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2008, Vol. 51, No. 5, 936–953.

GONE BUT NOT LOST: THE DIFFERENT PERFORMANCE IMPACTS OF EMPLOYEE MOBILITY BETWEEN COOPERATORS VERSUS COMPETITORS

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This article extends research on the relationship between employee mobility and firm performance by exploring how mobility between competitors and mobility between potential cooperators are different. We draw on social capital theory to argue that movement of employees both to and from clients may enhance firm performance, whereas only inward mobility from competitors benefits firms. We also hypothesize that it is more harmful for firms to lose social capital–laden human assets to competitors than to other potential employee destinations. We tested our hypotheses with a novel dyadic data set of patent attorney movements between law firms and *Fortune* 500 companies.

There is both anecdotal and empirical evidence that organizations have come to rely more and more on the acquisition of human assets from other organizations, as opposed to internal development and promotion, to satisfy their human resource needs. In recent years, rapid changes in technology, increased marketplace dynamism, and the general deterioration of the norm of employees' spending their whole careers with one firm have made it more difficult for companies to adequately train and develop employees to meet their demands for talent, especially in high-skill, knowledge-intensive professions (Cappelli, 2000). Against this backdrop, the mobility of knowledge workers between firms has acquired great significance for firm performance, given the potential for firms to gain (or lose) human capital (Kacmar, Andrews, Van Rooy, Steilberg, & Cerrone, 2006; Philips, 2002; Shaw, Duffy, Johnson, & Lockhart, 2005; Staw,1980) and the potential benefits of interorganizational learning and spillovers (Rosenkopf & Almeida, 2003; Song, Almeida, & Wu, 2003). Employee mobility between firms also has implications for the success of regional economic clusters through the agglomeration and localization of knowledge (Almeida & Kogut, 1999; Saxenian, 1994).

Extant theory on how and why employee mobility influences firm performance has typically focused on the human capital implications of employee movement. From this perspective, employee migration is theorized to influence firm performance by affecting its human capital, defined broadly as the cumulative knowledge, skills, talent, and know-how of the firm's employees (Becker, 1964). Thus, if a talented employee leaves her or his current employer to join a new firm, this movement increases the human capital of the employee's new organization and simultaneously decreases the human capital of the individual's former employer.

However, another aspect of employee mobility that has not garnered much attention is the role of

We gratefully acknowledge comments from Jay Barney, Rafael Corredoira, Nicolai Foss, Tammy Madsen, Frank Rothermel, Myles Shaver, and especially Tim Pollock. We also received valuable feedback from participants at the conference "HRM and Knowledge-Related Performance: The Nature, the Outcomes and the Linkages" (Center for Strategic Management and Globalization, Copenhagen Business School, 2006), the Melbourne Business School IPRIA Seminar (2007), and the Atlanta Competitive Advantage Conference (Emory University, 2007), and anonymous reviewers at the 2007 Academy of Management meeting, where an earlier version received the Convention Best Paper Award in the Human Resources Division. This project was supported by research grants from the Intellectual Property Research Institute of Australia (IPRIA) and the Robert H. Smith School of Business. Ry D'Antonio, Cristian Lopez, and Caitlin Mulligan provided valuable research assistance. The first two authors contributed equally to this article.

social capital in shaping the outcomes associated with losing or gaining employees. Social capital is defined as the sum of the actual and potential resources embedded within, available through, and derived from network ties (Nahapiet & Ghoshal, 1998: 243). Whereas the movement of employees certainly has direct implications for firms in terms of human capital, these effects may be complemented or offset by the social capital inherent in the intra- and interorganizational network ties that employee mobility can generate or sever. Some scholars have begun to discuss the implications of employee mobility for a firm's internal social capital (e.g., Shaw, Duffy et al., 2005), yet to date, very little research has considered the external social capital implications of employee mobility.

A notable exception is Broschak's (2004) examination of the mobility of managers in the advertising industry. Broschak reported that manager exit disrupted the social relationships between client and service firms, thus increasing the likelihood of the dissolution of market ties between these firms. Although Broschak's study provides valuable insights into the external social capital implications of employee mobility, an important limitation of this research is that it does not address the type of organization a firm loses employees to, and how this influences firm performance. Indeed, Broschak noted that in order to gain a more complete understanding of the external social capital implications of employee mobility, it is important to test not only whether market ties dissolve when managers exit a firm, but also whether new market ties are formed when managers move across firms (2004: 636–637).

An implicit assumption of past mobility research is that employees are lost to or gained from competitors. Yet, employee movements also occur between potential "cooperators" such as customers and suppliers, which may create interorganizational ties that facilitate rather than diminish business relationships with clients. For, example, there is anecdotal evidence that knowledge-driven service firms such as McKinsey & Co. utilize network ties with former employees that have joined prospective clients to develop and strengthen business relationships (Byrne, 1993). However, to date, the question of how the mobility of employees across different types of firms (i.e., competitors vs. cooperators) influences firm performance has been largely unexplored.

In this study, we seek to shed light on this unanswered question by complementing the human capital perspective with social capital theory to understand the impact of mobility on firm performance. We extend the extant literature by arguing that the type of organization a focal firm hires external talent from, or loses talent to, plays an important role in shaping the firm's business opportunities. In addition, we make the case that it is the potential for social capital gains (or losses) that calibrates the performance impacts of mobility to or from different types of firms. Our study extends extant resource-based-view research by addressing the calls of several scholars for research examining the mechanism by which firm resources create competitive advantages (e.g., Priem & Butler, 2001; Sirmon, Hitt, & Ireland, 2007). Specifically, we illustrate how the social capital embedded within mobile human resources enhances or diminishes opportunities for economic exchange. Thus, this article addresses the pressing need for integrating the resource-based view with complementary organizational perspectives (Barney, 1991; Barney & Zajac, 1994). Furthermore, by examining how the sources from which firms acquire (or the destinations to which they lose) human resources influence firm performance outcomes, our study provides new insights into how firms can strategically manage their human resource portfolios.

We test our theory by examining how the movement of a highly specialized type of employee—the patent law attorney—into and out of leading U.S. patent law firms influences these firms' performance. Specifically, we analyze how where patent lawyers are hired from and where they move to influences law firms' ability to obtain patent business from specific *Fortune*500 clients. Like other professional service industries, such as accounting, advertising, financial services, information technology (IT) consulting, management consulting, and public relations, a key component of law firms' competitiveness is their ability to develop relationships with potential clients and eventually receive business from them. Thus, by examining the relationship between patent lawyer mobility and the generation of new patent business for law firms, our study provides a fine-grained assessment of how human resource mobility influences a key performance outcome for professional service firms.

THEORETICAL BACKGROUND AND HYPOTHESES

The resource-based view of the firm provides a theoretical framework for understanding how the interorganizational movement of personnel may influence firm performance. According to the resource-based perspective, employees are repositories of human capital (Argote, 1997), one type of inimitable resource that has the potential to gener-

ate performance benefits for firms (Barney, 1991). However, human capital is different from other resources because, as Coff noted, "Unlike tangible assets, firms cannot own employees who are free to quit at will" (1997: 377). Given that employees carry their human capital with them when they leave one employer to join another, from a human capital perspective, organizational performance effects are presumed to follow from the gains or losses of high-quality employees.

In line with a human capital logic, several studies have reported a positive relationship between the inflow of new personnel and firm performance attributes such as survival (Philips, 2002), innovation (Rao & Drazin, 2002), and technical knowledge transfer (Almeida & Kogut, 1999; Rosenkopf & Almeida, 2003; Song, Almeida, & Wu, 2003). Several studies have also reported that the outflow of employees has an adverse effect on firm performance (e.g., Batt, 2002; Huselid, 1995; Osterman, 1987; Phillips, 2002; Staw, 1980). These effects are likely to be particularly severe if the human capital lost is strongly firm-specific, such as deep tacit knowledge about the organization and business of the firm, because specific assets and knowledge are very difficult to rebuild or replace (Coff, 1997; Kacmar et al., 2006). Utilizing a human capital perspective, researchers have also argued that a certain level of "functional" mobility may be beneficial to firms (Abelson & Baysinger, 1984; Dalton, Krackhardt, & Porter, 1981; Dalton, Todor, & Krackhardt, 1982). Moderate levels of employee exit are theorized to enhance firm performance by divesting human capital deemed unable to contribute to firm performance (Sirmon et al., 2007). Following this logic, recent studies have reported an inverted U-shaped relationship between employee exit and firm performance (Glebbeek & Bax, 2004; Shaw, Gupta, & Delery, 2005).

Organizational Social Capital

Although human capital theory provides one rationale for how employee mobility can affect firm performance, this relationship can also be examined from a social capital perspective. Social capital is derived from the creation and sustenance of network ties between actors and the flow of resources across these ties (Bourdieu, 1986; Burt, 1992). Therefore, human capital refers to knowledge-intensive productive assets embedded in employees, and social capital refers to the productive possibilities embedded in relationships that may be used to leverage resources. Or, as Burt bluntly put it, "while human capital refers to individual ability, social capital refers to opportunity" (1997: 339).

Social capital is a broad, multilevel term and has been described as an attribute of individuals (Burt, 1992, 2007; Coleman, 1990; Seibert, Kramer, & Liden, 2001), organizations (Leana & Pil, 2006; Leana & Van Buren, 1999), communities (Putnam, 1995), and even nations or geographic regions (Fukuyama, 1995). Early research in sociology centered around the benefits individuals obtain from social capital (Coleman, 1988; Portes, 1998); research in management has been largely interested in social capital as an organizational or firm-level phenomenon (Leana & Pil, 2006; Nahapiet & Ghoshal, 1998). We adopt this organizational level of analysis, wherein a firm's social capital incorporates the aggregate form and nature of its employees' social relationships (Leana & Pil, 2006; Leana & Van Buren, 1999). We view organizational social capital as a collective resource of an organization (Coleman, 1990; Nahapiet & Ghoshal, 1998), and "the benefits—and thus the value—of organizational social capital . . . accrue to the organization *and* its members" (Leana & Van Buren, 1999: 541).

Although we examine social capital at the organizational level, employee mobility is inherently an individual-level phenomenon. Accordingly, we conceptualize individual-level mobility as a mechanism by which organizational networks and social capital form and evolve over time (Gulati & Gargiulo, 1999). Thus, our focus is firmly on the social capital changes wrought at the organization level by employee mobility. Furthermore, we do not examine how the organizational value generated by social capital is apportioned among a firm's stakeholders, including mobile employees (Coff, 1997; Blyler & Coff, 2003), but address this important issue in our discussion.

Internal and External Social Capital

Prior research has distinguished between two types of organizational social capital: internal and external. Internal social capital is defined as the resources represented by social relationships and network ties within an organization (Nahapiet & Ghoshal, 1998; Leana & Van Buren, 1999). The internal social capital shared by employees within a firm is theorized to generate significant value because it creates a collective goal orientation and shared transactive memory, fosters trust and reciprocity, provides access to diverse information resources, and becomes a potential source of dynamic capabilities (Adler & Kwon, 2002; Blyler & Coff, 2003; Dess & Shaw, 2001; Leana & Van Buren, 1999). Conversely, external social capital refers to the cumulative relational assets accrued between organizational members and important external

stakeholders, such as customers and suppliers (Collins & Clark, 2003; Leana & Pil, 2006). Extant research on employee mobility and firm performance has largely focused on the role of internal social capital, and has shown that the departure of employees from a firm may be associated with a disruption of internal relationships, routines, and tacit knowledge, consequently lowering productivity and performance (Shaw, Duffy, Johnson, & Lockhart, 2005). However, prior research has focused relatively less attention on external social capital and employee mobility, and in particular, it has not distinguished the performance effects of mobility between competitors and cooperators.

Employee Mobility between Cooperators

There are often situations in which a firm hires from or loses employees to a potential cooperator, such as a client. These types of personnel flows have the potential to create or strengthen network ties between the focal firm and client company (Baty, Evan, & Rothermel, 1971). Thus, over and above any human capital effects, the hiring (or loss) of an employee from (or to) a potential client may enhance firm performance by increasing the social capital shared between the firm and its potential client.

When an employee moves between firms that are natural collaborators, rather than competitors, mobility is unlikely to entirely extinguish the internal social capital developed in the employee's former workplace. Individuals may still maintain contact with and share a high level of trust with their former coworkers. Thus, internal social capital may simply be transformed into an external social tie, which is now shared between the individual's former and current employers. This new interorganizational relationship may improve prospects for business relationships between the two firms by adding value along all three dimensions of social capital—structural, relational, and cognitive—identified by Nahapiet and Ghoshal (1998; Kang, Morris, and Snell [2007] refer to these three dimensions as "structural," "affective," and "cognitive").

The structural dimension of social capital refers to attributes of the connections that organizations make through interfirm networks, which in turn lead to the discovery and exploitation of economic opportunities (Collins & Clark, 2003). Client firms face significant uncertainty when attempting to identify suppliers of needed services, and this uncertainty is especially high when the services are knowledge-intensive and difficult to evaluate (Benjamin & Podolny, 1999; Weigelt & Camerer, 1988). The creation of a new network tie between a potential client and a service provider due to mobility may heighten mutual awareness (Granovetter, 1973) or span a structural hole in the two firms' existing networks (Burt, 1992), thus increasing the likelihood that a client firm will use a specific service provider.

In addition to structural advantages, mobility may also enhance the relational dimension of social capital, which refers to the trust, norms, reciprocity, and obligations embedded within network ties (Nahapiet & Ghoshal, 1998). Interfirm network ties stemming from prior work relationships are likely to have high levels of trust and comfort, and as a result may produce relational social capital that motivates parties to enter into economic exchanges. For example, decision makers in client firms are likely to tap their interfirm networks, including former employees who now work for service providers, to gather information about external vendors (Marsden & Friedkin, 1993). Similarly, employees of service firms that leave those firms to work for potential clients may provide their former employers with relational advantages in getting business from these clients. Naturally, both of these cases of employee mobility assume that the employees left their former employers on good terms.[1]

Finally, social capital also entails a cognitive dimension, whereby members of a network share a common language or code, systems of meaning, and work practices, which can enhance the effectiveness with which actors work with each other (Nahapiet & Ghoshal, 1998). Employee mobility between cooperators can play an important role in establishing communication channels between their current and former employers and enhancing their ability to work together. When an employee leaves a potential client to join a service provider they carry to their new employer tacit information about the practices, systems, and strategies of their former employer. This tacit information may allow the hiring service provider to anticipate the concerns and effectively mobilize its resources to meet the needs of the potential client, thus giving the hiring service provider a competitive advantage over other service providers that do not have access to this tacit knowledge (Burt, 2007). Furthermore, newly hired employees may also create changes in

[1] Our data are from public archival sources, and therefore do not allow us to measure the conditions under which employees left their former employers. However, to the extent that some employee mobility occurred under less than positive conditions, we anticipated that we would be less likely to find support for our hypotheses. Thus, we performed a conservative test.

their new companies that make it structurally easier for their companies to engage in economic exchanges with their former employers. For example, employees that leave a service firm may change the work systems of their new employers so that they are more consistent with the systems of their former employer (Boeker, 1997), thus making their former employer a more attractive vendor. In conclusion, we predict that employee mobility simultaneously augments the interrelated structural, relational, and cognitive dimensions of social capital shared by potential cooperators (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998), which may help increase the amount of business ties between them.

The implications of these arguments are most straightforward when a focal service provider gains an employee from a potential client. The internal social capital embedded in employees' intrafirm relationships is transformed into an external relationship, which adds, at least in some degree, to the external social capital shared between the hiring service provider and the client firm. By virtue of the structural, relational, and cognitive advantages conferred by this external social capital, we would expect that the client firm would be more likely to give business to its former employees' current employer. Therefore, we hypothesize:

Hypothesis 1. Gaining an employee from a potential client results in a focal firm getting more business from that client.

Social capital theory would also lead to the prediction that the loss of an employee from a focal service provider to a (potential) client may create external social capital that would expand the economic opportunities of a focal firm. An employee that leaves a firm to join a potential client can be an ambassador for the services of his former employer, generating all the social capital advantages of mobility between cooperators discussed earlier. In addition, client firms may hire skilled professionals not to substitute for outsourced services, but to manage the interface between external service providers and organization-specific resources, systems, and needs in a more effective manner (Somaya, Williamson, & Zhang, 2007). In these situations, we may expect the external social capital generated by the loss of employees to be particularly beneficial for the focal service firm because its former employees are being hired specifically for a boundary-spanning role. Accordingly, we hypothesize:

Hypothesis 2. Losing an employee to a potential client results in a focal firm getting more business from that client.

Employee Mobility between Competitors

Evaluating the impact of employee mobility between competitors has been the more traditional, or at least implicit, approach of mobility studies. Mobility studies taking a largely human capital view have highlighted the negative and positive performance implications of losing and gaining employees, respectively, because of resulting changes in skills, productive knowledge, and tacit know-how (Almeida & Kogut, 1999; Huselid, 1995; Kacmar et al., 2006; Osterman, 1987; Phillips, 2002; Rao & Drazin, 2002; Rosenkopf & Almeida, 2003). However, two important aspects of employee mobility between competitors have received less attention. First, employee mobility between competitors may serve to create new external social capital between firms owing to the migration of *external* network relationships along with an employee. Therefore, when firms gain new employees from their competitors, they may derive value from social ties shared by these individuals with their competitors' clients. Unlike the internal social capital shared with coworkers, which may simply be lost when an employee moves to a competitor, the external social capital embedded in that employee's relationships with clients may be largely transferable to the new employer. For this reason, Coff (1997) described internal social capital (or "social complexity") as a firm-specific asset, but external social capital as a general asset that can move with the employee. Therefore, when individuals move between competing firms, they may transfer their external social capital to their new employers, who may now have greater access to business opportunities involving the clients of the employees' former employer.

All dimensions of social capital with respect to client firms—structural, relational, and cognitive—are likely to be implicated with employee mobility between competitors. The gain of an employee may help a focal firm develop new structural connections with clients, strengthen its relationships with specific clients, and provide it with a cognitive advantage in servicing clients whom the employee worked with when he or she was with the previous employer (Nahapiet & Ghoshal, 1998). External social capital may be especially transferable with employee mobility in those knowledge-based services in which the external relationship is not tied to other firm-specific assets or to a complex set of ties between multiple actors in the two firms. Indeed, in many professional service industries, such as law firms or consulting firms, individuals are hired away from competitors precisely because of the clients they will bring with them. Although the human capital associated with new employees

may be valuable, their social capital with respect to particular clients of their former employers is likely to be much more valuable for obtaining business from these specific clients. Therefore, we hypothesize:

Hypothesis 3. Gaining an employee from a competitor results in a focal firm getting more business from the clients of that competitor.

A second issue generally overlooked in prior work on employee mobility has been the repercussions of losing employees *specifically* to a firm's competitors, which needs to be distinguished from the firm's loss of employees in general. This distinction is important because the loss of human capital through employee exit can be made up by hiring, but when employees go to work for competitors, they enable these rival firms to compete much more closely with their former employers. The loss of client-related social capital to competitors can be particularly damaging because it is a potentially significant source of uniqueness and differentiation for firms. Employees that move to competitors may transfer skills, knowledge, and work practices that are valued by the focal firm's clients and, as per Hypothesis 3, they convey external social capital that enables competitors to obtain more business from these clients.

Competitors are likely to use a firm's former human assets in an adversarial manner; thus, the loss of employees to direct competitors can have an explicitly detrimental impact on a firm's competitive advantage, and consequently, its performance. For example, Coff mentions how the brokerage firm Kidder Peabody & Co. "was devastated" (1997: 377) when key brokers left to join the firm's *competitors*, taking with them the firm's key resources—namely, human capital and customer networks. Because firm performance stems from unique competitive advantages enjoyed by firms *relative to* their competitors (Barney, 1991; Peteraf, 1993), losing employees to competitors will likely affect firm performance adversely. Accordingly, we hypothesize:

Hypothesis 4. Losing employees to competitors has a negative effect on the amount of business a firm gets from a client.

METHODS

Sample

To test our hypotheses, we examined business relationships and the movement of patent attorneys in a dyadic data set of major patent law firms and innovative *Fortune*500 companies that they serviced over the period 1991–95. Thus, the unit of observation in this study is a firm-client dyad-year. We focused on this setting because the amount of business law firms obtain from clients is a key performance criterion in the legal industry, and there exist reliable data to measure the volume of patent work that companies outsource to individual law firms. Furthermore, the human and social capital carried by patent attorneys is an important resource for competing in this industry, and there is considerable movement of these employees between firms, which can have impacts on firm performance. In addition, because patent attorneys are required to pass the patent bar and specialize to perform a highly technical and specific service—drafting and prosecuting patents before the U.S. Patent and Trademark Office (USPTO)—we were able to focus on a well-defined subsegment of the legal industry, in which only a very specific set of lawyers are able to perform services.

We were interested in the amount of *patent* work outsourced by companies, therefore our initial sample frame consisted of public U.S. *Fortune*500 firms (in the year 1990 to avoid survivor bias) from technology-driven industries that are likely to engage in patenting—namely, chemicals (39 firms), computer manufacturing (22 firms), electronics (40 firms), pharmaceuticals (12 firms), and scientific and photographic equipment (16 firms). Twenty companies were dropped as data were missing, leaving us with 109 *Fortune* 500 firms that were potential clients of patent law firms. The industry breakdown of these 109 firms was chemicals (29 firms), computer manufacturing (19 firms), electronics (38 firms), pharmaceuticals (9 firms), and scientific and photographic equipment (14 firms).

Our set of patent law firms consisted of all U.S. law firms with ten or more patent attorneys in 1990—a total of 124 law firms. Apart from having to draw the line somewhere, in choosing this size cutoff we were motivated by the fact that the next 14 law firms by size (employing eight or nine patent attorneys) worked on less than one patent, on average per year, for our entire set of 129 *Fortune*500 companies. The primary data source we used to identify patent law firms was the USPTO, which periodically publishes a complete roster of all patent attorneys who are registered to practice before it. The roster is generated by a department called the Office of Enrollment and Discipline (OED), which manages the admission of attorneys to the patent bar and administers their registrations subsequent to admission.[2] An active registration is

[2] The mission of the OED is available online at: http://www.uspto.gov/web/offices/dcom/olia/oed/mission.htm

a prerequisite for practicing before the USPTO, and attorneys are required to keep their addresses current to maintain their registration. The OED even audits a random selection of attorneys periodically and will revoke an attorney's registration if his or her address is not current. Therefore, we have great confidence in the use of these data to measure both the number of patent attorneys employed by law firms and companies and the movement of these professionals between organizations. Approximately 13,000 patent attorneys were registered with the USPTO in 1990, increasing to 17,700 in 1995, of which a total of 4,803 patent attorneys were employed at some point by at least one of our patent law firms.

Patent law firms during this period were typically not large general purpose firms. Less than 10 percent of our 124 patent law firms were among the 250 largest law firms in the United States, as identified by the *National Law Journal*. However, these patent law firms collectively accounted for about 80.5 percent of the patent work outsourced by the *Fortune*500 companies in our data set (during 1991–95). Therefore, we believe that our data capture the most significant outsourcing relationships for patent prosecution legal services in our sample of companies. We dropped one law firm from our analyses because of a complicated break-up of the firm, leaving us with pairings between 123 patent law firms and 109 companies over the five years (1991–95).

Dependent Variable

Our dependent variable is the volume of patent business outsourced by a particular company to a focal law firm in a given year. Specifically, we define the variable *patent work*$_{ijt}$ as the total number of patents law firm *i* filed on behalf of company *j* in year *t*. As each patent application is essentially a small de novo legal project, patent filings are a good proxy for the amount of new business obtained by patent law firms, with average per patent filing costs to the client in the range of $10,000 to $15,000 (in the early 1990s; see Somaya [2000] and the literature cited therein). Thus, patent filings effectively measure the revenue generated by law firms accounted for at the time the business is generated, which closely matches the performance effects of mobility we theorize in this article. More generally, revenue is also a key performance indicator for firms in several knowledge-based industries (e.g., legal services, accounting, IT consulting, financial services, and management consulting). Because knowledge-based firms tend to have very low material or capital costs, revenue tends to proxy the total value generated by these types of firms. Not surprisingly, gross revenue is a common measure by which law firms are evaluated and ranked within the industry (e.g., the *American Lawyer* Am Law 100 rankings). Firm revenue has also been used as a measure of performance in prior management research on the legal industry (Malos & Campion, 2000).

We obtained data on each company's patents from the USPTO PATSIC database. We employed the *Directory of Corporate Affiliates* to compile the entire corporate family for each *Fortune*500 company in each year, so as to include patents filed by all its subsidiaries, divisions, and affiliates. The 109 companies in our data filed approximately 74,000 patents during the focal years of our analyses (1991–95). Data about the use of a specific law firm for patent prosecution work was obtained from the "Attorney, Agent or Firm" field listed on each patent. In view of potential spelling differences and the absence of a standardized format, we hand-coded this information.[3] Of the 74,000 patents filed by the companies in our data about 19,600 patents were outsourced to law firms or attorneys in private practice (the majority of patents are processed by the companies' in-house patent departments). 15,604 patents were outsourced to our focal sample of law firms. We use all of these outsourced patents (100%) to compute our dependent variable.

Independent Variables

Our independent variables centered on the movement of patent attorneys into and out of the patent law firms and *Fortune*500 companies in our sample. To guard against the possibility of reverse causation, we lagged our independent and control variables by one year. We used the patent attorney roster maintained by the USPTO OED to determine where patent attorneys were employed in a given

(accessed January 12, 2007). We treat patent attorneys and agents equally in this study, but the latter comprise only about 11 percent of employees in our sample.

[3] We did not use computer programs to code the "Attorney, Agent or Firm" field because of several idiosyncratic challenges to automation. Specifically, (1) the field consists of multiple attorney names and/or a law firm name, listed in no particular order; and (2) the USPTO optically scans patent data into their database, producing errors that are not phonetic. Visual coding of these data was therefore extremely reliable relative to phonetically based software programs and was more easily accomplished with the resources at hand.

year and track their movements over time. Tracking attorney movement between employers was further facilitated by the unique attorney registration number assigned by the USPTO to each patent attorney. Three of our hypotheses suggest a performance impact from the mobility of employees with a client-specific connection, either movement to or from a client, or movement into the focal firm from a competitor that has a business relationship with a client. For each of these types of mobility in our data, the number of employees that move in a given year is typically zero or one, and only very rarely do two such employees move. Therefore, to facilitate interpretation of results we employed a simple dummy variable for all three of these variables (coded 1 if there was mobility, and 0 otherwise). However, in the case of employee movements from a focal law firm to all competitors, the number of moves varied between 0 and 18, and we therefore did not use dummies. We confirmed that our use of dummies had no material impact on the results in significance or magnitude. Accordingly, we defined the following independent variables.

Gain from client (Hypothesis 1). We measured this as a dummy variable coded 1 if an attorney joined law firm *i* from (potential) client company *j* in the previous year.

Loss to client (Hypothesis 2). Using the unique registration number of each patent attorney, we measured this as a dummy variable coded 1 if an attorney joined (potential) client company *j* from law firm *i* in the previous year.

Gain competitor client tie (Hypothesis 3). We measured this as a dummy variable coded 1 if an attorney joined law firm *i* from any competitor law firm that had prior business ties to (potential) client company *j*. Because we were interested in whether a law firm gains client ties from the hiring of an attorney from a competitor, we needed to define what constitutes a prior client tie. For the current analysis, we defined prior ties as the outsourcing of at least one patent from a *Fortune*500 company to a competitor law firm in the previous two years. However, we also employed measures based on three, five, and ten patents and obtained results with no material difference from those reported here.

Loss to competitors (Hypothesis 4). We measured *loss to competitors* as the logarithm of the total number of attorneys lost from law firm *i* to any competitor law firm in the previous year. The exponentiation of independent variables in count-data models required our use of logs, as we discuss further below. For all variables that could take the value 0, including this one, we added 1 before taking the log.

Control Variables

We included several control variables in our analyses. We measured *law firm size* as the (logged) number of patent attorneys that worked for a law firm, as recorded in the OED roster. Although this variable is not, strictly speaking, a size variable for the entire law firm, it is the appropriate size variable for its patent business. Fluctuations in this variable may indicate law firms' decisions to increase or decrease their patenting business. Because prior research suggests that organizational status or reputation may influence stakeholders' decisions to engage in economic exchange (e.g., Rindova, Williamson, Petkova, & Sever, 2005), we controlled for law firm reputation by using patent law–firm rankings from *Intellectual Property Today* (*IP Today*). *IP Today* didn't rank every law firm in our data set, and moreover the total number of law firms ranked increased over time. This raised some dilemmas about how to code our variable. For the ranked law firms we used actual rank order (e.g., 1st, 2nd, 3rd), so that lower scores represented more positive reputations. We computed a relative ranking of only the firms within our data set, assigning the median of the remaining ranks to all unranked firms.[4] Because the number of such median-substituted observations was large (47%), we also used an *unranked dummy* variable (1 = "unranked"), which effectively gives these unranked observations their own "intercept" in the model.

To rule out effects associated with overall employee mobility, which may simply be mirrored in our main client-specific mobility variables, our control variables included other types of patent attorney movements experienced by law firms. We controlled for all employees that left law firms to destinations other than competitors with the variable *loss to others*. This variable included employees who retired or entered private practice (we could not distinguish between these possibilities from our data) or went to work for companies or other organizations. Similarly, we also defined the variable *gain from others*, which included all patent attorneys (including recent graduates) hired by a focal firm from sources that were not competitors. We also employed the variable *gain from all competitors* to control for the total number of

[4] Thus, if we had 100 firms and only the first 49 among them were ranked, we would assign these firms ranks of 1 to 49 in increasing order, and all the remaining firms would be assigned a rank of 75 (the median rank between 50 and 100). A nice property of this measure is that unranked firms are assigned a "rank" equivalent to our unbiased estimate of their relative rank.

patent attorneys a law firm gained from all of its competitors (not just competitors with a prior client tie).

We also sought to control for various factors that might determine the overall number of patents that companies outsourced to law firms. A long tradition in the study of innovation has shown that firm size and R&D spending are important drivers of patenting (Ahuja & Kattila, 2001; Blundell, Griffith, & Van Reenen, 1995; Griliches, 1990; Hall, Griliches, & Hausman, 1986; Hausman, Hall, & Griliches, 1984; Somaya et al., 2007), and accordingly we controlled for *client company size* (logged number of employees) and *client company R&D* spending (1990 dollars, after adjustment for inflation) in the previous year. Data on client company size and R&D spending were gathered from the Research Insight database. The decision of a company to utilize patent law firms may also be correlated with its internal patent law expertise, because higher levels of such expertise either facilitate the conversion of R&D into patents (Somaya et al., 2007) or substitute for the use of external expertise from law firms. Therefore, we controlled for *client patent law expertise* by measuring the number of patent attorneys employed by a *Fortune*500 company. Data for this variable were also gathered from the USPTO OED patent attorney roster; we included attorneys employed by all affiliated entities within a company's corporate family. Because a company's R&D and patent attorney assets tend to be highly correlated with size, we divided these variables by company size. This transformation also facilitated the interpretation of results in the count data models we used (see below), and it is often employed for that reason in econometric models of patent output (e.g., see Hall, Griliches, & Hausman, 1986; Hausman, Hall, & Griliches, 1984).

It is plausible that *changes* in firm-level human capital may also influence law firm performance. Therefore, in addition to our aggregate *law firm size* variable, we also measured the average level of experience of attorneys in a firm. Work experience, an important source of knowledge acquisition, is a resource that enables employees to better perform job tasks (Quinones, Ford, & Teachout, 1995). Thus, it is plausible that law firms with highly experienced patent attorneys can provide better services and are more attractive suppliers to potential clients. We used each attorney's registration number to obtain the first year he or she was registered to practice before the USPTO and used these data to calculate the average *experience capital* for a law firm in each year.

In addition, we accounted for the possibility that the knowledge embedded in a law firm's human capital may change over time in ways that make it more or less attractive to particular clients. Although patent attorneys are all somewhat similar in their legal knowledge and skills, they can differ considerably in the knowledge of different technological or scientific areas that is a prerequisite for patent prosecution work. Therefore, the technological knowledge inherent in a law firm's human capital may change over time, particularly with respect to client-specific needs. We measured this fit between law firm knowledge and client requirements with the variable *knowledge capital fit.* We calculated this variable by using the USPTO's patent classification system to construct multidimensional vectors that defined the position of each law firm and client company in technology space. We measured this vector using the number of patents filed by each company and each law firm across different U.S. patent classes and then computed the cosine of the angle between each law firm–company vector pair in each year to obtain our fit variable.[5] Therefore, *knowledge capital fit* varies from 0 to 1, so that the greater the technological overlap, the higher its value. Finally, in addition to the control variables listed above, our empirical model employed fixed effects for each law firm–company dyadic pair, which controlled for all cross-sectional variation between law firm–company pairs.

Analyses

Our dependent variable, *patent work*$_{ijt}$, was measured as a count variable and as such took on only nonnegative integer values. Therefore, ordinary least square regression (OLS) techniques were inappropriate (Greene, 1997), and count data models had to be used instead. The primary equation em-

[5] Each technology position vector consisted of 435 potential dimensions, corresponding to the 435 distinct three-digit patent classes in the U.S. patent classification system. If L_i and C_j represent the vectors for law firm i and company j, *knowledge capital fit* would be computed as: $L_i \bullet C_j/|L_i||C_j|$. In other words, we take advantage of the dot product to compute the angle between the vectors. We obtained each law firm's patents by searching for conservatively defined text strings in the "Attorney, Agent or Firm" field of all U.S. patents in the relevant years. Because some client companies in our sample did not file patents in each year, we used patents filed in the previous three years to define company and law firm technology vectors. However, our results are robust to using patents filed in the previous year or the previous two years.

ployed for count data is the Poisson model, which is typically specified as follows:

$$E(patent\ work_{ijt}) = \exp(\boldsymbol{X}_{ijt-1}\beta), \qquad (1)$$

where $\boldsymbol{X}$ is a vector of independent and control variables, and $\boldsymbol{\beta}$ is a vector of their coefficients. Given the exponential specification of this model, we transformed all right-hand variables that are proportionally related to *patent work* by logs. In this way, both dependent and independent variables will be scaled similarly, yielding in essence a log-log model. For example, without logging *client company size*, the estimated number of patents would be modeled as increasing exponentially with the size of a company, which is clearly inappropriate.

In the Poisson model, the expected mean from Equation 1 is transformed to a count distribution with a Poisson distribution function. One feature of the Poisson distribution that has been focused on in the management literature is the assumed equality between the mean and the variance of the distribution. Therefore, many scholars employ the negative binomial model, which relaxes this "mean equals variance" assumption and can be especially valuable for analyzing *cross-sectional count data* by accommodating "overdispersion" in the errors. However, there is a history of distinguished econometrics scholarship advocating use of the Poisson model to analyze *panel count data*. A major concern with the negative binomial specification is that its estimates will be inconsistent (biased) if the true distribution of the errors is not negative binomial (Gourieroux, Monfort, & Trognon, 1984). By comparison, the Poisson estimates for panel data models will be consistent so long as the mean in Equation 1 is not misspecified (Gourieroux et al., 1984; Hausman et al., 1984). Research has also shown that concerns about overdispersion are much lower in fixed-effects count models because the fixed cross-sectional differences account for much of the overdispersion (Hausman et al., 1984) and that any residual overdispersion can be shielded against in significance tests by reporting semirobust Huber-White standard errors (Ahuja & Katila, 2001; Hausman et al., 1984). Consequently, a large number of analyses of panel count data have adopted the Poisson model (Ahuja & Katila, 2001; Blundell et al., 1995; Hall et al., 1986; Hausman et al., 1984; Somaya et al., 2007), and we employ this now-standard approach for analyzing our data as well.

To be clear, we employ fixed effects at the law firm–company dyadic level, which implies that our model focuses exclusively on *changes within* these dyads over time. By controlling for all constant features of each law firm–company pair, including unobserved heterogeneities, this approach provides a conservative test of our hypotheses. We also include a full set of year dummy variables to control for possible time period effects on the dependent variable. We preferred a fixed-effects model to a random-effects one because we had a nonrandom sample of firms and companies and also because we could not reasonably assume that unit-level (dyadic) disturbances in our sample were uncorrelated with our other variables (Greene, 1997). Using a fixed-effects model implied that all dyads that had no changes in the amount of patent business outsourced between them would be dropped from the sample during estimation, including those dyads that always had zero patents outsourced between them. In these cases, the constant level of the dependent variable was attributed entirely to the dyadic fixed effect, which meant that there was no remaining variation that could be attributed to (and therefore be used for estimating the coefficients of) any of the other variables. Consequently, in our main results reported below, there are 469 fixed dyadic units within which we examine the determinants of changes in business relationships.

RESULTS

Table 1 presents the descriptive statistics and the correlations between our variables. It should be noted that these correlations are cross-sectional and do not therefore have direct implications for collinearity, which is why researchers often do not report correlations with fixed-effects models. Table 2 presents the results of our fixed-effects Poisson models. Model 1 in Table 2, the base model with only control variables, illustrates that the amount of patent business law firms obtain from their clients is higher when they increase their human capital, as represented by the number of patent attorneys they employ, the average experience of their attorneys, and the overlap of their technological knowledge with client-specific needs. Furthermore, the number of patents outsourced by companies to law firms is also higher when they increase their size, their R&D intensity, and the intensity of their patent expertise. Models 2–6 present the results for our hypothesis tests added onto this base model. We conducted likelihood-ratio tests to compare these latter models to the base model and found that each of them adds significant additional explanatory power.[6]

[6] The McFadden pseudo-R^2s also suggest that the models have significant explanatory power. Unit fixed effects are subsumed in the residuals of fixed-effects models, leading to somewhat smaller R^2s in absolute

TABLE 1
Descriptive Statistics and Pairwise Pearson Correlations[a]

Variable	Mean	Standard Deviations			1	2	3	4	5	6	7	8	9	10	11	12	13	14
		Overall	Between	Within														
Patent work$_{ijt}$	3.72	17.64	15.12	8.68														
1. Gain from client	0.01	0.08	0.04	0.07														
2. Loss to client	0.01	0.10	0.05	0.09	−.01													
3. Gain competitor-client tie	0.04	0.19	0.10	0.17	−.02	.05												
4. Loss to competitors	0.79	0.68	0.48	0.49	.02	.04	.08											
5. Law firm size	3.41	0.64	0.63	0.15	.04	.09	.14	.48										
6. Experience capital	2.24	0.38	0.31	0.22	−.04	−.02	−.09	−.23	−.38									
7. Knowledge capital fit	0.18	0.13	0.12	0.06	−.01	.06	.04	.09	.11	−.09								
8. Law firm rank	3.58	1.10	1.03	0.39	.00	−.02	−.07	−.34	.52	.21	−.02							
9. Unranked dummy	0.46	0.50	0.34	0.37	.00	−.01	−.09	−.29	.47	.23	−.13	.67						
10. Loss to others	0.65	0.57	0.39	0.42	.00	.10	.09	.37	.47	−.21	.03	−.21	−.13					
11. Gain from all competitors	0.58	0.62	0.41	0.46	.06	.05	.30	.21	.45	−.20	−.02	−.24	−.22	.24				
12. Gain from others	1.45	0.81	0.66	0.47	.04	.06	.11	.40	.74	−.55	.11	−.36	−.23	.42	.34			
13. Client company R&D	11.50	7.94	7.73	1.82	.00	.03	.03	.08	.15	−.15	.23	−.10	−.16	.08	.02	.12		
14. Client company size	3.53	1.16	1.15	0.11	.04	.04	.08	.01	.02	.02	.16	−.05	−.02	−.01	.02	.01	−.02	
15. Client patent law expertise	0.48	0.38	0.37	0.11	.01	.04	.02	.02	.07	−.06	.05	−.07	−.11	.03	.02	.02	.36	.18

[a] Correlations larger than .04 are significant at the 5 percent level.

Model 2 tests the effect of employee moves into a law firm from a (potential) client company on the number of patents filed by the focal law firm for that company. *Gain from client* has a positive and significant coefficient (at the 1% level), which is consistent with Hypothesis 1. Therefore, hiring a patent attorney from a *Fortune*500 company positively influenced the amount of business a law firm obtained from that company. Hypothesis 2 predicted that losing an employee to a potential client may positively affect the amount of business a focal law firm receives from that client. As illustrated in model 3 of Table 2, *loss to client* had a positive and significant effect (at the 5% level) on the amount of patent business a law firm obtained from a company. Therefore, when patent law firms lost employees to cooperators who were their potential clients, business relationships between the organizations were enhanced, which is consistent with the predictions of Hypothesis 2.

Models 4 and 5 tested the effects of employee mobility between competing patent law firms on the amount of patent business focal firms obtained from client companies. In model 4, we evaluated the effect of gaining an employee from a competitor law firm on the amount of patent work a focal law firm obtained from that competitor's clients (Hypothesis 3). The estimated coefficient of *gain competitor-client tie* is positive and significant (at the 1% level). Thus, Hypothesis 3 was supported. In model 5, we tested the effect of losing employees to a competitor on a focal law firm's level of patent business (Hypothesis 4). The *loss to competitors* variable was negative and significant (at the 5% level), indicating support for the prediction of Hypothesis 4, that migration of employees to competitors is harmful to a focal firm's business. Finally, in the full model with all variables (model 6) our main results are again supported.

One striking feature of our results is the magnitude of the client-specific social capital–laden mobility effects (Hypotheses 1–3) relative to more general mobility (e.g., loss to competitors) or the control variables for human capital (e.g., knowledge capital fit). To interpret the effects accurately, we need to undertake a few additional calculations.[7] Perhaps the best approach is to take a situation that produces the biggest impact from general mobility to competitors; namely, comparison with a base case of zero losses to competitors. Leaving all the other variables unchanged, we find that losing one additional person to all competitors (starting from 0) has about one-tenth the effect (a 4% change in business) of gaining or losing a patent attorney

terms. Nonetheless, our full model has an R^2 of .16, which is relatively good for panel data models. The explanatory power of our models is further corroborated by a pseudo-R^2 of .55 for our zero-inflated Poisson model.

[7] Magnitudes of coefficients in count data models are interpreted differently from regression model coefficients owing to their exponential character. The effect of changes in each independent variable is essentially exponentiated and then multiplied by the effects of all other variables. For example, the movement of an employee from a focal law firm to a focal client changes the number of new patents outsourced between them to $\exp(0.35 \times 1) \times \exp(\text{coeff1} \times \text{var 1}) \times \exp(\text{coeff2} \times \text{var 2}) \times \ldots \times \ldots$, which is equal to $1.41 \times \ldots \times \ldots \times \ldots$. This is essentially a 40.5 percent increase in the level of business obtained by the focal firm from the focal client.

TABLE 2
Dyadic Fixed-Effects and Zero-Inflated Poisson Estimates of Patents Outsourced by Law Firms to Client Companies[a]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Gain from client		0.36** (0.10)				0.32** (0.10)	0.68** (0.08)
Loss to client			0.32* (0.13)			0.35** (0.13)	0.36** (0.11)
Gain competitor-client tie				0.33** (0.07)		0.33** (0.07)	0.33** (0.06)
Loss to competitors					−0.05* (0.03)	−0.05* (0.03)	−0.13** (0.02)
Law firm size	0.60** (0.13)	0.57** (0.13)	0.60** (0.13)	0.55** (0.13)	0.55** (0.13)	0.47** (0.13)	0.17** (0.04)
Experience capital	0.28** (0.11)	0.31** (0.11)	0.28* (0.11)	0.27* (0.11)	0.28** (0.11)	0.29** (0.11)	0.34** (0.05)
Knowledge capital fit	1.33** (0.18)	1.31** (0.18)	1.33** (0.18)	1.30** (0.18)	1.31** (0.18)	1.28** (0.18)	1.23** (0.07)
Law firm rank	−0.04 (0.05)	−0.04 (0.05)	−0.05 (0.05)	−0.05 (0.05)	−0.06 (0.05)	−0.08† (0.05)	0.07** (0.02)
Unranked dummy	−0.10 (0.06)	−0.10 (0.06)	−0.09 (0.06)	−0.08 (0.06)	−0.09 (0.06)	−0.05 (0.07)	−0.65** (0.05)
Loss to others	−0.003 (0.03)	0.01 (0.03)	−0.01 (0.03)	−0.004 (0.03)	0.00 (0.03)	0.00 (0.03)	−0.09** (0.03)
Gain from all competitors	0.01 (0.03)	0.01 (0.03)	0.00 (0.03)	−0.02 (0.03)	0.01 (0.03)	−0.03 (0.03)	−0.07** (0.03)
Gain from others	0.05 (0.03)	0.05 (0.03)	0.05 (0.03)	0.07* (0.03)	0.06† (0.03)	0.08** (0.03)	−0.01 (0.03)
Client company R&D	0.03** (0.01)	0.03** (0.01)	0.03** (0.01)	0.02** (0.01)	0.03** (0.01)	0.03** (0.01)	0.03** (0.00)
Client company size	0.93** (0.10)	0.93** (0.11)	0.92** (0.11)	0.92** (0.11)	0.96** (0.11)	0.93** (0.11)	0.04** (0.01)
Client patent law expertise	1.09** (0.16)	1.03** (0.16)	1.09** (0.16)	1.11** (0.16)	1.10** (0.16)	1.08** (0.16)	−0.81** (0.05)
Lagged DV dummy							1.51** (0.05)
Lagged DV count							0.01** (0.00)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	2,202	2,202	2,202	2,202	2,202	2,202	55,998
Number of dyadic groups	456	456	456	456	456	456	11,813
Wald χ^2	1,105.7	1,121.7	1,112.5	1,130.5	1,109.9	1,159.0	13,573.6
Log-likelihood	−3,109.2	−3,103.3	−3,106.1	−3,097.4	−3,107.3	−3,086.0	−7,703.9
Likelihood-ratio test		11.8**	6.2*	23.6**	3.8*	46.4**	127.6**

[a] Models 1–6 give fixed-effects estimates, and model 7 has zero-inflated estimates. Standard errors are in parentheses.
† $p < .10$
* $p < .05$
** $p < .01$

from/to the focal client (about 40%), or of gaining an attorney from a competitor with a tie to that client. Similarly, a one standard deviation change (within-dyad variation) in knowledge capital fit and experience capital produces only about one-fifth to one-sixth the effect, respectively, as mobility that has social capital implications specific to firms in the focal dyad. The relatively large magnitudes of these mobility effects make a compelling case for the importance of social capital conveyed in employee mobility about which we theorize.

Robustness Checks

As discussed above, our fixed-effects model has the advantage of controlling effectively for cross-sectional variation among law firm–client pairs and therefore provides a somewhat conservative test of our theory. However, as a robustness check we also ran a pooled cross-sectional model, which, unlike the fixed-effects model, included observations from all dyads that had no changes in the amount of patent business outsourced between them. Because we have a very large number of zeros for our dependent variable in this full sample (98.3%), it was appropriate in this context to employ a zero-inflated Poisson model (Greene, 1997; Mullahy, 1986). We also performed a test proposed by Vuong (1989) that corroborates (at the .001 level of significance) the superior fit obtained by correcting for zero inflation. The zero-inflated Poisson model we used comprises a first stage that models the likelihood that a law firm is in the consideration set of a client as a potential service provider and a second stage that models the actual number of patent applications outsourced. Because the model does not incorporate dyadic fixed effects, we included both lagged dependent variables—namely, a *lagged* dependent variable (*DV*) *dummy* variable (coded as 0 if there was no outsourcing), and a (logged) *lagged DV count* variable (measuring the actual number of patents outsourced)—to account for persistent dyad-level factors. Column 7 of Table 2 reports the estimates of this model, which closely mirror (but are sometimes larger than) our main fixed-effects results. However, because the zero-inflated Poisson model cannot account for all dyadic heterogeneities, the more conservative fixed-effects estimates are our preferred results.

In addition to the zero-inflated Poisson model, we conducted a number of analyses to further assess the robustness of our results. As discussed earlier, we employed alternative time-aggregation strategies for knowledge capital fit (see footnote 6) and alternative definitions of prior ties between competitors and clients, finding essentially the same results. We also used logged counts instead of dummies for all our main independent variables and found similar support for our hypotheses. Finally, we were concerned about whether all attorneys in our data would equally be carriers of social capital, especially if they didn't have long tenure at their former employers. Accordingly, we reestimated all our results after dropping patent attorneys who moved more than once in our data (less than 5 percent of all attorneys), and we found the same support for our hypotheses.

DISCUSSION

In the modern competitive and fast-changing business environment, firms are constantly faced with the challenge of finding and retaining high-quality employees in order to build successful competitive businesses. Nowhere is the importance of human assets to firm performance more acute than in professional service sectors such as law, management consulting, IT consulting, and advertising, where employees' knowledge, skills, and social capital have direct implications for firms' competitiveness, reputations, and ultimately their survival. However, unlike physical and financial assets, human assets are not organizational property and can be easily lost when employees leave a firm and choose to go elsewhere (Argote, 1997; Coff, 1997). This attribute of human resources raises several theoretical questions about how human assets create value for organizations, and also presents several practical challenges for managers attempting to leverage human resources.

Research on employee mobility at the organizational level has largely examined the issue through the prism of human capital theory, with social capital explanations being adduced only to the extent that they relate to productive internal relationships between employees (e.g., Shaw, Duff, et al., 2005). In this study, we extend prior research by drawing on the concept of external social capital (Leana & Pil, 2006) to offer a complementary perspective on traditional explanations linking employee movement to firm performance. In general, our results demonstrate that the external social ties created by employee mobility can have a significant impact on firm performance. Moreover, the effects of mobility that we find are very large, especially when compared to the impact of contemporaneous changes in the human capital of firms in our sample. These findings make a compelling case that employee mobility research may be usefully extended to combine concepts of external social capital with traditional human capital perspectives.

A key finding of this study is that where a focal

firm acquires human assets from and whom they lose these assets to have important implications for firm performance. Our results suggest that hiring employees from other firms can create interorganizational network ties that facilitate economic exchanges through the development of external social capital. Specifically, we find that when a firm hires employees from a client, a direct link between the two organizations is created, and this link is related to an increase in the amount of business transacted between them. Furthermore, the social capital benefits of external hiring are not limited to hiring directly from potential clients. A focal firm can also form links with potential clients and increase revenues by poaching employees from competitors. This finding extends prior research by empirically illustrating Coff's (1997) assertion that external social capital is a general asset that can be transferred between organizations through employee mobility. Moreover, although prior research has tended to focus on a firm's external networks and social capital as organization-level phenomena (e.g., Ahuja, 2000; Inkpen & Tsang, 2005; Walker, Kogut, & Shan, 1997), our findings demonstrate that some external ties may be embedded in individual-level relationships that can move between organizations with mobile employees. Exploring the dividing line between these portable individual-level external ties and more routinized and durable organization-level ties would be a useful endeavor for future research.

Another important finding of our study is that where firms *lose* employees to can be just as important in shaping economic exchanges with potential cooperators as where firms hire from. In our study, when an employee left a focal firm to join a client, the focal firm tended to receive more business from that client. This result contradicts the popular notion that losing people is always negatively related to firm performance (Osterman, 1987; Shaw, Duff, et al., 2005; Shaw, Gupta, & Delery, 2005). It also highlights the importance of considering both human and social capital benefits associated with employees. Although the loss of an employee can reduce the human capital of a firm, if the employee leaves to join a potential client, her or his mobility can also generate performance-enhancing external social capital.

Although employee exit can create positive outcomes for firms, the "wrong kind" of mobility may also harm a focal firm's competitive position. In our sample, focal firms that lost employees to competitors tended to have a reduction in the amount of business they received from clients. This result is consistent with prior findings that employee exit in professional service firms can dissolve market ties with clients (Broschak, 2004) and decrease the survival chances of the originating firms (Wezel, Cattani, & Pennings, 2006). However, taken together, the results of our study extend prior research by providing additional insight into when and how employee exit hurts firm performance. It should be noted that the coefficient of the loss to others control variable, which measured employee loss to retirement, private practice, or organizations that were not competitors, was not statistically distinct from 0 in our fixed-effects models. This result, along with our finding that losing employees to potential clients actually increases the amount of business law firms receive, suggests that it is important to distinguish between situations in which employees leave to join competitor firms and those in which they leave for other destinations.

Our research holds important implications for how practitioners strategically manage their human resources. There exists a long-standing notion in practitioner circles that acquiring talented employees from competitors is beneficial because it enhances the quality of the hiring firm's human resources. Although our findings are consistent with this viewpoint, they also suggest that traditional strategies of human resource management should be expanded to recognize that firm performance is shaped by where employees are lost to and acquired from. Human capital issues are clearly important, but human resource management should be extended to include the complementary management of internal and external relationships. For example, in addition to considering the individual-level attributes (e.g., knowledge and experience) of prospective "hires," it may also be important to consider where new employees are being hired from and what social ties they have to prospective clients. Organization leaders may also find it valuable to manage the relationships they possess with former employees who are currently working for prospective clients. For example, the consulting firm McKinsey & Co. actively maintains a connection with its alumni, many of whom work for potential clients, by mailing newsletters and sponsoring social events (Byrne, 1993). Such actions may help firms to retain the social capital they share with former employees, which creates valuable external relationships for firms, even though they no longer retain the individuals' human capital.

Directions for Future Research

The results of our study offer preliminary but encouraging support for the idea that the social capital associated with employee movements may be beneficial to a firm's performance. However,

social capital is a context-specific phenomenon that is influenced by "the nature of work and organizational structure and processes" (Leana & Pil, 2006: 363). In organizational settings where work activities are more interdependent and team-oriented, employees' internal social capital may play a more important role in shaping performance outcomes than external social capital. For instance, Groysberg, Nanda, and Nohria (2004) found that the performance of star stock analysts diminished when they left to join new employers, in part because their movement severed important intrafirm relationships. In addition, there may be certain organizational contexts where the portability and value of an employees' external social capital to a new employer are minimal. For example, our empirical setting differs from Shaw, Duffy and colleagues' (2005) examination of employee mobility in restaurants, where the implications of mobility for external social capital are likely very limited. Moreover, the potential loss of firm-specific human capital, especially in contexts where these are high, may moderate (or even offset) the social capital benefits of employee mobility. Therefore, despite the robustness of our results within the patent legal industry, we encourage future researchers to test our theory in other industries that may have different social norms, team production characteristics, levels of firm-specific human capital, and resource configurations in order to assess the generalizability of our findings.

In addition to competitors, we focus on only one source and destination of personnel flows—a firm's clients. Organizations, however, may experience personnel flows to and from many other sources as well, such as suppliers, complementary product (or service) producers, academic institutions, not-for-profit communities, and government agencies. Examining the impact of interorganizational ties created through employee mobility and the derived social capital in these various contexts would also be an interesting and fruitful research direction to pursue. Furthermore, our study focuses on the consequences rather than the antecedents of employee mobility. Future studies could build upon our work by examining how and why organizations target specific employees for hiring, including social capital or organization-specific knowledge built up through prior business ties.

In this study, we focused on the positive benefits firms may derive from the external social capital created by employee mobility. However, Labianca and Brass (2006) noted that social relationships are not always positive and may produce liabilities for organizations. For instance, when an employee has a negative relationship with his or her former employer, this may reduce the likelihood that employee mobility will create opportunities for economic exchange. Similarly, Portes (1998) noted that social capital may also entail negative aspects created by such factors as exclusion, obligation, and conformity, which may be intrinsic features of social capital. Thus, future research could build upon this research by studying how the affective attributes of employees' ties to former employers moderate the performance impacts of employee mobility and by examining the negative consequences of the social capital shared between firms and their clients. Our study could also be extended by investigating whether there are certain situations in which a focal firm's decision to hire an employee away from a cooperator may be perceived in a negative light (i.e., as "poaching"), thus generating negative social capital that diminishes opportunities for economic exchange.

Our findings provide evidence for the impacts of mobility on firm performance at the level of the overall value generated by a firm, but they leave open the question of which stakeholders of the firm appropriate those rents (Coff, 1999). For example, social capital–induced rents may accrue to the firm's shareholders or to its employees, and in partnership firms (such as the patent law firms in our sample) certain employee-owners (partners) may appropriate a larger share of the rents than others. Research has suggested that employees that convey organizational social capital may possess significant bargaining power, enabling them to appropriate large amounts of newly generated rents (Blyler & Coff, 2003). For example, in our context, individuals recruited into firms for their ability to deliver specific clients may be able to negotiate large (presumably contingency-based) compensation packages. Conversely, to the extent that rent appropriation by employees through bargaining is not perfect, firms (or other stakeholders of firms) may also appropriate a portion of the rents. Firms may also be able to leverage the social capital they gain from mobility by exploiting complementarities with other areas (such as related nonpatent legal services), and these rents are less likely to be bargained away by mobile employees. Understanding how the rents generated by external social capital are appropriated by different stakeholders of firms is a valuable avenue for additional future research. Relatedly, prior research has suggested that social capital can have a positive effect on individuals' salary, promotions, and career satisfaction (Seibert et al., 2001). Thus, research examining the effect of external social capital on individuals' career outcomes may provide important insights into career management for knowledge workers.

In conclusion, our study provides theoretical implications that extend both that HRM and resource-based literatures by providing novel explanations for the firm-level effects of employee mobility. In particular, it has helped to unpack the processes that link human assets to firm performance, which are still largely thought to be a black box (Kang, Morris, & Snell, 2007). We encourage future researchers to use this work as a departure point for more comprehensive studies of employee mobility and firm performance.

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