in corporate social responsibility (Wang & Bansal, 2012) and charitable giving (Brammer & Millington, 2008) can act as differentiators toward stronger long-run performance, particularly in reaction to negative media coverage (Jia & Zhang, 2014). We are comfortable viewing these findings as *suggestive* of the presumed link between longer horizons and improved performance but reluctant to consider them *conclusive*.

Theories tell us that firms should make resource allocation decisions on the basis of an analysis of expected future returns, and experience tells us that managers regularly attempt to perform this type of analysis. Both theorists and practitioners have a clear interest in knowing whether their resource allocation decisions are generating sufficient returns, and at the project level of analysis, many firms indeed track returns on investment internally. Yet each resource allocation decision captures multiple decision criteria—in addition to expected return, managers may consider the volatility of returns, the magnitude of the investment

needed, the upside potential (or maximum downside), time horizon, and their own personal beliefs—without any satisfactory way to attribute the overall outcome to these criteria. As a result, scholars have often settled for drawing inferences from what they believed to be true about risk, horizon, or any of these other criteria. This limits our confidence in any conclusions and precludes the ability to theorize and model the full range of nonlinear models often developed in organizational behavior research. Ideally, there would be enough studies of the relationship between horizon and performance to conduct a meta-analysis; realistically, at this point, it would be great to have a handful of studies that find ways to isolate horizon's effect by controlling for the levels of the other factors composing a resource allocation decision. One way to do this is by measuring each of those factors for a wide range of projects with known outcomes, a task that might be viable with enough observations over time within a single organizational setting. Such work could be complemented by other research that controls for other factors through research design—by finding settings where several of the usual decision criteria do not vary, thus allowing performance attributions to be made to the remaining factors that do vary.

Conclusion

We realize that the relative lack of empirical evidence about relationships involving investment horizon may derive from the difficulty of measuring long-term outcomes and linking them to specific investment choices. Going forward, we believe scholars can break down the problem into smaller, more analyzable issues to obtain more convincing empirical support. For example, do specific companies with longer horizons achieve demonstrably better performance levels than otherwise comparable firms with shorter horizons? Can the J-shaped performance consequences of long-term investments (i.e., negative returns for several years followed by very high returns in subsequent years) be tracked in quasi-experimental settings and compared to the steadier, lower upside returns of short-term alternatives? Do practices related to long-term orientation—such as stakeholder management, corporate shareholder responsibility, or environmental conservation—achieve the J-shaped returns expected from long-term decisions? In time, we expect robust empirical research to provide evidence demonstrating the negative consequences of short-term thinking in real-world settings.

As scholars improve the ability to test the connection between horizon and outcomes at all levels of analysis, it will become easier to model the full causal chain from antecedent concepts to longer horizons to better multilevel performance. Such evidence will help quantify the benefits available to managers who seek to do a better job incorporating long-term thinking into their resource allocation decisions.

References

Agarwal, R., & Bayus, B. L. 2004. Creating and surviving in new industries. *Advances in Strategic Management*, 21: 107-132.

Arthurs, J. D., Hoskisson, R. E., Busenitz, L. W., & Johnson, R. A. 2008. Managerial agents watching other agents: Multiple agency conflicts regarding underpricing in IPO firms. *Academy of Management Journal*, 51: 277-294.

Bakker, R. M., & Knoben, J. 2015. Built to last or meant to end: Intertemporal choice in strategic alliance portfolios. *Organization Science*, 26: 256-276.

Baldwin, C. Y., & Ruback, R. S. 1986. Inflation, uncertainty, and investment. *The Journal of Finance*, 41: 657-668.
Bansal, P., & DesJardine, M. 2014. Business sustainability: It is about time. *Strategic Organization*, 12: 70-78.
Barton, H., Brown, D., Cound, J., Marsh, P., & Willey, K. 1992. Does top management add value to investment decisions? *Long Range Planning*, 25(5): 43-58.
Bebchuk, L. A., & Stole, L. A. 1993. Do short-term objectives lead to under-or overinvestment in long-term projects? *The Journal of Finance*, 48: 719-730.
Begley, S. 2009. The evolution of an eco-prophet: Al Gore's views on climate change are advancing as rapidly as the phenomenon itself. *Newsweek*, November 9: 34-39.
Benzion, U., Rapoport, A., & Yagil, J. 1989. Discount rates inferred from decisions: An experimental study. *Management Science*, 35: 270-284.
Bluedorn, A. C., & Denhardt, R. B. 1988. Time and organizations. *Journal of Management*, 14: 299-320.
Bluedorn, A. C., & Standifer, R. L. 2006. Time and the temporal imagination. *Academy of Management Learning & Education*, 5: 196-206.
Bower, J. L. 1970. Planning within the firm. *American Economic Review*, 60: 186-194.
Bowman, E. H., & Hurry, D. 1993. Strategy through the options lens: An integrated view of resource investments and the incremental-choice process. *Academy of Management Review*, 18: 760-782.
Brammer, S., & Millington, A. 2008. Does it pay to be different? An analysis of the relationship between corporate social and financial performance. *Strategic Management Journal*, 29: 1325-1343.
Brealey, R., & Myers, S. 1996. *Principles of financial management*. New York: McGraw-Hill.
Brochet, F., Serafeim, G., & Loumioti, M. 2012. Short-termism: Don't blame investors. *Harvard Business Review*, 90(6): 28.
Bromiley, P. 1986. *Corporate capital investment: A behavioral approach*. Cambridge, MA: Cambridge University Press.
Brown, P. B. 2007. Shortsighted management. *New York Times*, November 24: C5.
Buck, T., Liu, X., & Ott, U. 2010. Long-term orientation and international joint venture strategies in modern China. *International Business Review*, 19: 223-234.
Bushee, B. J. 1998. The influence of institutional investors on myopic R&D investment behavior. *Accounting Review*, 73: 305-333.
Chatterjee, S., Lubatkin, M. H., & Schulze, W. S. 1999. Toward a strategic theory of risk premium: Moving beyond CAPM. *Academy of Management Review*, 24: 556-567.
Chi, T., & Fan, D. 1997. Cognitive limitations and investment "myopia." *Decision Sciences*, 28: 27-57.
Choi, Y. R., & Shepherd, D. A. 2004. Entrepreneurs' decisions to exploit opportunities. *Journal of Management*, 30: 377-395.
Chrisman, J. J., Chua, J. H., & Steier, L. P. 2011. Resilience of family firms: An introduction. *Entrepreneurship Theory and Practice*, 35: 1107-1119.
Chrisman, J. J., & Patel, P. C. 2012. Variations in R&D investments of family and non-family firms: Behavioral agency and myopic loss aversion perspectives. *Academy of Management Journal*, 55: 976-997.
Christensen, C. M., & van Bever, D. 2014. The capitalist's dilemma. *Harvard Business Review*, 92(6): 60-68.
Chua, J. H., Chrisman, J. J., & Bergiel, E. B. 2009. An agency theoretic analysis of the professionalized family firm. *Entrepreneurship Theory and Practice*, 33: 355-372.
Chung, J.-E. 2012. When and how does supplier opportunism matter for small retailers' channel relationships with the suppliers? *Journal of Small Business Management*, 50: 389-407.
Cojuharenco, I., Patient, D., & Bashshur, M. R. 2011. Seeing the "forest" or the "trees" of organizational justice: Effects of temporal perspective on employee concerns about unfair treatment at work. *Organizational Behavior and Human Development Processes*, 116: 17-31.
Connelly, B. L., Tihanyi, L., Certo, S. T., & Hitt, M. A. 2010. Marching to the beat of different drummers: The influence of institutional owners on competitive actions. *Academy of Management Journal*, 53: 723-742.
Coyne, K. P., & Witter, J. W. 2002. What makes your stock price go up and down? *McKinsey Quarterly*, 2002(2): 28-39.
Cyert, R. M., & March, J. G. 1992. *A behavioral theory of the firm* (2nd ed.). Malden, MA: Blackwell. (Original work published 1963)
Dahlmann, F., Brammer, S., & Millington, A. 2008. Environmental management in the United Kingdom: New survey evidence. *Management Decision*, 46: 264-283.

Das, T. K. 1987. Strategic-planning and individual temporal orientation. *Strategic Management Journal*, 8: 203-209.

Das, T. K. 2006. Strategic alliance temporalities and partner opportunism. *British Journal of Management*, 17: 1-21.

Das, T., & Rahman, N. 2010. Determinants of partner opportunism in strategic alliances: A conceptual framework. *Journal of Business and Psychology*, 25: 55-74.

Das, T. K., & Teng, B. S. 2000. Instabilities of strategic alliances: An internal tensions perspective. *Organization Science*, 11: 77-101.

Das, T. K., & Teng, B. S. 2001. Strategic risk behaviour and its temporalities: Between risk propensity and decision context. *Journal of Management Studies*, 38: 515-534.

Das, T. K., & Teng, B. S. 2002. Alliance constellations: A social exchange perspective. *Academy of Management Review*, 27: 445-456.

Dasgupta, P., & Maskin, E. 2005. Uncertainty and hyperbolic discounting. *American Economic Review*, 95: 1290-1299.

Davis, I. 2005. How to escape the short-term trap. *McKinsey Quarterly*. http://www.mckinsey.com/insights/growth/how_to_escape_the_short-term_trap. Accessed January 15, 2016.

Dean, R. 1974. Temporal mismatch—Innovations pace vs. management's time horizon. *Research Management*, 17(3): 12-15.

Desyllas, P., & Hughes, A. 2010. Do high technology acquirers become more innovative? *Research Policy*, 39: 1105-1121.

Devers, C. E., McNamara, G., Wiseman, R. M., & Arrfelt, M. 2008. Moving closer to the action: Examining compensation design effects on firm risk. *Organization Science*, 19: 548-566.

Devers, C., Wiseman, R. M., & Holmes, R. M. J. 2007. The effects of endowment and loss aversion in managerial stock option valuation. *Academy of Management Journal*, 50: 191-208.

Dumaine, B. 2012. Built to last: Patagonia founder Yves Chouinard argues that, when it comes to products, less is more. *Fortune*, August 13: 166.

Dyer, J. H. 1997. Effective interfirm collaboration: How firms minimize transaction costs and maximize transaction value. *Strategic Management Journal*, 18: 535-556.

Eccles, R. G., Ioannou, I., & Serafeim, G. 2014. The impact of corporate sustainability on organizational processes and performance. *Management Science*, 60: 2835-2857.

Ensley, M. 2006. Family businesses can out-compete: As long as they are willing to question the chosen path. *Entrepreneurship Theory and Practice*, 30: 747-754.

Fama, E. F., & Jensen, M. C. 1983. Separation of ownership and control. *Journal of Law and Economics*, 26: 301-325.

Fiegenbaum, A., Hart, S., & Schendel, D. 1996. Strategic reference point theory. *Strategic Management Journal*, 17: 219-235.

Floyd, S. W., & Lane, P. J. 2000. Strategizing throughout the organization: Managing role conflict in strategic renewal. *Academy of Management Review*, 25: 154-177.

Folta, T. B. 1998. Governance and uncertainty: The trade-off between administrative control and commitment. *Strategic Management Journal*, 19: 1007-1028.

Friedman, Y., & Segev, E. 1976. Horizons for strategic planning. *Long Range Planning*, 9(5): 84-89.

Gaddis, P. 1997. Strategy under attack. *Long Range Planning*, 30(1): 38-45.

Graham, J. R., Harvey, C. R., & Rajgopal, S. 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40: 3-73.

Gray, S. R., & Cannella, A. A. 1997. The role of risk in executive compensation. *Journal of Management*, 23: 517-540.

Gross, P. W., & Lewis, W. W. 2007. *Built to last: Focusing corporations on long-term performance*. Arlington, VA: Research and Policy Committee of the Committee for Economic Development.

Hambrick, D. C., & Fukutomi, G. D. S. 1991. The seasons of a CEO's tenure. *Academy of Management Review*, 16: 719-742.

Harris, J., Johnson, S. J., & Souder, D. 2013. Model-theoretic knowledge accumulation: The case of agency theory and incentive alignment. *Academy of Management Review*, 38: 442-454.

Hayes, R. H., & Abernathy, W. J. 1980. Managing our way to economic decline. *Harvard Business Review*, 58(4): 67-77.

Hill, C. W., Hitt, M. A., & Hoskisson, R. E. 1992. Cooperative versus competitive structures in related and unrelated diversified firms. *Organization Science*, 3: 501-521.

Hofstede, G. 1993. Cultural constraints in management theories. *Academy of Management Perspectives*, 7(1): 81-94.

Hopp, W. J. 1987. A sequential model of R&D investment over an unbounded time horizon. *Management Science*, 33: 500-508.

Ignatius, A. 2014. Who can really take on short-termism? *Harvard Business Review*, 92(1-2): 14.

Jackson, G., & Petraki, A. 2011. *Understanding short-termism: The role of corporate governance*. Stockholm: Glasshouse Forum.

Jacobs, M. T. 1991. *Short-term America: The causes and cures of our business myopia*. Cambridge, MA: Harvard Business School Press.

Jensen, M. C., & Meckling, W. H. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3: 305-360.

Jensen, M. C., & Murphy, K. J. 1990. Performance pay and top-management incentives. *Journal of Political Economy*, 98: 225-264.

Jia, M., & Zhang, Z. 2014. Donating money to get money: The role of corporate philanthropy in stakeholder reactions to IPOs. *Journal of Management Studies*, 51: 1118-1152.

Judge, W. Q., & Speitzfaden, M. 1995. The management of strategic time horizons within biotechnology firms: The impact of cognitive complexity on time horizon diversity. *Journal of Management Inquiry*, 4: 179-196.

Kacperczyk, A. 2009. With greater power comes greater responsibility? Takeover protection and corporate attention to stakeholders. *Strategic Management Journal*, 30: 261-285.

Kaplan, S., & Orlikowski, W. J. 2013. Temporal work in strategy making. *Organization Science*, 24: 965-995.

Kappes, I., & Schmid, T. 2013. The effect of family governance on corporate time horizons. *Corporate Governance—An International Review*, 21: 547-566.

Knott, A. M. 2012. The trillion-dollar R&D fix. *Harvard Business Review*, 90(5): 77-82.

Ladika, T., & Sautner, Z. 2014. *Managerial short-termism and investment: Evidence from accelerated option vesting*. http://ssrn.com/abstract=2286789. Accessed January 15, 2016.

Laverty, K. J. 1996. Economic "short-termism": The debate, the unresolved issues, and the implications for management practice and research. *Academy of Management Review*, 21: 825-860.

Laverty, K. J. 2004. Managerial myopia or systemic short-termism? The importance of managerial systems in valuing the long term. *Management Decision*, 42: 949-962.

Le Breton-Miller, I., & Miller, D. 2011. Commentary: Family firms and the advantage of multitemporality. *Entrepreneurship Theory and Practice*, 35: 1171-1177.

Lees, G., & Malone, R. 2011. *Building world-class businesses for the long term: Challenges and opportunities*. London: Chartered Institute of Management Accountants.

Letts, C. W., Ryan, W., & Grossman, A. 1997. Virtuous capital: What foundations can learn from venture capitalists. *Harvard Business Review*, 75(2): 36-44.

Levinthal, D. A., & March, J. G. 1993. The myopia of learning. *Strategic Management Journal*, 14(S2): 95-112.

López-Navarro, M. Á., Callarisa-Fiol, L., & Moliner-Tena, M. Á. 2013. Long-term orientation and commitment in export joint ventures among small and medium-sized firms. *Journal of Small Business Management*, 51: 100-113.

Lui, S. S., & Ngo, H.-y. 2012. Drivers and outcomes of long-term orientation in cooperative relationships. *British Journal of Management*, 23: 80-95.

Lumpkin, G. T., & Brigham, K. H. 2011. Long-term orientation and intertemporal choice in family firms. *Entrepreneurship Theory and Practice*, 35: 1149-1169.

Mannix, E. A., & Loewenstein, G. 1994. The effects of interfirm mobility and individual versus group decision making on managerial time horizons. *Organizational Behavior and Human Decision Processes*, 59: 371-390.

Marginson, D., & McAulay, L. 2008. Exploring the debate on short-termism: A theoretical and empirical analysis. *Strategic Management Journal*, 29: 273-292.

Maritan, C. A. 2001. Capital investment as investing in organizational capabilities: An empirically grounded process model. *Academy of Management Journal*, 44: 513-531.

Martin, G. P., Wiseman, R. M., & Gomez-Mejia, L. R. in press. Going short-term or long-term? CEO stock options and temporal orientation in the presence of slack. *Strategic Management Journal*. doi:10.1002/smj.2445

Matejka, M., Merchant, K. A., & Van der Stede, W. A. 2009. Employment horizon and the choice of performance measures: Empirical evidence from annual bonus plans of loss-making entities. *Management Science*, 55: 890-905.

Matta, E., & Beamish, P. W. 2008. The accentuated CEO career horizon problem: Evidence from international acquisitions. *Strategic Management Journal*, 29: 683-700.

McClelland, P. L., Barker, V. L. I., & Oh, W.-Y. 2012. CEO career horizon and tenure: Future performance implications under different contingencies. *Journal of Business Research*, 65: 1387-1393.

McGrath, R. G. 1999. Falling forward: Real options reasoning and entrepreneurial failure. *Academy of Management Review*, 24: 13-30.

Miller, K. D. 2002. Knowledge inventories and managerial myopia. *Strategic Management Journal*, 23: 689-706.

Miller, K. D., & Shapira, Z. 2004. An empirical test of heuristics and biases affecting real option valuation. *Strategic Management Journal*, 25: 269-284.

Millon, D. 2013. Shareholder social responsibility. *Seattle University Law Review*, 36: 911-940.

Munoz-Bullon, F., & Sanchez-Bueno, M. J. 2011. The impact of family involvement on the R&D intensity of publicly traded firms. *Family Business Review*, 24: 62-70.

Nadkarni, S., & Chen, J. 2014. Bridging yesterday, today, and tomorrow: CEO temporal focus, environmental dynamism, and rate of new product introduction. *Academy of Management Journal*, 57: 1810-1833.

Nadkarni, S., Chen, T., & Chen, J. in press. The clock is ticking! Executive temporal depth, industry velocity, and competitive aggressiveness. *Strategic Management Journal*. doi:10.1002/smj.2376

Nelson, R. R., & Winter, S. G. 1982. *An evolutionary theory of economic change*. Cambridge, MA: Harvard University Press.

Neubaum, D. O., & Zahra, S. A. 2006. Institutional ownership and corporate social performance: The moderating effects of investment horizon, activism, and coordination. *Journal of Management*, 32: 108-131.

Ocasio, W. 1997. Towards an attention-based view of the firm. *Strategic Management Journal*, 18(S1): 187-206.

Plambeck, E. L., & Wang, Q. 2013. Implications of hyperbolic discounting for optimal pricing and scheduling of unpleasant services that generate future benefits. *Management Science*, 59: 1927-1946.

Porter, M. E. 1992. Capital disadvantage: America's failing capital system. *Harvard Business Review*, 70(5): 65-82.

Poterba, J. M., & Summers, L. 1995. A CEO survey of U.S. companies' time horizons and hurdle rates. *Sloan Management Review*, 37(1): 43-53.

Prahalad, C. K., & Bettis, R. A. 1986. The dominant logic: A new linkage between diversity and performance. *Strategic Management Journal*, 7: 485-501.

Prencipe, A., Bar-Yosef, S., Mazzola, P., & Pozza, L. 2011. Income smoothing in family-controlled companies. *Corporate Governance—An International Review*, 19: 529-546.

Quirin, G. D., & Wiginton, J. C. 1981. *Analyzing capital expenditures: Private and public perspectives*. Homewood, IL: Richard D. Irwin.

Rappaport, A. 2005. The economics of short-term performance obsession. *Financial Analysts Journal*, 61: 65-79.

Reichelstein, S. 1997. Investment decisions and managerial performance evaluation. *Review of Accounting Studies*, 2: 157-180.

Rhee, M., & Kim, T. 2015. Great vessels take a long time to mature: Early success traps and competences in exploitation and exploration. *Organization Science*, 26: 180-197.

Ridge, J., Kern, D., & White, M. A. 2014. The influence of managerial myopia on firm strategy. *Management Decision*, 52: 602-623.

Ross, S. A., & Westerfield, R. 1988. *Corporate finance*. St. Louis: Mosby College.

Sanders, W. G., & Hambrick, D. C. 2007. Swinging for the fences: The effects of CEO stock options on company risk taking and performance. *Academy of Management Journal*, 50: 1055-1078.

Schliefer, A., & Vishny, R. W. 1990. Equilibrium short horizons of investors and firms. *American Economic Review*, 80: 148-153.

Shao, L., Kwok, C. C., & Zhang, R. 2013. National culture and corporate investment. *Journal of International Business Studies*, 44: 745-763.

Simon, H. A. 1947. *Administrative behavior*. New York: Free Press.

Slawinski, N., & Bansal, P. 2015. Short on time: Intertemporal tensions in business sustainability. *Organization Science*, 26: 531-549.

Sorheim, R., & Landstrom, H. 2001. Informal investors—A categorization, with policy implications. *Entrepreneurship and Regional Development*, 13: 351-370.

Souder, D., & Bromiley, P. 2012. Explaining temporal orientation: Evidence from the durability of firms' capital investments. *Strategic Management Journal*, 33: 550-569.

Souder, D., & Shaver, J. M. 2010. Constraints and incentives for making long horizon corporate investments. *Strategic Management Journal*, 31: 1316-1336.

Souza, G., Bayus, B., & Wagner, H. 2004. New-product strategy and industry clock speed. *Management Science*, 50: 537-549.

Stein, J. C. 1988. Takeover threats and managerial myopia. *Journal of Political Economy*, 96: 61-80.

Stein, J. C. 1989. Efficient capital markets, inefficient firms: A model of myopic corporate behavior. *Quarterly Journal of Economics*, 104: 655-669.

Su, X. 2007. Intertemporal pricing with strategic customer behavior. *Management Science*, 53: 726-741.

Thakor, A. V. 1990. Investment "myopia" and the internal organization of capital allocation decisions. *Journal of Law, Economics, & Organization*, 6: 129-154.

Thaler, R. H., Tversky, A., Kahneman, D., & Schwartz, A. 1997. The effect of myopia and loss aversion on risk taking: An experimental test. *The Quarterly Journal of Economics*, 112: 647-661.

Thanassoulis, J. 2013. Industry structure, executive pay, and short-termism. *Management Science*, 59: 402-419.

Thanassoulis, J. E., & Somekh, B. in press. Real economy effects of short-term equity ownership. *Journal of International Business Studies*. doi:10.1057/jibs.2015.41

Tihanyi, L., Johnson, R. A., Hoskisson, R. E., & Hitt, M. A. 2003. Institutional ownership differences and international diversification: The effects of boards of directors and technological opportunity. *Academy of Management Journal*, 46: 195-211.

Trigeorgis, L. (Ed.). 1995. *Real options in capital investment: Models, strategies, and applications*. Westport, CT: Praeger.

Walsh, J. P., & Seward, J. K. 1990. On the efficiency of internal and external corporate control mechanisms. *Academy of Management Review*, 15: 421-458.

Wang, T., & Bansal, P. 2012. Social responsibility in new ventures: Profiting from a long-term orientation. *Strategic Management Journal*, 33: 1135-1153.

Wellum, J. M. 2007. Long-term stewardship and our capital markets. *Management Decision*, 45: 1387-1396.

Wennberg, K., Wiklund, J., Hellerstedt, K., & Nordqvist, M. 2011. Implications of intra-family and external ownership transfer of family firms: Short-term and long-term performance differences. *Strategic Entrepreneurship Journal*, 5: 352-372.

Westphal, J. D., & Zajac, E. J. 1993. Substance and symbolism in CEOs' long-term incentive plans. *Academy of Management Proceedings*, 1993(1): 232-236.

Wilkes, F., & Samuels, J. 1991. Financial appraisal to support technological investment. *Long Range Planning*, 24(6): 60-66.

Yadav, M. S., Prabhu, J. C., & Chandy, R. K. 2007. Managing the future: CEO attention and innovation outcomes. *Journal of Marketing*, 71(4): 84-101.

Yeo, K. T., & Qiu, F. 2003. The value of management flexibility—A real option approach to investment evaluation. *International Journal of Project Management*, 21: 243-250.

Zahra, S. A. 1996. Governance, ownership, and corporate entrepreneurship: The moderating impact of industry technological opportunities. *Academy of Management Journal*, 39: 1713-1735.

Zahra, S. A., & Covin, J. G. 1995. Contextual influences on the corporate entrepreneurship performance relationship: A longitudinal analysis. *Journal of Business Venturing*, 10: 43-58.

Zellweger, T. M. 2007. Time horizon, costs of equity capital, and generic investment strategies of firms. *Family Business Review*, 20: 1-15.