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## Article

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# Dynamic capabilities: The role of board monitoring and managerial incentives

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## Abstract

Research on the nature and value of firms' dynamic capabilities has produced contradictory propositions and findings. Scholars have argued that contingency theorizing has the potential to improve our understanding, as the context in which dynamic capabilities are deployed may affect their value. Drawing on agency theory, we propose that corporate governance mechanisms play a significant role in determining the value of firms' dynamic capabilities. In particular, we develop theoretical propositions about the differential effect of two corporate governance mechanisms—board monitoring and managerial incentives—on the value of dynamic capabilities in the form of complex codified routines, on one hand, and simple rules, on the other hand, at different levels of environmental dynamism.

**JEL CLASSIFICATION:** L21; L22; D80; G34

## Keywords

Dynamic capabilities, agency theory, corporate governance, environmental dynamism

## Introduction

Dynamic capabilities vary in the extent of their routinization (Schilke et al., 2018). In particular, they can take the form of complex codified routines (Teece et al., 1997; TPS here onwards) or of simple rules (Eisenhardt & Martin, 2000; EM here onwards). A key concern among management scholars has been understanding which of these two types of dynamic capabilities adds more value<sup>1</sup> to the firm and under which environmental conditions (Schilke et al., 2018). Yet, the existing research has produced contradictory propositions and findings on how valuable TPS and EM dynamic capabilities truly are under different levels of environmental dynamism (Peteraf et al., 2013). While some studies suggest that the value of TPS dynamic capabilities increase with environmental dynamism (Helfat & Winter, 2011; Karna et al., 2016; Teece et al., 1997), other studies cast doubt proposing instead that the value of TPS dynamic capabilities is greatest in moderately dynamic environments whereas EM dynamic capabilities are the main source of competitive advantage in high-velocity, dynamic environments (Davis et al., 2009; Eisenhardt & Martin, 2000; Ringov, 2017; Schilke, 2014). As the context in which dynamic capabilities are deployed can either

enhance or limit their value, scholars have argued that contingency-based theorization has the potential to improve our understanding of which factors affect the value of TPS and EM dynamic capabilities in different environments (Barreto, 2010; Peteraf et al., 2013; Schilke et al., 2018).

Our article aims to shed more light on the above issue. Our point of departure is the observation that the deployment of dynamic capabilities is subject to agency problems and occurs within the context of a firm's corporate governance mechanisms (Kor & Mahoney, 2005). Yet, surprisingly, current scholarship has largely neglected the influence of corporate governance mechanisms on the deployment of firms' dynamic capabilities.<sup>2</sup> This conceptual article intends to address that gap by integrating agency theory (Eisenhardt, 1989a; Jensen & Meckling, 1976) into the study of dynamic capabilities and bringing

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to the fore the role of corporate governance mechanisms as a determinant of their value. We focus on two corporate governance mechanisms—board monitoring and managerial incentives<sup>3</sup>—and develop theory about their impact on TPS and EM dynamic capabilities. Specifically, we develop theory and propositions about the differential effect of these two corporate governance mechanisms on the value of TPS and EM dynamic capabilities at different levels of environmental dynamism.<sup>4</sup>

Our study contributes to research on dynamic capabilities (Eisenhardt & Martin, 2000; Teece et al., 1997), corporate governance (Agrawal & Knoeber, 2013; Eisenhardt, 1989a; Fama & Jensen, 1983), and organization design (Nickerson et al., 2012; Simon, 1969; van Aken, 2005). First, we examine the value of firms' dynamic capabilities from a key, yet hitherto neglected, theoretical perspective. Building on agency theory and the corporate governance literature, we develop novel theory on the differential effects of two prominent corporate governance mechanisms—board monitoring and managerial incentives—on the value of two types of dynamic capabilities (i.e., codified routines vs simple rules) in stable and dynamic environments. In doing so, we help answer the call of recent research (Barreto, 2010; Peteraf et al., 2013; Schilke et al., 2018) for contingency-based studies that improve our understanding of the value of dynamic capabilities in the form of codified routines (TPS), on one hand, and simple rules (EM), on the other hand, under different environmental conditions. What is more, our theoretical integration of dynamic capabilities and corporate governance research provides a new perspective on how corporate governance affects firm performance (Agrawal & Knoeber, 2013): we argue that it does so via the impact of corporate governance mechanisms on the deployment of dynamic capabilities (Schilke et al., 2018). More specifically, we theorize that board monitoring and managerial incentives magnify the value of TPS and EM dynamic capabilities at low levels of environmental dynamism. However, at high levels of environmental dynamism, these corporate governance mechanisms have contrasting effects for EM and TPS dynamic capabilities. While they reduce the value of TPS dynamic capabilities, they increase the value of EM dynamic capabilities.

Finally, by examining the value of dynamic capabilities as contingent on corporate governance mechanisms, this article advances the discussion on organization design (Nickerson et al., 2012; Simon, 1969; van Aken, 2005). Our theory suggests that the evaluation of whether a given governance mechanism is properly designed should include a consideration of how it influences the deployment of the organization's dynamic capabilities (Augier & Teece, 2009).

In what follows, first we provide a review of research on the value of TPS and EM dynamic capabilities. Second, we discuss two essential corporate governance

mechanisms—board monitoring and managerial incentives—and how they shape the internal context of the firm in which dynamic capabilities are deployed. Third, we develop theoretical propositions about the impact of these two corporate governance mechanisms on the value of TPS and EM dynamic capabilities at different levels of environmental dynamism.

## The value of dynamic capabilities

Research on dynamic capabilities was profoundly shaped by two seminal papers—TPS (1997) and EM (2000)—which offer different, yet complementary, views on the nature of firms' dynamic capabilities (Di Stefano et al., 2014; Peteraf et al., 2013; Schilke et al., 2018). These conceptualizations commonly view dynamic capabilities as identifiable, specific processes by which firms change their resources and capabilities. Examining dynamic capabilities as specific and identifiable processes, prior research has focused on routines for product development (Danneels, 2008; Helfat & Raubitschek, 2000; Schilke, 2014), replication (Shamsie et al., 2009; Winter & Szulanski, 2001), mergers and acquisitions (Bingham et al., 2015; Heimeriks et al., 2012), alliance management (Anand et al., 2010; Kale & Singh, 2007; Schilke, 2014), and internationalization (Bingham & Eisenhardt, 2011; Weerawardena et al., 2007).

Dynamic capabilities in TPS (1997) take the form of complex codified routines and are executed in a “linear” manner leading to “predictable” outcomes (EM, 2000, p. 1115). The performance benefits arise because the codification experience facilitates identification of cause-and-effect relationships (Zollo & Winter, 2002), externalizes tacit knowledge and insights (Cowan & Foray, 1997; Nelson & Winter, 1982; Zollo & Winter, 2002), imposes discipline that curtails impulsive decision making, and/or improves the speed and accuracy of execution (Nelson & Winter, 1982).

Yet, EM (2000) have raised concerns about the role of TPS dynamic capabilities in rapidly changing environments. TPS dynamic capabilities may not constitute a source of competitive advantage in rapidly changing environments because of their time-consuming and linear nature, and their dependence on the firm's current state of knowledge. In rapidly changing markets, valuable dynamic capabilities should be speedy, iterative, and dependent on the rapid creation of new knowledge. According to EM (2000, p. 1113), the dynamic capabilities that are valuable in rapidly changing environments take the form of simple rules that rely on newly created knowledge that is specific to the situation and are executed in an “iterative” manner leading to “unpredictable” outcomes.

Supporting the EM notion of dynamic capabilities, some of the prior research (Davis et al., 2009; Helfat et al., 2007; Ringov, 2017; Schilke, 2014) has indicated that

environmental dynamism acts as a boundary condition for the effectiveness of TPS dynamic capabilities. That is because codified routines give rise to the problem of inertia, resulting in the misapplication of old knowledge to new problems due to the insufficient customization of the routine to the specific situation at hand (Heimeriks et al., 2012). Thus, in dynamic environments, characterized by frequent and unpredictable challenges and opportunities (Davis et al., 2009; Eisenhardt, 1989b; McCarthy et al., 2010), firms would generally employ less structure (Rowley et al., 2000) to gain flexibility (Martin & Eisenhardt, 2010; Siggelkow, 2001).

Despite extensive research, the value of TPS and EM dynamic capabilities at different levels of environmental dynamism is still unclear (Peteraf et al., 2013). The proponents of a contingency approach posit that the value of dynamic capabilities is a function of fit with relevant external and internal contextual factors (Barreto, 2010; Peteraf et al., 2013; Schilke et al., 2018). Following the contingency approach, prior research has examined the effect of internal fit on the value of TPS and EM dynamic capabilities. Table 1 provides an overview of selected research on TPS and EM dynamic capabilities that has focused on different external and internal contextual factors that affect the deployment and, hence, the value of dynamic capabilities. Internal contextual variables that have received attention include features of the resource base (EM, 2000; Ringov, 2017; Stadler et al., 2013; TPS, 1997; Zott, 2003), features of the knowledge base and experience (Peteraf et al., 2013), organizational size and structure (O'Connor, 2008; Schilke et al., 2018), and type of leadership (Helfat & Winter, 2011; O'Connor, 2008; Zúñiga-Vicente & Vicente-Lorente, 2006).

Even though the deployment of resources and capabilities is subject to agency problems addressed by corporate governance mechanisms (Carney & Gedajlovic, 2001; Kor & Mahoney, 2005), we know little about how these mechanisms influence the value of TPS and EM dynamic capabilities. This article integrates agency theory (Eisenhardt, 1989a; Jensen & Meckling, 1976) into the study of dynamic capabilities, bringing to the fore the role of corporate governance mechanisms as a determinant of the value of firms' dynamic capabilities. In particular, we focus on two prominent corporate governance mechanisms—board monitoring and managerial incentives—which we argue are important contextual variables that differentially affect the value of TPS and EM dynamic capabilities at different levels of environmental dynamism.

### Corporate governance mechanisms

Agency theory details the problems that may arise when the owners of a firm (i.e., principals) assume a passive role and transfer control of the firm's assets to professional

managers (i.e., agents) (Fama, 1980; Jensen & Meckling, 1976). Principals and agents are assumed to be self-interested individuals, each pursuing their own set of goals. Moreover, owing to their direct involvement in the control of a firm's assets, agents are assumed to possess more information about the firm than principals. Based on the above assumptions, agency theory contends that the separation of ownership and control creates an inherent conflict of interest between principals and agents (Eisenhardt, 1989a).

In this situation, corporate governance mechanisms are responsible for reducing agency problems and ensuring that the strategic decisions are in interests of the shareholders (Daily et al., 2003; Eisenhardt, 1989a). Indeed, they play a critical role in determining firms' strategy and its implementation (Hambrick et al., 2008). The deployment of firms' dynamic capabilities is subject to agency problems and occurs within the context of a firm's corporate governance mechanisms (Kor & Mahoney, 2005).

Agency theorists suggest that monitoring of managerial decisions by the board and altering managerial incentives are two prominent corporate governance mechanisms to solve agency problems (Demougin & Fluet, 2001; Eisenhardt, 1989a; Rutherford et al., 2007). We focus on these two corporate governance mechanisms because they are widely used within the firms to control agency problems (Eisenhardt, 1989a; Rutherford et al., 2007; Tosi et al., 1997) and scholars have largely reached consensus that "corporations can and should increase their control over top managers by increasing the use of managerial incentives and monitoring by the boards of directors" (Zajac & Westphal, 1994, p. 121).

### Monitoring role of the board of directors

Board monitoring is a well-researched topic in the literature on corporate governance (Daily et al., 2003; Eisenhardt, 1989a; Hillman & Dalziel, 2003; Rutherford et al., 2007). Monitoring refers to the function of overseeing the decisions of the management on behalf of the shareholders. The monitoring role of the board has the potential to minimize agency problems that arise from the separation of ownership and control (Berle & Means, 1932; Jensen & Meckling, 1976).

Rutherford et al. (2007) showed that information-gathering mechanisms, which reduce the extent to which information is asymmetrically distributed between the board and managers, let the board determine if the managerial actions are well intended, thus mitigating agency problems. They discuss three information-gathering mechanisms that are used by the board of directors. First, the board focuses on information quality by taking steps to increase the reliability, availability, and timeliness of information. Reliability, availability, and timeliness of information determine the utility of collected information to the

Table 1. Summary of selected research on dynamic capabilities.

Authors	Approach and setting	Dynamic capabilities	Outcome	Environmental conditions	Internal context	Relevant propositions or findings
<b>Teece et al. (1997)</b>	Conceptual	Seminal paper on dynamic capabilities that conceptualized them as complex codified routines (TPS dynamic capabilities)	Firm level performance/ immediate outcomes	Environmental dynamism	Resource base	TPS dynamic capabilities lead to high performance in dynamic environments. The performance contribution depends on the existing resource base.
<b>Eisenhardt and Martin (2000)</b>	Conceptual	Seminal paper on dynamic capabilities that conceptualized them as simple rules (EM dynamic capabilities)	Firm level performance/ immediate outcomes	Environmental dynamism	Resource base	Dynamic capabilities lead to higher performance in dynamic environments. The performance contribution depends on the existing resource base.
<b>Zott (2003)</b>	Simulation	TPS dynamic capabilities	Firm level performance	Environmental dynamism	Resource base	Small differences in timing, costs, and learning leads to emergence of robust performance difference among firms with similar dynamic capabilities.
<b>Zúñiga-Vicente and Vicente-Lorente (2006)</b>	Empirical—Spanish banks	TPS dynamic capabilities	Firm level performance	Highly dynamic environment	Managerial characteristics	Strategic moves under dynamic environment has positive effect on performance. This effect is moderated by managerial characteristics, such as CEO succession and CEO tenure.
<b>O'Connor (2008)</b>	Conceptual	TPS and EM dynamic capabilities	Immediate outcomes	Environmental dynamism	Organizational structure, leadership, culture	EM dynamic capabilities are more effective than TPS dynamic capabilities. The effectiveness of EM dynamic capabilities further increases when aligned with the internal context.
<b> Helfat and Winter (2011)</b>	Conceptual	TPS dynamic capabilities	Immediate outcome	Environmental dynamism	Organizational perspective and biases	Dynamic capabilities are valuable in both stable and dynamic environments. Organizational perspective and biases influence the value of dynamic capabilities.
<b>Peteraf et al. (2013)</b>	Conceptual	TPS and EM dynamic capabilities	Firm level performance/ immediate outcomes	Environmental dynamism	Experience	TPS and EM dynamic capabilities are valuable in dynamic environments. Differences in experience may enhance or diminish value.
<b>Stadler et al. (2013)</b>	Empirical—Upstream oil industry	TPS dynamic capabilities, measured using regularity of capability use	Firm level performance	Level of industry price, measured using crude oil price	Resource base	Considering the resource base and environment is important while analyzing the value of dynamic capabilities.
<b>Ringov (2017)</b>	Empirical—US Mutual funds industry	TPS and EM dynamic capabilities, measured using the process fund use for reconfiguring its asset portfolio	Firm level performance	Environmental dynamism, measured using Chicago Board Options Exchange VIX volatility index	Asset base complexity dynamic exposure	Performance contribution of TPS dynamic capabilities decreases as environmental dynamism increases. This relationship is significantly influenced by the resource base.
<b>Schilke et al. (2018)</b>	Conceptual	TPS and EM dynamic capabilities	Firm level performance/ immediate outcomes	Environmental dynamism	Size, structure, culture, etc.	The value of dynamic capabilities depends on the environment and the context in which they are applied.

board. Second, the board engages in proactive information seeking, aiming to gather additional information rather than being content with the information voluntarily presented to them. Proactive information seeking is essential because managers may misrepresent information, allowing themselves to pursue selfish interests (Eisenhardt, 1989a). Proactive information seeking is critical because it enables the board to verify management claims. Third, in this scenario the board interacts with the firm at a higher frequency. Meeting the managers frequently keeps the board well versed with timely information. The three information-gathering mechanisms foster monitoring and are vital to controlling agency problems.

By reducing the potential costs incurred due to managerial opportunism, board monitoring improves firm performance (Eisenhardt, 1989a; Hillman & Dalziel, 2003; Mizuchi, 1983; Zahra & Pearce, 1989). Following this line of thought, many studies have used board monitoring to explain decisions in different functional domains in which dynamic capabilities are applied (Schilke et al., 2018), such as acquisitions (Kroll et al., 2008), innovation (Baysinger et al., 1991; Chen & Hsu, 2009; Kor, 2006), and alliance management (Kang & Zaheer, 2018).

### *Managerial incentives*

In addition to the monitoring mechanism, the compensation contract between the owner and the manager can also resolve agency problems (Demougin & Fluet, 2001; Eisenhardt, 1989a; Rutherford et al., 2007). The compensation contract between the manager and the owner can be based on the behavior of the manager or the outcome of such behavior (Eisenhardt, 1989a; Makri et al., 2006). Behavior-based contracts compensate managers according to their actions, ignoring the outcomes. In contrast, outcome-based contracts compensate managers according to the results of managerial actions. In other words, in the behavior-based contract the pay of the manager is independent of performance, whereas in the outcome-based contract the pay of the manager is contingent on performance.

Performance-based incentives align managers' interests with those of the owners (Eisenhardt, 1989a; Eisenmann, 2002), thus reducing agency problems. Following this line of thought, many studies have used performance-based incentives to explain decisions in different functional domains in which dynamic capabilities are applied (Schilke et al., 2018), such as acquisitions (Datta et al., 2016), innovation (Makri et al., 2006), and alliance management (Kang & Zaheer, 2018).

These findings show that both board monitoring and managerial incentives are agency-problem-reducing mechanisms.<sup>5</sup> As the use of dynamic capabilities makes agency problems salient (Kor & Mahoney, 2005), these mechanisms are key to the internal context in which dynamic capabilities are deployed.

## **Proposition development**

Analyzing the value of dynamic capabilities from the perspective of agency theory is interesting because it cautions that the motivations behind the deployment of dynamic capabilities might not always (or unambiguously) be in the best interests of the firm. If, as we argue, agency problems may affect the deployment of firms' dynamic capabilities, then to address the question of the value of firms' dynamic capabilities one needs to conceptualize and examine the deployment of dynamic capabilities as happening under the purview of the firm's corporate governance mechanisms designed to reduce such concerns.

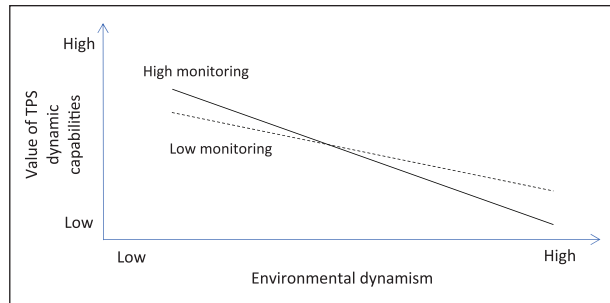
We argue that the effect of corporate governance mechanisms on the value of dynamic capabilities differs as dynamic capabilities vary in their degree of routinization. In what follows, we develop theoretical propositions about the effect of two prominent corporate governance mechanisms—board monitoring and managerial incentives—on the value of EM and TPS dynamic capabilities at different levels of environmental dynamism.

### *The effect of board monitoring on the relationship between the value of TPS and EM dynamic capabilities and environmental dynamism*

TPS dynamic capabilities are valuable in stable environments. The argument supporting this view is that the codification of existing knowledge into routines elucidates cause-and-effect relationships (Zollo & Winter, 2002); converts some of the tacit knowledge into explicit knowledge, thereby enhancing its applicability in the future (Cowan & Foray, 1997; Nelson & Winter, 1982; Zollo & Winter, 2002); and improves the speed and accuracy of implementation of such knowledge (Nelson & Winter, 1982).

Examining the relationship between the value of TPS dynamic capabilities and environmental dynamism, earlier research (Davis et al., 2009; EM, 2000; Ringov, 2017; Schilke, 2014) has argued that environmental dynamism acts as a boundary condition for the effectiveness of TPS dynamic capabilities. In dynamic environments, the flow of opportunities to the firm is fast and unpredictable (Davis et al., 2009; Eisenhardt, 1989b; McCarthy et al., 2010). Firms cope with the speed and unpredictability of opportunity flow by employing less structure (Rowley et al., 2000) as too much structure leads to loss of flexibility (Martin & Eisenhardt, 2010; Siggelkow, 2001). Owing to high structure and codification, TPS dynamic capabilities lead to the deployment of the established routine without sufficient customization in response to the specific situation at hand (Heimeriks et al., 2012).

The monitoring function of the board may reduce management's discretion to customize TPS dynamic capabilities. Compared to dynamic environments, making strategic



**Figure 1.** The moderating role of board monitoring on the relationship between the value of TPS dynamic capabilities and environmental dynamism.

choices in stable environments requires less managerial discretion (Wangrow et al., 2015). However, managers might use their discretion to make choices that benefit them rather than the firm: for example, depending on their goals managers might avoid risk (Bebchuk & Stole, 1993; Shleifer & Vishny, 1997) or take excessive risk (Tang et al., 2011). Corporate boards, which are focused on lowering performance variation (Cheng, 2008; K. D. Miller & Bromiley, 1990; Pearce & Patel, 2017) and mitigating organizational risk (Palmer & Wiseman, 1999), tend to discipline the managers and reduce their discretion (Wangrow et al., 2015). Thus, board monitoring can be expected to lead to less deviation from the established structure of TPS dynamic capabilities.

At the same time, to exercise effective monitoring, boards should possess the same information as managers (Holmstrom, 1979). However, boards are often at an informational disadvantage relative to top managers and thus exert substantial efforts in gathering information necessary to detect and prevent managerial opportunism (Eisenhardt, 1989b; Finkelstein et al., 2009). We argue that proactive information gathering by the board is simplified because of the codified nature of TPS dynamic capabilities. The codification of a routine allows for the externalization of tacit knowledge (Cowan & Foray, 1997; Zollo & Winter, 2002) that was possessed earlier by the top managers. Moreover, codification facilitates the identification of cause-and-effect relationships that govern performance outcomes (Heimeriks et al., 2012; Zollo & Winter, 2002). With the ease of information gathering and identification of cause-and-effect interactions between resources and performance, boards are better equipped to instill discipline among top managers, preventing opportunistic actions (Rutherford et al., 2007). Both reduced deviation from established routines and increased effectiveness of board monitoring magnify the value of TPS dynamic capabilities in stable environments (see Figure 1 for a depiction).

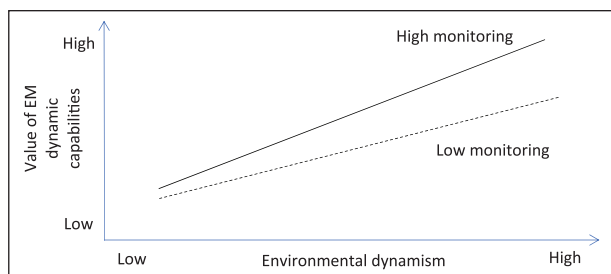
In contrast, as environmental dynamism increases, the monitoring function of the board magnifies the negative

effects of TPS dynamic capabilities. As part of their monitoring responsibility, boards keep top management in check through control mechanisms such as scrutiny of strategic planning and implementation (Rindova, 1999), evaluation of CEO performance (Young Gary et al., 2000), directing CEO dismissal (Haleblian & Rajagopalan, 2006), and planning CEO succession (Pitcher et al., 2000). Top managers are aware that they are at risk of receiving a negative assessment from the board for suboptimal performance even if their actions prevented the organization's problems from becoming worse. To avoid the negative consequences of suboptimal performance, managers may tamper with the board's ability to attribute a decline in performance to poor management (Ferris & Judge, 1991; Walsh & Seward, 1990). As March (1984, p. 58) observed, "If one can claim to have done the things a good manager should do, bad outcomes can be seen as irrelevant to evaluation." Top managers may be inclined to appear as good managers to the board by strictly following established, legitimate procedures (Meyer & Rowan, 1977) even when dynamic, unpredictable environments affect their performance in ways that require deviating from existing routines. Therefore, being more concentrated on avoiding a negative assessment from the board, top managers may be more likely to use TPS dynamic capabilities with minimum deviation from the established routines, increasing the chances of misapplication of pre-existing knowledge to novel and changing environments (see Figure 1 for a depiction).

Following the above arguments, and as shown in Figure 1,<sup>6</sup> board monitoring magnifies the value of TPS dynamic capabilities in stable environments but diminishes the value of TPS dynamic capabilities in dynamic environments. Thus, we posit:

**Proposition 1.** Board monitoring negatively moderates the relationship between the value of TPS dynamic capabilities and environmental dynamism.

EM (2000) posited that environmental dynamism limits the value of TPS dynamic capabilities. In rapidly changing environments, useful dynamic capabilities rely on real-time knowledge creation (EM, 2000). Reliance on real-time knowledge decreases the issue of misapplication of pre-existing knowledge. Relying on real-time knowledge, the EM dynamic capabilities take the form of simple rules and are executed in an "iterative" manner (EM, 2000, p. 1113). Simple rules provide enough structure (EM, 2000), thus specifying the boundary conditions within which managers have a wide variety of choices. This semi-structured nature, along with iterative execution, allows the firm to consider multiple alternatives and adjust to real-time information about the firm's environment. The simultaneous consideration of multiple alternatives increases the speed of the decision-making process (Eisenhardt, 1989b), which is crucial in times of rapid



**Figure 2.** The moderating role of board monitoring on the relationship between the value of EM dynamic capabilities and environmental dynamism.

environmental change. The above reasons support the view that EM dynamic capabilities (i.e., simple rules) are valuable in rapidly changing environments (see Figure 2 for a depiction).

We propose that the monitoring of management moderates the relationship between the value of EM dynamic capabilities and environmental dynamism. The semi-structured nature of EM dynamic capabilities creates latitude for managerial discretion (Di Stefano et al., 2014; Eisenhardt, 1989b; Peteraf et al., 2013). They only provide a few boundary conditions on the actions of the managers; for example,

Yahoo's very successful alliancing process is largely unstructured, consisting of a two-rule routine that sets the boundary conditions for managers wishing to forge alliances. The rules are: no exclusive alliance deals and the basic service provided by the deal (e.g., online greeting cards, party planning services, etc.) must be free. There is little else to the routine. These rules set the boundary conditions within which Yahoo managers have wide latitude for making a variety of alliancing deals. (Eisenhardt & Martin, 2000, p. 112)

If such high managerial discretion is not adequately monitored, then the prevalence of agency problems increases (Wangrow et al., 2015). For example, agency problems that arise during the alliance partner selection decision are guided by managerial discretion and are alleviated through board monitoring (Kang & Zaheer, 2018). Thus, we posit that board monitoring increases the value of EM dynamic capabilities by mitigating agency problems (Figure 2 depicts the relationship).

Another reason for the magnification of the value of EM dynamic capabilities is that board monitoring shifts managerial attention away from unbridled exploration toward a combination or balance of exploration and exploitation (Balsmeier et al., 2017). The recent work by Di Stefano et al. (2014) suggested that in dynamic markets TPS and EM dynamic capabilities jointly contribute to competitive advantage as a part of a dynamic bundle. As they put it, "under the most turbulent of environmental conditions, when there may be a greater reliance on simple

rules to respond flexibly, companies have no less a need for complex organizational routines" (Di Stefano et al., 2014, p. 318). Balancing between efficiency and flexibility is essential for high performance in dynamic environments (Davis et al., 2009). In fact, managers acknowledge the importance of communicating regularly with the board when managing a complex and complicated business (Sonnenfeld, 2013). They believe that it is wise to give the board time to perform due diligence and deliberate on key decisions as a well-informed board, with its collective sense on the subject, can discipline decision making.

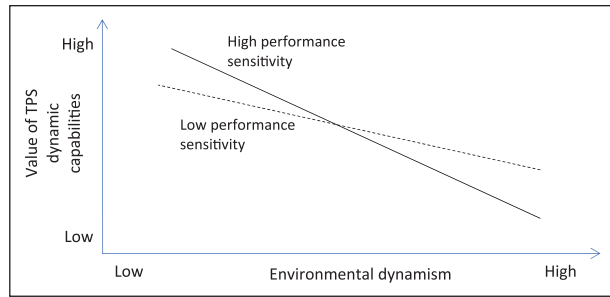
The above arguments suggest that board monitoring can encourage a balance between efficiency and flexibility by rewarding a more structured analysis alongside the deployment of EM dynamic capabilities. As shown in Figure 2,<sup>7</sup> board monitoring magnifies the value of EM dynamic capabilities in both stable and dynamic environments; the magnification is greater when managerial discretion is more prevalent (i.e., at high levels of environmental dynamism). Thus, we posit:

**Proposition 2.** Board monitoring positively moderates the relationship between the value of EM dynamic capabilities and environmental dynamism.

### *The effect of managerial incentives on the relationship between the value of TPS and EM dynamic capabilities and environmental dynamism*

Increasing the performance-based incentives of managers' compensation is a potential way to align the respective interests of managers and owners (Eisenhardt, 1989a; Eisenmann, 2002), and consequently reduce agency problems (Fama, 1980; Jensen & Meckling, 1976). Linking compensation with performance increases the manager's motivation to exert effort in meeting the firm's objectives (Cadsby et al., 2007; Lazear, 2000a, 2000b). For instance, the high sensitivity of managerial compensation to performance decreases the possibility of shirking (Eisenhardt, 1989a; Laffont & Martimort, 2009), which could lead to a compromise in detail and analysis during the implementation of TPS dynamic capabilities. By motivating managers to exert high effort, performance sensitivity of compensation enhances performance in routinized tasks (Ariely et al., 2009; Cable & Vermeulen, 2016), such as TPS dynamic capabilities that exist in the form of complex codified routines (Teece et al., 1997). Moreover, the effect of performance sensitivity of compensation on managers' motivation and effort is even higher when the managers can perceive the relationship between their effort and their compensation (Baker, 2002; van Herpen et al., 2005). As TPS dynamic capabilities rely extensively on existing knowledge and experiences, the relationship between their





**Figure 3.** The moderating role of performance-sensitive compensation on the relationship between the value of TPS dynamic capabilities and environmental dynamism.

implementation and performance outcomes is predictable in stable environments (Di Stefano et al., 2014; Peteraf et al., 2013). Consequently, in stable environments, the sensitivity of managerial compensation to performance magnifies the value of TPS dynamic capabilities (see Figure 3 for a depiction).

On the other hand, the performance sensitivity of managerial compensation seems to do more harm than good in rapidly changing environments (Bloom & Milkovich, 1998). In the context of environmental uncertainty, performance-based incentives in the compensation will lead to a risk transfer to managers (Eisenhardt, 1989a; Gray & Cannella, 1997; J. S. Miller et al., 2002), who are assumed to be risk averse. As a result, managerial creativity and innovation in problem solving declines, leading managers to make conservative decisions (Baysinger et al., 1991; Ederer & Manso, 2013; Eisenmann, 2002; Hoskisson et al., 1991; Makri et al., 2006). For instance, in a controlled laboratory experiment, Ederer and Manso (2013) showed that a large component of performance-based incentives and a low tolerance for failure sway risk-averse participants toward exploitation rather than exploration behavior. Given that proven responses to identified problems exist in organizational memory as codified routines, exploration of alternative solutions becomes less attractive for managers focused on reducing their personal risk (Hoskisson et al., 2017). Therefore, following risk transfer, risk-averse managers are less likely to explore and engage in knowledge creation and inclined toward implementing TPS dynamic capabilities without any situation-specific customization.

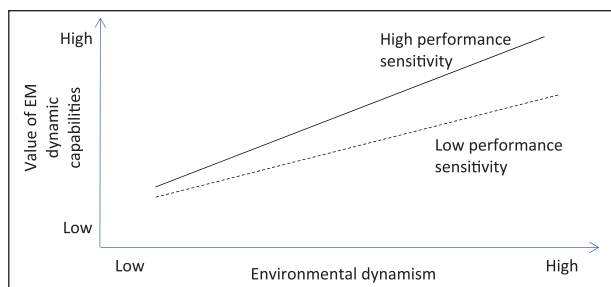
Because the effectiveness of dynamic capabilities in rapidly changing environments depends on the combination of existing knowledge and newly created knowledge about the current situation (Di Stefano et al., 2014; Peteraf et al., 2013), relying solely on the exploitation of TPS dynamic capabilities in such environments can be often maladaptive (Eisenhardt & Martin, 2000; Schilke, 2014). Consequently, in rapidly changing environments, the sensitivity of managerial compensation to performance magnifies the negative effects of TPS dynamic capabilities (see Figure 3 for a depiction).

Following the above arguments, and as plotted in Figure 3,<sup>8</sup> performance-sensitive compensation magnifies the value of TPS dynamic capabilities in stable environments but diminishes the value of TPS dynamic capabilities in dynamic environments. Thus, we posit:

**Proposition 3.** Performance-sensitive compensation negatively moderates the relationship between TPS dynamic capabilities and environmental dynamism.

Because EM dynamic capabilities exist as simple rules that set boundary conditions within which managers can make decisions, their use implies that discretion rests with the managers (Di Stefano et al., 2014; Eisenhardt & Martin, 2000). Managerial discretion, as associated with the use of EM dynamic capabilities, results in higher influence of top management on firm performance (Adams et al., 2005; Hambrick & Quigley, 2014) as well as greater information asymmetry between the owner and managers (Wangrow et al., 2015), increasing the prevalence of agency problems (Dalton et al., 2007). The incidence of agency problems further increases with environmental dynamism as it limits the owner's ability to determine the potential impact of managerial decisions on current and future performance (Li & Simerly, 1998). In such scenarios, managers engage in greater risk-taking which enhances the upside and downside of potential performance outcomes (Barker et al., 2001; Wangrow et al., 2015), making the performance sensitivity of compensation desirable and as it makes managers more accountable and focused on managing change (Finkelstein & Boyd, 1998; Makri et al., 2006).

As managers approach risk-taking and make choices within the boundary conditions set by EM dynamic capabilities (Di Stefano et al., 2014; Eisenhardt & Martin, 2000), they need to consider the potential performance distribution, that is, both the upside and downside potential of their choices (Wright et al., 2007). Linking compensation with performance leads to the transfer of risk from owners to managers, shifting managerial attention to downside potential of performance variance, and urging risk-averse managers to worry about a potential loss of compensation in case of underperformance (Eisenhardt, 1989a; Gray & Cannella, 1997). Consequently, managers may respond by restraining themselves from choices with high downside variance and making choices after comprehensive analysis to maximize the mean performance outcomes (Devers et al., 2007; Hoskisson et al., 2017). For example, Mohnish Pabrai, Managing Partner of the US-based Pabrai Investment Funds, manages investors' money using EM type of dynamic capabilities—"I like to say that there are ten commandments of investing" (Harris, 2018).<sup>9</sup> He has questioned the typical industry-wide investment management fees structure—"why do you [investment managers] need to have a low ethics fee approach designed to make money where you make money when your investors don't?"



**Figure 4.** The moderating role of performance-sensitive compensation on the relationship between the value of EM dynamic capabilities and environmental dynamism.

That’s just not right.”—and has adopted a performance-sensitive fees structure—“at Pabrai Funds, we have a 0% management fee, and a 6% hurdle, with a highwater mark, and then I get one quarter of above 6%” (Harris, 2018). While analyzing an investment opportunity,

Pabrai can tick most of the boxes in twenty minutes, but then . . . he realizes there are some areas—often not top-of-mind—that need more research and clarification. This is the biggest payback, because it forces a 360 degree look at risk. The human animal gets into tunnel thinking once it likes an investment idea, and this [360 degree look at risk] usefully stops that momentum. (DeMuth, 2013)<sup>10</sup>

As depicted in the above example, EM dynamic capabilities allow managers to narrow down the field of potential actions, yet using EM dynamic capabilities is only a starting point, and complementing them with detailed and comprehensive analysis is the key to improving performance (Di Stefano et al., 2014). The risk transfer arising due to performance-based incentives restrains managers from misusing their discretion, thus avoiding unnecessary risk and promoting diligent decision making.

Following the above arguments, and as shown in Figure 4,<sup>11</sup> performance-sensitive compensation magnifies the value of EM dynamic capabilities in both stable and dynamic environment, and the magnification is greater when managerial discretion is more prevalent (i.e., at high levels of environmental dynamism). Thus, we posit:

**Proposition 4.** Performance-sensitive compensation positively moderates the relationship between EM dynamic capabilities and environmental dynamism.

## Discussion

The voluminous body of existing research on the nature and value of firms’ dynamic capabilities has produced propositions and findings that are often contradictory. As the context in which dynamic capabilities are deployed can either enhance or limit their value, contingency-based theorization that takes into account the internal context within

which firm dynamic capabilities are deployed can help improve our understanding of the above relationship (DeMuth, 2013). This study presents a novel set of contingent conditions that are key to the internal context in which dynamic capabilities are deployed. Drawing on agency theory, we propose that corporate governance mechanisms play a significant role in determining the value of firms’ dynamic capabilities. In particular, we develop theoretical propositions about the differential effect of two corporate governance mechanisms—board monitoring and managerial incentives—on the value of dynamic capabilities in the form of complex codified routines, on one hand, and simple rules, on the other hand, at different levels of environmental dynamism.

This study makes contributions to research on dynamic capabilities (Barreto, 2010; Peteraf et al., 2013; Schilke et al., 2018), corporate governance (Eisenhardt & Martin, 2000; Teece et al., 1997), and organization design (Agrawal & Knoeber, 2013; Eisenhardt, 1989a; Fama & Jensen, 1983). First, while prior research on dynamic capabilities has examined how a firm’s internal context affects the value of dynamic capabilities (Di Stefano et al., 2014; O’Connor, 2008; Ringov, 2017; Schilke et al., 2018; Stadler et al., 2013; Zúñiga-Vicente & Vicente-Lorente, 2006), most studies have implicitly or explicitly assumed that there are no differences in the risk preferences and goals of shareholders and managers (as well as other stakeholders). By recognizing the potential for agency problems and examining the role of agency-problem-reducing corporate governance mechanisms as a feature of the internal context within which dynamic capabilities are deployed (Di Stefano et al., 2014; O’Connor, 2008; Ringov, 2017; Schilke et al., 2018; Stadler et al., 2013; Zúñiga-Vicente & Vicente-Lorente, 2006), we advance the conversation and contribute a novel set of contingent conditions that govern the value of dynamic capabilities in the form of complex routines (TPS) and simple rules (EM), respectively. In particular, we offer theoretical propositions about the differential effect of board monitoring and managerial incentives on the value of TPS and EM dynamic capabilities at different levels of environmental dynamism. In doing so, we help answer the call of recent research (Kor & Mahoney, 2005) for contingency-based studies that improve our understanding of the value of dynamic capabilities in stable and dynamic environments.

Second, our theoretical integration of dynamic capabilities and corporate governance research provides a new perspective on how corporate governance affects firm performance (Barreto, 2010; Peteraf et al., 2013; Schilke et al., 2018); in our view, it does so via the impact of corporate governance mechanisms on the deployment of dynamic capabilities (Agrawal & Knoeber, 2013). More specifically, we theorize that board monitoring and managerial incentives magnify the value of TPS and EM dynamic capabilities at low levels of environmental

dynamism. However, at high levels of environmental dynamism, these corporate governance mechanisms have contrasting effects for EM and TPS dynamic capabilities. While they diminish the value of TPS dynamic capabilities, they magnify the value of EM dynamic capabilities.

Third, by examining the value of dynamic capabilities as contingent on corporate governance mechanisms, this article advances the discussion on organization design (Schilke et al., 2018). Our theory suggests that the evaluation of whether a given governance mechanism is properly designed should include a consideration of how it influences the deployment of the organization's dynamic capabilities (Augier & Teece, 2009). A mismatch between corporate governance mechanisms and dynamic capabilities can be value destroying: for example, board monitoring and managerial incentives negatively affect the value of TPS dynamic capabilities at high levels of environmental dynamism. Recent research on corporate governance (Augier & Teece, 2009) has examined the benefits and costs of governance mechanisms jointly, seeking to understand how much governance is desirable and when it becomes too much. Our article suggests that the benefits and costs of governance mechanisms should be examined also in terms of their impact on firms' dynamic capabilities.

This study has its limitations that future studies can address. First, we theorize regarding the effect of corporate governance mechanisms implemented to control agency problems on the performance consequences of more and less routinized dynamic capabilities. Future studies could incorporate agency considerations to explain the performance consequences of different dynamic capabilities (see Schilke et al., 2018, for relevant dimensions to distinguish dynamic capabilities). Second, as we focus on two corporate governance mechanisms—board monitoring and managerial incentives—future studies could examine how other governance mechanisms, such as market for corporate control or institutional ownership (Sundaramurthy, 1996; Walsh & Seward, 1990), which are external to the firm, affect the deployment of dynamic capabilities.

This study puts forth directions for future research that future studies can address. The deployment of dynamic capabilities is costly (Sundaramurthy, 1996; Walsh & Seward, 1990) and there is a need for further studies that incorporate these costs, including agency costs, to explain the performance consequences of dynamic capabilities (Winter, 2003). Analyzing the value of dynamic capabilities from the perspective of agency theory is interesting because it cautions that the motivations behind the “resource base changes” undertaken by management might not always (or unambiguously) be in the best interests of the firm's shareholders or its other stakeholders. We believe that the integration of research on dynamic capabilities with corporate governance and agency theory could fruitfully further advance our understanding of dynamic capabilities and their value in different internal and external contexts.

## Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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## Notes

1. In the literature, the value of dynamic capabilities is often examined by their impact on firm performance (Schilke et al., 2018). We follow the same approach and use the terms “value” or “performance” of dynamic capabilities to refer to their impact on firm-level performance.
2. Kor and Mahoney (2005) and Carney and Gedajlovic (2001) are among the few papers that link dynamic capabilities to corporate governance mechanisms. Kor and Mahoney (2005) focused on the influence on market-based governance mechanism on the deployment of dynamic capabilities. Carney and Gedajlovic (2001) discussed the influence of corporate governance on the development of capabilities.
3. Agency theorists have suggested that monitoring of managerial decisions by the board and altering managerial incentives are two prominent corporate governance mechanisms to solve agency problems (Demougin & Fluet, 2001; Eisenhardt, 1989a; Rutherford et al., 2007). We focus on these two corporate governance mechanisms because they are widely used within the firms to control agency problems (Demougin & Fluet, 2001; Eisenhardt, 1989a; Rutherford et al., 2007) and scholars have largely reached consensus that “corporations can and should increase their control over top managers by increasing the use of managerial incentives and monitoring by the boards of directors” (Eisenhardt, 1989a; Rutherford et al., 2007; Tosi et al., 1997).
4. This article is conceptual, thus does not offer empirical tests of the developed theoretical propositions.
5. However, the effect of these corporate governance mechanisms on different functional domains in which dynamic capabilities are applied need not always be positive. For example, board monitoring could induce managerial myopia that is detrimental to acquisition and innovation performance (Balsmeier et al., 2017; Faleye et al., 2011). Given these mixed findings, a logical way forward would be to study the interplay of these corporate governance mechanisms with dynamic capabilities that are differentiated based on factors other than their functional domain.
6. The “high monitoring” and “low monitoring” lines intersect due to the contrasting/opposite effects of board monitoring on the value of TPS dynamic capabilities at high versus low levels of environmental dynamism.
7. The “high monitoring” and “low monitoring” lines do not intersect because of the similar directional effect of board monitoring on the value of EM dynamic capabilities at high versus low levels of environmental dynamism.
8. The opposite effect of performance-sensitive compensation on TPS dynamic capabilities at different levels of environmental dynamism leads to an intersection between the “high performance sensitivity” and “low performance sensitivity” lines.

9. <https://www.forbes.com/sites/kevinharris/2018/06/25/mohnish-pabrai-advice-for-value-investors/#7bfccac22ed>
10. <https://www.forbes.com/sites/phildemuth/2013/09/23/how-mohnish-pabrai-crushed-the-market-by-1100-since-2000/#3e6aa24358b4>
11. The similar directional effect of performance-sensitive compensation on EM dynamic capabilities at different levels of environmental dynamism leads to no intersection between the “high performance sensitivity” and “low performance sensitivity” lines.

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