WHOM ARE YOU PROMOTING? POSITIVE VOLUNTARY PUBLIC DISCLOSURES AND EXECUTIVE TURNOVER

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Research summary: *This paper uses signaling theory to bring together two complementary research streams that have largely ignored each other: strategic human resource management and media relations management. We argue that when publicly traded firms voluntarily and publicly disclose positive information about their value creation and appropriation activities, they also send positive signals to managerial labor markets regarding executives' capabilities. Accordingly, we hypothesize a positive association between public disclosures and voluntary executive turnover. An analysis of pharmaceutical and communications equipment firms from 1990 to 2004 supports this prediction, underscoring the need to understand better the effects of voluntary public disclosures on a firm's ability to protect its human capital. More generally, our results highlight the importance of considering the impact of a single signal on multiple receivers.*

Managerial summary: *Given the organizational benefits of positive media coverage, the considerable effort that firms put into managing their image in the media is not surprising. We argue and show, however, that when a firm enhances its public image it also improves its executives' positions in the managerial labor market and, by so doing, increases their likelihood of voluntarily leaving the firm. In particular, we find that corporate press releases, an important mechanism for managing information released in the public domain to signal a firm's competitive advantages, may result in unintentional loss of senior management talent. This trade-off suggests that firms should increase coordination between their strategy, human resources, and corporate communications/investor relations departments to ensure that they collectively weigh the benefits and costs of publicly disclosing value-relevant information.* Copyright © 2015 John Wiley & Sons, Ltd.

INTRODUCTION

Strategy scholars have long recognized that human capital can be a source of competitive advantage (Campbell, Coff, and Kryscynski, 2012a; Coff, 1997; Hall, 1993b; Hatch and Dyer, 2004; Hitt *et al.,* 2001). However, unlike other types of competitive-advantage-yielding resources, such as patents or brands, human capital is not fully owned or controlled by a firm. In most situations, employees can leave their employer and take their human capital with them. Such departures constitute a serious threat to firms, particularly in knowledge-intensive industries, where skilled employees often move rapidly between competing firms (Hall, 1993b). The departure of key talent in these industries "can deliver a double blow—the firms lose valuable human capital and rivals stand to gain technological know-how at their expense" (Agarwal, Ganco, and Ziedonis, 2009: 1350–1351).

Consequently, strategy scholars have devoted considerable effort to identifying factors that affect employee mobility (Hall, 1993b; Karim, 2006), offering valuable insight into how firms isolate their human capital and protect it from rival expropriation (e.g., Agarwal *et al.,* 2009; Campbell *et al.,* 2012b; Coff, 1997). Most of these efforts have focused on identifying conditions that limit worker mobility (Campbell *et al.,* 2012a). In this paper, we extend and contribute to this literature by examining how other, seemingly unrelated actions that firms take to enhance their strategic position may unintentionally jeopardize their human capital. In particular, we theorize and find that voluntary public disclosures, an important media relations management tool, may increase an executive's propensity to leave his or her firm voluntarily.

The relationship between firms and the media has attracted significant attention in recent years, due largely to the media's role in influencing firm performance (Hayward, Rindova, and Pollock, 2004; Rindova, Pollock, and Hayward, 2006). Empirical research has demonstrated that positive media coverage is associated with financial gains (Deephouse, 2000), abnormal returns to stockholders (Johnson *et al.,* 2005), and reduced underpricing of initial public offerings on the first day of trading (Pollock and Rindova, 2003). Not surprisingly, scholars have undertaken substantial research efforts to determine how firms might improve their image in the media to gain competitive advantage (Gray, Vitae, and Balmer, 1998; Rindova *et al.,* 2006).

A primary means by which firms can enhance their public image is by voluntarily disclosing positive information about their value creation and appropriation activities (James and Shaver, 2015). Indeed, scholars have argued that by voluntarily and publicly disclosing positive information, firms enhance their ability to attract potential alliance and licensing partners (Harhoff, Henkel, and von Hippel, 2003), access financing (Lang and Lundholm, 1996), reduce financing costs (James, Leiblein, and Lu, 2013; Lang and Lundholm, 1996), and deter competitors from entering their technology space and developing similar or substitute products (Polidoro and Theeke, 2012).

While both human resource management and media relations management are critical in understanding a firm's competitive position, their mutual relevance and interdependence have yet to be considered. We bring these two literatures together to examine how voluntary public disclosures affect the likelihood of executives' voluntary departures. Specifically, based on signaling theory (Spence, 1973), we argue that each time a firm broadcasts its accomplishments publicly to enhance its competitive advantage, it also emits positive signals about its managers' capabilities, improving their respective positions in the managerial labor market.

We examine this premise in the context of R&D intensive firms in the communications equipment and pharmaceutical industries, where high levels of unexpected executive turnover can have a strong negative impact on a firm's competitive position (Sørensen, 1999). Managers who are able to recognize and exploit new technological opportunities are particularly valuable to these firms (Park, 2005). Accordingly, we hypothesize and find positive associations between a firm's number of disclosures that report on early-stage R&D projects and the number of voluntary departures among its top executives, as well as between the number of disclosures that report on a firm's R&D alliances and its voluntary executive turnover. This empirical relationship is particularly interesting because it suggests that, by voluntarily disclosing information to strengthen their strategic position, firms may be unintentionally harming themselves through the loss of valuable human capital. Moreover, we find that such disclosures are more likely to increase the departure rates of managers of well-performing firms, who are in general less likely to seek external job opportunities.

This study makes contributions to several literatures. First, it adds to a growing body of work examining factors affecting employee mobility—in this case, public disclosures (e.g., Campbell *et al.,* 2012b; Carnahan, Agarwal, and Campbell, 2012; Ganco, 2013; Klepper and Thompson, 2010) . Second, it contributes to the media relations literature by recognizing executive turnover as a potentially negative consequence of public disclosures. Third, it speaks to agency theory (Fama and Jensen, 1983) by highlighting a potential tension between the interests of firms (owners) and managers: to improve their position in the labor market, managers may disclose information that is proprietary (and potentially detrimental) to the firm. Fourth, it underscores the need for signaling theory to examine the effects of a single signal on multiple receivers. We elaborate on these and other contributions in the Discussion and conclusion section.

THEORY AND HYPOTHESES

In accordance with the Securities Exchange Act of 1934 (SEC, 1934), publicly traded firms tend to disclose voluntarily information about a range of topics, including their financial performance, product attributes, environmental performance, and other value-relevant information (Amir and Lev, 1996; Jones, 2007; Narayanan *et al.,* 2000). Firms have discretion over what they disclose and when they disclose it, which is relayed to the general public via a major newswire either by the focal firm, one of its trading partners, or a third-party public relations firm. The process of disclosing generally proceeds in the following manner: top executives determine the content and timing of a press release and then consult with in-house legal counsel, investor relations, and corporate communications staff to ensure the timely release of accurate and clear (i.e., credible and verifiable) information that investors can then use to make informed investment decisions.

Prior studies indicate that, with the exception of negative-earnings-related disclosures, the information provided in these disclosures is positive (Lev and Penman, 1990; Skinner, 1994). By empowering stockholders with the right to sue firms and their managers for failing to disclose important earnings news, U.S. securities laws[1] create an incentive for managers to disclose bad earnings voluntarily and immediately (Skinner, 1994). Other types of disclosures are much less vulnerable to legal attacks, rendering the voluntary disclosure of negative news a rare occurrence, which firms employ only as a last resort to avoid shareholder class action lawsuits. For example, out of the 860 voluntary R&D disclosures in our sample, 785 (91.3%) provide clear positive information about the disclosing firm, while only 75 disclosures (8.7%) include any information that could be construed as neutral or negative.

A firm's incentive to provide voluntarily positive information about its value creation and appropriation activities stems from the signaling value provided by disclosures (Spence, 1973). For example, voluntary public R&D disclosures may reduce a firm's financing costs by providing a means of signaling the strength of its R&D investment opportunities to capital markets (James and Shaver, 2015).

Such disclosures are likely to attract an investor's attention because they allow the investor to assess better the risk level of the disclosing firm. Given that investors demand a premium for bearing information risk, managers can employ voluntary public disclosures to reduce information asymmetry and decrease their firm's cost of capital (Botosan, 1997; James *et al.,* 2013). This is especially important in high-technology industries, where information asymmetry regarding firms' technological capabilities and performance tends to increase the cost of capital significantly (Hall, 1993b; O'Brien, 2003; Vicente-Lorente, 2001).

Information asymmetries also exist between firms and potential partners' mutual contributions and benefits. For example, prior to forming an alliance, firms must be aware of the existence of potential partners and have some ideas about the resources they bring to the table. Public disclosures can help these firms recognize and assess alliance opportunities, thereby reducing the perceived contractual hazards and associated transaction costs (Cassiman and Veugelers, 2002). Disclosures are also an important means by which firms communicate the quality of their capabilities and resources in order to deter the entry of new rivals. For instance, if a firm is in a race to patent its innovations and can credibly signal a technological advantage, potential competitors may be discouraged from entering the same industry or product space (James and Shaver, 2015; Polidoro and Theeke, 2012).

Whereas these examples illustrate the function voluntary public R&D disclosures serve in signaling to multiple receivers (e.g., investors, potential alliance partners, and rivals), most extant signaling studies have focused their attention on a single dyad (i.e., one signaler and one receiver), communicating one signal (Connelly *et al.*, 2010). This narrow approach has impeded signaling research from considering the impact a single signal can have on multiple receivers. An underlying tenet of signaling theory is that a sender will invest in producing a quality signal only if the payoff is higher than its costs (Spence, 1973). But without considering the differential impact a signal can have on multiple receivers, existing research stops short of providing a full and complete accounting of all costs and benefits associated with a single signal. In the present study we underscore this point by examining the effects of voluntary public disclosures on the competitive position of executives in the managerial labor market.

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[1] Most lawsuits in this area are brought under SEC Rule 10b-5, which makes it unlawful for any person "to make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading."

The managerial labor market

The formal separation of ownership and control, whereby the owners of a corporation (shareholders) employ agents (managers) to administer corporate resources on their behalf, has created a market for managerial labor services. The demand side of this market consists of firms seeking to hire managers (Gardner, 2005), while the supply side includes candidates for managerial positions. Prior research highlights the important role that signaling plays in labor markets. Spence's seminal paper "Job Market Signaling" (1973), which laid the theoretical foundation for many of the signaling studies in the management literature, studied labor markets, and demonstrated how job applicants engage in behaviors to reduce information asymmetry that hampers prospective employers' ability to select employees. Ensuing work on employee signaling has examined a wide range of signals that employers frequently use during the recruitment process (Suazo, Martinez, and Sandoval, 2009). These include educational and professional credentials (Arkes, 1999; Bills, 2003; Rosenbaum and Kariya, 1991), job history (Bills, 1990), work experience (Bidwell, 2011), references from previous employers or supervisors (Björkman and Gertsen, 1993), and relationships to current employees (Bills, 1999).

Others have applied signaling theory to help explain why some employers do better than others at attracting potential job applicants. Applicants' attraction to an organization has been associated with a range of employer signals, including recruiter status and preparedness, dining extravagance and job advertisements (Gatewood, Gowan, and Lautenschlager, 1993; Rynes, 1991); firms' corporate social performance (Jones, Willness, and Madey, 2013; Turban and Greening, 1997); corporate advertising (Collins and Han, 2004); and the existence of a works council, an apprenticeship training program, and/or a high-quality workforce (Backes-Gellner and Tuor, 2010).

We extend this research by arguing that the market for managerial labor services is not only influenced by signals that employees and employers intentionally send to each other, but also by other signals that firms routinely broadcast, such as voluntary R&D disclosures. Our underlying assumption is that observers tend to attribute positive information about a firm to its managers (Meindl and Ehrlich, 1987; Meindl, Ehrlich, and Dukerich, 1985). The existence of such reputational halo effects, in which an organization's success rubs off on its managers, has been established in the accounting literature (Johnson, Young, and Welker, 1993) and has received further support from a number of studies that suggest labor markets for executives are more likely to reward managers from superior performing firms (Brickley, Linck, and Coles, 1999; Zajac, 1990). Drawing on these findings, we argue that a firm's voluntary and positive public disclosures are likely to reflect well on its managers and enhance their opportunities in the external labor market. We expect this to occur regardless of whether the managers are specifically mentioned in the disclosures.

While all positive voluntary public disclosures are likely to reflect well on the disclosing firm's managers, disclosures that indicate the existence of managerial skills that are valuable and rare are especially likely to attract attention from firms seeking to hire managers. One skill that has long been considered an important determinant of firm success, and is thus highly sought after, is the ability to identify and exploit technological opportunities (Denrell, Fang, and Winter, 2003; Eisenhardt and Martin, 2000; Kor, 2003). This competency is especially important in high-technology industries, where developments accelerate rapidly, product life cycles are shortening, and a steadily growing percentage of sales are accounted for by newly commercialized product innovations (Lev and Sunder, 1979). While being first to develop and commercialize an innovation is a fundamental aspect of competitive advantage in these and other industries (Cohen, Nelson, and Walsh, 2000; Levin *et al.*, 1987; Lieberman and Montgomery, 1988), the ability to recognize and exploit technological opportunities is relatively rare (Sanchez, 1995).

The recognition that being at the forefront of new technology development and application is one of the most effective means of obtaining competitive advantage has inspired strategy scholars to study the effects of scientists and other technological personnel on firm performance and their mobility across firms. For example, Almeida and Kogut (1999) demonstrate in an analysis of patent data from the semiconductor industry that ideas are spread through the mobility of key engineers. Cassiman and Veugelers (2006) indicate that 42 percent of innovative firms hire researchers from rival firms—a prevalent strategy for external knowledge acquisition that has been explored by, among others, Song, Almeida, and Wu (2003); Rosenkopf

and Almeida (2003), and Palomeras and Melero (2010).

These studies have sparked an interest in factors that affect firms' ability to protect their scientific and technological personnel from expropriation by rivals. For example, Kim and Marschke (2005) found that the risk of a scientist's departure raises firms' propensity to patent their innovations and mitigate the likelihood that their scientists, researchers, and other key personnel will leave. Relatedly, Agarwal *et al.* (2009) showed that a firm's patent litigiousness significantly reduces the transfers of proprietary knowledge through employee exits.

The value that firms attach to their scientific and technological personnel has recently resulted in a class action lawsuit filed against Apple, Google, Intel, and Adobe Systems, alleging that they conspired to refrain from recruiting one another's employees.[2] The case was based largely on emails in which Apple's late cofounder Steve Jobs, former Google CEO Eric Schmidt, and some of their Silicon Valley rivals hatched plans to avoid poaching each other's prized engineers. During the case, which was settled for $324 million, it was also revealed that Jobs threatened the Palm Company with a patent lawsuit if Palm refused to stop recruiting Apple employees.[3]

Given the lengths to which firms go to hire talented engineers and protect their own human capital, we expect that public reports signaling firms' resources and competencies in this arena will be particularly likely to attract attention. The following public announcement highlights how a voluntary disclosure can capture information regarding the strategic significance of an early-stage research project. Isis Pharmaceuticals disclosed the following information on July 27, 2000:

"Through the application of our powerful GeneTrove(TM) target validation technology, we identified this second potential drug candidate for diabetes and characterized the drug in animals in just 6 months from initiation of screening," said Frank Bennett, Isis' Vice President, Biology … "Our functional genomics capabilities, in GeneTrove, and our

antisense drug development approach have provided Isis the opportunity to leap to the head of the PTP-1B drug development race," said Stanley T. Crooke, Isis' Chairman and CEO. "We believe that antisense technology enables Isis and our partners to quickly and directly realize the benefits of genomics and create opportunity for substantial competitive advantage throughout the drug discovery and development process."

Disclosures such as these may enhance a firm's ability to raise additional funds, attract alliance partners, or deter new rivals from entering into the same area (James and Shaver, 2015; Polidoro and Theeke, 2012), but they also highlight the capabilities of that firm's executives. By signaling to the labor market that executives possess the rare and sought-after skill to recognize and exploit technological opportunities, information about an early-stage R&D success will increase executives' value in the labor market and attract the attention of hiring firms. In turn, more and better opportunities in external labor markets are likely to increase executives' likelihood of voluntarily leaving their home firm. Thus, we hypothesize

Hypothesis 1: There will be a positive relationship between a firm's total number of early-stage R&D disclosures and the number of voluntary departures among its top executives.

While being at the vanguard of new technology development and application is one of the most effective means of obtaining competitive advantage, this process is often slow and characterized by time-compression diseconomies, especially in the R&D phase (Dierickx and Cool, 1989). Moreover, the range of technical know-how and scientific skill needed to stay at the forefront of new technology development often exceeds the capabilities of a single firm (Hagedoorn, 1993; Powell, Koput, and Smith-Doerr, 1996). One way, and in some cases the only way, to deal with this conundrum is to form alliances with other firms that own or control complementary technologies (Rothaermel, 2001; Rothaermel and Boeker, 2008).

Not surprisingly, interfirm R&D alliances have become an integral part of firm strategy in technology-intensive industries (Rothaermel and Boeker, 2008). Despite their proliferation, however,

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[2] http://online.wsj.com/news/articles/SB1000142405270230462 6304579509700352730842

[3] http://www.reuters.com/article/2014/04/25/us-apple-google-law suit-exclusive-idUSBREA3N28Z20140425

such alliances are fraught with risk, and many fail (Dyer, Kale, and Singh, 2001). Thus, the ability to form and manage R&D alliances more effectively than one's competitors is an important source of competitive advantage (Dyer and Singh, 1998), and effective alliance management capabilities are much sought-after managerial skills. But the presence of alliance management capabilities, which include the ability to select the right partner, build social capital and knowledge, maximize cooperation among partners, and develop trust (Ireland, Hitt, and Vaidyanath, 2002), are difficult to specify.

Nevertheless, if we consider that (1) for the most part, firms only voluntarily publicize their successes, and (2) effective alliance management is a critical determinant of alliance success, especially during the initial R&D phase, disclosures about early-stage R&D alliances are likely to be perceived as signals that the disclosing firm's executives possess the skills necessary to manage alliances (Meindl and Ehrlich, 1987; Meindl *et al.,* 1985). Given the important role that alliances play in technology-intensive industries, any signal that indicates the presence of executives who possess the capability to manage alliances (e.g., disclosures about early-stage R&D alliances) will likely attract the attention of other companies in need of such capabilities. This, in turn, should result in more unsolicited job offers for executives and consequently a greater likelihood of voluntary executive turnover. Accordingly, we hypothesize

> *Hypothesis 2: There will be a positive relationship between a firm's total number of R&D-alliance early-stage disclosures and the number of voluntary departures among its top executives.*

Voluntary disclosures, firm performance, and executive turnover

Thus far, we have focused our discussion on the effect of voluntary R&D disclosures on executive turnover. We now extend our argument by considering how the performance of the disclosing firm may amplify the impact of disclosures on voluntary turnover. Our rationale suggests that because people are likely to attribute positive information about a firm to the firm's executives, disclosure of such information increases executives' attractiveness and thus their likelihood of leaving the firm.

Recent research, however, suggests that when forming judgments about the quality of an object or a person, individuals are affected by the level of congruity between multiple quality signals. As the degree of congruity increases, the credibility of each signal increases, amplifying their combined effect. For example, Stern, Dukerich, and Zajac (2014) showed that an emerging firm's likelihood of forming an alliance with an incumbent increases when the research achievements of its founding scientist (i.e., publications and citations) are congruent with the prestige of the university from which he or she graduated. Similarly, Kim and King (2014) found that the level of congruity between two quality signals: a pitcher's number of All-Star appearances and his career average of walks per batters faced positively relate to the evaluation of his pitch quality by Major League Baseball umpires.

A highly visible quality signal that is readily available to hiring firms is the financial performance of the executive's firm. Accordingly, we expect that the positive information conveyed in a press release will be perceived as more credible when a firm is also performing well. When performance is strong, and thus congruent with the information provided in the press release, it will increase the credibility of disclosures. Accordingly, we propose the following hypotheses:

> *Hypothesis 3a: The positive effect of early-stage R&D disclosures on executive turnover will be stronger when the firm is performing well.*
> *Hypothesis 3b: The positive effect of early-stage R&D alliance disclosures on executive turnover will be stronger when the firm is performing well.*

Finding evidence in support of these hypotheses would help to alleviate a potential endogeneity concern. Managers who seek opportunities in the external labor market would obviously benefit from an increase in the number of job opportunities generated by voluntary public disclosures. These disclosures may be associated with voluntary executive turnover, because managers who consider leaving their firm have an incentive to release information that can improve their positions in the labor market. The concern, therefore, is that the intention to leave one's job may increase executives' likelihood of disclosing information and subsequently quitting, thereby subjecting our models to an omitted variable bias.

Existing studies, however, report a negative relationship between firm performance and voluntary executive turnover (Balsam and Miharjo, 2007; Dunford, Oler, and Boudreau, 2008). Executives are more likely to jump ship when firm performance is poor, because they want to protect their reputation (Snyder, Lassegard, and Ford, 1986). Poor performance may also decrease a firm's stock price and push unvested options "out of the money" (Goolsbee and Syverson, 2008), weakening executives' sense of achievement and confidence in the firm's future prospects (Dedman and Lennox, 2009). This negative relationship may therefore suggest that the increased job opportunities generated by public disclosures are particularly attractive to executives of poorly performing firms. If this is the case, we should expect the opposite effect of that predicted by Hypotheses 3a and b (i.e., that the positive effect of voluntary public disclosures on executive turnover will be amplified when the firm is performing poorly, rather than well). If the current version of Hypotheses 3a and b are supported, it would support our broader argument that the positive relationship between voluntary disclosures and executive turnover is an unintentional byproduct of firms' attempts to improve their strategic positions, rather than the consequence of executives' self-interest.[4]

METHODS

Data and sample

Our argument suggests that disclosures signaling the existence of unobserved and highly sought-after managerial skills will attract attention from firms seeking to hire managers, thereby enhancing the disclosing firm's managers' opportunities in the external labor market. We thus test our hypotheses in two industries where the two managerial skills we focus on—the ability to recognize technological opportunities and the capability to exploit technological opportunities—have been shown to play a particularly important role: communications equipment (SIC codes 3661, 3663, and 3669) and pharmaceutical preparations (SIC 2834) (Hagedoorn, 2002; Kale and Little, 2007). Our dataset includes all publicly traded R&D-active firms that operated in these industries from 1990 to 2004 and have at least five firm-years of financial statement data available in COMPUSTAT and securities pricing data in CRSP, which allowed us to estimate the effect of the independent variables on the dependent variable using panel estimation methods. This procedure resulted in a sample of 322 (167 pharmaceutical and 155 communications equipment) firms and 3,112 firm-year observations. The use of lagged values for our independent variables reduced the number of usable observations to 2,790.[5]

Dependent variable

Data on *voluntary executive turnover* were collected from the LexisNexis database of articles and press releases. The Securities Exchange Act of 1934 requires publicly traded firms to declare executive turnover to the Exchange Commission on Form 8-K (SEC, 1934), and Regulation FD requires that the same information be disclosed to the general public via a corporate press release (SEC, 2000). These disclosures report turnover at the level of director, vice president, or above, as identified by the disclosing firm. We focused on firm press releases issued through PR Newswire and Business Wire, because they serve as the primary outlets through which publicly traded firms release information to the general public. All other sources tend to be secondary and essentially repeat information previously disclosed through these outlets.

Following Balsam and Miharjo (2007) and Huson, Parrino, and Starks (2001), we classify turnovers as voluntary when press releases provide information about an executive's future employment and do not suggest he/she was fired, forced from his/her position, or departed because of unspecified policy differences. We verified the accuracy of this classification by searching secondary public sources such as press releases issued by destination firms and source outlets like Factiva, Google, and the *Wall Street Journal* for every firm in the sample that had an executive turnover. These searches confirmed our assumption that press releases about voluntary departures typically state

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[4] As described in the Methods section, we also use several empirical measures to address the endogeneity concern, including a two-stage Heckman Probit model and several measures to control for firm performance.

[5] The limited availability of compensation data further reduced the sample to 2,104 firm years. However, compensation was not significant in any of the models, so to preserve degrees of freedom we excluded it from the analyses reported below.

a place of future employment, while press releases about involuntary departures do not.

Overall, we recorded a total of 419 voluntary departure events and 29 involuntary departures. Of the voluntary departures only 62 (18%) represent more than one departure from the same firm in a given year. We therefore define our dependent variable—*Voluntary Executive Turnover*—as a binary variable, equaling "1" when voluntary departures occur, and "0" when they do not.

Independent variable

Except for the pharmaceutical industry dummy variable, which we measure contemporaneously, all independent and control variables are lagged and measured in year *t - 1*. Our sample includes all types of voluntary disclosures. We code each of the following variables as 1 if a disclosure includes information of the particular following types and 0 otherwise. *Total Early-Stage R&D Disclosures* include all disclosures about a firm's independent R&D efforts that occurred between the inception of an R&D project and the initial discovery phase, before a firm began to develop and test new products or services. *Early-Stage R&D Disclosures Excluding Alliances* include all early-stage R&D disclosures that make no mention of R&D activities involving one or more partners. *Alliance Early Stage R&D Disclosures* consist of all early-stage R&D disclosures involving the focal firm and one or more partners. *Total Early-Stage R&D Disclosures* equal the sum of *Early-Stage R&D Disclosures Excluding Alliances* and *Alliance Early-Stage R&D Disclosures*.

All disclosures data were collected from the Lexis-Nexis database of corporate press releases. Disclosures were coded by two individuals as R&D or non-R&D disclosures, and each R&D disclosure was further coded as an early-stage, early-stage alliance, or nonalliance early-stage disclosure. The two coders had an inter-rater reliability of above 90 percent.

Control variables

Involuntary executive turnover may lead to organizational instability, which in turn may increase voluntary executive turnover (Gollob, Rossman, and Abelson, 1973). Thus, *Involuntary Executive Turnover* measures the number of press releases that

discuss executive departures where no information is provided about their future employer.

Interfirm alliances and joint ventures are conducive to building interpersonal networks, which may in turn increase voluntary executive turnover (Erber and Fiske, 1984; Häubl and Elrod, 1999). To differentiate the impact of the number of alliances formed in a given firm year on voluntary executive turnover and the effects caused by the number of early-stage disclosures about alliances, we control for the total number of *Alliance/JV Formations*. Alliance formations in a given firm year are measured as a count of the number of new alliance relationships announced. These data are drawn from the Thompson/Securities Data Corporation's (SDC) database. The correlation between early-stage R&D alliance disclosures and the number of alliance formations is surprisingly low ($p = 0.29$).

As greater R&D expenditures are likely to create more opportunities and thus more projects about which to disclose (James and Shaver, 2015), we also control for *R&D Expense* (measured in millions of dollars). This variable also serves as a proxy for firm size (as is *total sales,* which, as described below, is included as one of three measures of firm performance).

As mentioned above, prior research reports a negative relationship between firm performance and voluntary executive turnover (Dedman and Lennox, 2009; Dedman *et al.,* 2009). Because some firms in our sample are in the emerging growth phase and have not yet posted positive operating profits, we include both net *Sales,* in billions of dollars, and *Sales Growth* as indicators of performance. *Sales growth* is calculated as $(sales_t - sales_{t-1})/sales_t$. To further ensure that we capture the influence of firm performance on voluntary turnover, we also include *EBITDA* (operating earnings before interest, taxes, depreciation, and amortization). We include the absolute level of *EBITDA* rather than a ratio of *EBITDA* to sales because of the spurious correlation resulting from profitability ratios, which may bias the results (Liang and Zeger, 1986). In addition to controlling for the firms' current performance, we include *Market-to-Book* measures to control for expectations about firms' future prospects, calculating the ratio of a firm's stock market value to its book value of total equity. A high market-to-book ratio indicates that investors believe the firm represents a strong future investment opportunity (Lang and Stulz, 1994).

Counts of *Patent Applications* serve as controls for firms' stock of technological capabilities and level of intellectual property protection, both of which can affect firms' positive R&D disclosures and employee mobility (Pham and Muthukrishnan, 2002). We gather patent data from the National Bureau of Economic Research Patent Data file and the USPTO.

A firm's inducement to disclose information also increases with the number of analysts covering its stock (Stern *et al.,* 2014). Greater analyst coverage may therefore direct more attention to executives' value creation and appropriation abilities, increasing voluntary turnover. To control for *Analyst Coverage*, we measure the number of sell-side analysts covering a firm's stock in a given firm year. These data are drawn from the I/B/E/S database of analyst earnings and stock price estimates. Finally, we include *Pharmaceutical Industry and Year Dummy* variables to capture any unobserved industry differences and temporal effects.

Models

Because we are interested in the likelihood of voluntary departures occurring—measured here as a binary variable—Probit and Logit models are appropriate. However, if some of the same factors that influence a firm's propensity to disclose information (e.g., sales growth, patents), and thus be included in our sample, also affect voluntary executive turnover, our analysis might suffer from sample selection bias. We modeled and corrected for this potential bias using Heckman Probit models, which first calculate a firm's likelihood of disclosing information and then use the results as a control in our second-stage voluntary executive turnover analysis.[6] Given the panel nature of our data, using either a fixed effects or random effects model is appropriate. A fixed effects model would necessarily exclude firms that have all zero observations across the sample period, biasing our sample and results toward firms that experience executive turnover. We therefore estimate random effects models.[7]

To test interaction models, we split our panel into two subsamples based on firm performance measures above and below the median. We utilize this approach because the interpretation of interaction effects in nonlinear models, such as Probit, is complex. Ai and Norton (2003) argue that in nonlinear models with continuous interaction variables the sign of the interaction term coefficient need not correspond to the direction of the (hypothesized) conditional effect motivating the interaction term's inclusion in the first place and that the standard error of this coefficient conveys no direct information about the statistical significance of the effect (Erdem and Swait, 1998; Huson *et al.,* 2001). The magnitude and sign of an interaction effect depend on the coefficient of the interaction, the coefficient of each interacted variable, and the value of all variables in a given model (Hoetker, 2007; Norton, Wang, and Ai, 2004). Norton *et al.* (2004) developed a correction that allows for accurate calculation of the marginal effects of interaction effects. However, while this procedure makes the necessary corrections in pooled logit and Probit estimation (Norton *et al.,* 2004), there is still no way of making such corrections in continuous logit and Probit panel data models with fixed or random effects.

RESULTS

Table 1 reports descriptive statistics and correlations for all variables. Correlations between voluntary executive turnover and the independent variables are significant and have the expected positive sign.

To insure that multicollinearity does not influence our results, we calculated variance inflation factors (VIF) for each of the independent and control variables. A VIF below 10 is generally acceptable and indicates that multicollinearity is not a problem (Karim, 2006; Welsch, 1982; Welsch and Kuh, 1977). The mean VIF for these variables is 2.80, with only *R&D Expense* (VIF = 8) and *Sales* (VIF = 9) deviating significantly from the mean. We also examined linear regression diagnostics, which

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[6] The dependent variable in the first stage of our model is a binary variable that equals 1 if the firm made public disclosures of any type at year t and 0 if it did not. The results are similar, though a bit weaker, when using a variable that equals 1 if the firm made an R&D disclosure and 0 if it did not.

[7] Despite the limitations of a fixed effects estimator, as a further robustness check, we also estimate executive turnover using a fixed effects Logit estimator. The results are similar to the

random effects specification, thus indicating that our results are not driven by any unobserved differences between firms, such as a firm's tendency to disclose information or the quality of its PR department. We also employed generalized estimating equation (GEE) models with Logit and Probit distributions. These models yielded consistent results.

Table 1.   Descriptive statistics and correlations

Variable	Mean	Std. dev.	Min	Max	1	2	3	4	5	6	7
1. Voluntary executive turnover$_t$	0.12	0.32	0	1	1						
2. Total early-stage R&D disclosures$_{t-1}$	0.28	1	0.0	11	0.07*	1					
3. Early-stage R&D disclosures excluding alliances/JVs$_{t-1}$	0.21	0.74	0	11	0.04*	0.93*	1				
4. Alliance/JV early-stage R&D disclosures$_{t-1}$	0.08	0	0.0	4	0.09*	0.60*	0.26*	1			
5. Involuntary executive turnover$_{t-1}$	0.01	0	0.0	3	0.02	0.03	0.02	0.04	1		
6. R&D alliance/JV formations$_{t-1}$	1.44	4	0.0	64	0.07*	0.16*	0.05*	0.29*	0.14*	1	
7. R&D expense$_{t-1}$	194.84	649	0.0	12,183	0.10*	0.17*	0.08*	0.28*	0.11*	0.53*	1
8. Sales growth$_{t-1}$	0.95	15	−1.0	543.8	−0.01	−0.01	−0.01	−0.01	−0.01	−0.01	−0.02
9. Sales$_{t-1}$	1.59	5	0.0	51.79	0.07*	0.15*	0.06*	0.27*	0.14*	0.61*	0.93*
10. EBITDA$_{t-1}$	343.57	1,294	−5,062.0	17,122	0.06*	0.10*	0.03	0.21*	0.04	0.50*	0.87*
11. Market-to-book$_{t-1}$	5.16	8	0.0	109.4	0.01	0.05*	0.05*	0.04*	−0.01	0.07*	0.09*
12. Patent applications$_{t-1}$	20.92	87	0.0	1,400	0.09*	0.19*	0.10*	0.28*	0.13*	0.75*	0.55*
13. Analyst coverage$_{t-1}$	19.42	50	0.0	445	0.11*	0.07*	0.03	0.12*	−0.02	0.37*	0.42*
14. Pharmaceutical dummy$_t$	0.52	0.50	0	1	0.04*	0.22*	0.21*	0.11*	−0.04*	0.06*	0.09*

Variable	8	9	10	11	12	13	14
8. Sales growth$_{t-1}$	1						
9. Sales$_{t-1}$	−0.02	1					
10. EBITDA$_{t-1}$	−0.02	0.90*	1				
11. Market-to-book$_{t-1}$	0.02	0.09*	0.12*	1			
12. Patent applications$_{t-1}$	−0.01	0.65*	0.50*	0.06*	1		
13. Analyst coverage$_{t-1}$	−0.01	0.42*	0.51*	0.10*	0.30*	1	
14. Pharmaceutical dummy$_t$	0.03	0.08*	0.16*	0.21*	0.001	0.30*	1

*$p < 0.05$
n = 2,790 firm years, 322 firms

identify influential observations in the sample that may bias our results. We ran a bound regression to produce influence statistics, including *dfbeta* and *dffits* (Goldstein, 1991). The *dfbeta* statistic is a scaled measure of the change in each parameter estimate and is calculated by deleting the *i*th observation. Similarly, the *dffits* statistic measures the change in the predicted value for the *i*th observation and is calculated by deleting the *i*th observation. The recommended cutoff for *dfbeta* is 0.0379, while the maximum acceptable level for *dffits* is 0.1256. We identified 96 observations that exceeded the cutoff for *dfbeta* and 164 observations that exceeded the cutoff for *dffits*, respectively. We closely examined each of these observations to understand the source of their influence. This revealed that a majority of these observations constituted the largest

firms in the sample. We mitigate this potential bias by including multiple control variables for firm size (i.e., *R&D Expense*, *Sales*, and *Patents*). We also include a firm random effect to capture any unobservable factor that may be related to firm size.

To assess whether our independent variables are measuring significantly different constructs, we conduct mean comparison tests that $\mu \neq 0$ for each type of R&D disclosure. The results support our conclusion that *Total Early-Stage R&D Disclosures, Early-Stage R&D Disclosures Excluding Alliances,* and *Alliance Early-Stage R&D Disclosures* measure distinctly different constructs, as p-values are highly significant ($p = 0.00$).

The Heckman Probit results estimating *Voluntary Executive Turnover* using a random effects model

are reported in columns 1, 2, and 3 of Table 2.[8] Model 1 includes only the control variables. Model 2 reestimates Model 1 and includes *Total Early-Stage R&D Disclosures*. Model 3 replicates Model 2 and separates total early-stage R&D disclosures into two variables: *Early-Stage R&D Disclosures Excluding Alliances* and *Alliance Early Stage R&D Disclosures*.

Hypothesis 1 predicted a positive association between a firm's total number of early-stage R&D disclosures and the number of voluntary departures among its top executives. The findings in column 2 show a positive and weakly significant effect of *Total Early-Stage R&D Disclosures* on Voluntary Executive Turnover, providing weak support for Hypothesis 1.

Hypothesis 2 predicted a positive association between a firm's total number of R&D alliance disclosures and the number of voluntary departures among its top executives. We tested this hypothesis by partitioning the sample of early-stage R&D disclosures into *Early-Stage R&D Disclosures Excluding Alliances* and *Alliance Early Stage R&D Disclosures.* The results in column 3 show a positive and significant effect of *Alliance Early-Stage R&D Disclosures* on Voluntary Executive Turnover, thus strongly supporting Hypothesis 2. Interestingly, the effect of *Early-Stage R&D Disclosures Excluding Alliances* is positive but not significant, thus suggesting that the effect of *Total Early-Stage R&D Disclosures* is primarily driven by alliance-related disclosures.[9] We discuss this finding in more detail in the Discussion and conclusion section.

Interaction models

To test Hypotheses 3a and b, we split our panel into two subsamples based on firms' market-to-book ratio above and below the median.[10] This approach allows us to interpret unambiguously the results of how voluntary executive turnover changes as the different types of R&D disclosures change above and below median market-to-book ratios. The results for the two subsamples are consistent, and both control for unobserved heterogeneity. We reestimated the random effects probit models for each subsample. Columns 4, 5, 6, and 7 of Table 2 report the results comparing the interaction effects for firms with market-to-book ratios above and below the median (2.77).

Hypothesis 3a argued that the positive effect of disclosures on voluntary executive turnover will be larger for strongly performing firms than for weak performers. The findings show a positive and significant effect of *Early-Stage R&D Disclosures* for firms with market-to-book ratios above the median (column 4) and no effect for firms with market-to-book ratios below the median (column 5). These results strongly support Hypothesis 3a.

Similarly, Hypothesis 3b predicted that the positive effect of *Alliance Early-Stage R&D Disclosures* would be larger for strongly performing firms than for firms with weaker performance. Once again, the results for *Alliance Early-Stage R&D Disclosures* differ significantly for firms with market-to-book ratios above and below the median. Although *Alliance Early-Stage R&D Disclosures* are not a significant predictor of voluntary turnover for firms with a below median market-to-book ratio (column 6), this variable has a positive and significant effect for firms with a market-to-book ratio above the median (column 7). Taken together, these results strongly support Hypothesis 3b. Overall, the results provide strong support for our prediction that the effects of total early-stage R&D disclosures and alliance-related early-stage disclosures on executive departures are especially strong for those executives who work for high performing firms and thus are less likely overall to leave their jobs (Dedman and Lennox, 2009; Dedman *et al.,* 2009).

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[8] The results of the first-stage selection equation are used to estimate a firm's likelihood of voluntary disclosing all types of information in a given year. This step helps to control for a firm's general propensity to disclose voluntarily, which likely affects R&D disclosures. These estimates are used as a control in all models predicting voluntary executive turnover and are available upon request. We also estimated the first-stage equation using total R&D disclosures. All of our results still hold but are a bit weaker than in the models presented, and we believe that this is due to the high correlation between total R&D disclosures and early-stage R&D disclosures ($\rho = 0.78$).

[9] We initially included executives' total compensation in all of the models to control for the possibility that relatively low compensation may influence voluntary turnover. Interestingly, total executive compensation has no significant effect on voluntary executive departures. More importantly, the results remain consistent across all models. Because including total compensation substantially reduces the sample size from 2,790 to 2,104 firm years and is not a significant predictor in any of the baseline models, we excluded this variable from the analysis.

[10] Using sales growth instead of market-to-book ratios produces similar results. We also estimated models with a continuous interaction effects using market-to-book, which were consistent with the reported results, yet as explained previously, their marginal effects cannot be accurately estimated or interpreted.

Table 2.   Influence of R&D disclosure on voluntary executive turnover

	Heckman probit estimates			Random effects probit interaction models			
	(1)	(2)	(3)	(4) M/BV < 2.77	(5) M/BV > 2.77	(6) M/BV < 2.77	(7) M/BV > 2.77
Total early-stage R&D disclosures$_{t-1}$		0.06+ (0.03)		−0.07 (0.08)	0.10* (0.04)		
Early-stage R&D disclosures excluding alliances/JVs$_{t-1}$			0.02 (0.04)			−0.12 (0.10)	0.07 (0.05)
Alliance/JV early-stage R&D disclosures$_{t-1}$			0.18* (0.08)			0.15 (0.25)	0.20* (0.10)
Involuntary executive turnover$_{t-1}$	0.09 (0.23)	0.10 (0.23)	0.11 (0.23)	−0.06 (0.42)	0.59 (0.48)	−0.03 (0.42)	0.59 (0.48)
Alliances/JVs formed$_{t-1}$	0.001 (0.01)	−0.0004 (0.01)	−0.002 (0.01)	0.015 (0.03)	−0.008 (0.01)	0.01 (0.03)	−0.01 (0.01)
R&D expense$_{t-1}$				0.002* (0.001)	0.0002 (0.0002)	0.002* (0.001)	0.0002 (0.0002)
Sales growth$_{t-1}$	−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)	0.01 (0.01)	−0.02 (0.02)	0.01 (0.01)	−0.02 (0.02)
Sales$_{t-1}$	0.03+ (0.01)	0.02 (0.01)	0.02 (0.01)	−0.22+ (0.13)	−0.01 (0.03)	−0.22+ (0.13)	−0.01 (0.03)
EBITDA$_{t-1}$	−0.0001+ (0.0001)	−0.0001 (0.0001)	−0.0001 (0.0001)	0.0004 (0.0004)	−0.0001 (0.0001)	0.0004 (0.0004)	−0.0001 (0.0001)
Market value/total equity$_{t-1}$				0.19* (0.08)	−0.001 (0.01)	0.19* (0.08)	−0.001 (0.01)
Patents$_{t-1}$				0.0002 (0.001)	0.001+ (0.001)	0.0003 (0.001)	0.001* (0.001)
Analyst coverage$_{t-1}$	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.004+ (0.002)	0.002* (0.001)	0.004+ (0.002)	0.002* (0.001)
Pharmaceutical dummy$_t$	0.05 (0.06)	0.02 (0.07)	0.03 (0.07)	0.04 (0.13)	0.07 (0.12)	0.04 (0.13)	0.08 (0.12)
Years 1991−2004	Included	Included	Included	Included	Included	Included	Included
Constant	−1.05*** (0.12)	−1.06*** (0.12)	−1.06*** (0.12)	−1.61*** (0.23)	−1.20*** (0.18)	−1.60*** (0.23)	−1.20*** (0.18)
χ^2	40.95**	43.96**	46.68**	33.88+	44.89**	34.26	45.62**
LR test for independent equations	4.41*	3.98*	3.93*				
Number of observations	2,790	2,790	2,790	1,390	1,400	1,390	1,400

+$p < 0.10$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$
Robust standard errors in parentheses.

DISCUSSION AND CONCLUSION

Overall, the results strongly support our theoretical argument. We find consistent evidence that voluntary public R&D disclosures have a positive effect on voluntary executive turnover. These findings support our thesis that each time a firm broadcasts its accomplishments in the public domain to improve its competitive position, it also improves its executives' relative position in the managerial labor market, increasing their likelihood of leaving the firm. Further analysis indicates that these results are driven by a subset of the sample of public disclosures that includes only alliance-related, early-stage R&D disclosures. There are at least two possible reasons for this. First, alliance-related disclosures may be perceived as more reliable than other types of R&D disclosures. While firms can relatively easily disclose R&D-related information, alliance-related disclosures require the consent of both partners and are thus less likely to be interpreted as cheap talk (Aumann and Hart, 2003). Second, alliance-related disclosures are much rarer than other kinds of R&D disclosures. In our sample firms issue an average of 0.28 *Early-Stage R&D Disclosures* per year and only 0.08 *Alliance/JV*

Early-Stage R&D Disclosures. To the extent that such disclosures are perceived as signals of managerial capabilities, the rarer they are, the more valuable the skills they mention (or imply) are likely to be viewed and, thus, the more attention the disclosures are likely to attract (Barney, 1991).

We believe these findings contribute to several research streams, including work on strategic human resource management, media relations management, agency theory, and signaling theory. A central premise in the strategy literature is that human capital can be a source of competitive advantage (Campbell *et al.,* 2012a; Coff, 1997; Hall, 1993a; Hatch and Dyer, 2004; Hitt *et al.,* 2001), and a growing stream of research has examined the various factors affecting employee mobility between firms (Hall, 1993b). For example, Campbell *et al.* (2012b) studied the relationship between earnings and employee mobility; Carnahan *et al.* (2012) investigated how the allocation of rents by a firm's competitors influences the firm's ability to retain employees; and Ganco (2013) examined how the complexity of inventors' prior patenting activities impacts their decision to move to another firm or embark on a new venture. We contribute to this research by showing how voluntary public disclosures affect voluntary executive turnover.

The idea that, by drawing attention to their executives' managerial capabilities, firms may unintentionally increase the likelihood of those executives being poached is all the more striking when one considers that the primary driver of voluntary employee turnover involves precipitating events or shocks that jar an employee toward deliberate judgments about his or her job (Lee *et al.,* 1999). An unsolicited job offer constitutes such an event[11] (Gerhart, 1990; Holtom *et al.,* 2005; Lee *et al.,* 2008; Mitchell and Lee, 2001). In fact, studies have shown that in response to unsolicited job offers, managers often leave their current position even if they are relatively satisfied and are not actively searching for alternatives (Lee *et al.,* 1999, 2008). One important takeaway from our study is that, if we are to understand better the factors influencing firms' ability to isolate and protect their human capital from rival firms, we need to devote more effort to understanding the factors affecting the likelihood and rate at which employees receive unsolicited job offers.

Voluntary public disclosures are not likely to be the only organizational activity that leads to voluntary turnover. Future research would benefit from examining other organizational actions that may have similar consequences. For example, while interfirm alliances have been associated with numerous positive organizational outcomes, to our knowledge the question of how alliances affect turnover has not been explored. One could argue that the familiarity and trust that alliances breed among managers of partnering firms (Gulati, 1995) may increase the likelihood of their hiring each other. Similarly, regional clustering has been shown to benefit firms' innovation activities by providing easy access to high-quality human resources, strong basic research infrastructure, high-quality information, and an ample supply of risk capital (Porter and Stern, 2001). However close proximity may also make it conducive for firms to steal each other's employees (Ketchen, Snow, and Street, 2004), offsetting a cluster's benefits.

Interest in firm–media relations and their impact on firm performance usually focuses on the *benefits* firms gain by publicly disclosing information (Dranove and Gandal, 2003; Harhoff *et al.,* 2003; Polidoro and Theeke, 2012), but the positive association we found between voluntary disclosures and executive turnover underscores one negative effect of public disclosures. This finding leads to two important conclusions. First, from a scholarly perspective, if we are to provide insight as to how organizations should manage their media relations, we must better understand the trade-offs firms face when publicly disclosing information (James, 2014; James and Shaver, 2015). Second, from a managerial perspective, firms should coordinate the activities of their strategy, human resources, and media relations departments to ensure that they collectively weigh the benefits and costs of public disclosure.

More generally, this study identifies a tension between the interests of the firm and those of its executives. Following the work of Fama (1980), a large number of scholars have examined the role that career concerns play in managerial decisions. Empirical evidence suggests that reputational concerns in the managerial labor market affect executives' decisions regarding capital investment and risk taking (Chevalier and Ellison, 1999), earnings management and disclosures (Graham,

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[11] Holtom *et al.* (2005) examined 1,205 executives who quit across multiple samples and found that 711 (59%) of these cases involved shocks. Further, 371 of these shocks (52% of shocks, 31% of all turnovers) involved job offers. The majority of these offers were unsolicited.

Harvey, and Rajgopal, 2005), and top-management dismissal (Fortune and Mitchell, 2012). In the context of R&D-intensive firms, this tension is potentially exacerbated by the costly and irreversible commitments to R&D projects, many of which have a high risk of failure. In this study, we unfortunately could not determine executives' underlying motivation for disclosing information. While this does not undermine the validity of our findings, the study of managers' reasons for voluntarily disclosing information represents a rich line of research that infuses work on reputation and media management with ideas from agency theory.

Lastly, this study contributes to signaling theory. Although work in this domain suggests that one should decide whether a signal is worth obtaining by considering all the costs and benefits involved (Spence, 1973), signaling studies have generally been limited by examining the effects of one signal on one receiver. Our results highlight the reality that a signal may affect multiple receivers. While it is difficult to generate a comprehensive list of all the costs and benefits a signal may provide, a more robust test of signaling theory should first identify a signal's primary receivers and attempt to explain its combined effect on them. We hope that our study will stimulate research in this area.

With respect to study limitations, while we emphasized the potentially negative impact of media relations on a firm's ability to protect its human capital, we acknowledge that this is only half the story. Future research might explore how public disclosures affect not only the outflow but also the inflow of human capital into the disclosing firm. We also acknowledge that we were unable to discern whether a disclosing firm is losing top performing executives or poor performing executives, thus preventing us from determining how detrimental these exits are to the firm. This is an avenue we wish to pursue in future work.

The sample used in this study also presents some important limitations. While we highlight how executives' ability to identify and seize technological opportunities and manage early-stage R&D alliances is especially important in high-tech industries, there may be other relevant managerial skills that are not included in our dataset. Additional research examining different sets of industries and managerial skills will enhance the generalizability of our findings and further clarify the relationship between voluntary public disclosures and voluntary executive turnover.

In conclusion, our results highlight how a firm's efforts to create value may ironically diminish its ability to realize that value. Moreover, our sample provides no evidence to suggest that the effects we found were intentionally or strategically derived. Rather than being a byproduct of executives' pursuit of their own goals and interests outside the firm, voluntary turnover, we believe, is an unintended consequence of positive public disclosures and top managers are unaware of this potential negative consequence. As a matter of fact, managers with whom we shared our results expressed surprise, noting that the possibility that public disclosures might increase employee turnover had never crossed their minds. To the extent that these disclosures represent just one of many organizational actions that could have unintentional implications that have yet to be fully understood, our findings identify a rich research agenda aimed at examining these effects.

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