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Organizational slack, search antecedents, and R&D: A review of prior literature[1]

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Abstract

Prior research on the relationship between organizational slack and R&D (research and development) initiatives is inconclusive and confused. We aim to address the inconsistent research findings by employing the theory of the attention-based view of the firm to explain the ways in which organizational slack influences the degree to which organizations pursue R&D initiatives aggressively. First, we argue that organizational slack positively moderates a positive relationship between prior R&D commitments and current R&D initiatives by shifting the attention of organizational decision-makers from internal political bargaining to potential business opportunities uncovered through prior R&D commitments. Secondly, organizational slack attenuates a positive relationship between competitors' R&D initiatives and the focal organization's R&D initiatives by shifting the attention of organizational decision-makers from external changes, variations, and progress to internal issues. Finally, organizational slack reinforces a positive relationship between attainment discrepancy and R&D initiatives by shifting the attention of organizational decision-makers from risks entailed in R&D initiatives to the resolution of performance problems. Our findings inform our future efforts to reconcile mutually contradictory findings of the prior work on the relationship between organizational slack and R&D initiatives. We further discuss the implications of our findings for the hitherto underexamined aspect of organizational slack as an antecedent of managerial attention.

Keywords: Organizational slack, search, R&D, adaptation, behavioral theory of the firm

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I. Introduction

Various scholars have examined how organizational slack (Bourgeois, 1981; Cyert & March, 1963) influences the extent to which organizations pursue initiatives characterized by a high degree of uncertainty and risk, or more specifically, research and development (R&D) initiatives. However, findings are mixed and confusing. Some scholars argue that organizational slack enables organizations to be more risk-seeking because organizational slack comprises excess resources that managers are allowed to use at their discretion without paying close attention to their accountability of their choices. Put differently, these scholars argue for the positive relationship between organizational slack and organizations' R&D initiatives. On the other hand, other scholars argue that organizational slack hinders organizations' initiative in the pursuit of R&D. Their rationale is that organizational slack renders managers risk averse. This is because organizational slack, as resources in excess of current business requirements, is characterized with less close relevance to the maximization of the firm value. As such, organizational slack is an indication that managers use their resources so inefficiently as to forgo potentially profitable opportunities. Consequently, these scholars argue that organizational slack has a negative influence on R&D initiatives. Furthermore, still other scholars argue for a curvilinear (or an inverted U-shape) relationship between organizational slack and R&D initiatives. They try to reconcile the two contradictory arguments discussed above concerning the influences of organizational slack on R&D initiatives; however, none explicitly indicate the reason why the relationship is an inverted U-shape rather than a U-shape. Furthermore, they do not provide an explicit argument concerning how the optimal amount of organizational slack (or the peak of an inversed U-shape) is to be determined. In short, there is still no agreement regarding the influence of organizational slack on R&D initiatives.

One notable shortcoming of prior work is that the wide variety of motivations underlying organizations' R&D initiatives is ignored. More specifically, prior scholars do not account for the differential mechanisms by which various motivations influence organizations' decisions to allocate resources to R&D initiatives. For example, organizations may pursue R&D because they have made the prior decision to commit resources to certain directions of scientific or technological inquiry. It also may be possible that organizations are motivated to pursue R&D as a response to competitors' initiatives. Accordingly, the degree to which managers are ready to honor prior commitments to R&D influences motivating effects of the prior R&D commitments, while motivating effects of competitors' R&D depend on how precisely organizations monitor and recognize their competitors' initiatives. As such, the mechanisms through which R&D

initiatives increase (or decrease) differ to the extent that underlying motivations vary. It may therefore be inappropriate to ignore the differential motivations and underlying mechanisms for R&D initiatives when we examine the relationship between organizational slack and R&D initiatives.

Given the variation in organizations' motivations and underlying mechanisms for R&D, it is of theoretical as well as practical importance to consider the possibility that organizational slack differentially influences R&D to the extent that motivations and underlying mechanisms for R&D differ. One of the often unspecified assumptions underlying the prior research is that organizations are motivated to pursue R&D initiatives for some reasons or others. This assumption is critical because if organizations are not motivated to pursue R&D, organizational slack would have no influence on R&D no matter how big organizational slack is available. Put differently, organizational slack influences R&D initiatives as long as organizations are motivated to pursue R&D for some reason or other. Accordingly, examining the influences of organizational slack on R&D initiatives without considering underlying motivations may risk oversimplifying complicated organizational processes such as resource allocation decisions regarding R&D. Therefore, our purpose in this manuscript is to reveal the possibility that organizational slack differentially influences the relationship between organizations' various motivations for R&D and the degree to which they actively pursue R&D initiatives, or R&D intensity. In particular, we adopt the theory of the attention-based view of the firm (Blettner, He, Hu & Bettis, 2015; Joseph & Ocasio, 2012; Li, Maggitti, Smith, Tesluk & Katila, 2013; Ocasio, 1997; Rerup, 2009) to uncover hitherto underexamined contingencies that characterize the influences of organizational slack on R&D initiatives.

II. Review of prior work

Organizational slack is defined as "that cushion of actual or potential resources which allows an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy, as well as to initiate changes in strategy with respect to the external environment" (Bourgeois, 1981:30). The prior work identifies three types of organizational slack: absorbed slack, unabsorbed slack, and potential slack (Bromiley, 1991; Bromiley & Washburn, 2011; Greve, 2003; Singh, 1986). They capture different aspects of organizational resources in excess of current business requirements.

Absorbed slack is organizational slack that is distributed to particular usages, or "absorbed into the system design as excess costs" (Bourgeois & Singh, 1983:43). Examples of absorbed slack include excess inventory, excess machine capacity, and indirect staff (*ibid.*). Absorbed slack is considered excess resources because

comparable organizations are able to process identical tasks with fewer resources. It is also referred to as recoverable slack (*ibid.*) or low-discretion slack (Sharfman, Wolf, Chase & Tansik, 1988).

On the other hand, unabsorbed slack is an alternative type of organizational slack that comprises excess, liquid, and uncommitted resources in an organization. Unabsorbed slack is also more readily redeployable than absorbed slack because it is not assigned to any particular usage (Bourgeois & Singh, 1983; Singh, 1986). The best examples of unabsorbed slack are cash and marketable securities. Scholars often operationalize the amount of unabsorbed slack by measuring such liquid assets in excess of short-term liabilities. Scholars also use the terms "available slack" (Bourgeois & Singh, 1983) and "high-discretion slack" (Sharfman et al., 1988) to refer to unabsorbed slack.

Finally, potential slack is defined as the unused capacity to borrow from outside. When organizations maintain a sufficient capacity for additional borrowing, it adds to their unused, redeployable resources. Accordingly, potential slack is a third class of organizational slack that is as easily as redeployable as unabsorbed slack, but available only from outside the organization.

Scholars identify wide variety of influences of organizational slack on behaviors of organizations, including adaptations to competitive dynamics (Cheng & Kesner, 1997; Smith, Grimm, Gannon & Chen, 1991; Thompson, 1967), the building of dominant coalitions (Cyert & March, 1963), political behaviors (Bourgeois & Singh, 1983), conflict resolution among dominant coalitions (Cyert & March, 1963), centralization (March & Olsen, 1984), bureaucratization (Cyert & March, 1963), risk preferences (Bromiley, 1991; Singh, 1986; Wiseman & Bromiley, 1996), and innovation (Nohria & Gulati, 1996).

In other words, because organizational slack is excess resources that are not tied to specific usages in current operations, it can have a wide variety of influences on organizations depending on how it is used by managers. Partially due to such multi-dimensional characteristics of organizational slack, findings in prior research regarding the relationship between organizational slack and R&D is inconclusive and confused, as is discussed below.

Adopting a behavioral theory of the firm (Cyert & March, 1963), some scholars argue for a positive relationship between organizational slack and R&D initiatives. It is because managers are willing to take risks to the extent that organizational slack is available in their organizations (Greve, 2003). From the perspective of organizational capability, it also is argued that organizations strongly commit to R&D to the extent that they have sufficient excess resources to stabilize their investments year to year irrespective of annual fluctuations in

profits (O'Brien, 2003). This is because R&D contributes to competitive advantage only when continuous resource deployment is ensured.

Other scholars strongly oppose these views by arguing for a negative relationship between organizational slack and R&D initiatives. For example, Palmer and Wiseman (1999) argue that organizations increase their R&D initiatives to the extent that their organizational slack decreases because organizations try to maintain a certain amount of organizational slack, below which organizations are motivated to search for alternative initiatives to recover the amount of available organizational slack. Other scholars who adopt the perspective of agency theory (Fama, 1980; Jensen & Meckling, 1976) argue that organizational slack allows managers to waste their resources on self-protecting behaviors, including excessive diversifications, empire-building, and on-the-job shirking, while risky initiatives like R&D are avoided (Latham & Braun, 2009).

With these contradictory arguments in mind, yet other scholars argue for a curvilinear (an inverted U-shape) relationship between organizational slack and R&D initiatives (Geiger & Cashen, 2002; Kim, Kim & Lee, 2008). More specifically, organizational slack positively influences R&D initiatives up to a certain amount, above which the relationship turns into a negative one. Although a curvilinear (an inverted U-shaped) relationship reconciles the positive and negative perspectives concerning the influences of organizational slack on R&D initiatives, it still remains unclear why the relationship is an inverted U-shape rather than a U-shape. Furthermore, the proponents of the curvilinear (an inverted U-shaped) relationship do not provide any rationale concerning how the optimal amount of organizational resources is to be determined.

In this manuscript, we aim to address the inconsistent findings of prior work by considering the differential motivations and underlying mechanisms for organizations' R&D. We argue that it is important to focus on motivation because it is closely concerned with organizational attention, one of the key drivers of organizational adaptive capability (Blettner et al., 2015; Joseph & Ocasio, 2012; Li et al., 2013; Ocasio, 1997; Rerup, 2009). Put differently, motivation drives attention, which then influences organizational performance.

Organizational attention is defined as encompassing "the noticing, encoding, interpreting, and focusing of time and effort by organizational decision-makers on both (a) issues; the available repertoire of categories for making sense of the environment: problems, opportunities, and threats; and (b) answers: the available repertoire of action alternatives: proposals, routines, projects, programs, and procedures" (Ocasio, 1997:189). Scholars identify important influences of organizational attention, including those on the valuation and legitimization of the repertoire of issues and answers available to decision-makers (Ocasio, 1997).

Attention also provides a structured system of interest and identities that motivates decision-makers' action by structuring their decision premises (*ibid.*). The underlying assumption is that managers' cognitive capacity is constrained or bounded (March & Simon, 1958; Simon, 1955). As cognitive capacity is bounded, the locus of attention is of substantial importance. Specifically, the straightforward consequence of this assumption of bounded rationality is that managers do not pay attention to all issues, but only to certain, casually selected ones. Accordingly, business opportunities, technologies, and issues that do not capture managers' attention are not acted upon. Managers pay attention to only a limited number of issues, and the way in which those issues are selected substantially influences organizational performance.

As such, managerial attention enables us to explain the manners in which identical resources could be used for a wide variety of differential usages. This is critically important in the study of organizational slack. As uncommitted resources that managers can use for a wide variety of usages, performance contribution of organizational slack does not depend on its characteristics per se but on managers' decision to deploy organizational slack. In other words, it is critically important to take into account managers' strategic as well as operational considerations underlying their usage of organizational slack when we examine performance influences of organizational slack. Accordingly, we aim to reconcile the inconsistent findings of the prior work by employing the attention-based view of the firm (Ocasio, 1997) to examine the performance influences of organizational slack.

As argued above, organizations commit their resources to R&D initiatives as they are encouraged by various motivations. Accordingly, we focus on three of the most typical motivations for organizational R&D in particular. They are the pursuit of potential business opportunities, competitive adaptations, and efforts to address performance shortfalls or attainment discrepancies (Cyert & March, 1963; Lant, 1992; Lant & Montgomery, 1987). By building on the prior work, we discuss these three motivations in turn below; subsequently, how organizational slack may differentially influence R&D initiatives depending on different motivations and underlying mechanisms is discussed.

III. Prior R&D commitments

Organizations are the tools by which organizational goals are achieved. In business organizations, organizational goals entail maximizing profits by exploiting potential business opportunities. Accordingly, as one of critical business activities, R&D is also targeted to maximizing the realization of potential business opportunities. Put differently, one of the important motivations for R&D is the

pursuit of potential business opportunities identified by prior R&D initiatives. Therefore, we argue that organizations actively commit to current R&D initiatives to the extent that they have identified potential business opportunities through their prior R&D initiatives.

Practically speaking, however, a substantial portion of prior commitments to R&D initiatives are maintained as vested rights granted to owners of those initiatives, rather than as a consequence of the strict and rational evaluation of expected future gains (Cyert & March, 1963). Notwithstanding a notoriously long lead-time before commercialization, resources allocated to R&D initiatives in the form of engineers, equipment, and facilities are very hard to undo. One reason why prior R&D commitments are maintained as vested rights is the high degree of uncertainty that characterizes gains from R&D initiatives. Managers need to wait a long time before they learn of the consequences of their decisions to commit resources to R&D initiatives. Consequently, commitments made to R&D initiatives are maintained as managers cannot predict their outcomes precisely. In short, a substantial portion of R&D initiatives undertaken by organizations are characterized as institutionalized search (Antonelli, 1989).

However, such vested rights are difficult to honor to the extent that organizational slack is scarce. Organizational slack is instrumental in forming and maintaining dominant coalitions (Cyert & March, 1963), or groups of major decision-makers in organizations, as it enables managers to pursue their sub-goals without jeopardizing the achievements of overall organizational goals. The underlying assumption is that dominant coalition members agree upon overall organizational goals only to the extent that their sub-goals are satisfactorily pursued. Conversely, dominant coalitions grow unstable to the extent that organizational slack is scarce, thereby exacerbating goal disagreement among dominant coalition members (Bourgeois & Singh, 1983). In response, managers without sufficient organizational slack try to pursue their sub-goals by focusing their attention on internal political bargaining that entails "renegotiating the basic coalition agreement" (Cyert & March, 1963:122). Such renegotiation is often characterized by the exploitation of "the vulnerability of those activities in the organization for which the connection with major goals is difficult to calculate concretely (e.g., research in many firms)" (*ibid.*). In short, a lack of organizational slack drives managers' attention toward internal political bargaining, thereby undermining the continuity between prior R&D commitments and current R&D initiatives. Conversely, as organizational slack is an indication that organizations have performed favorably in the past (Cyert & March, 1963), managers perceive their prior commitment of resources positively by focusing their attention on whatever progress or achievements earned through their prior R&D commitments

to the extent that more organizational slack is available. We therefore argue that managers are more likely to sustain (and even increase) resources allocated to their prior R&D commitments to the extent that more organizational slack is available. Put differently, organizational slack reinforces the positive relationship between prior R&D commitments and current R&D initiatives by allowing managers to focus their attention on potential business opportunities uncovered by their prior R&D initiatives or vested rights endowed through prior R&D commitments.

It is important to note that organizational slack does not directly influence managers' decisions concerning current R&D initiatives. Put differently, managers don't increase current R&D spending just because they have more resources. Successful R&D requires continuous commitments of resources (O'Brien, 2003). Accordingly, the temporal availability of resources influences current R&D initiatives only marginally. Rather, organizational slack, by influencing managers' attention, determines the degree to which current R&D initiatives follow commitments made in prior R&D initiatives. As such, organizational slack reinforces (or disturbs) the mechanism in which prior R&D commitments influence current R&D initiatives. Accordingly, we argue that organizational slack reinforces the positive relationship between prior R&D commitments and current R&D initiatives. This leads to our first proposition.

Proposition 1: Organizational slack positively moderates a positive relationship between prior R&D commitments and current R&D initiatives such that the more organizational slack is available, the more positively prior R&D commitments are associated with current R&D initiatives.

IV. Competitive adaptations

Organizations do not necessarily make resource allocation decisions in reaction to internal considerations alone. They also monitor their competitive environments to make decisions for more appropriate adaptations in response to their competitors' initiatives. For example, decisions to allocate more resources to R&D may be made in reaction to their competitors' aggressive R&D initiatives. Such a motivation is also an important driver of organizations' resource allocations to R&D activities.

One important assumption underlying this argument is that organizations properly monitor and identify changes in their competitors' R&D initiatives. In other words, competitors' aggressive R&D initiatives do not influence the focal organization's R&D initiatives unless the focal organization recognizes competitors' initiatives precisely. Without knowing which competitors aggressively

pursue their R&D and to what extent, there is no way that the focal organization can respond to them. As such, organizational R&D motivated by competitive adaptations is sometimes constrained by the presence of organizational slack, because organizational slack undermines organizations' capacity to be alert to environmental variations by directing managers' attention to internal issues rather than external changes, variations, or progress.

Organizational slack buffers organizations from variations in external environments (Thompson, 1967). This is due to the fact that organizations characterized by organizational slack can weather environmental changes by adjusting their stock of organizational slack (Cyert & March, 1963; O'Brien, 2003). For example, organizations can reduce excess costs (i.e., organizational slack) to bump up their financial performance. Excess inventory may also enable organizations to buffer themselves from fluctuations in demand. Put differently, managers enact their competitive environments as stable and benign to the extent that they have more available excess resources (as organizational slack) to buffer themselves from external changes, variations, and progress. Conversely, organizations that continuously experience so poor performance as to deplete their excess resources to the extent that their survival is in doubt are likely to shift their attention to their close competitors in an attempt to learn from those competitors' successful experience by imitating their strategies (Blettner et al., 2015).

Consequently, organizations characterized by organizational slack grow less sensitive and adaptive to environmental changes (Cheng & Kesner, 1997; Smith et al., 1991). Their managers focus their attention on internal issues including efficiency increases, internal consistency between various tasks and procedures, and the enforcement of internal controls. Accordingly, we argue that organizational slack negatively moderates the positive relationship between competitors' R&D initiatives and the focal organization's R&D initiatives such that organizational slack weakens the positive relationship between competitors' R&D initiatives and the focal organization's R&D by driving managers' attention away from external changes, variations, and progress.

It is important to note that organizational slack does not directly discourage managers to actively pursue their R&D initiatives. Organizational slack shifts the locus of managers' attention from external issues to internal issues, which then disturbs (or even attenuates) the mechanisms by which competitors' R&D initiatives influence the degree to which the focal organization aggressively pursues R&D.

Proposition 2: Organizational slack negatively moderates a positive relationship between competitors' R&D initiatives and the focal organization's

R&D initiatives such that the more organizational slack is available, the less positively competitors' R&D initiatives are associated with the focal organization's R&D initiatives.

V. Attainment discrepancy

Our discussion above assumes that managers' decisions regarding R&D initiatives are the consequence of rational consideration. However, behavioral characteristics are also important drivers of organizations' motivations regarding R&D (Cyert & March, 1963). For example, organizations search for alternative approaches in executing tasks to the extent that they experience performance shortfalls, or more formally, attainment discrepancy (Cyert & March, 1963; Lant, 1992; Lant & Montgomery, 1987). Attainment discrepancy is a gap between organizations' performance aspirations (or targets) and realized performance. When organizations experience attainment discrepancy, they try to address performance shortfalls by searching for alternative approaches with the hope that they may be able to effectively address their performance problems (Bromiley, 1991; Cyert & March, 1963; Gaba & Joseph, 2013; Greve, 1998, 2003, 2008; Lim & McCann, 2014). Scholars refer to this as problemistic search, which is "search that is stimulated by a problem (usually a rather specific one) and is directed toward finding a solution to that problem" (Cyert & March, 1963:121). Put differently, organizations actively pursue R&D as problemistic search to the extent that they realize that their actual performance falls short of their performance aspirations.

However, performance shortfalls alone are not enough to motivate organizations to pursue R&D. This is because increases in R&D initiatives entail a certain amount of risks and uncertainty that may discourage managers from committing their resources to R&D. In other words, managers are able to search for less risky alternatives, including increases in advertising, price adjustments, and shifts in sales reps allocations. Although performance gains from such alternatives may be incremental improvements at best with only modest performance contributions, whereas successful R&D often improves organizational competitiveness substantially, managers are notoriously risk-averse (Jensen & Meckling, 1976; March, 1991), thereby choosing less uncertain incremental improvements. Disappointing performance or the likelihood of future decline may pressure managers to search for alternative approaches, but there must be something more to strongly motivate managers to pursue more or less uncertain R&D initiatives rather than less risky alternatives.

This is why we argue that the positive relationship between attainment discrepancy and R&D initiatives is positively moderated by organizational slack such that organizational slack reinforces the positive relationship between

attainment discrepancy and R&D initiatives. This is because organizational slack increases managers' risk tolerance by lowering their threshold for accepting proposals for initiatives with risky and uncertain consequences. Put differently, organizational slack drives managers' attention toward their attainment discrepancy, or away from the increased risks entailed in R&D initiatives targeted to identifying alternative solutions. First, organizational slack loosens controls placed on potential R&D initiatives because even if they fail in the initiative funded by excess resources, current business is not critically damaged. Organizational slack also relieves managers' concerns regarding possible failures because organizational survival is not severely jeopardized when excess resources are sufficiently available. Consequently, managers accept even risky projects that would not have been accepted in a condition of resource scarcity. Secondly, organizational slack resolves internal conflicts over the choice regarding resource allocation by allowing the pursuit of sub-goals that may not be accepted in a condition of resource scarcity. Accordingly, mangers are less critical of each other's initiatives, thereby enabling the further pursuit of initiatives characterized as risky and uncertain. Thirdly, as an indication of prior success, organizational slack renders managers more confident and optimistic about their likelihood of survival and prosperity. Put differently, organizational slack undermines healthy skepticism among managers. This may lead to excessively aggressive risk-taking. In short, managers enact their organizational contexts as less characterized by risk and uncertainty to the extent that they have more organizational slack. Conversely, a lack of organizational slack may amplify the sense of threat perceived by managers with attainment discrepancy by focusing their attention on the likelihood of organizational decline. This sense of threat discourages risk taking (Staw, Sandelands & Dutton, 1981), thereby weakening the positive relationship between attainment discrepancy and R&D initiatives.

For all of these reasons, organizational slack reinforces the positive associations between attainment discrepancy and R&D initiatives by driving managers' attention toward attainment discrepancy, or away from the risks entailed in experimenting with new alternatives. Put differently, managers try to address their performance shortfalls more vigorously to the extent that organizational slack attenuates their attention to possible failures, disappointments, and further attainment discrepancy.

Proposition 3: Organizational slack positively moderates a positive relationship between attainment discrepancy and R&D initiatives such that the more organizational slack is available, the more positively attainment discrepancy is associated with R&D initiatives.

VI. Discussion

In this manuscript, we aim to address one of the major research gaps concerning organizational slack's influence on R&D initiatives. Findings from the prior research are inconclusive and confusing, in that scholars argue for a positive, a negative, as well as a curvilinear (inverted U-shaped) relationship between organizational slack and R&D initiatives. No organization is without organizational slack. Furthermore, R&D plays increasingly important roles in today's dynamically changing, competitive environment. Therefore, it is of theoretical as well as practical importance to understand the relationship between organizational slack and R&D initiatives more precisely.

Our approach to reconciling these contradictory findings is to take into account differential motivations and underlying mechanisms for organizations to undertake R&D. We focus in particular on three of the most typical motivations for R&D, including the pursuit of potential business opportunities, competitive adaptations, and attainment discrepancy. Building on prior work, we argue that organizational slack differentially influences R&D depending on its underlying motivations and mechanisms. Organizational slack reinforces a positive relationship between potential business opportunities uncovered by prior R&D commitments and current R&D initiatives by driving managers' attention away from internal political bargaining. On the other hand, organizational slack weakens adaptive responses to competitors' R&D initiatives because organizational slack buffers (or blinds) organizations from variations in the external environment. In other words, managers' attention to external changes, variations, and progress is attenuated by increases in organizational slack. Furthermore, managers are willing to address their attainment discrepancy by searching for alternative solutions through R&D to the extent that more organizational slack is available. This is because managers grow less concerned with taking risks to the extent that their organization is characterized by organizational slack. Organizational slack draws managers' attention toward attainment discrepancy, and away from the potential risks entailed in pursuing R&D initiatives more aggressively.

Our findings inform future inquiries into the relationship between organizational slack and R&D initiatives by calling scholars' attention to the importance of taking into account the motivations and underlying mechanisms for R&D. We argue that the relationship is more complicated than that presumed in prior work. The inconclusive and confused findings in the prior work show that it is highly unlikely that the relationship is as simple as a direct relationship. As such, R&D initiatives must be disentangled by carefully examining their underlying motivations and mechanisms. We conclude this manuscript by

discussing some of the important implications of our findings. Theoretical as well as practical implications are discussed in turn below.

1. Theoretical implications

First, our arguments inform our future efforts to reconcile the contradictory findings in prior work. We show that organizational slack may influence R&D both positively and negatively depending on organizations' motivations in pursuing their R&D initiatives. Put differently, the relationship between organizational slack and R&D initiatives may vary to the extent that organizations are characterized by varying combinations of various motivations for R&D. Organizations that strongly pursue R&D motivated by potential business opportunities or by problemistic search show more positive influences of organizational slack on their R&D. On the other hand, organizations characterized by the competitive adaptation of R&D reveal more negative influences of their organizational slack on R&D. In practice, organizational R&D initiatives are motivated by some mixture of these three motivations, in addition to others. Therefore, the relationship between organizational slack and R&D depends on the varied composition of the various motivations underlying R&D initiatives. Accordingly, our findings show that it is important to take account of organizations' motivations and underlying mechanisms when we examine the relationship between organizational slack and R&D initiatives.

The aforementioned finding that the relationship between organizational slack and R&D initiatives varies depending on the motivations regarding R&D implies that the relationship between organizational slack and R&D may not be direct. As we argued above, organizational slack drives, shifts, or attenuates managerial attention, which then influences managers' decision-making concerning R&D initiatives. Put differently, we depart from the perspective of prior work by arguing for the moderating effects of organizational slack on organizational mechanisms that either increase or decrease R&D initiatives. Needless to say, organizational slack does not influence organizational performance without managers' decision to deploy organizational slack for some purpose or other. The prior research assumes that organizational slack directly influences R&D initiatives, but this assumption is inappropriate, as it ignores the critical roles managers play in making resource deployment decisions. Our argument recognizes the critical roles played by organizational decision-makers by explicitly discussing their motivations to pursue R&D, one of the major initiatives involved in resource commitment, as well as how their motivations are influenced by the presence of organizational slack. As such, although we developed our argument in the context of R&D, it may be possible to generalize our findings to

inform future inquiries concerning the influences of organizational slack on organizational performance in general.

Put differently, our findings indicate that we cannot explain the influences of organizational slack properly if we only focus on the aspect that organizational slack is excess or unused resources. Prior work has ignored the critical connection between organizational slack and managerial attention by understanding organizational slack simply as excess resources. The argument goes that excess resources allow managers to spend more, so the relationship between organizational slack and R&D should be a positive one. However, if organizational slack is simply excess resources, we cannot explain the reason why the relationship between competitors' R&D initiatives and the focal organization's R&D initiatives is attenuated by organizational slack. Another stream of the prior work has adopted the perspective that organizational slack comprises resources that are not used effectively; from this, scholars infer that managers are so risk-averse that organizational slack is negatively associated with R&D initiatives. If this were the case, it would be difficult to explain the reason why organizational slack reinforces a positive relationship between prior R&D commitments and current R&D initiatives. Likewise, the relationship between attainment discrepancy and R&D initiatives would also be weakened by organizational slack. As such, it would be difficult to coherently and consistently explain the influences of organizational slack on R&D initiatives without accounting for the close connection between organizational slack and managerial attention. Furthermore, these two streams imply fundamentally different assumptions regarding the characteristics of organizational slack; by combining two contradictory arguments, the theoretical validity of the argument for a curvilinear (inverted U-shape) relationship between organizational slack and R&D is jeopardized.

The inconclusive and confused findings made in the prior work suggest that unless we go beyond the aspects of organizational slack as excess or unused resources, it is difficult to explain the influences of organizational slack precisely. Our manuscript is an initial attempt to address the challenge of uncovering a hitherto underexamined aspect of organizational slack by paying careful attention to the close connection between organizational slack and managerial attention. Scholars reveal that organizational slack influences a wide variety of behaviors and phenomena associated with organizations, however, there is more to examine to explicate the core characteristics of organizational slack. By uncovering the influences of organizational slack on managerial attention, we may be able to forge more parsimonious and coherent arguments to explain the differences we observe in the influences of organizational slack on R&D initiatives. In short, adopting the

attention-based view of the firm enables us to deepen our understanding of the influences of organizational slack.

Accordingly, it may be important to understand organizational slack as one of the most important determinants of managerial attention. As we argued above, organizational slack drives managers' attention toward continuity of resource deployment decisions, issues inside the organization, and the resolution of performance shortfalls, whereas attention to issues characterized as discontinuous, external, and uncertain is attenuated. More generally, it may be possible to argue that managers' attention to the past is attenuated to the extent that organizational slack decreases. Conversely, increases in organizational slack encourage managers to attenuate their attention to the external environment and uncertainty.

Such a close connection between organizational slack and managerial attention is also underscored by the unique characteristics of managerial attention, which is "situated" as well as structurally distributed in organizations (Ocasio, 1997). First, the existence of organizational slack, or resource munificence, is one of the most important aspects of organizational contexts in which managers are embedded (or situated). Secondly, organizational slack strongly influences the structural distribution of attention, as we argue in this manuscript. The prior work emphasizes that the usage of organizational slack is at the discretion of managers. However, the literature ignores the fact that organizational slack strongly influences managers' decision-making by driving managerial attention in specific directions. As the influence of managerial attention is far-reaching, it is critically important to take account of the effects of organizational slack on managerial attention as an essential function of organizational slack. In other words, it is inappropriate to examine the influences of organizational slack per se without evaluating whether organizational slack focuses "the attention of organizational decision-makers on an appropriate set of issues and answers" (ibid., 202).

Our findings also inform future inquiries into managerial attention. Given that the theory of bounded rationality is widely accepted, the importance of paying scholarly attention to managerial attention is undeniable. However, irrespective of our belief that managerial attention substantially influences organizational performance, we still lack a detailed understanding of the mechanisms by which managerial attention influences organizational performance. By uncovering several avenues through which managerial attention influences organizational choices to pursue R&D initiatives, we contribute to promising future inquiry into the profound impacts of organizational attention.

2. Practical implications

It also is important to discuss practical implications of our findings. Given that the influences of organizational slack differ across differentially motivated R&D initiatives, managers are advised to adjust their amount of organizational slack in consideration of their R&D strategy. For organizations whose R&D is primarily motivated by potential business opportunities identified through prior R&D commitments or by recent performance shortfalls, organizational slack should be increased to facilitate the more active pursuit of R&D initiatives. By contrast, for organizations that primarily pursue R&D as a means of competitive adaptation, decreasing organizational slack enables more active pursuit of R&D. By definition, organizational slack comprises flexible resources that managers can use at their discretion. Our findings, by uncovering the differential influences of organizational slack on R&D initiatives, can inform managerial decision-making to facilitate more effective deployment of organizational slack.

Managers may alternatively consider proactively manipulating the organizational locus of attention by adjusting their degree of organizational slack. Scholars have identified several antecedents of organizational attention. Our findings add to these antecedents the extremely influential determinant, i.e., organizational slack. For example, it may be possible for managers to vary organizational slack to adjust the organizational locus of attention regarding past and future, inside and outside of the organization, and certainty and uncertainty. Of course, organizational slack is an only one determinant of managerial attention. Therefore, it is an interesting avenue for future research that seeks to uncover the interaction effects of organizational slack and other antecedents of managerial attention, including environmental characteristics, the procedural and structural design of organizations, and the existence of influential individuals.

3. Conclusion

Organizational slack is a prevalent phenomenon: it is difficult to find organizations without organizational slack. Furthermore, as excess resources that managers can use at their discretion, organizational slack is a particularly important class of resources because it amplifies both the favorable and unfavorable consequences of managerial decisions. However, the understanding of organizational slack's influences on organizational phenomena remains inconclusive and confused, as exemplified by our review of the prior work on the relationship between organizational slack and R&D. We hope our manuscript stimulates further research on this important construct.

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