

WHO LEAVES, TO GO WHERE, AND DOES IT MATTER?: EMPLOYEE MOBILITY, EMPLOYEE ENTREPRENEURSHIP AND THE EFFECTS ON PARENT FIRM PERFORMANCE¹

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ABSTRACT

We develop and test a theory that links differences in the ability of human assets to generate value (as proxied by employee earnings) to their mobility decisions, and the subsequent effects of the different types of mobility on parent firm performance. Using administrative data from the U.S. Census Bureau on the legal services industry, we find that employees with higher earnings are more likely to stay at the parent organization, but if they do leave, they are more likely to engage in employee entrepreneurship (starting a new firm vs. joining an existing firm). We find that employee entrepreneurship has a larger adverse impact on parent firm performance than mobility to an established firm even after controlling for observable employee quality. Our findings suggest that the ability of employees to transfer human capital, complementary assets, and opportunities all play an important role in both the employee mobility decision and its impact on parent firm performance.

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Human assets often represent an organization's key competency and source of competitive advantage (Coff, 1997; Lippman and Rumelt, 1982; Teece, 1982). While organizational procedures, norms, and routines serve as important repositories of firm specific knowledge (March 1991; Nelson and Winter, 1982), Simon (1991) identified the symbiotic relationship between organizational and individual knowledge inasmuch as organizations learn either due to learning of their employees, or by hiring employees that bring in new knowledge. However, as eloquently argued by Coff (1997), translating human assets to sustainable competitive advantage is fraught with management dilemmas, given the obvious issue that employees "walk out the door each day, leaving some question about whether they will return" (p 375). This causes firms to be in a precarious position of not only losing their competitive advantage, but indirectly enabling their competition due to the transfer of human assets, routines, and opportunities through mobility to established firms within the same industry or mobility to spin-outs (i.e. employee entrepreneurship).²

A rich body of literature documents strong support for knowledge spillovers or transfer through employee mobility (Agarwal, Ganco and Ziedonis, 2009; Almeida and Kogut, 1999; Bhide, 1994; Franco and Filson, 2006; Oettl and Agrawal, 2008; Rosenkopf and Almeida, 2003) and employee entrepreneurship (Agarwal, Franco, Echambadi and Sarkar, 2004; Franco and Filson, 2006; Hellman 2007; Klepper and Sleeper, 2005; Phillips, 2002). These scholars have amassed a substantial body of evidence about the advantages of "learning through hiring" (Simon, 1991) for the recipient organization. However, less is known about what types of employees are most likely to leave, to join which type of firms, and what are the competitive ramifications of the transfer of human assets on the performance of the parent firm³. These questions are critically important to address, not only from the micro perspective of an individual employee's ability to generate and

² The employee movements across organizations that have ownership affiliations are typically not considered employee entrepreneurship or mobility events (e.g. Agarwal, *et al.*, 2009). Spin-out is defined as a start-up founded by a former employee of an established firm within the same industry.

³ Early indications suggest that higher ability individuals are more likely to found start-ups (Groysberg, Nanda and Prats, 2007; Braguinsky, Klepper and Ohyama, 2009). Further, the performance of the source firm is negatively impacted, particularly when mobile employees join rivals (Somaya, Williamson, Lorinkova, 2007), or found competing start-ups (Phillips, 2002; Wezel, Cattani and Pennings, 2006).

appropriate value, but also from the macro perspective of a firm's strategic management of its human assets and resultant competitive advantage.

Anecdotally, these issues are best exemplified by the now classic lore of the genesis of Fairchild Semiconductor and its own subsequent spin-outs. The “traitorous eight”—Shockley Semiconductor Laboratories’ most talented yet underutilized employees who included Robert Noyce and Gordon Moore—attempted to negotiate William Shockley’s replacement with the company founder Arnold Beckman when they disagreed with Shockley about the prospects of his technology (Shurkin, 2006, Davis and Moore, 2001). When these efforts did not result in Shockley’s replacement, the eight researchers tried to offer themselves as a team to Shockley’s rivals (Holbrook, Cohen, Haunshell and Klepper, 2000, Davis and Moore, 2001). However, realizing that they may encounter similar constraints at another established firm in leveraging their talents, the eight employees ultimately chose to recreate the necessary complementary assets (both physical and human) to form a new venture—Fairchild Semiconductor (Holbrook, et al., 2000, Davis and Moore, 2001). History repeated itself at Fairchild; numerous “Fairchildren”—including Intel—were formed by talented employees that left themselves, but also transferred or replicated other core and complementary assets when they engaged in employee entrepreneurship (Moore and Davis, 2001).

As Gordon Moore noted about the first of Fairchild’s spin-outs:

One day we came to work and discovered that Baldwin, along with a group of people he had suggested we hire, were leaving to set up a competing semiconductor company (Rheem) just down the road. He and his group took with them the ‘recipes’ for manufacturing we had developed.” (p 4, Moore and Davis, 2001)

Importantly, while Silicon Valley and the semiconductor industry thrived as a result of such initiatives, parent firms Shockley and Fairchild semiconductor either exited or were marginalized, their erstwhile competitive advantage seriously eroded due to the continual loss of critical assets through employee mobility and entrepreneurship (Holbrook, et al, 2000; Moore and Davis, 2001). In fact, having learned the cost of losing valuable employees and helping to create his own

competition, when Moore started up Intel, he made employee entrepreneurship extremely difficult (Davis and Moore, 2001).

These lessons are perhaps not lost to Google, which was recently reported to have taken innovative steps in response to recent exodus of talented employees (Morrison, 2009). Given concerns that Google's size may now inhibit its talented employees to have the same impact they did when Google was smaller, Google is attempting to analytically identify the risk of employee exit. Google is developing sophisticated search algorithms to "get inside people's heads even before they know they might leave" (Morrison, 2009). Particularly of note is that Google's strategy for retaining its human assets is not "across the board" for all employees, but targeted towards a differential assessment of who feels most under-utilized and who generates the most value (Morrison, 2009). In part, this may also be a reaction to the xoogle phenomenon (a contraction of the word ex-googler and pronounced zoogler): employees of Google leaving to create start-ups. Google's concern with employee entrepreneurship is due not just to the transfer and replication of relevant knowledge and experience, but also to employees' heightened ability to convince colleagues best-suited to their new project to join the spin-out, as well as access to venture capital funding through the former Google employee network (Fost, 2008). Indeed, one key feature in assessing the importance of this type of movement for the parent firm is whether employee entrepreneurship has a significant impact on the parent firm. Missing from accounts of Google's secret algorithm for identifying potential brain drain (Morrison, 2009) is information on whether Google is incorporating the potential impact that may be caused when its employees move to an established firm or join a spin-out and how Google assess the impact.

The above examples illustrate that a comprehensive understanding of the relationship between employee mobility, employee entrepreneurship, complementary assets and parent firm performance across micro- and macro-levels of analysis is important for several reasons. At the individual level, an understanding of potential career trajectories as a function of both the individual level human assets and the requisite complementary assets may enable employees to make more informed choices about whether they should leave the parent organization, and to go where. At the

firm level, strategic management of human assets requires firms to be aware of the differential likelihood of mobility among their employees, so that they can devise strategies that both decrease the risk of losing their most valuable human assets and mitigate the potential negative performance consequences caused by the mobility to rival firms versus spin-outs. At an industry level, the answers to these questions relate to the competitive dynamics between established firms and entrepreneurial start-ups, given potential differential pressures on the parent firm of mobility to established firms versus spin-outs.

We examine our research questions in the empirical context of the legal services industry—a professional services context where knowledge residing in human assets is critical for the creation and appropriation of value. Using data derived from a custom extract of the Longitudinal Employer-Household Dynamics (LEHD) Project available at the U.S. Census Research Data Centers, we test our predictions on who leaves, to go where, and the impact of the mobility events on parent firm performance. At the individual employee level, we find support for our hypotheses that higher income earners are less likely to be mobile, but if they do leave, they are more likely to be involved in the founding of a new firm. At the firm level, we find that mobility to a spin-out has a larger adverse impact on parent firm performance than mobility to an established firm, even after controlling for observable employee quality differences. We also find that the adverse impact of employee entrepreneurship on parent firm performance increases with employee earnings.

In addressing these questions, we contribute to the literature in human resource management, strategy and entrepreneurship. We connect the fields of human resource management and strategy by extending Teece's (1986) framework of complementary assets to the micro-level mobility decisions of individual employees and the impact of these decisions on macro-level firm outcomes. Through this framework, we add to the understanding of how employees and employers may generate and appropriate value, and the extent to which complementary assets may affect their relative bargaining power vis-à-vis the other. Further, our research contributes to the connection between strategy's knowledge based view, literature on knowledge spillovers through employee mobility, and literature on employee entrepreneurship by simultaneously examining both the

determinants and the effects of knowledge transfer through employee mobility vs. employee entrepreneurship. Further, in keeping with Schumpeter's concept of creative destruction (Schumpeter, 1934) we explicitly capture the destruction of value at a parent due to the creation of spin-outs.

THEORETICAL FRAMEWORK AND HYPOTHESES

Human assets have been recognized as an integral part of value creation, and this increases with the knowledge intensity of the industry (Coff, 1997; Lippman and Rumelt, 1982). Simon (1991) emphasized that learning occurs in the minds of individuals: organizations learn either by their employees learning or by hiring new employees with new knowledge. The latter type of learning highlights the importance of human assets as a conduit for knowledge transfer or spillovers, since employees are free to quit at will (Aldrich & Pfeffer, 1976; Boeker, 1997; Coff, 1997). Indeed, a rich body of literature documents strong support for knowledge spillovers or transfer through employee mobility (Almeida and Kogut, 1999; Bhidé, 1994, Franco and Filson, 2006; Oettl and Agrawal, 2008; Rosenkopf and Almeida, 2003,) and employee entrepreneurship (Agarwal, Franco, Echambadi and Sarkar, 2004; Franco and Filson, 2006; Groysberg, Nanda and Prats, 2009; Klepper and Sleeper, 2005; Phillips, 2002, Wezel, Cattani and Pennings, 2006).

While the above studies extol the benefits of knowledge transfer or spillovers through human assets to the recipient firm, Coff (1997) highlights the management dilemmas faced by the "source" or "parent" firm that relates to the precarious ownership of valuable human assets. In particular, Coff questions whether competitive advantage based on human assets is truly sustainable, absent systems to cope with the associated management dilemmas. Further, Coff's work underscores the need for research that integrates across micro level human resource management and macro level strategic management to identify factors that potentially impact the appropriation of value between the organization and the employee, given heterogeneity in the type of knowledge embodied within different employees. We attempt to do so in this study, by beginning with a framework that highlights differences in bargaining power between the two as a function of two dimensions: the

importance of the firm's complementary assets to value creation, and the ability of the employee to transfer or recreate the complementary assets outside the firm's boundaries.

Value Appropriation, Relative Bargaining Power and Complementary Assets

In his seminal article, Teece (1986) identified the importance of complementary assets to core technological know-how in both the creation and appropriation of value. While Teece's framework has been used largely to explain strategic management issues regarding value appropriation by the innovating firm in high technology industries (Franco, Sarkar, Agarwal and Echambadi, forthcoming; Gans and Stern, 2003; Tripsas, 1997), it can also help shed light on human resource management issues. Our rationale rests on an important observation made by Hart (1995): "Control over non-human assets leads to control over human assets" (p 58).

In Figure 1, we adapt the Teece (1986) depiction of core and complementary assets to the context wherein the firm's complementary assets are important for value creation, and the core knowledge or innovation resides within the employee at risk of exit (the focal employee). These complementary assets may consist of organizational knowledge (e.g. codified routines, knowledge embodied in products and processes, and intellectual property rights), non-human complementary assets (e.g. physical capital, contractual relationships with buyers/suppliers, brand equity and reputation) and human complementary assets (e.g. tacit knowledge embodied in other employees). The focal employee's ability to transfer or recreate complementary assets conditions the relative appropriability of value created by the employee vs. the firm, since firms can potentially appropriate that portion of the value created which may be lost without these complementary assets (Klein, Crawford and Alchian, 1978).

The x-axis represents the importance of complementary assets owned by the firm for value creation relative to the employee's human assets, and the y-axis represents the employee's ability to recreate or transfer these complementary assets outside the parent firm's boundaries. The relative bargaining power of the firm vis-à-vis the focal employee is a function of whether it possesses complementary assets that are important for value creation, *and* whether the employee can

potentially walk away with, or recreate these complementary assets at low cost after exit.

Accordingly, we differentiate between three areas in Figure 1.

If the complementary assets are important to value creation *and* are embodied in assets that are not easily reproducible outside of the firm's boundaries (e.g. intellectual property rights on complementary knowledge, specialized physical assets), the firm easily prevent the employee from leaving and competing with the firm, limiting the employee's outside options. As a result, the firm will possess greater bargaining power—allowing it to appropriate a higher share of the value created (Firm Advantage in Figure 1). On the other hand, even when the firm possesses complementary assets that are necessary for value creation, if the employee is able to recreate or transfer these easily to the recipient firm, then the employee will have higher bargaining power, and may be able to appropriate much of the value created (Employee Advantage in Figure 1). For example, to the extent that the important complementary assets reside in other human assets (who can also be convinced to quit), or in non-human assets that can be more easily recreated outside the firm's boundaries (e.g. relationships with buyers and suppliers), the employee will have a relative bargaining advantage with their employer. The “in-between” area represents a situation of bilateral bargaining power: the firm's complementary assets are important for value creation, and the focal employee has some but not perfect ability to recreate these complementary assets. In this area, the ability of either the employee or the firm to appropriate value is limited by the other's bargaining power and may be determined by other features of the environment.

The human assets embodied within a focal employee (core knowledge) determines what is complementary for value creation. Thus, both dimensions represented in Figure 1 will differ based on the amount of human assets that the focal employee embodies. The lower the human assets of the focal employee, the more important are the firm's complementary assets for value creation, and the *less* able the employee will be to transfer and or recreate these complementary assets outside the parent firm's boundaries. In what follows, we discuss the implications and develop hypotheses for which type of employee is more likely to leave, to go where, and whether it matters to parent firm performance.

Who Leaves?: Types of Human Assets and Propensity of Exit

In examining questions related to the propensity of employee exit, our key underlying construct is the ability of an employee to generate value for her employer. An employee's ability to generate value for her employer captures the contribution of the employee to the value of the employer when surrounded by the complete set of complementary assets at the employer. This construct is highly related to many factors including the employee's innate ability, education, and experience; the employee's motivation to work; the employee's social network (Shaw et al., 2006); and the employee's position and responsibilities in the firm (Elfenbein et al., 2008; Salamin and Horn, 2005; Williams and Livingstone, 1994; Zenger, 1992). Because these factors vary across individuals, there is heterogeneity in employees' ability to generate value within the firm.

Compared to employees with high human capital, employees with low human capital are likely to contribute less to the total amount of value created given the contribution of the firm's complementary assets. Further, they are more likely to be limited in their ability to recreate or transfer these complementary assets outside of the firm's boundaries which limits their bargaining power and their ability to appropriate value. Accordingly, they fall in the "Firm advantage" area of Figure 1, given their lower ability to contribute to value creation and lower bargaining power.

Increased levels of skills, education, experience, and work ethic imply higher levels of knowledge embodied in human assets. Further, these factors are also correlated to promotions that result in increased locus of control and level of authority possessed by the individual in the firm (Trevor, Gerhart and Boudreau, 1997; Greenberg & Ornstein, 1983; Huselid, 1995; Phillips, 2002; Salamin and Horn, 2005; Zenger, 1992). Their earnings increase with factors related to ability. These employees have higher bargaining power due to their relative contribution to value creation and their ability to replicate the necessary complementary assets. As a result, they are able to appropriate a greater share of the value they generate because they are better able to make a credible threat to exit and transfer complementary resources and opportunities from the parent firm. This transfer of resources may include technologies identified while working within the parent firm

(Agarwal et al., 2004; Bhide, 1994; Klepper and Sleeper, 2005), transfer of supporting team members (Groysberg et al., 2009) and transfer of social networks (Burton, Sørensen and Beckman 2002). Examples of the opportunity transfer may include attracting current clients (i.e. “the book”) to the new firm (Taylor, 2005; Taylor, 2000; Stull, 2009), focus on niche segments of the industry (Hurley, 2009; Agarwal et al, 2004) or creation of new products and practices (Mondics, 2009; Taylor, 2000). Consequently the high value generators have high bargaining power vis-à-vis the parent firm and can appropriate most of the value they create.⁴ They are thus more likely to be in either the “Bilateral bargaining power” or “Employee advantage” area of Figure 1.

We posit that that while employees with higher levels of human capital levels pose a higher loss of value creation to the firm upon exit, they are less likely to *actually* exit, given their ability to appropriate value to their advantage. This is consistent with human resource management literature, which has documented how firms provide both pecuniary and non-pecuniary benefits to such employees to reduce turnover (Allen and Griffeth, 2001; Trevor, Gerhart and Boudreau, 1997; Salamin and Horn, 2005; Williams and Livingstone, 1994; Zenger, 1992), often in systems of high performance wage practices that complement each other (Huselid, 1995). Since pay satisfaction is often a function of relative rather than absolute pay (Berkowitz, Fraser, Treasure and Cochran, 1987; McFarlin and Sweeney, 1992), employees often weigh pay differentials among their coworkers more than labor market differentials (Coff, 1997). Thus, sharing rents with high-performing employees in the form of higher wages not only increases perception of distributive and procedural justice (McFarlin and Sweeney, 1992), it also creates a penalty for exiting (Coff, 1997; Weiss, 1990), given the perception that they are well paid for their performance (Coff, 1997; Lawler and Jenkins, 1990; Zenger, 1992). Additionally, firms can increase non-pecuniary job satisfaction in several ways. Since professionals and employees with higher levels of knowledge value the intrinsic satisfaction of the work, autonomy and input (Humphrys and O’Brien, 1986; Raelin 1991), firms that optimize their

⁴ This may also explain the partnership as the standard governance structure in professional services industries wherein there is transfer rather than spillover of relevant knowledge and complementary assets. Levin and Tadelis (2005) provide an alternative suggestion: when there are difficulties in monitoring the quality of a service, firms may choose to hire low quality workers. Since the partnership structure provides an incentive for partners to hire better employees, this explains the preponderance of partnerships within the professional service sector.

complementary assets to the focal employee's core knowledge provide higher levels of motivation to stay and perform well (Hackman and Oldham, 1980). Firms can also increase the value they provide to the employee by creating strong internal ties (Dess and Shaw, 2001; Jackson et al. 1991; Krackhardt & Porter, 1986; Lee et al. 2004), thus increasing complementarities with other assets and decreasing the likelihood of exit.

To the extent that the above human resource management strategies translate into greater ability to appropriate value for the high performing employees and thus have higher earnings, it is not optimal for high earning employees⁵ to leave the parent firm and incur the costs and risks associated with mobility either to a rival firm or a spin-out. While such employees may be able to transfer or recreate the firm's complementary assets outside its boundaries, they are less likely to do so. Coff (1997) provides evidence that although high-producing security brokers could leave with 95% of their clients and business, their turnover rate was less than 10%, given the rent-sharing strategies employed by the firm in the form of firm-specific pay, performance based incentives and high participation in critical management related decisions. This argument leads us to our first baseline hypothesis:

H1: There is a negative relationship between earnings and the likelihood of employee mobility.

To Go Where?: Employee Mobility to Entrepreneurial Start-ups (Spin-outs) vs. Mobility to Established Firms

The above discussion relates employee turnover to the ability of the employee to generate value, but does not distinguish between an employee exiting to join an established firm vs. creating a start-up. Groysberg et al. (2009) and Elfenbein et al., (2008) provide some evidence that higher performers or higher earners may be more likely to engage in employee entrepreneurship, however these studies do not offer any theoretical explanation of their empirical findings. In Braguinsky et al.

⁵ In linking an employee's ability to generate and appropriate value with earnings, we follow a long tradition in both human resource management and labor economics that document the positive correlation between employee value and earnings (Allen and Griffeth, 2001; Baker, Gibbs and Holmstrom, 1994; Trevor, Gerhart and Boudreau, 1997; Coff, 1997; Lazear and Rosen, 1981; McFarlin and Sweeney, 1992; Medoff and Abraham, 1980; Salamin and Horn, 2005; Williams and Livingstone, 1994; Weiss, 1990; Zenger, 1992).

(2009), the employee's ability to create value for the firm is highly related to the employee's entrepreneurship ability; higher able employees will be more successful as entrepreneurs. Similarly, within the context of our theory we posit that, conditional on mobility, the likelihood of employee entrepreneurship relative to the likelihood of mobility to established firm should increase with individual's earnings.

There are important differences between employee mobility to an established firm and employee entrepreneurship. By definition, starting a new enterprise implies undertaking the risk of operating a new business; the fact that more than a third of new firms do not survive five years (Agarwal and Audretsch, 2001) attests to the inherent uncertainty of venturing out on your own. Drucker (1985) attributes these high failure rates not to the quality of the idea or innovation, but to the lack of business and management skills among founders. He states that while the existence of "management" causes problems in established organizations due to inertial tendencies, the *absence* of management creates the biggest obstacles to success in entrepreneurial organizations. Anecdotally, Gordon Moore attributes Shockley Semiconductor's failure to its lack of management experience (Moore and Davis, 2001). Thus, for a new firm, the challenges relate to the creation of an organizational structure and the generation of synergies between the core knowledge of the human asset and the complementary assets that are requisite for value creation (x-axis of Figure 1).

Relative to joining an established firm, the decision to start a new venture requires the employee to address issues related to the optimal organization of the new firm. In this context, the individual's ability to transfer or recreate complementary assets (y-axis of Figure 1) is key to the formation and success of the new enterprise. As discussed above, since higher earnings are typically correlated with higher ability, experience and status, high earners are better at replicating complementary assets and transferring resources and opportunities outside of the parent firm (Agarwal et al., 2004; Bhide, 1994; Burton, Sorenson and Beckman 2002; Groysberg et al., 2009; Hurley, 2009; Klepper and Sleeper, 2005; Mondics, 2009; Taylor, 2005; Stull, 2009). Further, transferring or replicating these resources and opportunities is easier when starting with a clean slate than having to graft these on to an existing organization. For example, complex internal networks

that create value are easier to replicate through team mobility, and the likelihood of doing so is greater when moving to a start-up than to an existing firm (Ganco, 2009). Accordingly, high earners will have higher value creation potential and lower set-up costs and risks when founding a new firm relative to low earners. In contrast, mobile employees with lower earnings may be limited in their ability to replicate complementary assets effectively, and may be more likely move to an established firm relative to founding a start-up.

Additionally, high and low earners may also have differences in motivation in starting a new firm relative to moving to an established firm. As discussed above, high earners are able to appropriate most of the value they create, thus, their motivation could be twofold. First, they may sense the potential to generate or appropriate even more value outside of the parent firm due to perceived parental inertia that results in the existence of underexploited opportunities, lack of existing fit with their skills, and other such constraints at the existing firm. These inertial tendencies are more likely to be present at other established firms as well, and may even be exacerbated by moving to an established firm, to the extent that differences in corporate culture create difficulties in matching with other firms (Coff, 1997). Thus, if motivated by frustration with parental inertia and perception of underexploited opportunities (Agarwal et al, 2004; Klepper and Thompson, 2008), employees are more likely going to spin-out than move to an existing firm. Second, high earners are likely to have diminishing marginal returns for pecuniary motives, and may value non-pecuniary factors such as job satisfaction and autonomy relatively more than low earners (Hamilton, 2000; Blanchflower & Oswald, 1998; Gompers et al., 2005; Puri & Robinson, 2006; Teece, 2003). Starting a new firm enables them to fulfill these non-pecuniary motives better than moving to an existing firm where they may be constrained to conform to established norms and standards.

In sum, we expect that high earnings employees are less likely to move but if they do move, they are more likely to start new firms. Accordingly,

H2: Conditional on mobility, employees with greater earnings are more likely to join spin-outs than join established firms.

Does it Matter? Impact on Parent Firm Performance

How do the micro-level mobility choices of employees affect macro-level firm performance? We now turn to the analysis of the impact of mobility to established firms and mobility to spin-outs on parent firm performance. Consistent with our framework above, we argue that mobility to a spin-out will have a greater adverse effect on parent performance relative to mobility to an established firm, and this differential will increase with the quality of the mobile human assets.

Regardless of whether the employee moves to an established firm or to a spin-out, the mobility event represents the parent firm's loss of the focal human asset as a critical resource (Phillips, 2002). The competitive impact on the parent of this loss is a function of the recipient firm's ability to capitalize on the focal human asset's knowledge and will be greater for employee movement to a spin-out than to an established firm because an established firm will find it harder to assimilate the employee's accumulated firm specific skills, resources and idiosyncratic knowledge (Coff, 1997; Polanyi, 1962; Williamson, 1975). Furthermore, Agarwal et al (2004) show that spin-outs inherit knowledge from their parents through their founders, while the link between knowledge at one established firm and another after mobility events has not been shown to be as direct or clear.

Moreover, mobility to the spin-out also results in a greater replication and transfer of the complementary assets, thus impacting the parent firm more adversely than mobility to an established firm. Wezel et al. (2006) hypothesize that the replication of organizational knowledge and routines from parent firm to the spin-out is a likely cause why mobility events to spin-out impact the parent firm more adversely than mobility events to an established firm. More importantly, employees are better able to transfer both non-human and human complementary assets when moving to a spin-out than when moving to an established firm as shown in Agarwal et al (2004). In particular, to the extent that supporting team members are important complementary assets (Groysberg et al, 2009), employees are more able to transfer complementary human assets to a start-up than to an existing firm (Ganco, 2009). Such transfers will have a larger negative impact on the parent firm's performance.

In addition, employees who start up a firm rather than move to an established firm are also more motivated to transfer the necessary resources and capabilities, given the higher risk and uncertainty associated with starting a new venture (Agarwal and Audretsch, 2001; Drucker, 1985, Khessina and Carroll, 2008). While employees who move to established firms have the relative luxury of leveraging the recipient firm's existing complementary assets, as noted above, employee entrepreneurs need to re-create more of the complementary assets relative to employees moving across existing firms, making transfer of assets and opportunities to the start-up more likely.

In addition, there are other, non-human, complementary assets that can allow employee entrepreneurs to have a higher relative impact on their parent firm. Brand loyalty and reputation are important complementary non-human assets that serve as differentiators between firms and a source of competitive advantage (Podolny, 1993; Porter, 1980; Rao, 1994; Schmalensee, 1982; Shapiro, 1983). When an employee exits to join an established firm, they are less able to leverage the brand loyalty and reputation of their parent firm, given that the recipient firm has their own brand and reputational capital. Further, the incoming employees may be assigned to tasks, existing clients and projects within the hiring organization that may be incompatible with the transfer of resources and opportunities from the parent firm. In contrast, employees who create start-ups may be more able to leverage their prior affiliation to their advantage, since buyers, suppliers, venture capitalists and other contractual parties will rely on the parent's brand equity and status as a signal for the founders' potential success with the new ventures (Burton, Sørensen, and Beckman, 2002). Research in relationship marketing highlights the importance of the employee as the "face of the firm," even when these relationships represent firm-to-firm interactions (e.g. alliances, business to business sales), and the importance increases for firm-to-customer (e.g. end-consumer sales) and in professional services (service provider-to-customer) relationships (Berling, 1993; Crosby et al. 1990; Iacobucci and Ostrom 1996; Solomon et al. 1985). Employees leaving to start a new firm can better capitalize on these relationships and "cash-in" on the parent's reputation, since the brand loyalty is "locked-in" to the employee rather than the firm (Beatty et al. 1996), and customers are more willing

to follow the employee rather than stay with the parent firm (Beatty et al, 1996; Taylor, 2005; Taylor 2000; Stull, 2009).

The transfer of complementary assets and opportunities is obviously damaging to the parent firm. Since it is more likely to occur towards start-ups, we theorize that employee mobility to spin-outs will have a larger negative impact relative to employee mobility to established firms.

Consequently, we propose:

H3: The adverse impact on firm performance due to employee mobility is greater for employee mobility to spin-outs than employee mobility to established firms.

Our final hypothesis regarding impact of mobility on parent firm performance directly flows from the micro-macro linkage implications of the previous hypotheses. Phillips (2002) argues that employees with higher ability to generate value have a more detrimental effect on parent performance than employees with a lower ability to generate value, since the parent firm loses employees that are core to their creation of value. Additionally, at the micro-level, we argued in hypothesis 1 that employees with higher ability to generate value have greater ability to transfer and/or recreate complementary assets, and they are more likely to join a spin-out than an established firm (hypothesis 2). Further, as discussed in the development of hypothesis 3, employee mobility adversely impacts parent firm performance through the transfer and replication of complementary assets, and exiting employees have greater ability and incentive to transfer/replicate complementary assets when moving to a spin-out than when moving to an established firm.

If employees with higher ability to generate value are more likely to move to create spin-outs, and are more able to transfer or recreate complementary assets, it follows that the difference in the impact on parent firm performance associated with mobility to established firm and mobility to spin-out increases with the exiting employee's ability to generate value. If the exiting employee has very low ability to generate value, then her ability to replicate complementary assets is also very low, no matter whether she moves to a spin-out or an established firm. As the exiting employee's ability to generate value increases, she also is able to potentially transfer a larger pool of complementary

assets and opportunities from her employer. Given higher absolute differences in both the core and complementary assets that are potentially transferred to a spin-out relative to an established firm, there will be higher absolute difference in the impact of mobility to spin-out and mobility to established firm with increases in the employee's earnings. Accordingly, the reasoning leads us to the following prediction:

H4: The adverse impact on parent firm performance due to employee mobility to spin-outs relative to mobility to established firms increases with the earnings of the moving individual.

DATA AND METHODOLOGY

Empirical Context: the US Legal Services Industry

We test our hypotheses using data from the legal services industry. We focus on a professional service industry not only because of its knowledge intensive nature and the critical role played by human assets, but also because of the importance of services to the U.S. economy. Notwithstanding the positive effects of high technology industries on economic growth, professional services are a large and growing portion of the economy. The services sector constituted 68 percent of the U.S. GDP in 2007, as compared to manufacturing which constituted only 19%⁶ In fact, the shift from manufacturing to services in developed nations has been well documented since the middle of the 20th century (Baumol, 1967; Fuchs, 1968). As noted in Buera and Kaboski (2008), the rising role of services sector is largely attributed to the growth in professional services (inclusive of legal, financial, management, consulting, education and health care services), which contributed to 46.5% of GDP in 2007 (Bureau of Economic Analysis, 2008).

Additionally, because professional services are human capital intensive industries, replicability of complementary assets is potentially much easier than in manufacturing industries. Relative to manufacturing firms, in professional service firms, complementary assets are more likely to be embodied in people (Teece, 2003). Because physical capital assets are owned by the firm and

⁶ Statistics on GDP by industry are from the Industry Economic Accounts Program at the Bureau of Economic Analysis. Data are available at http://www.bea.gov/industry/xls/GDPbyInd_VA_NAICS_1998-2008.xls.

human assets are not, it is relatively easier to transfer complementary human assets away from the firm than complementary physical assets. As a result, mobility and spin-out generation should be much more common in the professional services sector (Teece, 2003). Although the theoretical mechanisms underpinning mobility and their impact on parent firm performance hold for both manufacturing and services, the effects are much more critical in professional services industries.

The legal services industry is similar to other professional service industries in that human assets are more important than physical assets; complementary assets are typically also human assets and are potentially easily replicable; in addition, employees' desire for autonomy is greater than in manufacturing (Teece, 2003). Furthermore, employment contracts in the legal services industry exclude non-compete clauses and, for those already in the industry, namely those who have passed the bar, the barriers to entry are low. As a result, employees have relatively low costs associated with mobility (at least within the borders of a state) and new firm creation rates are high.

In the legal services industry, the dominant organizational design is the partnership model, where partners own law firms and almost all revenues are returned to employees and partners in the form of taxable earnings. In the dominant organizational design, the majority of employment falls into the following categories: low-paid assistants, secretaries, and paralegals, (staff), associate and other salaried lawyers and highly-paid partners. Lawyers who become partners are typically promoted within 6-7 years at which point they may earn a share of the firm's revenue. The division of the firm's revenue may be either equitable or based on revenues brought in (Gilson and Mnookin, 1985).

In this industry, the barriers to entry for current employees are small which facilitates new firm generation from within incumbent firms, however the high-end of the market is dominated by large, prestigious law firms that generate the bulk of work measured in dollar terms (Gilson and Mnookin, 1985). Due to state-specific bar exams, lawyers' credentials do not necessarily transfer across state borders, however their skills are generally transferrable within state borders. In other words, the direct costs of mobility and the direct costs of new firm generation are low within states

in this industry. As a result, the industry represents an active environment of mobility to both established firms and spin-outs.

It is also worth noting that an important driver of mobility within the legal industry is the tournament employment system in which associate lawyers who are not promoted to partners are typically forced to leave. Since tournament-driven mobility potentially correlates with some of our predictions (H1, 2) but is not the focus of our theory, we employ a variety of robustness checks to rule out alternative explanations and exclude that tournament-driven mobility is driving our results.

Data Source

The data for the study are derived from a custom extract of the Longitudinal Employer-Household Dynamics (LEHD) Project available at the Census Research Data Centers. Our custom extract includes linked employer-employee data drawn from state-level Unemployment Insurance (UI) records and multiple data products from the U.S. Census Bureau. Every quarter, organizations that pay into their state's UI fund submit form ES-202 which includes a list of all employees covered by the UI program, every covered employee's taxable earnings, and a variety of firm characteristics. From these mandatory submissions, two sets of data files are constructed: *Employer Characteristics Files* which include longitudinal records of firm⁷ level characteristics and *Employment History Files* which include longitudinal records of all employment spells (including name of employer and taxable earnings) for all employees covered by the UI system. The LEHD program also includes *Individual Characteristics Files* which contain individual characteristics such as gender, date of birth, race, ethnicity, and education that are drawn/imputed from the Social Security Administration's Personal Characteristics Files, the Decennial Census, the Current Population Survey, and the Survey of Income and Program Participation. Taken together, the three underlying data files contain

⁷ Because the data are collected at the state level, the firm identifier is actually a firm-state identifier. As a result, our definition of firm includes only the activities of the firm located within a state's borders. Due to data limitations it is not possible to link firms across state borders, so a firm that operates in states x and y will be disaggregated into two records: the firm's activities located in state x and the firm's activities located in state y. The high cost of mobility across borders in the legal services industry minimizes the impact of this issue on our empirical results.

individual level attributes, firm-level characteristics and a longitudinal record of all employee-employer dyads covered by the UI system.⁸

Our data are a custom extract from the LEHD program that includes all individuals who ever worked in the legal services industry over a period of more than 40 quarters in 10 large states. Since the data are drawn from UI filings that are mandatory in this industry, the data cover the entire universe of legal services firms in the ten states of coverage. The universality of our data source permits tracking employee mobility across firms within the industry and facilitates identification of new firm creation in the industry. To protect the confidentiality of the data, all results must be cleared for disclosure by the U.S. Census Bureau to ensure that no individual respondent or firm can be identified in the presented results.

The samples for hypotheses 1 and 2 are a random 25% sample of the employees in the data. We then restrict our sample to employees who earn more than \$25,000 per year, are employed at a firm of more than 5 people and are employed at a firm that does not exit the data that year or in the subsequent year. The first restriction excludes employees with a weak attachment to the labor market, the second restriction excludes very small firms which contribute only a small percentage of the total revenues in this industry (Gilson and Mnookin, 1985), and the third restriction excludes employees who work at firms that die that year or the subsequent year. This last restriction is particularly important to mobility. The type of employee that leaves a dying firm might be systematically different than the type of employee that leaves a healthy firm. We choose to focus just on employees who leave healthy firms.

For hypotheses 3 and 4, the employee-level data are aggregated to the firm-level. In order to get a clean measure of employee mobility at the firm-level, we exclude mergers and acquisitions and administrative recodes that would be mis-identified as employee mobility events. We also exclude very small firms, dying firms, and firms with outliers on the dependent variable. Specifically, we exclude firms of less than 5 employees, firms that exit in the current or subsequent year, firms that

⁸ For more information on the LEHD program, see http://lehd.did.census.gov/led/library/tech_user_guides/overview_master_zero_obs_103008.pdf

have revenue per employee of less than \$10,000 or more than \$1,000,000, and firms that lose more than 20 employees in any payroll class to an established firm or to a spin-out in a given year. This last restriction allows us to exclude mergers, acquisitions, and administrative recodes. We may potentially exclude very large actual mobility events as a result, but the focus of this paper is on the impact of individual mobility on firm performance so aggressive trimming is consistent with our analysis.

Estimation Methodology

Our empirical strategy is to first identify the individual characteristics that are related to employee mobility in general and then employee mobility to a spin-out. Then, after establishing which types of employees are more likely to engage in each type of exit, we examine the impact on parent firm performance of each type of employee mobility. In the first stage, we estimate a series of linear probability models with firm-year fixed effects to examine the impact of individual characteristics on employee mobility and then we examine the impact of individual characteristics on mobility to spin-out conditional on mobility. The dependent variables are dummies indicating mobility and mobility to spin-out. We include firm-year fixed effects to absorb any variation due to unobserved characteristics that are constant within a firm-year.

We choose a linear probability model with firm-year fixed effects instead of a conditional logit model due to computing constraints. With our very large sample size (even after selecting a 25% random sample) conditional logit is computationally infeasible.⁹ Instead, we estimate a linear probability model and include robust standard errors to account for inherent heteroskedasticity. We check the performance of the model and find that out-of-sample predictions are extremely rare in our data which suggests that the linear probability model is performing acceptably.

In the second stage, we estimate a series of fixed effects linear regressions of firm performance as a function of the intensity of different types of employee mobility and firm characteristics. In our models we examine the impact of the quantity and quality of exiting

⁹ Due to data confidentiality concerns all analyses must be performed on-site at a Census Research Data Center. As a result, the empirics are limited by the time and computing power available at the Data Centers.

employees on parent firm performance. Our explanatory variables include number of exiting employees, payroll of exiting employees, and number of exiting employees in different pay classes. We include firm fixed effects to absorb any variation due to unobserved characteristics that are constant within a firm.

Variables

Employee Mobility: The dependent variables for hypothesis 1, *Employee Mobility* is constructed as a dummy variable which takes a value of 1 if an employee's dominant employer changes from the previous year, and 0 if the dominant employer does not change from the previous year, where the dominant employer is the employer at which a employee earns the most during the year.¹⁰

Employee Mobility to Spin-out: This dependent variable for hypothesis 2 is constructed as a dummy variable that takes a value of 1 if an employee's dominant employer changes from the previous year and the new employer appears in the data for the first time in that year. We note that our measure of *Mobility to Spin-out* is broader than the typical definition of a spin-out founder. To the extent that non-founding employees who join the spin-out are similar to employees who move to established firms, our results that differentiate between mobility to established firm and mobility to spin-out should be seen as conservative. The presence of employee mobility to established firm events in the employee mobility to spin-out measure should bias our analysis against finding significant differences between the two categories. Alternatively, non-founding employees who join a spin-out during the first year of its existence (especially at higher levels of earnings) may be driven by motives and preferences similar to the ones of the original founder(s)—which may translate into similar characteristics and impact on the parent firm. If that is the case then, within the context of our theoretical questions, the difference between the actual founding and non-founding employees that join the spin-out early on is less crucial.

Firm Performance. The dependent variable for hypotheses 3 and 4, *Firm Performance* is measured as revenues per employee. In the partnership model, almost all revenues are returned to employees

¹⁰ Because some employees maintain multiple employers within a quarter, we focus on employees' *dominant employer* which is the employer at which the employee earns the most in a given year.

and partners in the form of taxable earnings. By aggregating the earnings of all employees inside the firm, we can construct the total revenues earned by the firm (less non-compensation costs and set-asides for future years). To allow comparison of firm performance across firms of different sizes we then divide revenues by number of employees. In this industry, this yields the average revenue generated per employee (including partners, associates, and staff) within the firm.

Employee Earnings. Our key explanatory variable for hypothesis 1 and 2, *Employee Earnings*, is captures all forms of taxable compensation that an employee received in the calendar year, including salary, bonuses and other reported income.

Firm Level Mobility Measures. The key explanatory variables for hypothesis 3 and 4 relate to firm level mobility measures. We aggregate our mobility measures over 5 years to capture the lagged effect of employee mobility on firm performance and also to facilitate disclosure review at the Bureau of the Census. We construct three different variables as they relate to types of mobility and types of employees.

First, we measure the number of employees that have left the parent firm over the past 5 years. This is calculated as the count of all unique individuals that left the established firm to join an established firm in the given year and the 4 years prior. We do the same for all employees that leave the firm to join a spin-out firm in a given year. As a result, for every firm-year in the data, we construct a measure that captures the human assets that have exited the firm to established firms and to spin-outs.

Our second measure is a measure based on employee earnings. For both types of events (i.e. mobility to established firm and mobility to spin-out), we measure the sum of the payroll of all movers in the given year. Specifically, we aggregate the compensation for all employees who leave a firm for an established firm over the past 5 years and we aggregate the compensation for all employees who leave a firm for a spin-out over the past 5 years.

Our third measure combines the above two measures and is our most refined firm mobility measure. For both types of mobility events we sort exiting employees into one of the following earnings classes: \$25,000-\$100,000, \$100,000-\$300,000, \$300,000-\$5,000,000, \$5,000,000+. We then

count the number of exiting employees within each discrete earnings class over the past 5 years. This measure allows us to proxy for both the type and number of employees that firms lose to established firms and spin-outs.

Control Variables. For the employee-level mobility estimations we control for observable demographic and human asset differences by including measures of age, age², gender, race, tenure with parent firm, tenure² and imputed years of education. Gender and race controls are operationalized as a dummy variable indicating male/female and white/non-white respectively. Age is a continuous variable. Imputed years of education is a continuous variable imputed by the Census Bureau using a multiple-imputation procedure. Tenure is a continuous variable that captures how many years an individual has worked at their current employer. Since our data begins in the middle of the careers of some employees, the tenure variable is left-censored and we under-measure the tenure for employees who began working in the industry before the beginning of the data. To address this censoring issue, we construct a dummy variable indicating if the tenure spell is potentially left-censored.

For the firm-performance estimations, we include firm fixed effect and we also control for the means of the observed demographic and human asset variables across all employees within the firm. We also control for the means of the observed demographic and human asset variables across all employees within the firm. Specifically, we measure the mean age and education and percent white and male within each firm in the fourth quarter of each year. Because firms' workforces are fluid and change over time as firms hire and lose employees, taking an average across all employees who worked in a firm during a given year would be biased and over-count employees at firms with a high level of employment churn. While calculating measures within just one quarter allows us to minimize the impact of churning on our measures, we potentially still over-count employees because the total number of employees employed over the entire quarter may be greater than the steady state employment of a firm.

Descriptive statistics and correlations for the individual-level mobility data and the firm-level performance data are in Tables 1 and 2 respectively. The correlations tables suggest that our

variables are not collinear (except for the age and age², tenure and tenure², and earnings and earnings² pairs). As shown in Table 1, approximately 9.5% of employees change dominant employers in a given year, and approximately 1.3% of employees leave their employer to a spin-out in any given year. The two rates imply that approximately 14% of employees that leave their employer for another job leave for spin-outs. Our employee sample is largely white (84%) and female (56%) and includes many short tenure employees. The average age for employees is 40 years old, average education is some college education (14 years of schooling), and the average earnings are \$67,047 per year.

As shown in Table 2, the average revenues per employee for firms in this sample is \$63,007.¹¹ Firms have an average workforce age of 38 years, average education of 13.85 years and on average are 83% white and 30% male. Firms on average lose 8.13 employees with total payroll of \$301,705 to established firms every year and 0.77 employees and \$36,838 in payroll to spin-outs every year. On average, leavers to established firms earn \$37,089 and leavers to spin-outs earn \$47,704. The vast majority of exiting employees are in the <\$100,000 payroll class. Mobility in a given year for employees earning more that \$300,000 occurs, but is a rare event for many firms.

RESULTS

Table 3 contains our results on employee mobility decisions. The first model in Table 3 provides estimates of the impact of employee characteristics on employee mobility. The second model in Table 3 captures the impact of employee characteristics on their decision to move to a spin-out conditional on employee mobility. The estimates in Model 1 indicate that employee earnings are negatively related to employee mobility and the square of employee earnings is positively related to employee mobility. Combining the effect of the two coefficients implies that the marginal effect of earnings on mobility is negative for employees earning between \$0 and \$5,200,000. While disclosure concerns prevent us from identifying the maximum earnings level in the data, \$5,200,000 is over 45 standard deviations away from the mean of employee earnings

¹¹ Individual-level measures and firm-level measures differ due to the different sampling frames for the individual data and the firm-level data and due to the churning concerns raised earlier.

(\$67,047). This suggests strong support for Hypothesis 1. To put the size of the coefficients into context, a 35 year-old male with 18 years of education and ten years of tenure who earns \$100,000 per year has a 5.8% probability of mobility, while an employee with the same characteristics that makes \$300,000 per year has a 3.8% probability of mobility. This represents a 35% drop in the likelihood of mobility. In addition to the earnings effects, we also find that older employees are less likely to exit, employees with longer tenure are less likely to exit, and men are less likely to exit.

In Model 2 of Table 3, we restrict our sample to only employees who moved during the year and provide results on the predictors of mobility to spin-out conditional on mobility. The estimates demonstrate that employee earnings are positively related to employee entrepreneurship conditional on mobility and the square of employee earnings is negatively related to employee entrepreneurship. The marginal effect of earnings on employee entrepreneurship conditional on mobility is positive for employees earning less than \$3,500,000. This maximum represents 30 standard deviations away from the mean of employee earnings thereby supporting Hypothesis 2. Again, to put the estimates into context, a 35 year-old male with 18 years of education and ten years of tenure that earns \$100,000 per year and leaves their current employer has a 16.6% probability of joining a spin-out, while an employee with the same characteristics that makes \$300,000 per year has a 21.8% probability of joining a spin-out¹². This represents a 31% increase in the likelihood of employee entrepreneurship conditional on mobility. Among the control variables, conditional on mobility, male employees and employees with longer tenure are more likely to move to a spin-out.

Table 4 reports the estimates of the relationship between parent firm performance and employee mobility to established firms and employee mobility to spin-outs. The results in Table 4 demonstrate that the impact of employee mobility to spin-outs is negative while the impact of employee mobility to established firms is not significant. These estimates provide support for Hypothesis 3. Specifically, while there is no significant loss due to an employee leaving to join an

¹² For a 35 year-old male with 18 years of education and ten years of tenure that earns \$100,000 per year, the probability of staying with his employer is 94.2%, the probability of mobility to an established firm is 4.8%, and the probability of mobility to a spin-out is 1.0%. For an employee with the same characteristics that earns \$300,000, the probability of staying with his employer is 96.2%, the probability of mobility to an established firm is 3.0%, and the probability of mobility to a spin-out is 0.8%.

established firm, an employee leaving to join a spin-out adversely impacts the parent firm's revenue per employee by \$269, which translates to a \$22,865 loss for an average sized firm of 85 employees.

Additional support for Hypothesis 3 is demonstrated in Table 5. Table 5 contains estimates of the impact of the quality of exiting employees (measured by the pre-mobility payroll of employees that leave to established firms and leave to spin-outs) on firm performance. Similar to the previous results, there is an adverse impact on parent firm performance of employee mobility to spin-outs, but employee mobility to established firms does not have a significant effect on parent firm performance. The estimates in this table show that for every thousand dollars of payroll that a parent firm loses to a spin-out, their revenue per employee decreases by approximately 6 dollars (which implies that the total loss for an 85 person firm after an employee who earned \$100,000 moves to a spin-out is \$52,530).

In Table 6, we provide results on the relationship between exiting employee ability and parent firm performance. The coefficients on the number of employees exiting in each earnings class measure the impact of each type of exiting employees on parent firm performance. The estimates for employees moving to established ventures indicate that the mobility of employees earning less than \$100,000 actually has a positive impact on parent firm performance, while the mobility of employees in the higher pay classes does not have a significant impact on parent firm performance. However, the estimates for employees moving to spin-outs tell a different story. Mobility of employees who earn less than \$100,000 to new ventures does not have a significant impact on firm performance, while mobility of employees in higher pay classes has a negative impact on firm performance that increases with pay class. Specifically, the adverse impact of mobility to spin-out for an employee who earns between \$300,000 and \$5,000,000 is greater than the adverse impact of mobility to spin-out for an employee who earns between \$100,000 and \$300,000. The magnitude of the coefficients imply that an employee who earns between \$100,000 and \$300,000 who leaves for a spin-out is associated with a loss of \$193,015 in revenue at an 85 person firm and an employee who earns between \$300,000 and \$5,000,000 who leaves for a spin-out is associated with a loss of \$1,000,007 in revenue at an 85 person firm. These results suggest that the adverse

impact on firm performance due to employee entrepreneurship increases with the compensation of the exiting employee and provide support for Hypothesis 4.

The effects of the control variables are consistent across the firm performance regressions. The average education of the workforce is positively related to parent firm performance. Gender composition is significantly related to revenue per employee within firms, where firms with a greater percentage of male employees demonstrate greater revenue per employee. This result is likely driven by occupational differences by gender within law firms. Racial composition is not a significant factor, and average age of the workforce is not consistently significant.

Additional Analysis and Robustness Checks

Our analysis connects micro and macro level analysis by examining the determinants of mobility at the individual level and then connecting these individual decisions with firm-level outcomes. However, our empirical findings may potentially be explained by alternative micro and macro level processes. To further our analyses, we examine whether our results persist after accounting for involuntary turnover and heterogeneity in occupations within firms, and after taking into account different firm performance measures.¹³

An implicit assumption in our theoretical section was that all mobility decisions are voluntary; however employee mobility may also be involuntary. Notwithstanding that involuntary turnover is generally related to the underlying individual level characteristics for value creation, we examine the robustness of our results for Hypotheses 1 and 2 after accounting for three primary sources of involuntary turnover. We focus on the first two hypotheses since the empirical findings consistent with Hypothesis 1 and 2 may be explained by involuntary turnover. First, we identify turnover driven by the up-or-out tournament model of promotion (Rebitzer and Taylor, 2007). Second, we eliminate turnover that is preceded by poor performance. Third, we exclude turnover

¹³ The results of the robustness tests are currently under disclosure review. While the results are pending disclosure review, we are not permitted to release any estimates, but we are permitted to discuss general findings and implications. Tables for the robustness tests will be added upon clearance of the results.

that is likely driven by the temporary nature of internships. Our objective is to re-estimate the baseline models for subsamples that are unlikely to experience each type of involuntary turnover.

The dominant organizational form for attorneys in the legal services industry is the up-or-out tournament model (Rebitzer and Taylor, 2007). In this industry, involuntary exit due to the tournament model typically occurs after 6-7 years of tenure at the firm. Accordingly, we perform a subsample analysis on employee mobility conditional on employees' tenure with their current employer. We eliminate all employees with tenure that are potentially left censored and then create a subsample of employees with less than 6 years of tenure. The intuition is that turnover driven by the up-or-out system is less likely to occur in the subsample of employees who have been at their current employer for less than 6 years. Within this subsample, the relationships of earnings and employee mobility are similar to Table 3, Model 1: *earnings* is negative and highly significantly related to employee mobility; *earnings*² is positive and highly significantly related to employee mobility. These results are consistent with our findings for Hypothesis 1. For the short tenure subsample, the relationships between earnings and mobility to spin-out are similar to Table 3, Model 2: *earnings* is positive and highly significantly related to employee mobility; *earnings*² is negative and highly significantly related to employee mobility¹⁴.

An important source of involuntary turnover is the forced exit of poorly performing employees. We assume that employees who receive high relative wage growth in the prior year are less likely to be released due to poor performance than employees with low relative wage growth. Similar to the analysis above, we perform subsample analysis including only employees with high relative wage growth. For every employee in each firm we calculate the wage growth between the prior year and the current year. We then compare this within firm wage growth measure with other employees in the same earnings bin in the same firm. Using employees' relative wage growth, we create a variety of subsamples. We first include only employees who received above median wage growth over the prior year, and then we focus only on employees who were in the top 25% of the

¹⁴ Turnover driven by the up-or-out system is also unlikely to occur for workers with more than 7 years tenure. We perform similar analysis focusing only on employees with tenure greater than 7 years. The results for the high tenure sample is also consistent with Table 3, Model 2, however disclosure concerns prevent us from reporting the estimates.

wage growth distribution. With each subsample, we diminish the likelihood of including employees who were released due to poor performance. In both subsamples, the relationship between the earnings measures and the mobility and mobility to spin-out decisions are similar to the results in Table 3. For both subsamples, the results have the same sign and are highly significant.

Another potential source of contamination in our measures of employee mobility decisions is the common use of interns in the industry. Law students work as interns for law firms for fixed terms during their academic career. Because interns may work for different firms at subsequent internships, they will appear in our data as mobility events although the decision-making process leading to mobility is different than the process outlined in the theory development section. In order to eliminate likely interns from our analysis we cut the sample by age and eliminate the youngest employees, given the rationale that law students are highly likely to be younger than professional lawyers. We estimate the models in Table 3 for employees in their 30s, in their 40s, and in their 50s and we repeat the analysis by age group, and for employees with 16 or more years of education. Again, in all specifications, the relationship between earnings and the mobility decisions are in-line with Table 3.

Next, we explore whether the relationships in Hypotheses 1 and 2 hold for employees who have a high ability to generate value for their firm. A concern is that the employee-level results could be driven by clerks, paralegals, administrators and other non-lawyers. However, if high value generating employees are important resources to the firm, then it is important to examine whether their mobility decisions are the same as the full sample. We implement a subsample analysis to examine the relationship between earnings and mobility for high value generating employees. We focus on an absolute earnings cutoff of \$100,000 in earnings and relative earnings cutoffs of employees in the top 50% of the firm and in the top 25% of the firm. For all subsamples, the signs on *earnings* and *earnings*² are highly significant and similar to those in the baseline results in Table 3.

Further, to examine the extent to which different occupations drive the results in Hypotheses 1 and 2, we create subsamples based on years of education. We examine employees with 12 years of education, 13-15 years of education, 16 years of education, and greater than 16 years

of education. Again, the results for each education subsample are consistent with the results in Table 3.

Finally, we examine the sensitivity of our results to different firm performance measures. In the empirical analysis section we examine revenue per employee as our firm performance measure. However, given the partnership structure of most law firms (where partners are the ultimate decision makers in the firm), partners may seek to maximize revenue per partner instead of revenue per employee. Under the assumption that partners are the highest earners in the firm, we re-estimate the results for Hypotheses 3 and 4 using revenue per *high earning* employee. Specifically, we operationalize the dependent variable in two different ways: revenue per employee earning \$100,000 or more, and \$300,000 or more. We find that the results are robust to these different specifications of the dependent variable.

DISCUSSION AND CONCLUSION

We connect micro-level decisions and their macro-level outcomes by examining both the determinants of employee mobility and the effect of employee mobility on firm performance. We focus on both mobility to established firms and mobility to spin-outs. The impact of employee mobility to established firms and that of employee mobility to spin-outs on parent firm performance may be different because of differences in the observable quality of employees exiting the parent firm, differences in the importance of appropriating new opportunities, and differences in the unobservable quality of employees exiting the parent firm. Understanding the relative impact of employee mobility to established firms and employee entrepreneurship on parent firm performance provides insights into the value of human capital in different contexts, the value of knowledge transfer, and the nature of the spin-out process.

At the micro-level, we examine the connection between employees' ability to generate value (as proxied by earnings) and employee mobility (H1), and conditional on mobility, the likelihood of joining a spin-out (H2). At the macro-level, we examine how quantity (H3) and quality (H4) of employee exiting to established firms and spin-outs impact parent firm performance. We find

results consistent with our four hypotheses. In our micro-level analysis, we demonstrate that the likelihood of mobility decreases with earnings for most employees. However, conditional on mobility, the propensity of employee entrepreneurship increases with earnings. In our macro-level analysis, we find that employee entrepreneurship has a larger negative effect on parent firm performance than employee mobility to an established firm, and the difference in the size of the effect across the two types of mobility events is positively related to the ability of the exiting employee to generate value (H4). Taken together, our findings suggest that while employee entrepreneurship has a larger adverse impact on parent firm performance than employee mobility to established firm, the effect is not driven only by the observable factors of exiting employee quantity and quality. The support found for H4 suggests that even after controlling for observable employee quality, the (per person) effect of employee mobility to a spin-out relative to that to an established firm on parent firm performance increases with employee quality. In other words, if two observably equivalent employees exit a firm, one to an established firm and one to a spin-out, the parent firm is more adversely impacted by the mobility to spin-out event and further, the difference in impact on parent firm performance increases with observable employee quality. This suggests that observable quantity and quality of exiting employees do not explain the full story of the impact of mobility and employee entrepreneurship on parent firm performance. We attribute the remaining variance to superior ability of employees to transfer relevant complementary assets to spin-outs relative to established firms, particularly when the employees embody higher ability to generate value.

The differential ability to replicate or transfer complementary assets when moving to an established firm relative to moving to a spin-out also relates to the market opportunities that are being exploited. To the extent that employee entrepreneurship is triggered by specific market related opportunities (i.e. ability to walk away with client accounts or ability to capitalize on underutilized technology for new markets) and employee mobility to established firms is triggered by general opportunities (i.e. better career development, higher compensation), the former are more likely to come at the expense of the parent firm, and employee entrepreneurship will have a greater detrimental effect on parent firm performance than employee mobility to established firms.

Further, our results also provide evidence that employee entrepreneurship is correlated to the existence of unobserved and/or undervalued human capital. If an employee possesses human capital that is systematically unobserved and/or undervalued on the labor market, the employer can under-compensate the employee relative to the value they generate for the firm. Such employees can appropriate a larger share of the value they create only by resorting to employee entrepreneurship, since established firms will only compensate the employees for what they can observe and value. The loss of employees with systematically undervalued human capital will adversely impact the parent firm more than the loss of employees with “appropriately valued” human capital.

Finally, it is important to note that in our empirical context, there is a high correlation between high earnings and age and gender. In particular, most partners in law firms tend to be older males. One additional correlation is that partners are more likely to stay with their firms, but if they do leave the firm, they are more likely to leave to move to a spin-out. In light of the theoretical construct we developed, this result is not surprising. A partner is more likely to have a relative bargaining advantage, since the relative importance of complementary assets in his ability to create value is low and he is more able to recreate these complementary assets should he move.

Limitations and Future Research

The limitations to our study also provide avenues for future research. The first relates to the generalizability of our study to other contexts. To the extent that the legal services industry, and its dominant organizational structure of a partnership model characterizes most professional services industry contexts, we believe that our theory and empirical evidence will shed light on issues related to employee mobility, employee entrepreneurship and effects on parent firm performance. Future research could examine whether our findings are generalizable in other knowledge intensive industries, and for different organizational structures. Second, our empirical design currently treats all individuals as independent mobility events, and does not account for the team structure of exiting employees. To the extent that employee mobility commonly occurs in teams in the legal services industry, we are accordingly unable to tease out the differential effects of team composition on

parent firm performance over a collection of identical independent individuals. To address such concerns in future research, we hope to utilize our unique employer-employee data and examine the role of team structure of mobile employees on both parent and recipient firm performance.

Importantly, while we theorize and find evidence for the relationship of employees' ability to generate value and their ability to transfer or recreate complementary assets on their mobility decisions and the subsequent effect on parent firm performance, an explicit testing of the effect of different types of complementary assets transferred or recreated is beyond the scope of the paper. As discussed above, organizational knowledge, non-human, and human complementary assets are all potentially transferable or replicable. Teasing out the differential explanatory power of each type of complementary assets would be an immensely valuable avenue for future research. For instance, there is a conjecture in the professional services area, posited by both Phillips (2002) and Wezel, et al. (2006), that high-level routines are more easily transferred to start-ups than to existing firms. As a result, one mechanism through which employee entrepreneurship would have a larger adverse impact on parent firm performance than employee mobility to established firms is through the replication of routines. Employees that exit an existing firm will be able to replicate more routines or replicate them more effectively at a new firm than at an established firm. Consequently, a spin-out will be more similar to a parent than established firms that receive employees from the same parent. As a result, the parent firm faces a greater competitive challenge from mobility to spinouts than from mobility to existing firms.

Alternatively, the differential impact of complementary assets on employee mobility and parent firm performance could also be related to differences in the ability to transfer complementary assets in professional services relative to high-tech manufacturing. As noted by Teece (2003), employees of professional services firms play a very different role from those in high tech industries. The complementary assets in professional services are typically embodied in human assets and these human assets are typically more important than physical assets. Because the most important complementary assets in professional services firms are human assets which are rivalrous and can be easily recreated or transferred through employee mobility, the impact of employee mobility and

employee entrepreneurship on firm performance in the professional services sector will be more pronounced compared to a similar mobility in the high tech sector. This difference between professional services and high-tech manufacturing is one that is worth investigating.

Our study did not explore the role of legal specializations in the mobility decisions of attorneys. Attorney's careers, their mobility decisions, and the impact of mobility decisions on parent firm performance may differ by the legal specialty of the employee. Garicano and Hubbard (2007) demonstrate that complementarities between specializations of lawyers play an important role in determining the boundaries of legal service firms. As a consequence, the exit of an employee with a specialty that complements their employer's portfolio of human assets will have a larger impact on parent firm performance than the exit of an employee that does not complement the areas of practice prevalent in their employer. In both our micro-level and macro-level results, we focus on the level of employee's human capital, but our empirical findings could be confounded by the *type* of human capital and human assets possessed by the employee and the firm respectively. While such an examination was beyond the scope of our study due to data limitations, these questions are fruitful avenues of future research since they relate to the complementarities between the different types of knowledge embodied in the human capital, not just the ordinal level or amount of human capital (as proxied by earnings).

Contributions

Our paper contributes to both micro-level and macro-level research streams. In response to Coff (1997), we answer a call for examining the micro-foundations of strategy literature, and contribute to that literature by linking individuals' decisions of employee mobility to firm performance. Specifically, we demonstrate how an employee's ability to generate value affects the performance of their employer through the employee's incentive and ability to replicate and transfer important complementary assets. In doing so, our research complements the existing body of research on human resource management. In addition, we apply a macro-level strategy framework to study the implications of micro-level mobility and turnover decisions. In particular, we examine

the relationship between core human assets and complementary assets in the value generation process. At the micro-level, the importance and replicability of complementary assets is an important driver of employee mobility decisions and is a valuable construct to examine as firms develop systems and practices to attract and retain high value employees. Importantly, we show that the ability and knowledge of individual employees is indeed a value creating asset, and that firms are adversely affected by the loss of employees when the employees move to entrepreneurial contexts.

The hypothesized adverse effect of entrepreneurial spawning relative to employee mobility to established firms in our macro-level analysis implies that firms may have to tailor their human capital strategies at the micro level to reduce the incidence of spin-out generation more than traditional employee mobility. Our findings suggest that the most valuable employees are the employees most likely to move to entrepreneurial firms. To avoid the loss of employees that generate the most value for the firm, managers need to identify and assess which employees are most able to replicate or transfer the complementary assets of the firm and then strengthen those employees' incentives to stay or weaken their ability to replicate the complementary assets. Clearly, this issue is of current interest among firms as noted in Lafsky (2009) and Morrison (2009).

In the knowledge spillovers literature stream within strategy, we contribute by integrating the literature on employee mobility and employee entrepreneurship, and explore the differential impact of underlying factors on each phenomenon. While there is a large literature on employee mobility and a large literature on who becomes an entrepreneur, understanding employee entrepreneurship necessitates integrating these two lines of research because employee entrepreneurs fall into both categories. This research is an early step at addressing both types of micro-level events simultaneously. We find that employees who move to existing firms are observationally different from employees who move to new firms. In particular, employee entrepreneurs are on average more highly paid, more experienced and more educated than employees who move to existing firms. These characteristics are all crude measures of an employee's ability to generate value which suggests that conditional on mobility, more valuable employees leave to start-ups. As a result, research that compares employee mobility and employee entrepreneurship must, at the least, control for

observable differences in individuals. For managers, these findings help identify the types of employees with the highest propensity to adversely impact their employer through employee entrepreneurship.

In the entrepreneurship literature stream, we make several contributions. First, there is a long line of literature on what individual traits and qualities are correlated with the decision to become an entrepreneur (Robinson and Sexton, 1994; Lazear, 2005; Nicolau et al, 2008). To this body of literature, we add that an individual's ability to create and capture value is an important factor in an employee's decision to spin-out from their employer. Further, if an employee's ability to create and capture value is tied to the nature of complementary assets, then the ability of an employee to replicate complementary assets is a critical factor in the spin-out decision. By focusing on complementary assets, we highlight the mechanism for the larger negative impact on parent firm performance that is attributable to employee creation of new ventures relative to employee mobility to established firms. Specifically, we address how the importance and replicability of complementary assets affects the impact of human capital transfer, routine transfer, and opportunity transfer on parent firm performance. Because we find a large adverse impact of employee entrepreneurship on parent firm performance, our study supports the Schumpeterian view that the creation of new ventures potentially results in more destruction of value at the source firm than a mere transfer of the same knowledge from one firm to another, at least in this sector.

In summary, the purpose of our paper is to ask the question: *Who leaves, to go where and does it matter?* We find that high earning individuals tend to move less but if they do move, they tend to start new firms. Controlling for earnings we find that employee entrepreneurship events are more detrimental for parent firm performance than movements to existing firms. Our findings suggest that the negative impact on parent firms is not only due to selection of high ability individuals into start-ups. Our study sheds new light on parent-spin-out interaction with implications for competitive dynamics and parent firm strategies, because parent firm performance is affected not just by the quality of an exiting employee, but also the quality of the opportunity that they pursue.

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FIGURE 1

Complementary Assets and Relative Bargaining Power of Employee

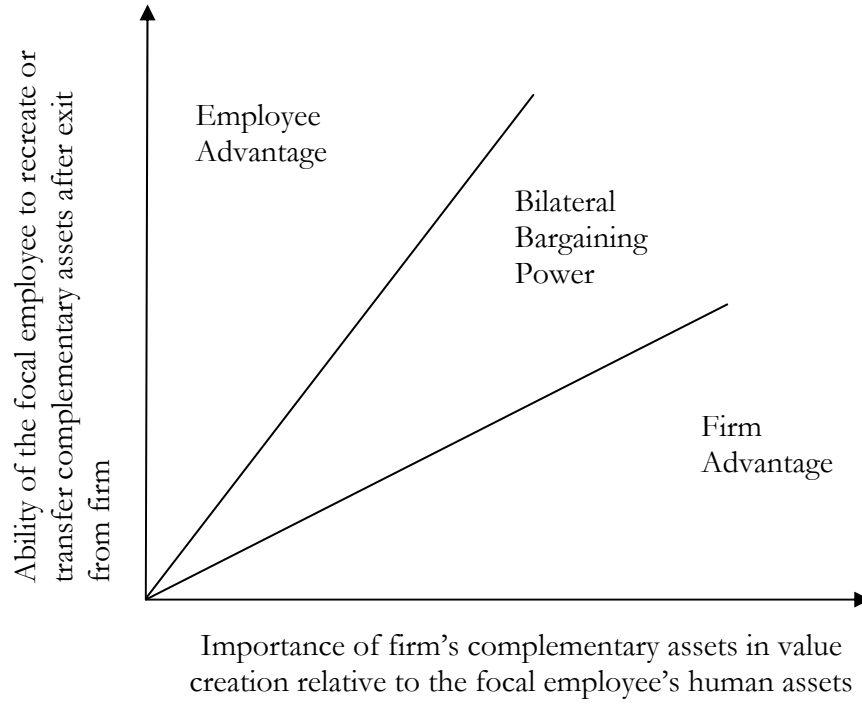


TABLE 1
Descriptive Statistics: Employee Data

	Variable	Mean	Standard Deviation	Correlations														
				1	2	3	4	5	6	7	8	9	10	11	12	13		
1.	Mobility	0.10	0.29	1														
2.	Mobility to spin-out	0.01	0.11	0.36	1													
3.	Age	40.10	10.78	-0.05	-0.01	1												
4.	Age ²	1724.21	937.47	-0.05	-0.01	0.99	1											
5.	Years of Education	14.57	2.53	-0.02	0.01	0.09	0.07	1										
6.	Years of Tenure	2.21	2.60	-0.08	-0.01	0.22	0.21	0.13	1									
7.	Years of Tenure ²	11.66	24.01	-0.08	-0.02	0.21	0.20	0.11	0.92	1								
8.	Tenure < 1 year?	0.49	0.50	0.07	-0.01	-0.12	-0.11	-0.15	-0.69	-0.46	1							
9.	Tenure is Censored?	0.15	0.35	-0.06	-0.02	0.05	0.05	0.17	0.33	0.35	-0.41	1						
10.	White	0.84	0.37	-0.02	0.01	0.12	0.12	0.09	0.08	0.07	-0.08	0.07	1					
11.	Male	0.43	0.50	0.00	-0.01	0.03	0.03	-0.05	-0.09	-0.06	0.11	-0.07	0.04	1				
12.	Annual Earnings (\$1000s)	67	112	-0.04	0.00	0.11	0.11	0.12	0.12	0.10	-0.10	0.05	0.08	0.18	1			
13.	Annual Earnings (\$1000s) ²	17121	804923	0.00	0.00	0.02	0.02	0.01	0.02	0.02	-0.01	0.01	0.01	0.02	0.73	1		

Note: N = 767,307

TABLE 2
Descriptive Statistics: Firm Data

Variable	Means	Standard Deviation	Correlations																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14			
1. Cumulative payroll per employee in t – 1	63.01	47.87	1.00																
2. Cumulative payroll of leavers to established firms	301.71	592.97	0.22	1.00															
3. Cumulative payroll of leavers to spin-outs	36.84	155.50	0.12	0.27	1.00														
4. Cumulative # of emps leaving to established firms	8.13	11.00	0.18	0.87	0.29	1.00													
5. Cumulative # of emps leaving to spin-outs	0.77	1.66	0.09	0.38	0.63	0.47	1.00												
6. Cumulative # of employees leaving to established firms (0-\$100k)	7.79	10.21	0.17	0.83	0.28	0.99	0.47	1.00											
7. Cumulative # of emps leaving to established firms (\$100k-\$300k)	0.33	1.37	0.18	0.77	0.18	0.60	0.22	0.51	1.00										
8. Cumulative # of emps leaving to established firms (\$300k-\$5M)	0.012	0.136	0.14	0.29	0.10	0.17	0.09	0.14	0.21	1.00									
9. Cumulative # of emps leaving to spin-outs (0-\$100k)	0.70	1.47	0.08	0.36	0.54	0.46	0.98	0.47	0.19	0.07	1.00								
10. Cumulative # of emps leaving to spin-outs (\$100k-\$300k)	0.06	0.35	0.10	0.27	0.56	0.27	0.57	0.26	0.23	0.09	0.40	1.00							
11. Cumulative # of emps leaving to spin-outs (\$300k-\$5M)	0.002	0.050	0.09	0.10	0.45	0.08	0.26	0.08	0.05	0.08	0.18	0.20	1.00						
12. Average age	38.01	6.87	0.00	-0.09	-0.02	-0.13	-0.04	-0.13	-0.05	-0.01	-0.05	0.00	0.00	1.00					
13. Average education	13.85	1.38	0.13	0.03	0.04	0.02	0.04	0.02	0.03	0.03	0.03	0.03	0.02	0.33	1.00				
14. Percent White	0.83	0.25	0.00	-0.07	-0.01	-0.09	-0.01	-0.09	-0.05	-0.01	-0.01	0.00	0.00	0.29	0.14	1.00			
15. Percent Male	0.30	0.22	0.17	0.09	0.04	0.09	0.04	0.08	0.07	0.03	0.04	0.04	0.03	0.00	0.04	0.04	1.00		

Note: N = 70130

TABLE 3
Linear Probability Model on Employee Mobility

	Model 1		Model 2	
	DV:		DV:	
	Mobility		Mobility to Spin-out Mobility	
Age	-7.92E-04 ***	(1.79E-04)	9.39E-04	(5.86E-04)
Age^2	-9.93E-07	(1.96E-06)	-9.63E-06	(6.77E-06)
Years of Education	3.46E-04 ***	(1.33E-04)	6.58E-04 ***	(3.94E-04)
Years of Tenure	-1.09E-02 ***	(7.03E-04)	7.97E-03 ***	(2.24E-03)
Years of Tenure^2	5.82E-04 ***	(5.57E-05)	-5.92E-04 ***	(2.07E-04)
Tenure < 1 year?	4.28E-03 **	(1.70E-03)	-5.18E-04	(4.57E-03)
Tenure is Censored?	-1.83E-02 ***	(1.59E-03)	2.01E-02 **	(8.01E-03)
Male	-8.59E-03 ***	(6.99E-04)	6.61E-03 ***	(2.24E-03)
Annual Earnings (\$1000s)	-1.01E-04 ***	(4.71E-06)	2.60E-04 ***	(2.60E-05)
Annual Earnings (\$1000s)^2	9.50E-09 ***	(9.89E-10)	-3.65E-08 ***	(6.50E-09)
Constant	1.50E-01 ***	(4.37E-03)	8.04E-02 ***	(1.33E-02)
N Observations	767307		73061	
N Groups	37758		15252	

Note: Models control for race and include firm-year fixed effects.

Robust standard errors are in parentheses.

*** Significant at the 1% level

** Significant at the 5% level

* Significant at the 10% level

TABLE 4
Parent Firm Performance and Number of Mobile Employees

	DV:	
	Revenue/worker	
Payroll per employee in t – 1	-0.0015	(0.0018)
Cumulative # of employees leaving to established firms	-0.0187	(0.0334)
Cumulative # of employees leaving to spin-outs	-0.2691 **	(0.1056)
Total # employees in quarter 1	-0.0771 ***	(0.0074)
Average age	0.1018 ***	(0.0330)
Average education	0.5341 ***	(0.1251)
Average tenure	-1.6794 ***	(0.1624)
Percent white	1.3539	(0.8398)
Percent male	4.9576 ***	(0.8239)
Constant	50.6183 ***	(2.0519)
N Observations	70130	
N Groups	18454	

Note: Model includes firm and year fixed effects.

Robust standard errors are in parentheses.

*** Significant at the 1% level

** Significant at the 5% level

* Significant at the 10% level

TABLE 5
Parent Firm Performance and Total Payroll of Mobile Employees

	DV:	
	Revenue/worker	
Payroll per employee in t – 1	-0.0016	(0.0018)
Cumulative payroll of leavers to established firms	0.0002	(0.0006)
Cumulative payroll of leavers to spin-outs	-0.0062 ***	(0.0012)
Average age	0.0399	(0.0324)
Average education	0.4500 ***	(0.1250)
Percent white	1.1353	(0.8409)
Percent male	4.7760 ***	(0.8250)
Constant	49.8202 ***	(2.0383)
N Observations	70130	
N Groups	18454	

Note: Model includes firm and year fixed effects.

Robust standard errors are in parentheses.

*** Significant at the 1% level

** Significant at the 5% level

* Significant at the 10% level

TABLE 6
Parent Firm Performance and Compensation of Mobile Employees

	DV:	
	Revenue/worker	
Cumulative payroll per employee in t – 1	-0.0012	(0.0018)
Cumulative # of employees leaving to established firms (0-\$100k)	0.0661 ***	(0.0360)
Cumulative # of employees leaving to established firms (\$100k-\$300k)	0.1334	(0.1873)
Cumulative # of employees leaving to established firms (\$300k-\$5M)	0.8336	(1.2414)
Cumulative # of employees leaving to spin-outs (0-\$100k)	0.1984	(0.1283)
Cumulative # of employees leaving to spin-outs (\$100k-\$300k)	-2.2708 ***	(0.4889)
Cumulative # of employees leaving to spin-outs (\$300k-\$5M)	-11.7648 ***	(1.4966)
Average age	0.1805 ***	(0.0305)
Average education	0.0907	(0.1222)
Percent white	0.3364	(0.8401)
Percent male	5.0674 ***	(0.8258)
Constant	52.6925 ***	(1.9369)
N Observations	70130	
N Groups	18454	

Note: Model includes firm and year fixed effects.

Robust standard errors are in parentheses.

*** Significant at the 1% level

** Significant at the 5% level

* Significant at the 10% level