DISCONTINUITIES IN THE VALUE OF RELATIONAL CAPITAL: THE EFFECTS ON EMPLOYEE ENTREPRENEURSHIP AND MOBILITY

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Abstract

We examine how a discontinuous increase in the value of an employee’s relational capital influences her mobility and entrepreneurship decisions. We develop a theory proposing that positive shocks to external relational capital will catalyze employees to consider alternative employment options, thereby resulting in an increased probability of exit. We further maintain that exit decisions in response to such shocks will be driven by a desire to appropriate more value, making these shocks particularly strong predictors of employee entrepreneurship, especially when the employee works in an area which is peripheral to the firm’s core capabilities. Empirically, we exploit the reporting requirements mandated by the Lobbying Disclosure Act of 1995 to construct a unique employee-employer linked database that tracks employment of all registered lobbyists in the United States federal lobbying industry. Leveraging plausibly exogenous and large shocks to the value of an employee’s relational capital and a novel market-based measure of the employee’s position in the firm’s knowledge space, we report two main sets of findings. First, an increase in the value of an employee’s relational capital has a positive effect on the likelihood of mobility to established firms and employee entrepreneurship, with the effect for the latter stronger than the former. Second, the magnitude of the effect on employee entrepreneurship but not mobility to established firms becomes stronger when the employee is peripheral rather than central to the firm’s core knowledge.
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ABSTRACT

We examine how a discontinuous increase in the value of an employee’s relational capital influences her mobility and entrepreneurship decisions. We develop a theory proposing that positive shocks to external relational capital will catalyze employees to consider alternative employment options, thereby resulting in an increased probability of exit. We further maintain that exit decisions in response to such shocks will be driven by a desire to appropriate more value, making these shocks particularly strong predictors of employee entrepreneurship, especially when the employee works in an area which is peripheral to the firm’s core capabilities. Empirically, we exploit the reporting requirements mandated by the Lobbying Disclosure Act of 1995 to construct a unique employee-employer linked database that tracks employment of all registered lobbyists in the United States federal lobbying industry. Leveraging plausibly exogenous and large shocks to the value of an employee’s relational capital and a novel market-based measure of the employee’s position in the firm’s knowledge space, we report two main sets of findings. First, an increase in the value of an employee’s relational capital has a positive effect on the likelihood of mobility to established firms and employee entrepreneurship, with the effect for the latter stronger than the former. Second, the magnitude of the effect on employee entrepreneurship but not mobility to established firms becomes stronger when the employee is peripheral rather than central to the firm’s core knowledge. Together, our results are consistent with a value creation-value appropriation rationale, where sudden increases in the value of an employee’s relational capital drive exit as a means to appropriate a greater portion of the value the employee anticipates creating.
INTRODUCTION

Human assets are crucial components to the creation of value within organizations (Campbell, Coff and Kryscynski 2012a; Karim and Williams 2012). However, unlike physical assets, human assets are not owned or under the strict control of firms. This creates two key strategic challenges. One, employees have an incentive to appropriate a portion of the value they create (Coff 1999). Two, employees are free to quit at will and employee exit deprivs the firm of valuable resources which may transfer with mobile employees to established or new competitors (Agarwal, Ganco and Ziedonis 2009; Raffiee 2017). Accordingly, a key question for strategy scholars is how and when an employee’s ability to create and appropriate value within and outside firm boundaries influences mobility and entrepreneurship decisions (Kaul 2013).

Existing research has shown that employees create value through human capital and relational capital (Byun, Frake and Agarwal 2017). Human capital reflects the value rooted in an employee’s accumulated knowledge and/or skills (Coff 1997), whereas relational capital is the value associated with an employee’s social relationships (Nahapiet and Ghoshal 1998). Although these sources of value creation are conceptually distinct, they tend to “develop simultaneously over an individual’s career” (Mawdsley and Somaya 2016: 104), a process which creates challenges for researchers seeking to understand their effects on employee mobility and entrepreneurship. Thus, while prior work has frequently theorized that the ability to create and appropriate value from human and relational capital should influence mobility and entrepreneurship decisions (see Agarwal, Gambardella and Olson 2016), existing research has rarely disaggregated and often conflated these two constructs (e.g., Campbell et al. 2012b; Phillips 2002; Wezel, Cattani and Pennings 2006).1

In this paper, we disentangle relational capital from human capital and examine how increases in the value of an employee’s relational capital impact her propensity to engage in mobility and entrepreneurship. Doing so is noteworthy, because, as Mawdsley and Somaya (2016: 104) note, the value associated with human and relational capital can be “accumulated through different mechanisms.” Building on this assertion, we highlight how the nature of relational capital differs from human capital in that the former is more prone to

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1 The terms relational capital and social capital are frequently used interchangeably in the management literature. We follow Mawdsley and Somaya (2016) and use the term relational capital in our theorizing because it explicitly refers to the value associated with a relationship and is also more commonly used within the strategy literature.
sudden and discontinuous changes in its value – i.e., the value associated with the resources a relationship affords access to can shift abruptly and dramatically. Although rarely discussed in prior work, such discontinuous shocks are common in practice and have increased theoretical importance in contexts such as professional services where relational capital is central to the creation of value (Pennings, Lee and van Witteloostuijn 1998; Phillips 2002). For example, an attorney’s established relational capital with a member of a client’s in-house legal team can abruptly increase if the team member is promoted and given discretion over how (and to whom) the client’s legal work is outsourced (Carnahan and Somaya 2013; Somaya, Williamson and Lorinkova 2008), the benefits of knowing a Hollywood talent agent or manager can spike when the resources the agent controls access to – i.e., actors and actresses – appear in an unexpected blockbuster hit (Zelenski 2002), or the value associated with a lobbyist’s tie to an elected official can surge when the official accumulates additional legislative power and influence over policy (Byun et al. 2017). In contrast, the value associated with an employee’s human capital is typically accumulated gradually through a series incremental investments (Becker 1964), thereby making it less susceptible to large and abrupt changes in its value.2

Our central thesis is that an increase in the value of an employee’s relational capital will elevate the likelihood of employee exit, particularly when the increase is large, discontinuous, and occurs to external relational capital. Our logic is rooted in the fact that: 1) external relational capital is a widely coveted “general purpose resource that has broad demand-side applications” (Byun et al. 2017), 2) employees are inherently motivated to appropriate value (Coff 1999), and 3) the discontinuous nature of the surge will trigger employees to search for and/or consider alternative employment options (Lee and Mitchell 1994). We further contend that the attractiveness of outside options and therefore the extent to which these shocks translate into exit will depend on how central the focal employee is for the firm’s value creation (Leonard-Barton 1992). We illustrate this mechanism by focusing on the location of the employee in the knowledge space of the focal firm as a contingency. Employees who are more central with respect to the firm’s core knowledge

2 Discontinuities in the value of human capital are also possible. For example, the value associated with a travel agent’s deep understanding of Cuba likely spiked when the Obama administration lightened restrictions for U.S. citizens. While it is possible that such shocks to human capital value function in a way similar to shocks to the value of relational capital, events which trigger abrupt changes in the value of human capital are likely to be much more rare. Therefore, we focus our attention on discontinuities in the value of relational capital and leave the study of human capital to future work.
may find it difficult to create relatively more value associated with the shock to their relational capital without the firm’s complementary assets (Campbell et al. 2012b; Kaul 2013; Toh and Poldi andor 2013). The contingency thus highlights the value creation and appropriation rationale that is connecting the shocks in the value of relational capital with exit decisions.

We test our theory using a longitudinal database of United States federal lobbyists and lobbying firms constructed from lobbying disclosure reports filed with the Senate Office of Public Records as stipulated by law in the Lobbying Disclosure Act of 1995. We leverage plausibly exogenous shocks to a lobbyist’s political connections in power (Bertrand, Bombardini and Trebbi 2014; Blanes i Vidal, Draca and Fons-Rosen 2012; Byun et al. 2017; Liu and Srivastava 2015) to proxy for discontinuous increases in the value of a lobbyist’s relational capital. We find that increases are positively related to both employee mobility (defined as movements to established firms) and entrepreneurship. Consistent with our value appropriation arguments, we further find that the effect is stronger for entrepreneurship than for mobility.3 To capture the contribution of the focal employee to the firm’s core knowledge, we construct a novel market-based measure of firm-employee knowledge distance. Our measure is designed to capture similarity and co-occurrence of issues that are being lobbied between the firm and employee, two factors which jointly drive the importance of the focal employee for firm value creation and the relevance of the firm’s complementary assets for the employee.

While we theorize that knowledge distance will moderate the effect of relational capital discontinuities on both employee mobility and entrepreneurship, we find supportive evidence for employee entrepreneurship only. Our results are robust to a plethora of robustness checks, specifications, fixed effects, sub-samples, and additional controls, including the construction of a counterfactual control group which allows us to conclude that the discontinuous nature of relational capital accumulation plays an important role in the exit calculus.

This paper makes several contributions. First, this study contributes to the employee mobility and entrepreneurship literatures by theoretically and empirically highlighting value creation through relational capital as a key driver of employee exit. Unlike prior studies which tend to conflate human and relational

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3 While our theory focuses on *increases* in the value of relational capital, we also empirically examine the effects of *decreases* – i.e., loss of valuable political connections. We show that the effects of negative shocks are qualitatively different. Negative shocks to a lobbyist’s relational capital do not predict entrepreneurship or mobility. We revisit this issue below.
capital (Campbell et al. 2012b; Groysberg, Nanda and Prats 2009; Wezel et al. 2006), we disentangle and show that sudden increases in the value of relational capital have a direct and unambiguous positive effect on both mobility and entrepreneurship. Second, by introducing the notion of relational capital discontinuities, we add to the relational and social capital literature by highlighting how relational capital is particularly vulnerable to discontinuous shocks to its value (Adler and Kwon 2002; Nahapiet and Ghoshal 1998), and, by developing a theory about how these shocks differentially drive employee mobility and entrepreneurship, we add additional contribution by linking the relational capital literature with both the strategy literature on employee mobility and the unfolding model of turnover (Lee and Mitchell 1994). Third, we show that the location of the employee in the firm’s knowledge space and thus the importance of the employee to the firm’s core capabilities is an important contingency driving the magnitude of the effect of relational capital shocks on employee entrepreneurship, a key departure from existing studies which tend to examine employee and firm characteristics in isolation (e.g., Agarwal et al. 2004; Ganco 2013). Finally, we contribute empirically with a research design that exploits sudden changes in the value of relational capital and introduce a novel revealed preference measure of employee-firm knowledge distance that is market-based. This allows us to attach stronger predictive claims to our findings and begin to alleviate some of the longstanding empirical concerns related to omitted variable bias in the employee mobility and entrepreneurship literatures.

THEORY AND HYPOTHESES

Strategy scholars concerned with employee exit often point to the loss and transfer of valuable resources as a byproduct of employee movement (Agarwal et al. 2009; Raffiee 2017). Thus, scholars are implicitly concerned with the movement of employees who have the ability to create value. In knowledge-intensive contexts such as professional services, the creation of value is primarily driven by the human and relational capital possessed by a firm’s employees (Mawdsley and Somaya 2016; Teece 2003). Yet the question remains as to if and when employees with large endowments of these resources will be more or less likely to leave (Nyberg 2010). Indeed, studies have found that greater employee “capabilities” relate positively (Palomeras and Melero 2010) and negatively (Campbell et al. 2012b) to employee exit. Part of the ambiguity may stem from the difficulty of separating human capital from relational capital (Mawdsley and Somaya 2016), the result of which has been a
series of papers which “call on both dimensions, but many are not able to distinguish their individual effects” (Byun et al. 2017). As a result, the precise mechanisms driving the results in prior work remain unclear.

Conceptually, the relationship between an employee’s ability to create value through relational capital and mobility/entrepreneurship has received much less attention in the literature, perhaps because measures such as employee earnings or performance rankings are assumed to be acceptable proxies for human capital/ability and are more readily available for empirical tests (e.g., Åstebro, Chen and Thompson 2011; Campbell et al. 2012b; Carnahan, Agarwal and Campbell 2012; Groysberg et al. 2009). However, these proxies still conflate human capital with relational capital, particularly in professional services settings where an individual’s relational capital and relationships with external stakeholders are crucial to the employee and firm’s ability to create value (Carnahan and Somaya 2013; Pennings et al. 1998; Phillips 2002; Somaya et al. 2008). We, therefore, focus our attention on the relationship between relational capital and employee mobility and entrepreneurship. As we will demonstrate in our theoretical arguments below, conceptually separating these two constructs reveals important distinctions regarding how the value of human and relational capital can accumulate. This theoretical distinction, in turn, will allow us to generate unambiguous predictions regarding the relationship between the value of relational capital and employee exit.

**Discontinuities in the Value of Relational Capital**

Relational capital is built through repeated interaction between parties that fosters the development of mutual trust and goodwill (Burt 1992; Kale, Singh and Perlmutter 2000; Portes 1998). One key distinction made in the literature has been between internal and external relational capital (Adler and Kwon 2002). Internal relational capital refers to the relationships that form between employees within an organization whereas external relational capital refers to relationships with external constituents including suppliers, clients, and other resource providers. Our theory focuses on the value associated with external relational capital. External relational capital is a key resource underpinning value creation and competitive advantage in many service industries and is considered a relatively general purpose resource often not tied to a firm (Byun et al. 2017).⁴

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⁴ Discontinuous increases to internal relational capital are possible as well. However, the value of internal relational capital is largely tied to the focal firm. Theoretically, this may increase the attractiveness of the current firm and therefore work to decrease the probability of employee exit. We leave this avenue of inquiry to future work.
The value and value creation potential of relational capital lies in the benefits associated with the resources through which the relationship affords access (Adler and Kwon 2002; Nahapiet and Ghoshal 1998). Thus, as Kwon and Adler (2014: 416-417) astutely observe, “if social capital is the resource provided by an actor’s relationships, the magnitude of this resource is surely in part a function of those contacts’ abilities to offer such resources.” This observation underscores an important characteristic of relational capital – the value associated with the resources the relationship provides access to can change abruptly and dramatically, a process we refer to as relational capital discontinuities. That is, since the value of relational capital is tied to the resources the contact controls, then sudden changes in the contact’s ability to deliver these resources, for example, a promotion which allows the contact increased discretion and authority, can provide a sudden shock to the value associated with the relationship and thereby the employee’s ability to create value through their relational capital. As we will detail in the next section, the abrupt and discontinuous nature of relational capital shocks will play a central role in our theory which unambiguously links increases in relational capital with employee exit – both in terms of mobility to established firms and to entrepreneurship.

**Relational Capital Discontinuities and Employee Exit**

Relational capital with external constituents is a highly coveted resource in professional services (Pennings et al. 1998; Phillips 2002). As Byun et al. (2017) describe, the nature of relational capital is akin to a general purpose resource which can be transferred and utilized to create value across firms within a professional services industry. As a result, employees with high stocks of relational capital are typically sought after by rival firms, and employees can leverage this demand to achieve preferred employment outcomes where both the ability for the employee to create and appropriate value are high (Krause, Handfield and Tyler 2007).

Although the value associated with relational capital means it can be leveraged by employees to generate employment options, it remains unclear whether higher levels of relational capital will lead to a higher probability of employee exit. Much like studies which have examined the relationship between human capital and employee turnover, many other factors render the general linkage ambiguous (Carnahan et al. 2012; Nyberg 2010). However, as we have outlined above, relational capital differs from human capital in that it is prone to discontinuous spikes in its value. Thus, while we are agnostic as to the relationship between
absolute levels of relational capital and employee turnover, our argument is that sudden and discontinuous increases in the value of relational capital will be positively related to the likelihood of employee exit.

Our theoretical basis for this prediction builds on insights from the unfolding model of voluntary turnover, a key model of employee turnover in the human resource management (HRM) literature (Lee and Mitchell 1994). While the early HRM literature suggested that employee exit is driven primarily by worker dissatisfaction (Mobley 1977), the unfolding model differs in that it highlights a number of alternative voluntary turnover pathways. A central feature of the unfolding model is its emphasis on the importance of “shocks” to an otherwise relatively steady-state system of employment as key triggers that result in employee movement (Lee et al. 1996; Lee and Mitchell 1994; Lee et al. 1999). The general idea is that turnover is frequently driven by discrete events or shocks which occur and lead employees to begin to consider and/or engage in a search for alternative employment options. While employment search and consideration of alternative employment opportunities are usually the first steps in the turnover process, search does not guarantee that employees will ultimately choose to exit. However, theoretical and empirical work has shown that the probability that employment search leads to actual turnover will increase dramatically when the availability of the employee’s alternative job opportunities is high (Swider, Boswell and Zimmerman 2011).

Discontinuous increases in an employee’s relational capital represent discrete events in which the employee experiences a sudden surge in their ability to create value. Thus, consistent with the unfolding model, these shocks should theoretically lead the employee to consider potential alternative work arrangements. Further, because relational capital is a fungible resource which can be readily deployed across firms, it should be widely valued by rival firms meaning that there should be no shortage of available job opportunities. Some of these opportunities are likely to allow the employee to appropriate more value from her relational capital and the abrupt nature of the shock will cause the employee to expend any search costs that may prevent the discovery of such opportunities otherwise. Taken together, this line of reasoning leads to our baseline hypothesis that is consistent with the logic in Lee and Mitchell’s (1994) unfolding model:

**Hypothesis 1:** Discontinuous increases in the value of an employee’s relational capital will be positively related to employee exit.
The Relative Effect of Relational Capital Discontinuities: Mobility vs. Entrepreneurship

Thus far, we have treated employee exit as a “binary outcome of staying or quitting,” consistent with the unfolding model (Lee et al. 1996: 7). However, there is variation with respect to where exiting employees go. The focus of our theory is on the employee’s decision to join an established firm versus the creation of a new firm via employee entrepreneurship. Although the unfolding model is silent regarding the destination of where employees go once they exit (Lee and Mitchell 1994), our contention is that employee exit in response to a discontinuous increase in the value of relational capital will disproportionately result in employee entrepreneurship relative to joining established firms, particularly in settings in which startups costs are low relative to the potential for value creation associated with the relational capital shock.

Although employee employment choices may be motivated by a variety of pecuniary and non-pecuniary factors (Benz and Frey 2008), we maintain that employees remain at least in part motivated to enter work arrangements where they can appropriate a larger portion of the value they create – an assumption which is consistent with prior theoretical (e.g., Blyler and Coff 2003; Coff 1999, 2010) and empirical (e.g., Campbell et al. 2012b; Carnahan et al. 2012; Groysberg et al. 2009) strategy research. Accordingly, an attractive feature of employee entrepreneurship is that entrepreneurs do not have to share any portion of the gains with an employer as they become residual claimant. Indeed, even under a strict “eat what you kill” compensation system that closely ties an employee’s compensation with the value and profits they generate, a predetermined portion of such profits is typically shared with the firm (Aderant 2015). Thus, if the employee can create the same amount of value in entrepreneurship and in established firms, and if exit is driven by a desire to capture value, then the higher marginal appropriation through entrepreneurship relative to employment should drive employees toward starting their own firms rather than joining an existing firm.

However, employees may be unable to create the same amount of value in a start-up as they would in an existing firm. This is because there are typically start-up costs associated with new ventures as employee entrepreneurs need to build, recruit, and develop complementary assets (Campbell et al. 2012b). That said, the appropriation upside of entrepreneurship is not fully contingent on the employee’s ability to create an equal or greater amount of value in their start-up as could be generated as an employee in an established firm.
Indeed, Coff (2010) underscores that entrepreneurial organizational forms may create less value than other modes of exploitation, but that entrepreneurship is often preferred when significant new capabilities emerge because entrepreneurship can allow employees to maximize their individual gain even if this comes at the expense of maximizing overall total welfare. Contextually, situations where the net gains from employee entrepreneurship through greater appropriation following a positive shock to relational capital are likely to exceed value capture in employment are most likely to occur in settings where relational capital plays a central role in value creation, where startup costs tend to be low, and where non-human complementary assets are relatively inexpensive and readily available on the market. These characteristics tend to be satisfied in the context of many professional services industries (Teece 2003), and, consistent with this observation, most empirical work linking a theory of value appropriation through entrepreneurship as the causal mechanism driving entrepreneurial entry have been conducted in service sectors (Campbell et al. 2012b; Carnahan et al. 2012; Groysberg et al. 2009). Moreover, if the shocks to the value of relational capital are sufficiently large, they will render the complementarity considerations and startup costs secondary and the value appropriation concerns will dominate the decision-making calculus. These shocks are most likely to occur in professional service settings where relational capital is a primary driver of value creation (Mawdsley and Somaya 2016).

In sum, relational capital shocks should trigger employees to consider alternative employment options, including joining an established firm or starting a new firm. If the attractiveness of alternative employment options is driven by the employee’s desire to appropriate more value, then the allure of entrepreneurship should increase as entrepreneurship allows the employee status as residual claimant and a higher marginal rate of appropriation with respect to current and expected future cash flows. While entrepreneurship does not come without some risk, the relative appropriation advantage of entrepreneurship in terms of net gains to the employee entrepreneur is most likely to hold in professional services contexts where relational capital is a primary source of value creation, where there is low reliance on physical assets, and where other start-ups costs are minimal. Accordingly, these arguments lead to the following hypothesis:

*Hypothesis 2: The positive effect of discontinuous increases in the value of an employee’s relational capital on exit will be stronger for employee entrepreneurship relative to employee mobility to established firms.*
Heterogeneity of the Effects across the Core and Non-Core Employees

Thus far, we have argued that discontinuities in the value of relational capital will spur employee exit. Our theoretical arguments draw upon the unfolding model where employee turnover can be triggered by discrete shocks which catalyze employees to initiate search and/or consider alternative employment options (Lee and Mitchell 1994). The high value of relational capital coupled with its ability to be applied across firms (Byun et al. 2017) means that triggered searches should result in a host of outside options, the volume of which increases the probability that the employee will exercise the choice to leave the focal firm (Swider et al. 2011).

However, while relational capital discontinuities should spike exit consideration, as we just highlighted, heterogeneity in the employee’s ability to appropriate value in alternative work arrangements will play a role in the employee’s ultimate exit decision. And so while the sheer volume of outside options should make it more likely the employee finds an outside option they perceive will allow them to generate net gains in terms of appropriated value, the relative attractiveness of such options and therefore likelihood the employee comes to such a conclusion should depend on the employee’s location with respect to value creation at the focal firm (Kaul 2012). Specifically, employees contributing significantly to the core capability of the firm will respond differently to the shock in the value of their relational capital than the non-core employees. Our conceptualization of core capability is consistent with the definitions used in prior work - i.e., “the knowledge set that distinguishes and provides a competitive advantage” (Leonard-Barton 1992: 113). If the employee operates in a space which is central to the focal firm’s core capabilities, then the employee will benefit from the focal firm’s complementary resources to create value (Kaul 2013; Toh 2014). This, in turn, will influence the relative amount of value the employee can create outside the focal firm, which is intrinsically linked to the employee’s ability to appropriate additional value. That is, even if a competing firm offers a higher marginal share of the value the employee or the employee appropriates all the returns through entrepreneurship, the probability of achieving a net gain in terms of value appropriation through outside options will decrease as the gap between value creation at the focal firm and outside options increases.

This logic suggests that while relational capital discontinuities should trigger search and a host of alternative job opportunities for all employees regardless of their location in the focal firm, the attractiveness
of these options for employees located more central to the firm’s core capabilities should be weaker than the attractiveness perceived by employees who are less critical for value creation at the focal firm. To illustrate, a patent attorney (core employee) who experiences a discontinuous increase in the value of her relational capital while working in a large law firm that specializes in intellectual property law should be less likely to deem alternative work arrangements as more attractive than the focal firm, both in terms of value creation and appropriation, as would a similar attorney working in the same firm who happens to be the lone wolf in the firm who practices criminal defense (peripheral employee) and therefore benefits less from the focal firm’s complementary assets (e.g. brand equity, etc.). This line of reasoning leads to the following hypothesis:

**Hypothesis 3:** The positive effect of discontinuous increases in the value of an employee’s relational capital on exit will become stronger as firm-employee knowledge distance increases.

While the degree of distance between the employee and focal firm’s core capability should influence the relative attractiveness of both mobility to established firms and to entrepreneurship, we contend that the distance will be particularly salient in determining the attractiveness of employee entrepreneurship. As we argued above, entrepreneurship is an attractive option because it typically affords the employee an opportunity to appropriate a greater share of created value, although it comes with start-up costs. In many professional services, these costs tend to be lower than in other settings but employee entrepreneurs still need to assemble relevant complementary assets in order for the firm to create value. As Campbell et al. (2012b) argue, the employee’s perceived ability to replicate these assets is a crucial factor in the employee’s decision to start a new firm. Likewise, Kaul (2013) models the probability that we observe entrepreneurial firm formation as a decreasing function of the employee’s reliance on the firm’s complementary assets. A higher reliance on the firm’s complementary assets decreases the attractiveness of entrepreneurship as it increases the costs associated with firm formation, thereby decreasing the entrepreneur’s ability to capture additional value.

This is not to say that similar concerns will not arise for employees who assess the relative attractiveness of alternative employment options within established firms. Rather, we suggest that the concern will be greater for employees considering entrepreneurship. Returning to our earlier example of the patent and criminal defense attorneys working in a law firm focused on intellectual property law, the criminal defense attorney (peripheral employee) should have an easier time than the patent attorney (core employee) in
terms of replicating the complementary resources they utilized in the focal firm to create value should they enter entrepreneurship. That is, by being located on the periphery of the firm with respect to its core knowledge and capabilities, the criminal defense attorney likely benefitted from some of the complementary resources the firm provided, but, in general, these benefits (e.g., brand equity, etc.) should be less than those enjoyed by the patent attorney. As we detailed above, the net gains in terms of greater appropriation through entrepreneurship are most likely when start-up costs are low. While such costs tend to be lower in professional services contexts relative to other settings, we contend that they are largely a function of the employee’s location within the focal firm (Teece 2003). As a result, when a peripheral employee experiences a discontinuous surge in the value of her relational capital, the attractiveness of employee entrepreneurship should increase with the distance between the employee and the focal firm’s core capabilities. Thus, while we expect that, in general, the probability of exit following a positive relational capital shock will be weaker for core relative to peripheral employees, the location of the employee in the firm knowledge space should be especially relevant for employee entrepreneurs. Accordingly, this logic leads to our final hypothesis:

Hypothesis 4: The positive effect of discontinuous increases in the value of an employee’s relational capital on employee entrepreneurship relative to mobility to established firms will become stronger as firm-employee knowledge distance increases.

METHODS

Empirical Context and Data

The empirical context of our study is the United States federal lobbying industry. The lobbying industry exhibits characteristics which are typical of most professional service sectors – high in knowledge-intensity and low in capital-intensity – and has been used by researchers studying issues related to employee mobility (Raffiee 2017) and employee performance (Byun et al. 2017) in service contexts. Conceptualized at a broad level, lobbying refers to any activity conducted with the intent to influence public policy (Drutman 2015). Federal lobbying firms are hired by clients to advance the client’s business and political needs in Washington. Lobbyists do so by leveraging their expertise (i.e., what they know) and relational capital (i.e., who they know)
(Bertrand et al. 2014). Given the service-based nature of lobbying, the primary value-add of lobbying firms is the cumulative human and relational capital of its roster of lobbyists (Levine 2009).\footnote{See Drutman (2015) for a detailed overview of the dynamics of the federal lobbying industry.}

The data we use is assembled from lobbying disclosure reports filed with the Senate Office of Public Records (SOPR) as required by law and mandated by the Lobbying Disclosure Act of 1995 (LDA). These reports contain detailed information regarding lobbying activity, including the name of the lobbying firm, the name of the client which hired the lobbying firm, the individual lobbyists who lobbied for the client, the issues lobbied, and the dollar amount of lobbying revenue or expense. The LDA stipulates that lobbying reports need to be filed on a biannual basis. We use these reports to construct a unique employee-employer linked database containing the universe of registered lobbyists for the decade spanning from 1998 to 2008.

### Sample

Lobbyists have various backgrounds, ranging from ex-politicians to congressional staffers to practicing lawyers (Leech 2013). Two of the key dimensions which contribute to value creation in lobbying are expertise and relational capital (Bertrand et al. 2014). The value of relational capital with political connections is a function of the leverage the politician has in the legislative process. Accordingly, lobbyists may experience a discontinuous shift in the value associated with a connection if there is a change to the politician’s committee and/or committee chair assignments. Prior work has documented that these changes, conditional on observables, are plausibly exogenous to the individual lobbyist (Byun et al. 2017).

Our key construct, discontinuous increase in relational capital, requires our sample of lobbyists to have a comparable chance of experiencing these surges. To that end, we limit our sample to lobbyists with: 1) a similar background so that the primary source of value creation is comparable, and 2) a similar chance of experiencing a discontinuous increase in their relational capital through changes in the value of their connections. One type of lobbyists who meet these requirements are revolving door lobbyists who were previously employed as congressional staffers. Connections to their former employers (e.g., Senators) are an important source of relational capital for ex-staffer lobbyists (Blanes i Vidal et al. 2012). Accordingly, changes to these connections may cause discontinuous shifts in the value of these relationships. In fact, Bertrand et al.
(2014) showed that the amount of revenue a lobbyist earned was directly tied to the power of her political connections. A significant portion of lobbyists have an ex-staffer background – in 2008, approximately 21 percent of lobbyists were ex-staffers with active connections in Congress. Our sample consists of ex-staffer lobbyists who had active political connections through employment anytime during the sample period. In our dataset, we identify 1,108 ex-staffer lobbyists who are connected to one or more senators or representatives in office. Our final sample consists of 9,686 lobbyist-period (semi-annual) observations from 1999 to 2008.

Variables

Dependent variables

In testing Hypotheses 1 and 3, our binary dependent variable is employee exit, coded “1” if a lobbyist’s primary employer had changed since the previous period and “0” otherwise. Among 1,108 revolving door lobbyists in our sample, the total number of exits is 555 in the 10-year sample period. To test Hypotheses 2 and 4, we use employee entrepreneurship (i.e., spinout) as the dependent variable. Following the conventional definition of employee entrepreneurship, we code this as “1” if a lobbyist either creates or joins a start-up after leaving a firm in the lobbying data in the previous period (Carnahan et al. 2012). Employee entrepreneurship is a subset of employee exit. We identify entrepreneurship when an employee joins a firm in the first period that the firm is observed in the data. Among the 555 exits, 156 are entrepreneurship. All mobility variables are measured at t+1 and the rest of the variables are calculated at t, which for movers, is the period prior to mobility.

Independent variables

**Discontinuous increase in the value of relational capital.** We measure this variable by tracking changes in the power of politicians who are connected to lobbyists in our sample. Following prior work (Blanes i Vidal et al. 2012; Byun et al. (2017), we use appointments to committee chair and assignments to the four most powerful committees in Congress to capture connected politicians’ power changes in the legislative process.6

**Discontinuous increase** is a binary variable coded “1” for the first year a politician connected to a lobbyist is

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6 The four powerful Congressional committees are: The Senate Committee on Finance, the Senate Committee on Appropriations, the House Committee on Ways and Means, and the House Committee on Appropriations (Duso 2005).
selected to be a chair of a congressional committee or is assigned to one of the powerful committees in Congress and “0” otherwise.

Our identifying assumption is consistent with prior work and rests on the assumption that the temporal change in power of connected politicians is exogenous, conditional on the observable characteristics of the lobbyists and their firms (Blanes i Vidal et al. 2012). For the power change of a connected politician to be plausibly exogenous, whether and when the connected politician will experience the advancement has to be difficult to predict by lobbyists and firms. In addition, the change in lobbyist’s value creation due to a surge in the value of political connections should be uncorrelated with the accumulation of the lobbyist’s expertise conditional on observables. Given the complicated and uncertain political process of chair selection and committee assignment, scholars have argued that committee and chair assignment satisfies these conditions with respect to lobbyists (Bertrand et al. 2014; Byun et al. 2017). In fact, others have gone as far as to argue that the timing and ascension of committee and chair appointments are exogenous even to the politician herself (Liu and Srivastava 2015). Thus, it is reasonable to believe that using the power change of connected politician to capture discontinuous increases in lobbyist’s relational capital would alleviate identification concerns due to potential omitted variable biases. In our sample, there is a total of 176 discontinuous increase events, 115 of which are cases where the connected politicians are assigned as committee chair and 71 are events where revolving door lobbyists’ prior employers are assigned to one of the four powerful committees in the Congress. Only 10 events occur at the same period.

**Employee’s distance from the firm’s core knowledge.** Our measure of employee-firm distance captures an employee’s location vis-a-vis the firm’s location in the knowledge space. We use a weighted measure of employee-firm distance based on the assumption that the knowledge distance between the firm and employee, measured in terms of overlap of lobbying issues, is proportional to knowledge-relatedness among issues. Our measure can be thought of as capturing both the overlap (lobbying on the same issue as those critical to the firm) and joint use between issues central to the firm and those covered by the lobbyist

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7 In addition, we confirm that our results are robust to the inclusion of lobbyist fixed effects which controls for time-invariant lobbyist quality, thereby further strengthening the confidence in our findings (Blanes i Vidal et al. 2012).
(e.g., clients requesting issues A and B to be lobbied while firm covers A and the focal lobbyist covers B). This approach was chosen because we wanted to capture the importance of the individual lobbyist to the value creation at the firm (in the robustness tests, we show that both elements of the distance measure – joint use and overlap of issues affect the outcomes independently). Our approach is analogous to that of Bloom, Schankerman and Van Reenen (2013) in that it considers knowledge complementarity across areas in computing a distance measure. We construct our measure according to the following steps. First, we create a knowledge-relatedness matrix among lobbying issues (i.e., issue co-occurrence). Second, we account for relatedness among issues in measuring the overlap of issues between the firm and the lobbyist (i.e., issue overlap). Lastly, we leverage temporal changes in the knowledge-relatedness matrix to extract temporal variation that likely represents an exogenous variation from the perspective of the lobbyist-firm relationship.

In a lobbying contract between a client and a lobbying firm, multiple issues are often bundled. Thus, from each lobbying report that has been filed for a lobbying contract, we identify a revealed preference of issue co-occurrence among 78 issues pre-defined in Congress. Using methods adapted from Breschi, Lissoni and Malerba (2003) and Lee and Lieberman (2010), we first construct the knowledge-relatedness matrix from the issue co-occurrence pattern. Let $R_{ik}$ indicate the presence or absence of issue $i$ in a lobbying report $k$ and let $K$ be the total number of lobbying reports in a given year. The knowledge-relatedness matrix $\Omega_{ij}$ is a 78 by 78 matrix calculated as the angular separation of the co-occurrence vectors. The numerator in the equation below represents the total number of co-occurrences between issue $i$ and issue $j$ in a given year.

$$\Omega_{ij} = \frac{\sum_{k=1}^{K} R_{ik} R_{jk}}{\sqrt{\sum_{k=1}^{K} R_{ik}^2 \sum_{k=1}^{K} R_{jk}^2}}$$

Next, we calculate the degree of issue overlap between the firm and each employee using the method of Jaffe (1986), the most widely used measure of technological distance. However, we use the knowledge-relatedness matrix as weights in calculating the angular separation of the vectors of firms and employees. This approach was proposed by Bloom et al. (2013) to obtain a more relevant distance measure for capturing knowledge space differences. In our context, we calculate the distance between firm $m$ and employee $n$ as:
\[
\text{Firm } - \text{ Employee Distance}_{mn} = 1 - \frac{f_m \sum e_n}{\sqrt{f_m \sum f_m} \sqrt{e_n \sum e_n}}
\]

where the vector \(f_m = (f_{m1}, f_{m2}, \ldots, f_{m78})\) is firm \(m\)'s share in each of 78 issue domains out the firm's total revenue and the vector \(e_n = (e_{n1}, e_{n2}, \ldots, e_{n78})\) denotes employee \(n\)'s share in each issue domain out the lobbyist's total revenue.

The relatedness among issues can be affected by macro-level changes in the political agenda. Changes in the political agenda affect co-occurrence pattern in lobbying reports which aggregates determine yearly changes in the knowledge relatedness matrix. However, such aggregate changes in co-occurrence patterns are orthogonal to each firm-employee relationship. Thus, we can extract an exogenous component of firm-employee distance from changes in the knowledge-relatedness matrix. To demonstrate, the introduction of the Homeland Security issue after the 9/11 terrorist attack in 2001 drastically changed how some issues were bundled. For example, the transportation issue, an issue that was loosely related to the defense issue prior to 2001, co-occurs more frequently with defense after 2002. For a lobbyist specialized in transportation, although the actual overlap of issues between the lobbyist's and the firm's issue portfolio may remain the same, the knowledge-relatedness weighted distance may increase (or decrease) after 2002. To capture such variations, we first set the distance variable at mean value and use the values only if the un-weighted angular separation distance measure stays the same compared to the previous year. This approach is equivalent to creating a demeaning variable that only leaves variability in the knowledge-relatedness matrix. The procedure enables us to capture variations in the firm-employee distance that are caused by macro changes in co-occurrence patterns, holding the actual difference between the firm and the employee constant.\(^8\)

**Control variables**

Individual and firm characteristics have been shown to influence employee exit (Agarwal et al. 2016), and so we include an extensive set of control variables and fixed effects. First, we include a set of lobbyist level

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\(^8\) Note that our results hold without this de-meaning approach.
controls. Client relationships are crucial in professional services context (Pennings et al. 1998), and so we control for # of client ties as the cumulative number of clients the lobbyist has in a given period. Studies have shown that employee performance may also influence exit (Carnahan et al. 2012). Thus, we control for lobbyist’s performance with lobbyist’s revenue, a continuous variable calculated by the total dollar amount of lobbying deals each lobbyist was involved in a given period of time (a lobbying deal can have more than one lobbyist involved). Firm-specific human capital may decrease turnover (Jovanovic 1979). Therefore we include tenure in firm calculated as the number of periods a lobbyist worked in the current firm. We also control for the level of Specialization as measured using a Herfindahl-Hirschman Index (HHI) (Bertrand et al. 2014) based on the concentration of cumulative lobbying revenue share for each pre-defined issue areas. The HHI takes a value between 0 and 1, with higher values indicating a higher specialization.

Our key independent variable, discontinuous increase in the value of relational capital, captures abrupt changes in the value of political connections. To condition out gradual changes in the value of connections, we use a “stock” measure of political ties established before the lobbyist entered the lobbying industry. The # of political connections is measured as the number of active connections in Congress the lobbyist has. This count variable varies slowly over time as the connected politicians exit and re-enter Congress. While all lobbyists in our sample entered lobbying with connections to their previous employers as ex-staffers, they can also pursue access to politicians through making personal contributions to politicians (Bertrand et al. 2014). Thus, we control for such investments through political contribution, a binary variable coded “1” if the lobbyist has made an individual campaign contribution in the previous year, “0” otherwise. Finally, as a proxy for competitive pressure an individual lobbyist may face, we construct and include competitive overlap as the average number of lobbyists who participate in each issue the focal lobbyist covers.

We also incorporate several firm-level control variables in all models. Firm age is measured as the number of semi-annual periods in lobbying industry since 1998. We control for Firm size as measured in terms of the total number of lobbyists that register to lobby for the firm in each period. In the lobbying industry, a significant portion of lobbying is conducted by full-service law firms catering to varied needs of its existing client base. Often, a lobbying division is typically not the core division of a law firm. In addition, non-lawyer
lobbyists in law firms often do not become equity partners (Becker 2011). Thus, lobbyists’ mobility decisions in law firms may be systemically different from lobbyists in lobbying firms. Law firm is a binary variable coded “1” if the firm describes itself as a law firm and “0” otherwise. We also control for in-house lobbyists who are employed directly by interest groups or clients. In-house lobbyists may also be different from lobbyists working in professional lobbying firms because they are largely constrained to a single client during their employment period. Lobbying firm is a binary variable coded “1” if the firm files a lobbying report on behalf of a client and “0” otherwise. Across all analyses, we control for numerous factors related to connected politicians including political party fixed-effects, chamber fixed-effects, and a dummy variable that indicates whether the connected politician is a member of the majority party. To capture whether the connection to a politician is redundant within the firm, we construct a variable that measures the number of lobbyists with the same politician contact within the firm. Because the lobbyists connected to the same politician within the same firm are very rare in the sample, the variable is dropped as it predict the dependent variable perfectly. Lastly, semi-annual period fixed effects are included in all models to account for the cyclical nature of the economy, politics, and lobbying.

**Estimation Methodology**

We test our hypotheses by estimating a series of logit regressions. For hypotheses 1 and 3, we estimate variations of the following logit model to test the main and moderating effects of our independent variables on the likelihood of general exit (mobility to established firms and entrepreneurship):

\[
\text{logit}(\text{Exit}_{it+1}) = \beta_0 + \beta_1 \text{Discontinuous}_{it} + \beta_2 \text{Distance}_{it} + \beta_3 \text{Discontinuous} \times \text{Distance}_{it} + \beta_4 \text{Controls}_{it} + \epsilon_{it}
\]

where \(i\) indexes lobbyists and \(t\) indexes semi-annual periods. In this equation, we test hypotheses 1 and 3 through the estimation of \(\beta_1\) and \(\beta_3\), respectively. For hypotheses 2 and 4, we compare the magnitudes of our hypothesized main and moderating effect across entrepreneurship and mobility. To do so, we first estimate the equation above with entrepreneurship rather than general exit as the dependent variable. Next, we estimate the following logit, to examine the likelihood of entrepreneurship conditional on employee exit:

\[
\text{logit}(\text{Spinout}|\text{Exit}_{it+1}) = \delta_0 + \delta_1 \text{Discontinuous}_{it} + \delta_2 \text{Distance}_{it} + \delta_3 \text{Discontinuous} \times \text{Distance}_{it} + \delta_4 \text{Controls}_{it} + \eta_{it}
\]
Here, we test hypotheses 2 and 4 though the estimation of $\delta_1$ and $\delta_3$, both of which we predict will be positive and significant. All specifications include robust standard errors clustered by lobbyists’ connected politicians to account for non-independence. For lobbyists with multiple connected politicians, we assign a politician with the most number of lobbyists connected in the sample. In our robustness checks, we confirm that our results hold with the inclusion of lobbyist fixed effects and various levels of standard error clustering.

**RESULTS**

Table 1 presents descriptive statistics and correlations for all variables. In all analyses, variance inflation factors (VIFs) for all variables are below 10, implying that multicollinearity is not a concern. We provide tests of our hypotheses in Table 2, which displays results in three sets of regressions. The first set, Models 1 through 3, tests Hypotheses 1 and 3 by estimating the effect of the discontinuous increases in the value of relational capital and its interaction with firm-employee distance on the likelihood of general employee exit. Models 4 through 6 examine Hypotheses 2 and 4 by presenting coefficient estimates on the likelihood of employee entrepreneurship (spin-out) using the entire sample. Models 7 through 9 verify the main effect and the interaction effect on the likelihood of spinning out compared to the effects on mobility to established firms using the sample of employee exits (555 observations).

[Insert Table 1 and Table 2 about here]

Model 1 is a baseline logit regression of the likelihood of exit with only our control variables. Among the controls, the number of political connections a lobbyist has is negatively related to the likelihood of employee exit. We also find that firm-employee distance positively affects the likelihood of employee exit. Models 4 and 7 are baseline logit models for the likelihood of employee entrepreneurship using the entire sample and the sub-sample of exits. Hypothesis 1 posits that the likelihood of employee exit increases when an employee experiences a discontinuous increase in the value of her political connections. Model 2 demonstrates that a discontinuous increase is positively related to employee exit ($\beta = 1.5637; p<.001$). As a lobbyist experiences a discontinuous increase in the value of her relational capital, the log odds of exit increase by 1.56. Holding all other variables at their means, the marginal effect indicates that lobbyists who
experience a surge in relational capital are 9.44 percentage point higher in the predicted probability of exit than a lobbyist who did not experience such an increase. Thus, Hypothesis 1 is supported.

In Hypothesis 2, we predicted that the effect of a discontinuous increase in relational capital would be stronger for entrepreneurship than for mobility to established firms. Model 5 demonstrates that the main effect exists for the likelihood of employee entrepreneurship ($\beta = 1.8033; p < .001$) and Model 8 indicates that this relationship is stronger for entrepreneurship than for mobility ($\beta = .6248; p < .05$). As shown in Model 8, conditional of exit, the coefficient estimate indicates that the predicted probability of entrepreneurship following a discontinuous increase in relational capital is 13.21 percent higher than the predicted probability for mobility to established firms, holding all other variables at their means. Thus, Hypothesis 2 is supported.

Hypothesis 3 predicted a positive interaction between discontinuous increases in relational capital and firm-employee distance with respect to the likelihood of exit. In Model 3, the coefficient for the interaction term is not statistically significant at conventional levels ($\beta = -.0138; p > .05$). However, testing an interaction effect in a logit model requires more than an assessment of $p$-values because the interaction depends on the values of other variables (Hoetker 2007). Because our models only contain a single interaction term and no higher order term, we employ an approach recommended by Zelner (2009). Although the interaction term calculated as the mean cross-partial derivative of exit with respect to the two independent variables is positive (0.07), none of the observations fall outside of the 95 percent confidence interval when the interaction is calculated for each observation separately. Thus, we do not find support for Hypothesis 3.

Hypothesis 4 posits that the interaction between discontinuous increase and firm-employee distance will be stronger for employee entrepreneurship than for mobility to established firms. While we do not find statistical significance for interaction term in predicting exit in Model 3, Model 6 demonstrates that the interaction effect is statistically significant for the likelihood of employee entrepreneurship ($\beta = 2.3637; p < .05$). The positive coefficient for the interaction term in Model 9 entrepreneurship ($\beta = 3.8411; p < .05$) which estimates the likelihood of entrepreneurship conditional on exit, further implies that the interaction is stronger for employee entrepreneurship than that for mobility to established firms. When the interaction effect is computed as cross derivative, the interaction effects for all observations are above zero with most of
them being statistically significant at 95 percent confidence interval. In addition, the magnitude and statistical significance of the coefficient for the interaction term are consistent across observations with a mean of 0.73. To demonstrate, Figure 1 plots the predicted likelihood of employee entrepreneurship for each level of firm-employee distance using estimates in Model 6. We also run the same model with the likelihood of mobility as the dependent variable and use the same approach to plot in Figure 2. In both figures, the upper lines represent when discontinuous increases in employee relational capital equal to 1 whereas the lower lines denote no increase. No overlap between the 95 percent confidence intervals of the two lines in Figure 1 but a large overlap in Figure 2 graphically display that Hypothesis 2 is supported. In Figure 1, we also find that the slope of the upper line is positive while the slope of the lower line is relatively flat. Accordingly, the gap between the upper line and the lower line becomes wider as firm-employee distance increases. However, in Figure 2, the size of the gap decreases and starts to overlap as distance increases, displaying the opposite pattern. This suggests that the interaction between a surge in relational capital and firm-employee distance is larger for entrepreneurship than for mobility. Together, the marginal effects and graphical results support Hypothesis 4.

[Insert Figure 1 and Figure 2 about here]

Robustness Checks

We perform a series of checks to ensure the robustness of our findings to alternative model specifications, alternative samples, and to different operationalizations of variables. Due to DRUID word limits, we only report the results from alternative model specifications in Table 3. A full set of robustness test are available from the authors upon request.

[Insert Table 3 about here]

DISCUSSION

Motivated by a growing body of work that suggests employee mobility and entrepreneurship can lead to the loss of valuable resources (e.g., Agarwal et al. 2004; Agarwal et al. 2009; Raffiee 2017) and have competitive implications for firm performance (e.g., Campbell et al. 2012b; Mawdsley and Somaya 2016; Wezel et al. 2006), strategy scholars have become increasingly interested in understanding individual and organizational
factors that drive employee mobility and entrepreneurship decisions (Agarwal et al. 2016). In this study, we parsed human capital from relational capital and developed a theory that integrates insights from the relational capital literature (Adler and Kwon 2002), unfolding model of employee turnover (Lee and Mitchell 1994), and the strategy literature on employee mobility (Agarwal et al. 2016), to propose that discontinuous increases in the value of an employee’s external relational capital will drive employee entrepreneurship and mobility, particularly when the employee is located on the periphery with respect to the firms core knowledge.

Using a novel employee-employer linked database consisting of all registered lobbyists in the U.S. federal lobbying industry, our study provides evidence that a discontinuous increase in the value of relational capital has a positive effect on the likelihood of mobility to established firms and to entrepreneurship (Hypothesis 1), with the effect stronger for employee entrepreneurship than for mobility to established firms (Hypothesis 2). While we expected that the relative magnitude of this effect would vary with the location of the employee in the firm’s knowledge space for both mobility to established firms and entrepreneurship (Hypothesis 3), we found supportive evidence for employee entrepreneurship only (Hypothesis 4). Taken together, our study advances prior work by disaggregating relational capital from human capital and highlighting the nuanced relationships between relational capital, employee entrepreneurship, and mobility.

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Figure 1: Discontinuous Increase X Distance on Likelihood of Spin-out

Note. This figure plots the marginal effect of discontinuous increase by firm-employee distance calculated from Model 5 in Table 2.

Figure 2: Discontinuous Increase X Distance on Likelihood of Mobility to Established Firms

Note. This figure plots the marginal effect of discontinuous increase by firm-employee distance calculated from the same model with Figure 1 but with mobility to established firms as a dependent variable.
Table 1: Descriptive Statistics and Pearson Correlations

| Variables                        | Mean | SD  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  |
|----------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1. Employee Exit                 | 0.06 | 0.23|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2. Spin-out                      | 0.02 | 0.13| 0.503|     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 3. Discontinuous Increase        | 0.03 | 0.18| 0.119| 0.091|     |     |     |     |     |     |     |     |     |     |     |     |     |
| 4. Firm-Employee Distance        | 0.13 | 0.16|     | 0.017|     | 0.004| -0.006|     |     |     |     |     |     |     |     |     |     |
| 5. # of Client Ties              | 24.18|     |     |     | -0.049| -0.009| -0.056| -0.175|     |     |     |     |     |     |     |     |     |
| 6. Lobbyist's Revenue            | $88.3 \times 10^4$ | $12.0 \times 10^5$ |     |     |     | -0.016|     | 0.000| -0.006| -0.208| 0.602|     |     |     |     |     |
| 7. Tenure in Lobbying Firm       | 6.18 | 4.66|     |     | -0.023| -0.019| -0.069| -0.041| 0.331| 0.097|     |     |     |     |     |     |     |
| 8. Specialization                | 0.29 | 0.26|     | 0.010|     | 0.003| 0.023| 0.047| -0.277| -0.262| -0.152|     |     |     |     |     |
| 9. # of Political Connections    | 1.03 | 0.58|     | 0.048|     | 0.030| 0.090| -0.026| -0.066| 0.049| -0.211| 0.008|     |     |     |     |
| 10. Political Contribution       | 0.47 | 0.50|     |     | -0.003| 0.023| -0.055| -0.047| 0.166| 0.143|     | 0.040| -0.125| 0.013|     |     |
| 11. Competitive Overlap          | 1932 | 884.11|     |     | -0.018| 0.002| -0.030| -0.213| 0.162| 0.028| 0.085| 0.086| -0.043| -0.011|     |     |
| 12. Firm Size                    | 17.35| 21.93|     |     | -0.010| -0.002| -0.004| 0.340| 0.167| 0.190| 0.069| -0.173| -0.002| -0.001| 0.047|     |
| 13. Firm Age                     | 11.01| 5.67|     |     | -0.003| 0.001| -0.032| 0.128| 0.199| 0.158| 0.476| -0.174| -0.075| 0.002| 0.184| 0.182|
| 14. Law Firm                     | 0.29 | 0.45|     | -0.007| 0.015|     | -0.014| -0.011| -0.004| -0.027| 0.023| 0.026| -0.025| 0.009| 0.007| -0.037| 0.016|
| 15. Lobbying Firm                | 0.90 | 0.30|     | -0.115| -0.053| -0.033| 0.180| 0.179| -0.084| 0.093| 0.008| -0.079| 0.073| 0.071| 0.139| 0.039| -0.002|

Note. The level of analysis is lobbyist-semi-annual period. The sample size used in the analyses is 9,686. Exit and Spin-out variables are measured at the period $t+1$, and all other variables are measured at the period $t$. 

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Table 2: Logistic Regression Results of Likelihood of Employee Exit and Entrepreneurshipa

<table>
<thead>
<tr>
<th>DVs</th>
<th>Logit Exit</th>
<th>Logit Spin-out</th>
<th>Logit Spin-out</th>
<th>Logit Exit</th>
<th>Logit Spin-out</th>
<th>Logit Exit</th>
<th>Logit Spin-out</th>
<th>Logit Exit</th>
<th>Logit Spin-out</th>
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<td>(0.0027)</td>
<td>(0.0027)</td>
<td>(0.0032)</td>
<td>(0.0031)</td>
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<td>-0.0421+</td>
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<td>0.2480***</td>
<td>0.1938**</td>
<td>0.1938**</td>
<td>0.2603*</td>
<td>0.1855+</td>
<td>0.1854+</td>
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<td>-1.1800***</td>
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<td>1.5656***</td>
<td>1.5656***</td>
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<td>1.4533***</td>
<td>1.4533***</td>
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a. Standard errors clustered by lobbyists. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10.
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