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WHEN KNOWLEDGE IS AN ASSET: EXPLAINING THE ORGANIZATIONAL STRUCTURE OF LARGE LAW FIRMS

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ABSTRACT

We study the economics of employment relationships through theoretical and empirical analysis of an unusual set of firms, large law firms. Our point of departure is the "property rights" approach that emphasizes the centrality of ownership's legal rights to control important, non-human assets of the enterprise. From this perspective, large law firms are an interesting and potentially important object of study because the most valuable assets of these firms take the form of knowledge - particularly knowledge of the needs and interests of clients. We argue that the two most distinctive organizational features of large law firms, the use of "up or out" promotion contests and the practice of having winners become residual claimants in the firm, emerge naturally in this setting. In addition to explaining otherwise anomalous features of the up-or-out partnership system, this paper suggests a general framework for analyzing organizations where assets reside in the brains of employees.

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I. Introduction

In his seminal essay on the theory of the firm, Ronald Coase observed that employment relationships are difficult to reconcile with conventional notions of economic transactions:

> In economic theory we find that the allocation of factors of production between different uses is determined by the price mechanism… Yet in the real world, we find that there are many areas where this does not apply. If a workman moves from department Y to department X, he does not go because of a change in relative prices, but because he is ordered to do so (Coase, 1937, p. 387).

Coase's contrast between command relationships and the price mechanism poses two interrelated questions for economic theory. First, what empowers a firm to effectively command employees? Second, does the "command" observed in employment relationships differ from that found in other commercial transactions? When an employer tells an employee what to do, is authority exercised in a manner any different than a consumer who tells a retailer what products she wants the retailer to carry (Alchain and Demsetz, 1972)?

Economic theorists from Karl Marx (1967) to Oliver Hart (1989) have suggested that workplace authority derives from a system of property rights that gives the owners of the firm control over the disposition of the non-human capital of the enterprise. This "property rights" position is stated most clearly in Sanford Grossman and Hart's (1986) analysis of investments in "relationship specific assets" and in the subsequent work of Hart and John Moore (1990). Relationship specific assets are assets that achieve their greatest value when used by specific parties. The important innovation of the Grossman and Hart and Hart and Moore analyses is the demonstration that in dynamic environments, in which enforceable contracts cannot be written covering all contingencies, property rights over relationship-specific assets will affect the *ex post* distribution of the surplus, and that this, in turn, requires modifications to the *ex ante* agreements between parties in economic relationships.

This property rights theory provides a simple way to fill the gap in economic theory identified by Coase. Employment relationships will appear whenever the expected net benefits arising from control over physical assets in *ex post* bargaining exceeds the net benefits of

contracting for labor services from a contractor (or consultant) who owns his or her own capital. The employment relationships that emerge in this framework will typically be those in which employers, by virtue of their property rights, exercise greater influence over employees than would otherwise be possible. Thus employment relationships will be characterized by more "command" than would be observed in other economic transactions.

This paper offers an examination of the property rights explanation of employment relationships and firm organization. Our approach is to analyze employment relationships in firms where ownership is *not* associated with clear rights to control the disposition of the key assets of the enterprise. If, as the property rights perspective suggests, control over the assets of the enterprise is important for establishing authority within firms, then the owners of these unusual firms should find it difficult to sustain employment relations found in conventional firms. Instead, we would anticipate the emergence within these firms of unconventional personnel policies—policies the firms can use to sustain employment relationships in the absence clear property rights to key firm assets.

The object of our investigation is the organizational structure of large law firms. These firms are typically structured as partnerships. Attorneys become partners via up-or-out promotion contests. In these contests, employers hire attorneys as "associates" for a pre-determined time period. At the end of this time period, associates are either invited to become equity partners—firm owners—or are fired. The practice of giving firm ownership to senior employees certainly differs from typical firms, and the policy of dismissing associates who are not invited to partnership would seem on the surface to be irrational. After all, elite law firms devote substantial resources to recruiting the best legal talent, and the firms' partners readily admit many of the associates they fire are talented and able. Law firms that avoid the expense of firing experienced attorneys and replacing them with inexperienced new hires would appear to enjoy a significant competitive advantage.

Given its apparent inefficiencies, the survival of the up-or-out system over most of the past century poses an anomaly for the economics of organizations. We resolve this anomaly by

arguing that the up-or-out partnership system can be a solution to certain problems created by the absence of property rights over key assets.

Our argument can be briefly summarized: Attorneys are "knowledge workers," who differ from other employees because they essentially carry around key firm assets in their brains. The knowledge assets these lawyers control—an understanding of the needs and interests of clients—are obviously of greatest value when used with specific clients. This specificity gives individual attorneys considerable leverage over their employers. By threatening to "grab and leave" with an important client, attorneys can leverage an increased share of their firm's revenues. The up-or-out partnership system found in large law firms has evolved over time as a workable resolution to this particular problem. By forming partnerships and firing experienced attorneys who are not promoted to partnership positions, law firms limit the opportunity for experienced attorneys to grab and leave with the firm's valuable clients. Grabbing and leaving is more important in legal partnerships than in conventional firms because law firms cannot readily establish property rights over the knowledge essential for serving particular clients.

Previous microeconomic analyses of large law firms focused on up-or-out promotion rules, but have not considered why, in law firms, the winners of the promotion contest become *partners*, i.e., residual claimants to the surplus produced by the enterprise (Waldman, 1990; Kahn and Humerman, 1988; O'Flagherty and Siou, 1992; Prendergast, 1993). In our model, both up-or-out rules and the partnership structure emerge as a natural solution to the problem of regulating the firm's knowledge assets in the absence of clear property rights.

Our theoretical analysis of law firms is related to recent work by Levin and Tadelis (2005), who study profit-sharing partnerships. While the goal of their analysis is different than ours—they study the role of profit-sharing on the selection of heterogenous workers into

partnerships—their model, like ours, analyzes the impact of an organizational form in which relies on profit sharing.[1]

Our work is also related to a series of recent papers by Garicano and Hubbard (2005, forthcoming) that analyze the division of labor within law firms in terms of intra-firm referrals and specialization. According to this view, specialized attorneys will in general be reluctant to refer clients to other specialists who could fruitfully work on part of a client's legal problem for fear of losing the client's business entirely. The sharing of revenues among attorneys within law firms mitigates this problem because one specialist can refer the client to another within her own firm and still reap benefits from the relationship with the client.

Our analysis of "grabbing and leaving" is very much complementary to Garicano and Hubbard's in that we also focus on the problem of managing client relationships in an environment where these relationships cannot be contractually assigned to any individual firm or attorney. Our model seeks to explain an important aspect of large law firms—the up-or-out partnership system—from which Garicano and Hubbard abstract. Conversely, Garicano and Hubbard's work offers a natural explanation for features of large law firms that we take as given. Specifically, the fixed up-front cost of knowledge acquisition by specialists that is central in Garicano and Hubbard's model produces precisely the sort of "increasing returns" that our model requires to generate an up-or-out partnership structure.

Although our focus is on law firms, our theoretical analysis is similar in spirit to such analyses as Stole and Zweibel (1996) and Holmstrom and Milgrom (1996), whose work focuses on intra-firm bargaining to provide perspectives on the internal workings of firms. As in Stole and Zweibel, control over assets determines the outcome of intra-firm bargaining and this, in turn, determines organizational structure and pay. As in Holmstrom and Milgrom, the law firm's personnel policies reflect an interconnected *system* of practices (up-or-out staffing rules *and*

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1 As Levin and Tedelis (2004) note, this line of inquiry extends back to Ward (1958).

compensation policies that make senior attorneys the residual claimants).[2] Our theoretical results differ from these other studies because law firms rely on a class of assets, knowledge assets, for which it is difficult to enforce property rights.

We present the theoretical and empirical arguments of the paper as follows. In section II we set up a simple model of a firm whose net worth is tied to the knowledge of its senior employees. We demonstrate that an up-or-out partnership system serves as a sensible solution to the organizational dilemma posed by these assets. In section III we review legal doctrine in order to evaluate the key assumption of the property rights model, namely that contracts regulating lawyer-client relationships are incomplete. Section IV examines our model in light of relevant historical evidence on the emergence of the up-or-out partnership system in large corporate law firms. Section V provides empirical evidence concerning an implication of our model using survey data on the time use of attorneys. Section VI provides concluding remarks.

II. A Model of Law Firm Organization

To set the theoretical arguments we present our model in three stages. We begin with a baseline model of a firm with overlapping cohorts of workers who develop firm-specific human capital. In this simplest version of the model a capitalist controls the firm's key asset (e.g., physical capital) and can employ workers at a fixed wage; there is no hold-up problem. The second variant of our model is motivated by our observation that in a law firm the key asset is *knowledge*, in the form of working relationships senior attorneys have established with clients. Although such assets cannot be bought and sold like conventional capital, law firms can preserve the value of assets by organizing themselves as partnerships in which senior attorneys essentially hand off key assets to succeeding generations of junior attorneys. Finally, in the third variant of our model we address the central issue of grabbing and leaving, and in so doing make our key

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2 Rajan and Zingales' (1998) work on the source of power within firms is also related.

theoretical point—that the professional partnerships formed by attorneys will tend to run "lean" in the number of senior partners, and will find it optimal to adopt up-or-out promotions.

A. A Conventional Firm with Overlapping Generations of Workers

We begin by describing the operation of a conventional firm (not necessarily a law firm), in which an investor controls a durable asset. The flow from this asset, *K*, can be combined with labor to produce output. There are two types of labor—experienced and inexperienced. For clarity of exposition we assume that these two labor inputs are perfectly substitutable, but that experienced workers have higher marginal product than inexperienced workers. In period *t*, let A_t^0 be labor hired in the current period (i.e., inexperienced workers) and A_t^1 be labor hired in the previous period and retained in the current period (i.e., experienced workers). The value of output produced is $F(A_t^0 + \alpha A_t^1, K)$, where $\alpha > 1$. (As *K* is fixed we henceforth suppress it as an argument in *F*.)

Other than the distinction of being experienced or inexperienced, we suppose that all workers are identical. We assume that the human capital accumulated by experienced workers is firm-specific (e.g., it might be specific to a firm's relationships with its clients). Workers have careers that last two periods, and in either period they can secure an alternative job that pays $\overline{w}$.

With this in mind, the firm's objective at date *t* will be to maximize, with respect to A_t^0 and A_t^1, the current value of the firm,

$$(1) \qquad V_t = F(A_t^0 + \alpha A_t^1) - w_0 A_t^0 - w_1 A_t^1 + \frac{V_{t+1}}{1+r},$$

where w_0 and w_1 are the wages paid inexperienced and experienced workers respectively, *r* is the discount rate and V_{t+1} is the value of the firm in the next period, which of course is given by

$$(2) \qquad V_{t+1} = F(A_{t+1}^0 + \alpha A_{t+1}^1) - w_0 A_{t+1}^0 - w_1 A_{t+1}^1 + \frac{V_{t+2}}{1+r}.$$

The firm seeks to maximize (1) subject to the constraints that the number of experienced workers employed in any period does not exceed the number of inexperienced workers hired in the previous period, $A_t^1 \le A_{t-1}^0$ and $A_{t+1}^1 \le A_t^0$, and subject to the constraint that the wage path the firm offers, w_0 and w_1, be sufficient to induce workers to accept employment at the firm:

(3) $$w_0 + \frac{w_1}{1+r} \geq \overline{w} + \frac{\overline{w}}{1+r}.$$

We focus on the steady state behavior of the firm (under the assumption that the firm is infinitely lived). Since human capital is specific to the firm's physical capital, new hires are always made from the pool of inexperienced workers. To characterize the optimal employment, we let $\overline{A}^0_{t-1}$ be the number of workers hired in the previous period, and let $\overline{A}^0_{t+1}$ be the number of workers hired in the following period. Then the hiring decision in the current period can be found by substituting (2) into (1) and maximizing with respect to A^0_t. Letting F_1 indicate the derivative of F with respect to its first argument, we find that at the optimal level of A^0_t

(4) $$F_1(A^0_t + \alpha\overline{A}^0_{t-1}) - w_0 + \frac{\alpha F_1(\overline{A}^0_{t+1} + \alpha A^0_t) - w_1}{1+r} = 0.$$

We substitute (3) into (4). Then noting that in the steady state employment will be the same in every period, this first order condition reduces to

(5) $$(F_1 - \overline{w}) + \frac{(\alpha F_1 - \overline{w})}{1+r} = 0.$$

This outcome is intuitive. The firm adjusts employment so that the present value of the marginal product of a worker equals the present value of the reservation wage. Notice that for (5) to hold, the first expression in parentheses must be negative and the second expression positive.[3] In the first period, the marginal product of a worker is below his or her reservation wage while, in the second period, marginal product exceeds the reservation wage. Thus the firm will have no interest in hiring inexperienced workers who would not be retained for the second period, because these workers necessarily cost more than their marginal contribution. The profitability of the enterprise indeed depends critically on realizing the surplus produced by experienced employees working together with the firm's capital. It is from this perspective that up-or-out promotion rules appear so anomalous.

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3 We know this because $(\alpha F_1 - \overline{w}) > (F_1 - \overline{w})$ and these expressions must be opposite signed for equation (5) to equal 0.

To complete our discussion of the firm's human resource system, we note that there are many values of the wage stream w_0 and w_1 that satisfy the participation constraint (3). We might expect the firm to choose wage paths that give neither the firm nor the employee incentive to exit the relationship before the second period, i.e., a wage for which both the firm and employee receive surplus if the relationship continues. The result is an upward-sloping wage profile with $w_0 < \overline{w}$ and $\overline{w} < w_1 < \alpha\overline{w}$.

B. Profit-Maximizing Partnerships

We turn our attention now to law firms specifically. A central issue with law firms is the control of its key asset—the valuable on-going relationships with clients. This asset cannot easily be held by a capitalist. In particular, as we argue in Section III, when a client has an established relationship with a particular attorney or group of attorneys, a law firm has no ready mechanism to prevent such attorneys from leaving the firm, taking the client with them. It is generally recognized that controlling "grabbing and leaving" among attorneys is fundamental to the viability of law firms.[4] What has been less generally recognized is the profound effect the problem of restraining grabbing and leaving can have on firm governance, promotion and pay policies.

To examine these issues, consider a large client (say a large corporation) that has a flow of legal needs that require attention each year. Imagine that this flow, when combined with inexperienced and experienced legal talent, produces value according to $F(A_t^0 + \alpha A_t^1)$. If assembling a team of attorneys, A^1 and A^0, to resolve the client's legal needs is a value-added activity, an entrepreneur can in principle contract with the client to handle legal needs and hire attorneys to provide agreed-upon levels of service. However, as we just noted, the entrepreneur is vulnerable to a transparent play by its senior attorneys: these attorneys, having established a valuable relationship with the client, could simply establish a new firm and "take" the client with

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4 See, e.g., Gilson and Mnookin (1985), Hillman (1988), and Johnson, 1988.

them. In this new "partnership" they would hire their own associates, and split the remaining profit amongst themselves. This profit would now equal their old wages *plus* the surplus previously being generated for the entrepreneur!

If the partners in this new enterprise choose to maximize firm profits, they can do so by paying associates a below-market wage, but then promoting those associates to replace themselves as surplus-generating partners. The partners now maximize total payout to the senior partners:

$$(7) \qquad V_t = F(A_t^0 + \alpha A_t^1) - w_0 A_t^0 .$$

Such an organization is faced with two simultaneous hiring decisions. The first decision is the number of attorneys who will be promoted into the partnership in the next period. The second decision is the number of associates (if any) to hire in excess of the number required to succeed outgoing partners.

Attracting talent requires that the firm meet the participation constraint for associates. Note that the reward to partnership is a share of the value of the firm in the next period, $\frac{V_{t+1}}{A_{t+1}^1}$.

Assuming risk neutrality, the participation constraint can be written

$$(8) \qquad w_0 + \left(\frac{A_{t+1}^1}{A_t^0}\right)\frac{V_{t+1}}{A_{t+1}^1(1+r)} + \left(1 - \frac{A_{t+1}^1}{A_t^0}\right)\frac{\overline{w}}{1+r} \geq \overline{w} + \frac{\overline{w}}{1+r}.$$

Carrying out the maximization problem in (7) subject to (8), using the same steps described in our analysis of a conventional firm, we find that in steady state our firm will choose the number of partners to promote next period according to the first-order condition:

$$(9) \qquad (F_1 - \overline{w}) + \frac{(\alpha F_1 - \overline{w})}{1+r} = 0 .$$

Although the objective function (7) and participation constraint (8) for our partnership appear to be different than the corresponding profit function (1) and participation constraint (3) for a conventional firm, in fact we have precisely the same first-order condition for hiring that emerged from the model of a conventional firm (see equation 5 above). When the firm is

organized as an equity partnership, senior stakeholders essentially "sell" the firm to junior associates; associates work at a below-market wage when they are young in exchange for the rights to extract surplus as partners when they are senior. As in our baseline case, when the partnership is profit-maximizing, it will never be profitable to hire associates over and above the number required to assure an adequate number of partners in the next period.

C. So Why Up-or-Out Promotions?

Our key theoretical insight is that while an attorney partnership *can* be structured to maximize surplus—and in so doing replicate the hiring decisions that a capitalist would make—the logic that drives the firm to devolve into a partnership will also induce the firm to adopt an objective function that does *not* maximize surplus. In particular, the problem of grabbing and leaving means that the attorney-owners of our firm must organize themselves so that no sub-set of partners will find it profitable to leave the partnership with the client. In the absence of other commitment mechanisms, the partnership can effectively eliminate defection of partners only by making decisions that maximize surplus *per partner* rather than total surplus.[5] The problem for the senior attorney owners of a partnership, then, is to choose the number of associates and senior attorneys to maximize

$$(10) \qquad V_t / A_t = [F(A_t^0 + \alpha A_t^1) - w_0 A_t^0] / A_t^1.$$

It is straightforward to demonstrate that the practice of maximizing *per partner* surplus can lead to the use of up-or-out promotions. Taking the derivative of (10) with respect to A_t^0 and setting the result to 0 gives $F_1 = w_0 - A_t^0[\partial w_0 / \partial A_t^0]$, as w_0 depends on the number of associates hired and the number of senior attorneys retained, via the participation constraint (8). Using (8) to solve for the right-hand side of this latter expression, and simplifying, gives

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5 A potential alternative strategy would be for the senior attorneys to post a bond with an outside owner. It is difficult to see how this would be workable, as this would amount to writing contracts controlling the disposition of client relationships. As we demonstrate below, these contracts are infeasible to write and enforce. (Even if such contracts were feasible, it would remain to solve the problem that an outside owner would have the incentive to simply keep the posted bond.)

(11) $F_1 - \overline{w} = 0.$

Taking the derivative of (10) with respect to A_t^1 and setting the result to zero (and rearranging terms) gives

(12) $\alpha F_1 - [F - w_0 A_t^0] / A_t^1 = 0.$

Expressions (11) and (12) are intuitively sensible first-order conditions that characterize personnel decisions when the partnership has an "interior solution." From (12) we observe that when the organization maximizes per-partner surplus, the value of the marginal product of a partner (αF_1) is equal to the per-partner share of the surplus. In such an organization no coalition of partners can profitably form to exclude another partner, as the marginal partner's value to the firm is as large as her share of the firm's current profits. Figure 1 illustrates this point: per-partner surplus is given by the slope of a ray from the origin through the corresponding point on the production function. At a partnership size that maximizes per-partner surplus, this slope equals the value of the marginal partner's product. From (11) it is apparent that at the optimal partnership size, A_t^1, characterized in Figure 1, partners hire associates A_t^0 to the point where the value of marginal product is equal to the opportunity cost of the marginal associate.

We have two observations about the partnership's personnel practices. First, our analysis indicates that partnerships will run lean relative to a conventional profit-maximizing firm: recall that in a conventional baseline case we had total effective employment of attorneys that resulted in $F_1 - \overline{w} < 0,$ while in a partnership that limits "grabbing and leaving" the optimal effective employment satisfies $F_1 - \overline{w} = 0.$[6] Indeed, given the tension against large firm size the optimal firm structure might in some circumstances drive the firm to a "corner solution"—a single senior attorney working with an apprentice who takes over the firm when the senior attorney retires.

Second, when the nature of the legal services provided requires a *team* of attorneys (i.e., the scale of production results in an "interior" solution to the firm's maximization problem), the

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6 The economic logic of our observation that the partnership runs lean is discussed in Ward's (1958) examination of employee-owned firms.

partnership will *not* in general promote all junior associates to partnership positions. It is true that in a stable partnership the marginal productivity of any senior attorney in the firm, αF_1, exceeds that attorney's earning capacity in the outside market, $\overline{w}$. However, if the partnership retains "too many" senior partners, the firm will have a situation in which a sub-group of partners can profitably defect from the firm, taking clients with them. In short, the firm will adopt an up-or-out promotion strategy in which perfectly capable associates are not promoted to partnership.

A numerical example serves to illustrate our point about the up-or-out organizational structure. Suppose a large corporate client requires a team of attorneys the value to provide legal services, with value of these services given by

(13) $[\theta(A^0 + 2A^1)]^{1/2} - 30.$

Note that complete inattention to legal needs results in a substantial loss for the client (-30); assigning attorneys to the flow of legal work potentially creates value. For the example we set $\theta = 108$, $\overline{w} = 1$, and $r = 1$. Then using equation (5) it is easy to verify that a conventional firm would maximize surplus in the steady state by hiring 16 junior and 16 senior employees. We have argued that such a firm is not viable, though, because of the inability of a capitalist employer to limit grabbing and leaving. Instead, a partnership utilizing an up-or-out organizational structure would create legal services (as depicted in (11) and (12)) with 6 senior partners working with 15 junior attorneys, resulting in a steady state promotion rate to partnership of 40 percent.[7]

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7 As for compensation, in the baseline case of a profit-maximizing firm owned by a capitalist, a wage path of $w_0 = 1$ and $w_1 = 1$ satisfies the participation constraint, though as we note above a moderately upward-sloping wage path of equal present value might make more sense (e.g., to insure there is no turnover among senior attorneys). For the partnership case we can use (8) to show that junior attorneys earn $w_0 = 4/5$, while attorneys promoted to partnership earn a profit share of 2 (while those who do not win promotion earn the opportunity wage $w_1 = 1$ elsewhere). The extraordinarily high partner compensation deters grabbing and leaving. It is common practice in large law firms to provide extra compensation to "rainmakers"—senior attorneys who are especially effective in bringing in new clients. Our model abstracts from such heterogeneity in productivity. But the logic of our model does suggest why such compensation is necessary:

We draw attention to one final feature of our model. In a conventional setting an exogenous shift that increases the value of workers' marginal product (e.g., an increase in the output price) induces the firm to increase employment. Matters are more complicated in our model. Consider again the numerical example (13), but increase θ from 108 to 112. Given the first-order condition (11), we can we sure that indeed effective employment, $A^0 + \alpha A^1$, increases. However, given the relationship between the marginal product of senior attorneys and the per-partner surplus (12), the increase in the firm's profitability means that the viable number of partners *decreases*; in our example, in the optimal steady state there is a decrease in the number of senior partners from 6 to 4 while the employment of junior associates increases from 15 to 20; the steady state promotion rate to partnership declines to 20 percent.

D. Implications

Where will the up-or-out system be found? Our model suggests that an up-or-out partnership system is likely to emerge as a response to the threat of grabbing and leaving. According to the reasoning we have laid out, this organizational form is likely to appear when (1) the firm's key "asset" is on-going long-term relationships with clients,[8] and (2) large teams of attorneys are needed to satisfy complex and varied needs of clients.[9] We also notice that according to our theory, the higher the value of the legal services the more "severe" will be the

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senior attorneys must be well paid, and this logic will be especially pertinent to those attorneys who are at risk to grabbing and leaving.

8 The long-term relationship might most obviously be continued legal advice offered a corporate client or a wealthy family with succeeding generations of individuals receiving advice from a trusted firm. As emphasized in Bar-Isaac (2003), the long-term relationship might also be with a community in which the firm has an established reputation (though this obviously is not something we model here).

9 Specifically, our model requires that the scale of legal production is such that the services required by large corporate clients could not be provided by a network of small firms having one senior partner and one junior associate (who anticipates inheriting the firm from the senior partner the next period). If, in fact, the work flow could be so divided, the client could utilize a network of small firms that would maximize surplus. In our initial numerical example, such a network would allocate 1/16 of the work flow to each of 16 two-person firms.

up-or-out system, i.e., the higher will be the fraction of junior attorneys who will be dismissed rather than promoted to partnership.

Client Contact. Our model treats the length of the associate period as exogenous; we assume that senior law partners can grab and leave, while junior attorneys cannot. One could imagine a theoretical treatment that did not rely on so stark an assumption, but instead analyzed the dynamic process whereby firms allocate the time of young attorneys to client contact. If controlling the firm's key asset—the relationship with clients—is central to the firm, we would expect the firm to take other actions to limit the ability of young attorneys from building relationships that would allow them to "grab and leave." Thus a more complete treatment would solve for the optimal length of an "associateship" by comparing the benefits of more experienced associates (higher levels of productivity, reducing the burden of fixed hiring costs) against the costs (an increased likelihood that the associate will be able to defect with the client). All else equal, if firms could reduce the likelihood of client defection they would no doubt prefer longer associate periods. One way to realize some of the benefits of longer associateships would be to reduce the direct contact between clients and associates. In the absence of such contacts it would be difficult for associates to develop the kind of rapport with clients required to make the threat of grabbing and leaving credible. A natural implication of our model's logic, then, is that client contact for associates will be reduced in the large firms that rely heavily on up-or-out promotion rules.

III. Are Contracts Incomplete?

The property rights explanation of up-or-out employment relationships requires that law firms cannot rely upon other, less costly means of restraining grabbing and leaving. The most straightforward means of preventing grabbing and leaving is to write contracts that bind the client to the law firm. The status of these contracts is determined by codes of professional responsibility. These codes may vary from state to state, but they are strongly influenced by the model codes put forward by the American Bar Association (ABA). The ABA promulgated the

Cannons of Professional Ethics in 1908, the Model Code of Professional Responsibility in 1967 and the Model Rules of Professional Conduct in 1983. These codes prohibit contracts that limit a client's freedom to choose her lawyer:

> Because the lawyer-client relationship is personal in nature and dependent on the client's trust in the lawyer, both the Model Code and the Model Rules mandate lawyer withdrawal upon discharge by a client. For purposes of grabbing, the client's power to choose, discharge, or replace a lawyer borders on the absolute. Even a contract purporting to bind the client to a lawyer or a firm is terminable at the will of the client (Hillman, 1988).

For similar reasons the rules of legal ethics bar the use of non-compete agreements in a law firm's employment contract with associates.[10] The reasoning for the proscription is based in part on the rejection of the idea that client relationships are the property of the attorneys. The following assessment of a 1961 statement by the ABA's Committee on Professional Ethics is revealing in this point: "The committee's Formal Opinion 300 notes that attorneys can neither buy nor sell clients, adding that a restrictive covenant represents an attempt to 'barter in clients'" (Hillman, 1988, p. 163).[11]

Even without restrictive covenants in employment contracts, a law firm may be legally entitled to act against an associate who takes business away from the firm. Courts recognize that improper third-party interference with attorney client relations is actionable as tortious interference with contractual relations (Hillman, 1988, p.165, and Johnson, 1988). Violation of

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10 See, e.g., Hillman (1988) and Johnson (1988). Johnson notes, "Rule 5.6 of the Model rules state in part: 'A lawyer shall not participate in offering or making: (a) a partnership or employment agreement that restricts the rights of the a lawyer to practice after termination of the relationship, except an agreement concerning benefits upon retirement.' This language is substantially identical to that included in the Model Code" (Johnson, 1988, p. 125).

11 Accountants and physicians regularly enter into non-compete agreements. However, the legal status of these agreements is different from other contracts. Judges can disallow those agreements (or the parts of the agreements) that do not pass a "reasonableness" test. Reasonableness is generally interpreted as restricting the time period and geographic area covered by the agreement as well as the employers "need" for protection from competition with the employee (see Callahan, 1985 and Sterk, 1993).

recognized ethical codes is important in determining whether interference with plaintiffs' contractual relations was improper.

The Model Code and the Model Rule prohibit certain kinds of solicitation by attorneys. These prohibitions, however, do not create a substantial barrier to associates who consider grabbing and leaving. Rule 7.3 of the Model Rules states that a "lawyer may not solicit professional employment from a prospective client with whom the lawyer has no family or prior professional relationship, by mail, in person, or otherwise, when a significant motive for the lawyer's doing so is the lawyer's pecuniary gain" (Hillman, 1988, p. 13). The "prior relationship" qualification would seem to allow most solicitation of clients with whom the departing associate has contact.[12]

Another basis for litigation is the law of agency. Associates are the agents of their firms and agents are prohibited from stealing "trade secrets." If in the course of his work, however, an employee acquires useful information about clients or business methods, this information is barred from use in subsequent competition only to the extent that use of this information would be unfair to the former employer (Hillman, 1988, and Johnson, 1988). The "unfairness" standard is difficult to apply in the context of grabbing by lawyers because it is likely to conflict with the principle of client choice.[13]

A recent and comprehensive review of the law regarding solicitation of clients by departing associates and partners concluded that from a legal perspective, "… there is little a firm can do to protect itself from the loss of clients to departing partners or associates" (Johnson, 1988, p.133). Even in cases where legal recourse is possible, law firms may be reluctant to litigate for fear of souring relations with the client in the future.

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12 In light of the results reported below, it is worth noting that this qualification gives law firms a direct interest in reducing the degree of contact between associates and clients.

13 As Hillman suggests, "In light of the importance accorded client choice under ethical norms, considerations emphasizing fairness to the firm are not dispositive of the issues raised by post withdrawal competition" (p. 172).

IV. Long-Term Client Relationships and Complex Legal Services

The property rights approach suggests that up-or-out partnership systems should evolve in large firms—particularly those firms characterized by: (1) valuable long-term relationships with clients and (2) legal services complex enough that they require the simultaneous efforts of a number of experienced attorneys. In what follows, we investigate this proposition by briefly reviewing the historical emergence of the up-or-out system in large corporate law firms.[14]

Prior to the appearance of large law firms, the career of an attorney was characterized by "fluid partnerships." Attorneys would move easily from one partnership to another—often taking clients with them (Galanter and Palay, 1991, p. 14). Organizations that we would recognize today as large law firms appeared early in this century to provide legal services to the newly emerging, large corporations. Consistent with our model, these corporate clients required new kinds of complex legal services which "could be supplied only by a team of specialized lawyers" (Galanter and Palay, 1991, p. 5).[15] Given the amount of business generated by individual corporate clients, a major concern of the early progenitors of large law firms was establishing a lasting relationship between the corporate client and the law firm rather than between the client and an individual attorney.

The career of Paul D. Cravath, one of the central innovators in the development of the modern corporate law firm, highlighted the possibility that young attorneys could grab and leave with clients. Early in his career Cravath split off from an established law firm and took with him the business of the Westinghouse interests. With this client, he moved to the firm of Seward,

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14 This discussion relies on Galanter and Palay (1991), Hobson (1986) and Abbott (1988).

15 In his review of the historical development of the American legal profession, Andrew Abbott states that the growth of large commercial enterprises "involved some problems never before encountered—large-scale reorganizations, massive bond issues, tax planning and, in America, antitrust" (Abbott, 1988, p. 248). Abbott (p. 252) also claims that the newly introduced large law firms allowed for a high degree of specialization whose effect was a dramatic increase in law firm productivity

Gurthie and Steele and began to introduce the set of personnel policies that came to characterize most large, corporate law firms by the 1920's (Hobson, 1986, p. 197).

The system of law firm management introduced by Cravath involved three distinctive personnel policies that were a sharp break from past practice. First, the firm hired only inexperienced law school graduates to work as associates.[16] Second, the law firm paid associates salaries instead of allowing them to cultivate their own clients. For example, prior to Cravath's arrival at Seward, Guthrie and Steele, the firm had been "staffed by friends of the partners, of colleagues at the bar and of clients, and most of them stayed only a few months… These men had not been paid and had been allowed to seek clients of their own" (Hobson, 1986, p.197-198). Third, the associates working in Cravath's system were offered training and the opportunity to be considered for partnership. Those associates who were not promoted were helped to find positions at other firms.

Associates in the new law firms were given little opportunity to establish an independent reputation or relationships with clients:[17]

> "Thus, by the late 1890's and early 1900's, Cravath was creating a system of law office organization which would, when it became a general rule in the 1920's, make nearly impossible the kind of career he and his young colleagues had known. They had established major reputations as young men. For example, Hughes was only twenty-six and Cravath twenty-five when they were made partners in Carter's firm in 1888. These men had been able to move easily from firm to firm, often creating new firms themselves and carrying their clients with them. In addition they often became known by the public, sometimes because, like Hughes, they were active in court practice, sometimes because they became involved in urban, state, or national politics. But the Cravath system, once institutionalized, churned out anonymous organization men, steadfastly loyal to the firm that had hired them fresh out of law school, moving only if the firm

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16 Currently, law school graduation is the primary pre-requisite for a career in law. This was not true at the turn of the century. Estimates are that only one quarter of those admitted to the bar in 1870 were law school graduates, compared to two thirds in 1910 (Galanter and Palay, 1991, p. 9). For a discussion of the causes and consequences of the emergence of law schools in the American legal profession, see Abbott (1988).

17 For more extended discussions, see Galanter and Palay (1991) and Hobson (1986).

> informed them it could not advance them to partnership" (cited in Galanter and Palay from Hobson, 1986 p. 200).

V. Contact between Associates and Partners in Large Law Firms

If our property rights perspective is correct, up-or-out personnel policies discourage grabbing and leaving by dismissing associates before they have established strong relationships with clients. The length of the associate period can therefore be increased (and the unit cost of hiring associates be reduced) if firms limit the direct contacts between clients and associates. Indeed, if it were possible to completely eliminate contact between clients and associates, associates could be employed indefinitely.

Limiting client-associate contacts was a clear concern for the founders of large, corporate, law firms. In modern firms, such contact is still believed to increase the likelihood of grabbing and leaving:

> One practice which undoubtedly exacerbates the risk of departure-based loss of clients is that of over-delegation of responsibility to junior attorneys. To the extent that senior attorneys fail to maintain client contact or to supervise the work of subordinates, it is not surprising that junior attorneys should regard clients as their own or that clients should feel a special bond to those junior attorneys. Accordingly, senior attorneys often might be well advised to maintain a greater degree of participation in the affairs of firm clients (Johnson, 1988, p.135).

We should expect, therefore, that the firms should develop a division of labor in which partners have more contact with clients than associates. Since, as we have discussed, the up-or-out system is relied upon most heavily in large firms, we would expect the difference in direct contact between partners and associates to increase with firm size.

In 1984, the Young Lawyer's Division of the American Bar Association conducted the first nationally representative survey of lawyers (for a description see American Bar Association, Young Lawyer's Division).[18] This survey collected information about the ways in which

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18 The survey consisted of a random probability sample of 3,000 lawyers of all ages drawn from both ABA member and nonmember lists totaling 586, 706 lawyers. The sampled individuals

associates and partners use their time. Most important for our purposes, the survey asked attorneys what fraction of their time over the previous 12 months was spent in contact with clients and in new client development. Table 1 presents data on client contact and development for attorneys in private practice. Solo practitioners were not included in the sample.

Columns 1 and 2 of Table 1 presents data on the percent of time attorneys in law firms spend in contact with clients. It is clear from this table that associates spend less time with clients than do partners. Consistent with our model, the differences between partners and associates increase with firm size. In the largest firm size category of 90+ attorneys, partners spend 80 percent more time with clients than do associates. In firms with 4-9 lawyers, this differential is roughly 8 percent.

If grabbing and leaving is a problem, large firms should worry more about some forms of client contact than others. In particular, firms should discourage associates from developing new clients of their own. Columns 3 and 4 of Table 1 compare the fraction of time associates and partners spend in client development. Partners spend more time developing clients than do associates and, as before, this difference increases with the size of the firm. In the largest firms, partners spend 120% more time in client development than do associates. For firms with 4-9 lawyers, the comparable figure is 60%.[19]

Table 2 presents the data in Table 1 in an OLS regression framework. The advantage of this way of analyzing the data is that it allows us to assess the role that differences in experience or practice style have on client contact. Column 1 of Table 2 estimates the natural log of the

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were sent a lengthy survey covering many aspects of their work environment, job history, educational background health and psychological profile and basic demographics. All members of the study sample were sent a copy of the questionnaire. After several weeks of returns, a follow-up post card was mailed to all non-respondents. Seven weeks into the survey a telephone follow-up was begun. A total of 76.9% responded to a combination of the mailed survey and telephone follow-ups.

19 The finding that associates in large firms spend relatively little time on client development is consistent with other evidence that client development is not an especially important criterion for promotion in large law firms (Landers, Rebitzer and Taylor, 1996).

percent of work time devoted to client contact as a linear function of associate status (Associate), the log of firm size (Log of Firm Size), and an interaction between associate status and firm size (Associate*Log of Firm Size).

The estimated difference between the amount of time partners and associates spend in contact with clients is captured by Associate and Associate*Log of Firm Size. The negative coefficients on these variables indicate that associates spend less time with clients than partners and that the differences increase with firm size.[20]

In column 2 of Table 2 we re-estimate the client contact time equation with additional variables controlling for experience (Years Since Bar Exam), job tenure (Years At Firm), geographic location (Live In Legal Center), type of practice (e.g., corporate law, administrative law, property law, family law, etc.). In addition, we include a vector of human capital variables: attorney's assessment of the prestige of their undergraduate institution (a four point scale ranging from "not at all prestigious" to "very prestigious"); variables indicating the attorney's undergraduate major (biological sciences, physical sciences and engineering, social sciences, humanities, business and other); and the attorney's report of their quartile ranking in their law school class. Finally, we include dummy variables indicating gender and race (because attorneys in this sample were overwhelmingly white, we rely simply on a dummy variable equal to 1 if respondent was not white). Introducing these additional control variables has virtually no effect on the results reported in column 1. This suggests that differences by firm size between associate and partner client contact are not due to differences in experience, type of legal practice, human capital acquisition or attorney demographics.

Column 3 of Table 2 contains parameter estimates of a client development time equation. The equation in column 3 is identical to that presented in column 1, except that the dependent

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20 A test of the hypothesis that both the coefficients on Associate and Associate*Log of Firm Size are zero yields $F(2,813) = 15.68$. A test of the hypothesis that, at the mean firm size, the total effect of associate status is zero yields $F(1,813) = 23.2$.

variable is the natural log of the percent of time spent in client development. The negative coefficients on Associate and Associate*Log of Firm Size indicate that associates spend a smaller fraction of their work time on client development than partners and that the difference in time allocation increases with size of the firm.[21]

Column 4 of Table 2 re-estimates the equation in Column 3 of Table 2 after introducing variables controlling for attorney experience, job tenure, place of practice and type of legal practice. The key results are unaffected by these additional variables, suggesting the differences in these factors across firm size cannot account for the differences in associate and partner time use.

Three fundamental results emerge from the data presented in Tables 1 and 2. First, it does not appear possible to completely separate associates and clients. Associates in all firm sizes spend some of their work time in contact with clients or in developing new clients. Second, associates spend less time with clients than do partners. Third, this divergence between associate and partner time use increases with the size of firm. Importantly, these results are not due to differences in experience and type of practice across firm size groups.

In Table 3, we present analysis of other dimensions of time use by estimating regressions similar to those in columns (2) and (4) of Table 2 for other activities. To economize on space, we suppress all coefficients but those on our key variable of interest, ASSOCIATE*LOG FIRM SIZE. Each row of Table 3 corresponds to a distinct time-use regression with the dependent variable

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21 A test of the hypothesis that Associate and Associate*Log of Firm Size are jointly zero yields $F(2,813) = 26.13$. A test of the hypothesis that, at the mean firm size, the total effect of associate status is zero yields $F(1,813) = 43.36$. As for the magnitudes involved, using the interaction coefficient from Column (1) of Table 2, we can draw the following inference: For a firm with 15 attorneys, being an associate (relative to being a partner) reduces our measure, the log of *% Time in Client Contact,* by -0.32, or approximately 32 percent for *% Time in Client Contact*. The corresponding effect for being an associate in a firm with 75 attorneys is -0.51, which translates to an approximately 51 percent decline in *% Time in Client Contact*. These inferences are similar to those one would draw directly from Table 1: In a firm with 10-20 lawyers, *% Time in Client Contact* is 26 percent lower for associates than partners. In a firm with 61-90 lawyers, *% Time in Client Contact* is 56 percent lower for associates than partners.

listed in column 1. The first two rows of Table 3 reproduce the coefficient on ASSOCIATE*LOG FIRM SIZE found in columns (2) and (4) of Table 2. The negative coefficients in rows (1) and (2) imply that as firm size increases, the percentage of work time associates devote to client contact and development falls. Row 3 reports results of a regression analyzing the fraction of time spent doing research and writing memos. The coefficient on ASSOCIATE*LOG FIRM SIZE is positive and statistically significant, indicating that associates in large firms spend more of their time in research and writing. Finally, the coefficient on ASSOCIATE*LOG FIRM SIZE in row 4 is negative, implying that associates in large firms spend less time in negotiations than their small firm counterparts.

In interpreting the first four rows of Table 3, it is important to note that the activities being analyzed are not mutually exclusive. Thus negotiations are likely to entail a certain amount of client contact and client development may also involve certain types of negotiation. Research and memo-writing, however, can often be conducted under the supervision of senior attorneys and in isolation from clients.

The remaining activities included in the ABA survey (depositions, trials and administrative court proceedings, drafting instruments, clerical work, misc. personal activities, and non-law related work) do not differ in a statistically significant manner across associates in large and small firms.

Taken together, the results in Tables 1-3 are consistent with our "grabbing and leaving" model. In what follows, we consider whether these results are consistent with two other important alternative explanations: tournament models and models of human capital accumulation within firms.

The standard explanation for up-or-out employment contracts in the economics literature emphasizes the "dual incentive" problems created when employers try to induce employees to make hard-to-monitor investments in firm specific skills (Kahn and Huberman, 1988; Prendergast, 1993; and Waldman, 1990). According to this story, law firms create incentives for associates to invest in firm specific skills by promising a valuable promotion to some or all of the

associates who undertake the investments. It is difficult, however, for outsiders to monitor whether the associates have actually met the firm's requirements. This gives the employer an incentive to cheat the associate by denying promotion even when the associate has performed as the firm desires. Since the employees anticipate cheating by the firm, no investments in firm-specific human capital are made.

A firm's commitment to an up-or-out employment system can potentially resolve the dual incentive problem. Firms will find it in their interest to promote those employees who have most successfully made the desired investments. Employees can see that their investments will be rewarded and therefore undertake the investments.

The dual incentive model of law firm organization offers both an imaginative and logically coherent account for up-or-out promotion rules. Applying the dual incentive model to our data on time-use, we would naturally assume that attorneys generally acquire firm-specific (often client-specific) knowledge in the course of performing the various legal activities presented in Table 3. In addition, we know from casual observation as well as from empirical research that the expected value of prizes for promotion to partner in large firms are far greater than in small firms (see Rebitzer and Taylor, 1995). From this perspective, then, we can reinterpret Tables 1-3 as follows: As firm size increases, the incentive to make investment in firm-specific human capital also increases. These heightened levels of human capital investment appear to involve less client contact and more research and memo writing. But why should this be so? There is no obvious explanation in the dual incentive model. One could, perhaps, assume that this is a feature of the technology for providing legal services, but this post-hoc assumption would need some justification that is not provided within the human capital models. In contrast, the grabbing and leaving model predicts that large law firms, with long-standing relationships to important corporate clients, would implement a kind of legal production technology that would keep non-partners at arms-length from clients.

Based on this reasoning, we argue that the dual incentive model of up-or-out practices fits our empirical observations less well than our grabbing and leaving model. Looking beyond the

evidence in our tables, there are institutional factors that also cast doubt on the dual incentive model—namely that the attorneys who are promoted become residual claimants to the surplus produced by the enterprise. Explaining the partnership aspect of the up-or-out partnership system requires some consideration of the problem of grabbing and leaving.

A second important limitation of these dual incentive models of up-or-out is the way dismissal is handled. The dual incentive model requires that dismissal from the firm be costly to the associates who are not promoted. Indeed, the more costly is dismissal, the more effective the incentive to accumulate the desired human capital. From this perspective, it is hard to explain why large law firms often help their associates find good jobs at other firms.[22] It is similarly hard for the dual incentive models to explain why firms often retained permanent associates of limited ability for "back office" work.[23] These practices can be incorporated quite easily into the property rights approach. In this latter model, work incentives do not rely upon dismissal costs, and firms can benefit if they reduce the risk of the up-or-out contest by effectively placing associates who are not promoted. Similarly, firms are willing to retain permanent associates, provided they do not constitute a threat to grab and leave with clients.

Tournament models, like dual incentive models, use deferred compensation to induce work effort. In a tournament model, associates are hired in period 1 and their relative performance is assessed. The high performing associates are rewarded by promotion to partner and the relatively poor performers are let go. To the extent that the tournaments are designed to

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22 Galanter and Palay (1991, p. 29) describe the practices of large corporate law firms as follows: "For associates who did not make partner, firms undertook out-placement, recommending them for jobs with client corporations and with smaller firms. Ties might be maintained as the firm referred legal work to them or served as outside counsel to the corporation."

23 But most "permanent associates were 'failures,' second-class citizens who had not been promoted but stayed on and were assigned routine work—especially 'back office' work which did not involve dealing with clients... Of all those who had started out at the Cravath firm from 1906 to 1948, 16 remained permanent associates—almost half as many as became partners" (Galanter and Palay, p. 26).

elicit investments in human capital, tournament models share all the predictions and limitations of the dual incentive models. To the extent that tournaments are designed to elicit work effort *per se*, they do not make predictions about the allocations of effort across different work activities as described in Table 3. Tournament models that focus solely on work effort also do not predict that the winners of the tournament be granted residual claimant status.

The Incidence of Up-or-Out Systems in Law and Elsewhere

Dual incentive models have difficulty accounting for the variation of up-or-out promotion rules across different legal settings. Attorneys working in government or in the legal department of corporations are not hired under up-or-out contracts and are not promoted to positions where they are residual claimants of the enterprise. The dual incentive approach might account for the variation in incidence of up-or-out rules if (somewhat implausibly) the problem of eliciting investments in human capital is greater in large law firms than in government offices or corporate legal departments. In contrast, under the property rights approach this variation in the use of up-or-out is natural. Up-or-out rules are unnecessary in corporate legal departments or government jobs because the key client (the corporation or government) is also the employer.[24]

We have argued that the up-or-out employment structure evolved in law firms because of the difficulty of otherwise retaining control over the disposition of the key asset, long term client

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24 A third alternative explanation for up-or-out rules has to do with screening. If an individual's productivity as a senior attorney can be observed by their performance as a junior attorney, firms may terminate a capable junior attorney in order to observe another candidate (O'Flaherty and Siow, 1992). If screening during the associate period were solely for the purpose of learning how well an associate would perform as a partner, one would expect that the tasks performed by associates would resemble those of partners. If client relationships were a critical part of a partner's role, associates should be given responsibility for developing these relationships *prior* to promotion. While this practice is common in large consultancies, the tasks analyzed in Tables 1-3 do not follow this pattern. One might want to explain the differences between the time use of partners and associates as resulting from partners pushing undesirable "grunt" work onto associates, but there is no *a priori* reason to believe that client contact is inherently more pleasurable than other activities listed in Table 3. Screening of some type may play a role in the career path of large law firms (see Landers, Rebitzer and Taylor, 1996), but the coincidence of partnerships with up-or-out promotion rules is not readily explained by screening models.

relationships. A large class of professional service firms have assets bound up in client relationships, yet only some of these (notably accounting firms and some consulting firms) have used the type of employment contracts found among attorneys in large law firms. Are these variations inconsistent with our property rights approach employment relationships?

Our model requires that experienced lawyers must either be promoted into the partnership or be dismissed from the firm if there are no other ways to control the development of independent relationships with clients. In generalizing our story outside of law, it is therefore necessary to consider the ability of the firm to regulate relationships between professionals and clients. This sort of analysis requires the answer to questions that are very context specific. Does the firm have control over a non-human asset that is necessary for delivering the service, e.g., a specialized machine, a copyright, or a patent? Is it possible for the firm to sign binding non-compete agreements with employees? Are the services delivered complex enough to require the efforts of a team of professionals with specific knowledge? Law firms are interesting because the answer to these questions are similar across most large firms. The same cannot be said in many other professional settings. Consultancies, for example, can effectively inhibit grabbing and leaving with clients through the use of non-compete agreements.[25] In most physician practices, especially primary care practices, the delivery of medical services is essentially done by solo physicians.

High technology firms raise some of the same issues that professionals service firms do. In high technology firms, many of the key assets of the enterprise are bound up in the brains of crucial employees. Property rights to some of these intellectual assets can be secured through patents or copyrights. When adequate control *cannot* be attained through intellectual property rights, one should expect to see innovations in the employment relationship that reduce the firm's vulnerability to loosing valuable assets. In some instances, high technology companies reduce

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25 See, e.g., Fallick, Fleishman, and Rebitzer (forthcoming) and Gilson (1999) for economic analyses of non-compete agreements.

the incentive of key "knowledge workers" to leave through the use of stock options and other forms of deferred compensation that become dramatically less valuable when the employee exits the firm.[26]

The tenure system found in many colleges and some public school systems resembles up-or-out in some superficial ways. In universities, for example, professors who are not granted tenure before some specified time period are required to find work elsewhere. Despite these superficial similarities to the system in large law firms, we do not believe our grabbing and leaving model applies to universities. After all, in the university context, there is no equivalent to the large corporate client relationship in law firms. Carmichael (1988) offers, in our view, a more compelling economic explanation for university tenure systems.[27]

Our model opens up at least one line of inquiry that we do not pursue here—the role of *reputation.* To the extent that a reputation for excellence rests with *individual attorneys*, grabbing and leaving is will be a real possibility, and in consequence firms will face the serious challenges for organization design we discuss in this paper. On the other hand, if the reputation for excellence rests with the firm (i.e., because the firm has been able to consistently recruit unusually talented attorneys), this might reduce the problem of grabbing and leaving, and thereby

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26 Stock options are not available to law firms because rules of professional conduct prohibit outside ownership of stock in a law firm. (Even if these rules did not exist, the nature of the knowledge assets in these firms might work against the existence of stable markets for equity.) Since there is no market for the stock of a law firm, options are not feasible.

27 Carmichael's argument rests on the specialized knowledge acquired by senior professors. This knowledge gives senior professors in a department superior ability to spot talented junior hires. The university grants tenure, in Carmichael's view, as an incentive compatible mechanism for inducing professors in a department to hire the very best candidates available. It might be objected that a model of up-or-out that applies to law firms and professional partnerships but not to academic departments is necessarily an incomplete explanation, but this objection rests on the faulty assumption that similar promotion rules must have similar functions even if they occur in very different organizations functioning in very different economic environments.

allow the firm more flexibility in organizational design.[28] The role of reputation is doubtless important for law firms, and systematic study of this issue is merited.

VI. Conclusion

From the property rights perspective, large law firms are poorly suited to sustaining employment relationships because they have no enforceable means of controlling the firm's key knowledge asset—client relationships. The up-or-out partnership systems that have evolved over time in these firms offer an awkward but workable resolution to this problem. By restricting partnership size to maximize surplus per partner and by making senior attorneys residual claimants, law firms limit the opportunity for sub-groups of partners to grab and leave with the firm's clients. This action, however, creates additional demand for inexperienced associates who serve as (imperfect) substitutes for their more experienced counterparts. The result is that more associates are hired than can be promoted into a stable partnership. Those associates who do not succeed outgoing partners will be dismissed before they acquire sufficient client knowledge to themselves pose a threat of grabbing and leaving. That law firms find it worthwhile to commit to the costly practice of firing qualified attorneys in order to retain control over client relationships points to the general importance of control over assets in more conventional employment relationships.

The property rights model, in contrast to other explanations, can explain the coincidence of up-or-out promotion rules and partnerships in large law firms. At the root of our model is the claim that law firms cannot rely upon legal mechanisms to establish control over client relationships. We demonstrate that this is, in fact, the case under U.S. law. In addition, the property rights model suggests two propositions that are supported by the available historical, institutional and econometric evidence: (1) up-or-out appeared first in large corporate law firms

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28 We are grateful to a helpful referee for making this point.

who specialized in delivering large scale, complex legal services to valuable, long-term clients, and (2) large law firms practice a style of law that limits contact between associates and clients. Finally, the property rights model can account for the otherwise anomalous absence of up-or-out personnel policies in government agencies and large corporate litigation departments.

The presence of knowledge based assets is not unique to law firms. It is commonplace to find management "gurus" commenting on the increasing importance of knowledge workers for the modern American economy.[29] Much work in growth theory has also emphasized the importance of knowledge to determining the wealth of nations. What has been missing from the literature so far, however, are narrowly focused case studies that elaborate the organizational consequences of knowledge assets.

Based on the results of this study, we believe that the property rights perspective on employment systems provides a promising framework for analyzing the organization of knowledge based organizations whose assets reside in the brains of employees.

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29 Peter Drucker claims, for instance, "The single greatest challenge facing managers in the developed countries of world is to raise the productivity of knowledge and service workers. This challenge, which will dominate the management agenda for the next several decades, will ultimately determine the competitive performance of companies. Even more important, it will determine the very fabric of society and the quality of life in every industrialized nation" (Druker, 1991, p. 69).

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TABLE 1

TIME SPENT ON CLIENT CONTACT AND CLIENT DEVELOPMENT

Firm Size	% Time In Client Contact Associates	% Time In Client Contact Partners	% Time on Client Development Associates	% Time on Client Development Partners
2-3 lawyers	21.3	24.7	5.6	6.9
4-9 lawyers	20.7	22.4	4.9	7.8
10-20 lawyers	17.7	24.0	3.4	8.0
21-30 lawyers	20.5	22.9	3.8	9.9
31-60 lawyers	18.3	24.3	4.6	7.5
61-90 lawyers	12.2	27.7	4.3	6.7
90+	18.4	32.5	5.0	11.2

Sample is attorneys in private practice but not in solo practice. The time use variables are constructed from categorical variables with the following cutoffs: 0-5%; 6-20%; 21-49%; 50-74%; 75+%. Respondents were assigned the mid-point of the category they selected.

Table 2

DETERMINANTS OF CLIENT CONTACT TIME
Attorneys in Private, Non-solo, Practice

All Estimates are OLS
(t-statistics)

DEP. VARIABLE:	[1] Log of % Work Time in Contact With Client[1]	[2] Log of % Work Time in Contact With Client[1]	[3] Log of % Work Time in Client Development[1]	[4] Log of % Work Time in Client Development[1]
ASSOCIATE	-0.016 (-0.117)	0.026 (0.170)	-0.134 (-0.991)	-0.168 (-1.10)
LOG OF FIRM SIZE	0.041 (1.359)	0.038 (1.110)	0.122 (4.069)	0.092 (2.71)
ASSOCIATE * LOG OF FIRM SIZE	-0.118 (-2.641)	-0.133 (-2.940)	-0.117 (-2.645)	-0.111 (-2.44)
YEARS SINCE BAR EXAM		0.018 (1.210)		0.010 (0.65)
(YEARS SINCE BAR EXAM)^2/100		-0.062 (-1.990)		-0.030 (-0.96)
AT FIRM 1-3 YEARS		0.272 (2.470)		0.082 (0.74)
AT FIRM 4-9 YEARS		0.238 (2.020)		0.052 (0.44)
AT FIRM 10 OR MORE YEARS.		0.106 (0.64)		0.014 (0.09)
LIVE IN LEGAL CENTER		0.095 (1.020)		-0.039 (-0.42)
ADDITIONAL VARIABLES [2]	No	Yes	No	Yes
CONSTANT	Yes	yes	yes	yes
N	817	784	817	784
ADJUSTED R^2	0.038	0.0816	0.059	0.0765
F STATISTIC	F(3, 813)=11.63	F(28, 755)= 3.49	F(3, 813)=18.14	F(28,755) = 3.31

1 Refers to the past 12 months. Survey administered in 1984. Note the categories "contact with client" and "client development" are *not* mutually exclusive.

2 These include variables indicating the attorney's regular monthly hours and the percent of time spent on types of legal practice (corporate, administrative, property, rights-based, family, and other). In addition, we include a vector of human capital variables: attorney's assessment of the prestigiousness of their undergraduate institution (a four point scale ranging from "not at all prestigious" to "very prestigious"); variables indicating the attorney's undergraduate major (biological sciences, physical sciences and engineering, social sciences, humanities, business and other); and the attorney's report of their quartile ranking in their law school class. Finally, we include dummy variables indicating gender and race (because attorneys in this sample were overwhelmingly white, we rely simply on a dummy variable equal to 1 if respondent was not white).

Table 3

ALLOCATION OF ATTORNEY TIME ACROSS ACTIVITIES
Attorneys in Private, Non-solo, Practice

All Estimates are OLS

DEP. VARIABLE: LOG % TIME SPENT IN FOLLOWING	MEAN OF DEPENDENT VARIABLE	ASSOCIATE * LOG OF FIRM SIZE	
		COEFFICIENT	T-STATISTIC
CLIENT CONTACT	2.731	-0.133	-2.940
CLIENT DEVELOPMENT	1.296	-0.111	-2.440
RESEARCH AND MEMO WRITING	2.359	0.184	3.750
NEGOTIATIONS	2.169	-0.139	-2.630
DEPOSITIONS	1.554	-0.018	-0.370
TRIALS OR ADMINISTRATIVE PROCEEDINGS	2.113	0.006	0.110
MISC. PERSONAL/TELEPHONE	2.139	-0.015	-0.270
INTERNAL ADMINISTRATION	1.517	-0.081	-1.650
DRAFTING INSTRUMENTS	2.330	-0.045	-0.870
NON-LAW RELATED WORK	1.026	0.039	1.070
CLERICAL WORK	0.940	0.032	1.000

Each row of this table presents results from time use regressions similar to those in columns 2 and 4 of Table 2. The coefficients and t-statistics are presented for our key variable of interest, ASSOCIATE*LOG FIRM SIZE. To facilitate comparisons across activities, the first two rows reproduce the results from Table 2.

A negative coefficient means that associates in larger firms spend a smaller fraction of their time in this activity than do associates in smaller firms. Thus, the results in row one indicate that as firm size increases, associates spend a smaller fraction of time in client contact. Conversely, the results in row three indicate that associates spend an increasing fraction of their time doing research and writing memos as firm size increases.

FIGURE 1.
SIZE OF PARTNERSHIP WHEN GRABBING AND LEAVING CONSTRAINT BINDS