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Uncorporated Professionals[*]

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Abstract

Professional service providers who wish to organize as multi-person firms have historically been limited to the partnership form. Such organizational forms trade the benefit of risk diversification off against the costs of diluted incentives and liability exposure in choosing their optimal size. More recently, states have permitted limited-liability entities that combine the simplicity, flexibility and tax advantages of a partnership with the liability shield of a corporation. We develop a game theoretic model of professional-firm organization that integrates the provision of incentives in a multi-person firm with the choice of business form. We then test the model's predictions with a new longitudinal data set on American law firms. Consistent with our predictions, initial firm size is a strong positive predictor of subsequent conversion to a new limited-liability form. Also consistent with our theory, growth rate of small converters substantially exceeds that of larger adopters; large converters grow more robustly than non-adopters, however. These findings suggest that while the promulgation of new organizational forms has stimulated growth in the legal services industry, the principal beneficiaries of this growth have been large, well established firms rather than small, entrepreneurial, boutique practices.

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1 Introduction

For much of the last century, service professionals (including accountants, attorneys and physicians) have faced a significantly more limited set of choices concerning organizational form than have their counterparts in other industries. By a combination of tradition, policy preference, and even accident, courts widely held that professional services industries deserve special consideration in light of the importance of personal skills and confidentiality in matters concerning the public trust.[1] As such, groups of service professionals were generally unable to organize themselves as anything other than general partnerships, the organizational arrangement that continues to be the default legal relationship for multi-person firms.[2] Although partnerships have many advantages (such as flexibility, profit sharing, and pass through taxation), they have a potentially significant drawback: potentially unlimited liability. Indeed, partners are jointly liable for all obligations incurred by any partner on the partnership's behalf, and jointly and severally liable for wrongful acts committed by a partner.[3] This liability exposure creates a significant risk at the firm level, and, in the views of some, an impediment to the formation of multi-person firms.

Perhaps persuaded by such criticisms, states began in the early 1980s to allow professional services firms to adopt a special species of corporate status, in the form of a "professional corporation." Although originally motivated for exploiting various loopholes in federal tax law,[4] professional corporation status also provided a potentially significant liability shield for participants that were not available under partnership law. Although largely retaining personal liability for malpractice and other forms of professional negligence, the professional corporation form provided some measure of relief against other forms personal liability for the entity's obligations. Combined with "S" corporation status (which was developed at around the same time), service professionals were for the first time able to enjoy many of the tax benefits of the partnership form while shielding participants from personal liability.

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[1] See, e.g., Leventhal v. Atlantic Fin. Corp. 55 NE2d 20 (Mass. 1944).

[2] It is important to note that default does not mean dominant. Rather, if a business organization comes into being without complying with statutory formalities for forming, say, a corporation, it will be considered a general partnership by default.

[3] See, e.g., Uniform Partnership Act §§ 13-15 (1911).

[4] Economic Recovery Tax Act, Pub. L. No. 97-34, 95 Stat. 172 (1981); Tax Equity and Fiscal Responsibility Act of 1982, Pub. L. No. 97- 248, 96 Stat. 324.

Nevertheless, from its initial statutory creation, professional corporate status frequently proved to be an unpredictable refuge for firms, for at least three reasons. First, many state statutes (once interpreted by courts and administrative agencies) did not in fact extend significant liability protection to shareholders of professional corporations, largely limiting the advantages of such forms to tax considerations (Maychek 1986). Second, notwithstanding the existence of a professional corporation statute, state courts frequently constrained the form's availability to certain professions (particularly attorneys).[5] And finally, many states imposed other forms of restrictions on the professional corporate form to make its adoption cumbersome, inflexible, or inconvenient. (Cox et al. 1996).[6]

Significantly, however, just as the last few states were extending the corporate form to professionals, a steady stream of jurisdictions began to embrace ever more novel statutory reforms authorizing the widespread use of the limited liability company (LLC) and the limited liability partnership (LLP) business forms. Statutes authorizing businesses to organize under these forms were adopted either jointly or individually within every state and the District of Columbia between 1977 and 1996.[7] While sharing many of the characteristics of the professional corporation, LLCs and LLPs were advertised to have significantly greater flexibility, and significantly more effective liability shields than their corporate forebears.[8] And, while these business forms were typically unavailable to professional services at the inception of an en-

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[5] First Bank & Trust Co. v. Sagoria, 302 SE2d 674 (Ga. 1983).

[6] In addition, S Corporation status was perhaps only modestly attractive. First, the benefit was simply unavailable to large firms or firms with foreign participants, as subchapter S is limited in applicability to companies with fewer than 75 shareholders, all of whom must be United States citizens. Second, S corporations are often unable to deduct the full expenses of many employee benefit plans (as can C corporations), and are generally unable to use basis step-ups to avoid certain tax liabilities upon a sale of assets or share redemption. In addition, S corporations are allowed to have only one class of stock, which limits the ability to allocate control decisions in a way different from cash flow rights. Finally, many state statutes still do not allow S corporations (or C corporations) to disclaim responsibility for certain types of liability (malpractice, in particular).

[7] The statutory implementations are detailed in an appendix.

[8] At the same time, LLC/LLP also comes with a few costs. First, unlike corporations (and even partnerships), these limited-liability firms may be required to have a limited lifespan (frequently in the neighborhood of 35 years). While allowed to reform at the end of this period, the terminal period itself can create both tax and strategic problems for the firm. In addition, some states require that LLC/LLP firms maintain a certain amount of insurance for satisfying other creditors.

abling statute, states shortly began to extend them to professionals (subject to certain restrictions) on a wide-scale basis throughout the 1990s.

There are some differences between LLCs and LLPs, of course. For instance, in some larger states (like California) professionals are limited to the LLP form, while others (such as Illinois, until recently) have required the LLC form. Moreover, the LLP form frequently does not provide the same extent of liability limitation as does the LLC,[9] and it is thought to impose larger fiduciary duties on its members. Nevertheless, the LLC and LLP both constitute important deviations from the status quo ante of the early '80s, and therefore share more similarities than differences.

In this study, we explore a simple but important question: How has the increased availability of limited liability business forms over the last 15 years – particularly LLCs and LLPs – affected organizational characteristics of law firms? The simplicity of our research question, however, should not obscure its importance. Indeed, legal services sector comprises a staggeringly important component of economic activity. The tort system alone accounted for $233.4 billion in expenditures in 2002, an amount representing over two percent of gross domestic product, and more than twice the amount spent on new automobiles during that same year. (Economic Report of the President 2004). Second, an ostensible rationale for introducing LLC/LLP business forms to law firms was to catalyze growth, innovation and entrepreneurship within the industry. Now that the experiment is substantially complete, we are in a position to measure the effectiveness of these legal innovations. Third, legal practices constitute a highly visible population of firms, which lends itself to somewhat accurate measurement. Indeed, there is relatively good data available for the study of how law firms change in practice area, scope, and size. And finally, the incremental introduction of limited liability forms across states provides us with important statistical heterogeneity to measure the importance of regulatory structure on the substantive boundaries of the firm.

This study has two components, the first theoretical and the second empirical. The theoretical part is devoted to developing a testable model of

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[9]Most notably, a number of states provide partners in an LLP only partial liability shields against third party creditors (most notably, tort claimants alleging malpractice by other partners). These partial shield states still allow for liability as to the LLP's general debts, and include: Alaska, Louisiana, Ohio, Arkansas, Maine, Pennsylvania, District of Columbia, Michigan, South Carolina, Hawaii, Nevada, Tennessee, Illinois, New Hampshire, Texas, Kansas, New Jersey, Utah, Kentucky, North Carolina, West Virginia.

professional-firm characteristics as a function of regulatory environment, focusing in particular on the package of regulatory instruments relating to liability. Our theory builds on the rich literature on multi-person organizations, in which the tradeoff between incentives and risk sharing is a central focus.[10] Increased size can diversify the business risk borne by each participant in a traditional partnership, which unambiguously enhances the value of larger scale. On the other hand, increased size can exacerbate agency costs, since the direct return to effort for a representative attorney becomes increasingly diluted as firm size grows. Faced with these diluted incentives, clients may be willing to make up for these costs by allocating greater amounts of incentive compensation to the law firm. Our theoretical model predicts that some firms are likely to attempt to use this response strategically, growing just to the point where the client no longer finds incentive compensation worthwhile. Moreover, for those firms that have such strategic incentives, the introduction of new limited liability business forms is likely to be extremely attractive.

Using this framework, we predict that larger partnerships are disproportionately likely to embrace the new limited-liability forms, and that smaller firms are unlikely to be affected. Moreover, our framework predicts that of the population of firms that do adopt the new forms, subsequent growth rates will tend to be the highest among the firms within that population that are more moderate in size.

Our second enterprise in this study proceeds to test our theoretical predictions with a large data set on law firms in the United States. The business form, size and location of firms as of 1993 and 1999 was derived from the Martindale-Hubbell Law Directory, perhaps the most comprehensive and long-standing directory of the legal-services industry. Our data thus bookend much of the time span in which states extended LLC/LLP structures to professional firms. Our empirical approach complements Hillman's (2003) examination of a mid-2002 snapshot of American firms, also derived from Martindale Hubbell, in which the probability that a firm is an LLP increases with firm size. Our longitudinal data permits an assessment of the evolution of general partnerships in 1993 and in particular firm size prior and subsequent to the introduction of LLC/LLP forms for adopters and non-adopters. The relative adoption of these forms among existing and new firms (in a sense

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[10]Within this broad literature Gaynor and Gertler (1995), Lang and Gordon (1995), and Liebowitz and Tollison (1980) are empirical analyses of the tradeoff between risk sharing and incentives for professional firms, with the latter two focusing on law firms. None directly addresses the issue of limited liability.

to be made more precise) is informative about the costs of reorganization and the lag between regulation and its consequences in this industry.

Ours is not the first study to consider the effects of new business forms on law firm practice. Indeed, a distant cousin of our theoretical approach is Carr and Mathewson's (1990) analysis of the balance between solo and two-person practices offers an interesting contrast. In their model consumers can offer a lump-sum payment to a firm to be forfeited if an attorney is caught shirking. In a two-person firm one partner may credibly commit to monitoring effort through sunk investments in the firm's reputation. Market equilibrium follows from the relative benefits and costs to consumers of representation by a quality partnership, a quality solo practice, and a low-effort solo practice. Carr and Matthewson conclude that limited liability is a temptation to shirking that undermines the economic viability of quality partnerships. Our analysis generalizes theirs by allowing firms of arbitrary size, and considering the extent to which both size and organizational form may be strategic tools used by firms. Moreover, unlike Carr & Matthewson, we attempt to test our theoretical predictions with empirical data.

From an empirical standpoint, both Baker and Krawiec (2004) are also concerned with law firms' choice of business form (if not firm size per se). The authors describe a variety of economic considerations that may motivate form choice and attempt to test among them. An analysis of a small, relatively homogeneous sample—firms with 25 or more attorneys based in New York City—yields no evidence of a relationship between the size of an existing firm and its decision about reorganization. While LLPs do tend to be larger than general partnerships in their sample, Baker and Krawiec do not pursue (as do we) a comparison of size before and after reorganization.

Our analysis proceeds as follows. Section 2 briefly describes the route through which states embraced the LLC/LLP forms, and how they were adopted at the state level for law firms. Section 3 presents a theoretical framework of optimal contracting, focusing specifically on the relationship between firm size and liability exposure. Using this framework, we generate a core set of predictions, and in particular that (a) liability shields are more likely to be adopted by larger firms than smaller ones; and (b) that firms which do adopt them are likely to grow larger as a result. Section 4 describes our data collection methodology, and provides some simple descriptive statistics. Section 5 then trains our attention more centrally on the hypotheses that our theoretical model generates. We find that both predictions find support in the data (although the first appears to have the strongest amount

of support). Section 6 concludes.

2   State Adoption Processes

Although all 50 states had passed LLC and LLP legislation of some kind by
the beginning of this century, the manner in which professional firms had
these choices available to them was considerably more circuitous. Indeed, by
historical precedent, professional firms were generally prohibited from form-
ing ordinary corporations, and thus the professional corporations statutes
of the 1970s and 1980s were devised especially for the sui generis purpose
of regulating law firm behavior. Similarly, then, it should not be surprising
to learn that in many states, professional firms were generally treated dif-
ferently upon the introduction of LLC/LLP statutes. Thus, while in some
instances, it is perhaps sufficient to use the effective date of a general statute
to pinpoint the date at which law firms could enter alternative limited lia-
bility forms, that is the exception more than the rule. Indeed, it appears
to have been commonplace for state legislatures, for example, to promulgate
separate statutes that specifically enabled professional firms to take the form
of LLCs or LLPs. In addition, state supreme courts frequently claim inherent
authority to regulate the legal profession, and therefore promulgate supreme
court rules to govern the practice (Donn 2004b).

The resulting landscape of general statutes, specific statutes and supreme
court rules presents challenges for those (such as ourselves) who wish to
categorize and date the effectiveness of limited liability entity election across
all 50 states. In some states, for example, the availability of the form was
actually in a state of flux for some time, and the subject of intense litigation.[11]
In other states, an administrative court rule or a specific statute appears
merely to ratify an existing practice, thus indicating that the alternative
form was likely available from the onset of the statute.

Table 1 below presents our categorization of the availability of LLC and
LLP forms to law firms, noting (to the best of our ability) the effective dates
in each state for the relevant enabling act (be it legislative, judicial, or ad-
ministrative).[12] In most cases, these dates correspond to the effective date

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[11]Georgia is one good example. See Donn 2004b.

[12]These dates are drawn originally from Donn 2004a, but we went directly to the statutes
and rules to double check the dates given there. In this effort the USC Law School reference
librarians (and particularly Brian Raphael) were extremely generous and helpful with their

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of a state statute that allows for the limited liability form for professionals, which may or may not have been promulgated subsequent to a general statute. In other cases, the date refers to the date at which the state supreme court first gave official authorization of the business form. In a few cases, it appears recognized by practitioners that the general statute itself enabled professional firms to utilize the entity form. The statutory authorizations are more fully described in Appendix B.

Insert Table 1 Here

What factors would be important for a law firm that wished to convert to choose between an LLC and an LLP? First, some states (California, New Mexico, and Nevada) either strictly prohibit the LLC or its permissibility is still in doubt. In these states, the LLP is perhaps the only viable option of new limited liability entity. Second, however, it is important to note that in approximately 12 states, the LLP statute allows for only a "partial shield" on a firm's liability. Within such partial shield states (with a few variations), partners in an LLP, while not liable for other partners malpractice, are still liable for more general obligations, a fact that can still yield significant liability exposure.[13] For example, unsecured creditors in the Arthur Anderson bankruptcy attempted to use partial shield states to claim that they could recover from the partners of Anderson, as those debts were part of "ordinary commercial debt." (Donn 2004). On the other hand, some practitioners claim that it is still unclear whether LLC memberships are likely to be regulated as securities one day, a risk that may make the LLC option less attractive.

In neither LLCs nor LLPs, however, are attorneys absolved from personal liability for their own negligence or malpractice. Indeed, attorneys are strictly prohibited from entering into contracts that limit their prospective liability for malpractice with clients.[14] As such, the advantage of the LLC/LLP form would seem to accrue more centrally to multi-person firms (and as we will argue below, particularly large ones). In fact, larger firms may be able to substantially hedge even some of the risks of personal liability, by (for example) purchasing malpractice insurance at the firm level.

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time.

[13]The states are: Kentucky, Maine, Michigan, Nevada, New Hampshire, Ohio, Pennsylvania, South Carolina, Tennessee, Utah, West Virginia and Wisconsin. See Donn 2004.

[14]See, e.g., Restatement (3rd) of the Law Governing Lawyers, at § 54(2).

3 A Model of Optimal Contracting and Liability Shields

This section presents a framework to study the optimal organizational structure of professional firms. Given our data source, we will concentrate on law firms (though our analysis is general to all professional services firms and perhaps more broadly so). We endeavor to generate a model that reflects the pivotal real world relationships that we are interested in testing. Most centrally, our model must provide a mechanism for law firm size and liability shields to "matter" in some way. As noted in the introduction, there are competing arguments about whether the introduction of limited liability entities would favor small or large firms, and our model must make some predictions along this dimension. Moreover, given that the risk of liability is at the core of the attraction to limited liability, our model should allow for attorneys to be risk averse, and for them to be able to hedge liability risk by forming multi-person firms. The model should also include a rationale for why attorneys bear any risk at all, which most who study the legal profession concur to be a significant problem with agency costs at the lawyer/client level.[15]

3.1 Basic Framework

Consider a population of N attorneys, indexed by $i \in \{1, 2, ..., N\}$, each of whom has limited wealth $w > 0$ available to satisfy judgment creditors. The parameter w reflects 'available' wealth rather than actual wealth insofar as the choice of organizational form limits the degree to which claimants can recover against the personal assets of the attorney.

In every period, each attorney is assumed able to obtain a reservation utility of u_0 outside the practice of law (which we assume, for simplicity, to be uniform across attorneys). If practicing law, each attorney is matched with exactly one risk-neutral client. In addition, all attorneys are assumed to have identical quasi-linear preferences in total wealth y, given by $U_i(y) = v(y) - \rho_i$, where ρ_i (described in greater detail below) constitutes the disutility of effort by the attorney. To capture the notion of risk aversion, we suppose that $v(.)$

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[15] Although tax treatment of the entity is another factor that we consider important, we have excluded it here to focus on liability aspects alone. Indeed, this was probably the most important contribution of the LLC/LLP revolution for professional firms.

takes on a simple mean-variance form as follows:

$$v(y) = E(y) - \gamma \cdot Var(y), \tag{1}$$

where the parameter $\gamma > 0$ reflects the attorney's marginal rate of substitution between expected payoff and risk.[16]

Attorney i's effort generates (stochastic) income for the client, denoted by Z_i. This value of the client's income, however, turns in part on the effort the attorney expends. In particular, we suppose that:

$$Z_i = \begin{cases} 0 & \text{w/ probability } 1 - p_{e_i} \\ \overline{Z} & \text{w/ probability } p_{e_i} \end{cases} \tag{2}$$

where $e_i \in \{L, H\}$, corresponding to low and high effort, accordingly, and where $0 < p_L < p_H < 1$. It is assumed to cost c_L for the attorney to take the case and expend minimal effort, and $c_L + \phi$ to take the case and expend high effort (thus, ϕ represents the incremental cost of high effort). We suppose that each client's case is statistically independent of the others, so that for any i and j, $E(Z_i|e_i, Z_{-i}) = E(Z_i|e_i)$. (In later drafts of this paper, we hope to relax this assumption, in order to consider the effects of firm scope as well as size).

In the analysis below, we shall from time to time refer to the following assumptions:

Assumption A: $(p_H - p_L) > \phi \cdot \max\left\{\frac{1}{\overline{Z}}, \gamma(1 - p_H)\right\}.$

Assumption B: $p_H = 1 - p_L$

Assumption A is tantamount to imposing a condition that effort "matters" sufficiently. In particular, high effort must be sufficiently important to justify its cost, and also that it must be large compared to the attorney's level of risk aversion. While a violation of Assumption A would not undermine our general analysis, the assumption is necessary if liability shields are to have any discernible role on optimal firm size. Assumption B asserts that the probability of a successful outcomes conditional on working hard and shirking are symmetric. This is strictly a regularity assumption that

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[16]A mean-variance approach to preferences may look on first blush to be overly stark, but it largely captures a more general class of models from finance in which payoffs are normally distributed. As we shall see below, the payoffs of a multi-person law firm will be approximately normal.

simplifies our analysis, but our core results hold under much less stringent assumptions (at the cost of significantly more notation).

At the beginning of each period, the client offers the attorney a linear compensation package to A_i consisting of a fixed fee β_i and a percentage of the client's prospective payoff, α_i. We do not constrain the sign that either of these parameters can take. However, to the extent that β_i is negative, it cannot exceed the attorney's available wealth w. (Note that a negative value for β can be thought to represent a type of 'performance bond' analogous to damages that the client can collect in the event that the case is lost. We elaborate on this point at greater length below).

Under this contract, attorney i's individual expected gross payoff equal to:

$$\beta_i + p_{e_i} \cdot \alpha_i Z_i - \rho_i, \tag{3}$$

and the variance of this gross payoff is:

$$(\alpha_i Z_i)^2 \cdot p_{e_i} (1 - p_{e_i}) \tag{4}$$

so that if the attorney worked alone under the contract, her expected utility would be given by:

$$\beta_i + p_{e_i} \cdot \alpha_i Z_i - \gamma (\alpha_i Z_i)^2 \cdot p_{e_i} (1 - p_{e_i}) - \rho_i \tag{5}$$

3.1.1 Firms

In addition to these basic aspects of the problem, we also include the possibility that the attorney may be part of an $m-$ person firm, or "partnership" (where $m = 1$ represents the limiting case of a sole practitioner).[17] Each member of the firm faces a similar type of client (as reflected by similar Z_i). All members/partners within a firm are assumed identical,[18] and are assumed

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[17]We place the term *partnership* in quotation markes since that term has legal significance beyond our intended use in this part of the paper. For now, we simply use the term as a generic place-holder for a multi-person firm.

[18]Although we do not explicitly assume a role for associates or staff in this paper, such a role could be easily included here. For example, if each partner faced a technological constraint imposing something akin to a Leontief production function on a client's project (i.e., the case requires one partner, one associate, two paralegals, and one secretary), then the framework we use above would readily apply, with the costs of support staff factored in as part of the cost of effort. We abstract, however, from the question of agency costs between the various players who provide litigation support, and focus solely on the agency problem between lawyers (however constituted) and clients.

to share equally in the gains and losses (to the extent that law allows) of the partnership.[19]

Assuming that all attorneys in the partnership put forth the same effort level e_i (an assertion that we shall confirm later constitutes an equilibrium), the event of k victories within the partnership is distributed binomially with parameters (m, p_{e_i}). Thus, the mean number of victories the firm obtains is equal to mp_{e_i} and variance is equal to $mp_{e_i}(1 - p_{e_i})$.[20] Assuming that all attorneys at the firm receive the same form of contract and contribute the identical amount of effort (an assertion we confirm below), the representative attorney's expected utility if she is part of an $m-$person partnership is given by:

$$\pi\left(\alpha, \beta; e, m\right) = \beta + p_e \cdot \alpha \overline{Z} - \gamma \left(\frac{\left(\alpha \overline{Z}\right)^2}{m}\left(p_e\right)\left(1 - p_e\right) \right) - \rho_e \qquad (6)$$

Note from (6) that holding the terms of the contract and the attorney's effort choice constant, the attorney's expected utility is increasing in m, reflecting a principal advantage of forming multi-person firms: the ability to hedge risk. In addition to this benefit, our analysis below demonstrates that forming partnerships may also convey another advantage of *creating* a collective action problem in the firm that the client will attempt to undo by offering substantial economic rents to the attorney.

3.1.2 Legal Liability

Finally, should an attorney's client lose a case, we assume that there exists a noisy technology for adducing evidence about liability. In particular, this evidence consists of a signal R_i that takes on values L and H according to

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[19]The alert reader will note that this assumption is a bit of a simplification. In particular, most LLC/LLP statutes do not exempt professionals from personal liability, though other partners/participants may be exempted. In such circumstances, losses are not shared equally.

While we are sensitive to this criticism, the availability of indemnity agreements and insurance carried by law firms may justify the simplifying assumption we make, so that the firm internalizes the costs of liability on a symmetric, pro rata basis.

[20]Note also that for sufficently large values of m, the number of victories can be approximated with a normal distribution with mean mp_{e_i} and variance $mp_{e_i}(1 - p_{e_i})$. Thus, since the returns for a law firm are approximately normal, our assumption of mean variance preferences is somewhat more general than it first appears. See note _ _ supra.

the following probabilities:

$$\Pr\{R_i = H | loss; e_i = e_L\} = \theta_L$$
$$\Pr\{R_i = H | loss; e_i = e_H\} = \theta_H$$

Importantly, we assume that $\theta_L \leq \theta_H$, so that evidence is helpful in adducing negligence. Thus, the signal R_i represents a noisy representation about whether the evidence suggests that the attorney in fact worked hard or shirked. For current purposes we assume that suit is free, but that litigation is limited in its ability to expose more than the true state of the world, so that $\theta_L = \theta_H = 1$. This assumption therefore constitutes a special case corresponding to the situation where effort is not verifiable ex post,[21] and thereby allows us to capture the firm's liability exposure through the value of the contractual term β. If $\beta < 0$, it represents the analog of the liability sum that the attorney/firm must pay in the event of a loss.

3.2 Strategic Sequence and Player Objectives

Our model explores the competing choices that law firms and clients make in interacting with one another. Partnerships choose their size m (and, in a later section, they simultaneously commit to their organizational structure), while clients choose the contractual terms they will offer the firm. Because size and organizational structure are more difficult to change in the short run, it is appropriate to conceive of the firms' and clients' choices as occurring sequentially.

Consequently, we characterize each player's maximization problem as a component of a sequential game, with the law firm moving first and the client moving second. Beginning with the latter, the client attempts to maximize his own expected payoff, subject to relevant constraints on the permissible

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[21]The more general case would require considering an additional state to the contract. There, it would necessary to subdivide the β component into two parts. Should the client lose but the evidence reveals no shirking, or alternativley should the client win (and no shirking is presumed), the fixed component will be denoted as β_H. Conversely, should the client lose and the evidence reveals shirking, the fixed component will be denoted as β_L. Thus, the introduction of legal liability suggests that each client's contract is given by

$$\left\{\alpha_i, \beta_{H_i}, \beta_{L_i}\right\}$$

This leads to a much more difficult approximation (through Chi-Squared rather than normal, which becomes analytically less tractable).

contractual terms, the attorney's participation, and the attorney's incentives to work hard. In particular, the client takes firm size m as given (as well as the firm's organizational form, when applicable), and chooses contract terms $(\alpha_i, \beta_i)$and an effort level e_i to solve the following program:

$$\max_{\alpha_i, \beta_i, e \in \{0,1\}} p_e (1 - \alpha) \cdot \overline{Z} - \beta$$

$$s.t.$$
$$(W) \qquad \beta_i \geq -w \qquad\qquad (*)$$
$$(IR) \qquad \pi(\alpha, \beta; e, m) \geq u_0$$
$$(IC) \quad e \in \arg\max \{\pi(\alpha, \beta; e, m)\}$$

The three constraints stated above are worth some reflection, as they will become central in the analysis that follows. The first constraint (denoted as (W)) states that while the fixed component of the attorney's compensation package can be negative (thus representing a form of liability / performance bond), it cannot exceed attorney wealth. In what follows, we shall periodically refer to condition (W) as the attorney's "wealth" constraint. Significantly, note that even in firms that consist of multiple partners – and therefore have additional sources of wealth – this constraint remains as stated, since every attorney's contract within that firm will (in equilibrium) places an additional liability burden on the attorney that offsets the infusion of additional resources. The second condition, denoted as (IR), states that the compensation package must be such the attorney is at least as well off under the contract as he would be taking his outside option that earns u_0. In what follows we shall periodically refer to (IR) as the "individual rationality" constraint. Finally, condition (IC) states that the level of effort the client wishes to implement (i.e., $e = H$ or $e = L$) is the attorney's optimal strategy under his compensation package. We shall frequently refer to (IC) in what follows as the "incentive compatability" constraint. Let the solution to program (*) be denoted as (α^*, β^*, e^*), and note that each of these optimal choices will generally depend on the value of m.

Anticipating the contractual terms that clients will offer, firms are assumed to select their size (and later, their organizational structure) to maximize the payoff of their respective partners. Thus, the partnership chooses m to solve the following program:

$$\max_{m} \pi(\alpha, \beta; e, m)$$

$$s.t. \qquad\qquad (**)$$
$$(\alpha, \beta, e) = (\alpha^*, \beta^*, e^*)$$

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In order to characterize the equilibrium predictions of this game, we proceed by backward induction, beginning with the client's contract design problem.

3.3   Client's Contract Design Problem

It is first important to note that the client must choose between attempting to implement high effort and low effort. The optimal contract can, in theory, attempt to implement either, since for some parametric values, the client would find paying the attorney excess rents worthwhile, while for other values the client would simply allow the attorney to shirk. Thus, the first necessary task is to consider the contracts that the client would choose under the alternative assumption that she attempts to implement low versus high effort levels (respectively).

Implementing Low Effort   Perhaps the simplest contract to analyze is the one that implements low effort. Indeed, given that the attorney benefits from a low effort level, there is no need for the client to provide a countervailing incentive to induce hard work by the attorney. Consequently, the client can induce both participation:

Lemma 1: *The optimal low-effort inducing contract consists of a flat fee $\beta = u_0 + c_L$ and no contingency fee so that $\alpha = 0$. Under such a contract the attorney expends effort level e_L.*

The intuition underlying this result is very clear: All that is necessary to induce the attorney to contribute the lowest possible effort is to compensate him for his opportunity cost of time. That is exactly what the above contract does. Moreover, it is easily confirmed that so long as the costs and reservation utilities are the same for all attorneys, the contract is the same for all attorneys in the firm.

Implementing High Effort   Let us now turn to the more interesting question of how the client can implement high effort. Unlike the case of implementing low effort, high effort requires that the principal be willing to provide an incentive to the attorney – one that, significantly, can take the form of carrots or sticks (or a combination thereof). Analysis of this problem leads to the following Lemma (whose proof – in addition to all others – can be found in the appendix):

Lemma 2: *If Assumption B holds, the optimal high-effort inducing contract consists of both a flat fee and a contingency arrangement, so that:*

$$\alpha = \frac{m}{\overline{Z}}\left(\frac{\phi}{(p_H - p_L)}\right)$$

$$\beta = \max\left\{u_0 + c_L + \phi - m\left(\frac{\phi p_H}{(p_H - p_L)}\right)\left(1 - \gamma\phi\frac{(1 - p_H)}{(p_H - p_L)}\right), -w\right\}$$

Note from the lemma that the contingent amount α is strictly increasing in m, and strictly decreasing in $\overline{Z}$. This result is intuitive. First, as the size of the partnership (reflected by m) grows, free riding problems get larger since each attorney's income turns less and less on his own case and more on that of other partners. To counter this fact, the client has to offer more in incentives to the attorney. On the other hand, as the stakes in each case (reflected by $\overline{Z}$) get larger, the fractional share of those stakes the attorney need claim grow smaller.

Note also that the fixed component β is initially decreasing in m, but it eventually becomes flat at the point where it equals the representative attorney's available wealth. The intuition here is simple: if the attorney's available wealth is sufficiently large, then she can afford to post a bond enough to 'pay' for the expected value of her future bonus should the case come out victorious, and the wealth constraint never binds. On the other hand, if the attorney is extremely wealth constrained, then she cannot afford to post a bond large enough to capture the expected value of her bonus. Here, the (IR) constraint no longer binds, and instead the (W) constraint must become binding. When this occurs, client must offer the attorney more 'carrots' for producing a good result than 'sticks' to punish a bad result. Because the required incentive bonus grows larger as the size of the firm grows, there exists a critical firm size beyond which the attorney's wealth constraint becomes binding. Denoting this critical size by $\widetilde{m}$, a little algebra reveals that:

$$\widetilde{m} = (p_H - p_L) \cdot \frac{u_0 + c_L + \phi + w}{\phi p_H \cdot \left(1 - \frac{\gamma\phi(1 - p_H)}{(p_H - p_L)}\right)} \tag{7}$$

Thus, for all firms with size equal to or exceeding $\widetilde{m}$, the high effort inducing contract must treat the wealth constraint as binding, and offer more carrots than sticks to the attorney. For firms smaller than $\widetilde{m}$, however, the wealth constraint no longer binds, and the client can offer a contract that balances

carrots and sticks, so that the attorney realizes no expected gain over his reservation utility. Note that the critical threshold size $\tilde{m}$ is always strictly positive under Assumption B.

3.4 Optimal Contract

While the discussion above helps to characterize the type of contract the client will offer for each level of effort she might attempt to implement, we have not yet considered which level of effort is optimal from the client's perspective. Analysis of the above constraints, however, immediately yields this insight, which is reflected in Proposition 1 and associated Corollaries:

Proposition 1: *If Assumptions A and B hold, the client will choose to implement high effort if and only the size of the firm satisfies $m \leq \hat{m}$, where*

$$\hat{m} = \begin{cases} m^* \equiv (p_H - p_L) \frac{(p_H - p_L)\overline{Z} + (u_0 + c_L + w)}{p_H \phi} & \text{if } m \geq \tilde{m} \\ m^{**} \equiv (p_H - p_L)^2 \frac{(p_H - p_L)\overline{Z} - \phi}{\gamma \phi^2 p_H (1 - p_H)} & \text{if } m < \tilde{m} \end{cases} \quad (8)$$

Direct application of Proposition 1 immediately yields the following important corollaries:

Corollary 1A: *If Assumptions A and B hold, then $m^* > m^{**}$.*

Corollary 1B: *If Assumptions A and B hold, then attorneys will earn positive economic rents if and only if $w \leq w^*$, where:*

$$w^* \equiv \left(\frac{(p_H - p_L)}{\gamma \phi (1 - p_H)} - 1 \right) (p_H - p_L) \cdot \overline{Z} - \frac{(p_H - p_L)}{\gamma (1 - p_H)} - (u_0 + c_L) \quad (9)$$

Corollary 1C: *If Assumptions A and B hold, then attorneys will earn positive economic rents if and only if $\overline{Z} \geq \overline{Z}^*$, where:*

$$\overline{Z}^* \equiv \left(\frac{(u_0 + c_L + w)(1 - (p_H - p_L) + \gamma \phi (1 - p_H)) + \phi}{((p_H - p_L) - \gamma \phi (1 - p_H))} \right) \quad (10)$$

Proposition 1 and Corollaries 1A-1C offer observations about the contract that the client is likely to offer – observations that are important for considering the firms choice of size. The proposition shows that regardless

of whether the wealth constraint or the participation constraint binds, there exists a critical firm size above which the client is unwilling to implement high effort. Instead, for firms that exceed this critical size, the client will pay for, expect, and receive a low level of effort by the attorney.

Interestingly, the critical cutoffs at which the client decides to implement low effort depend on whether the attorney's wealth constraint or the rationality constraint is binding for the high-effort contract. Corollary 1A states that the high effort contract cutoff when the rationality constraint binds (m^{**}) is smaller than the maximal firm size that will support high effort when the wealth constraint binds (m^*) this is important, since it suggests that at times where the wealth constraint begins to bind, there may be a discontinuous shift upwards in firm size. Corollaries 1B and 1C state that if the firm is ever in a situation where wealth constraints bind, it is when available attorney wealth is relatively low or (equivalently) when client stakes are relatively large.

3.5 Firm's Organizational Design Decision

We now proceed backward, asking what size the firm will create for itself in light of the contract terms it expects its attorneys to receive from clients (which take firm size into account). Although a direct application of Proposition 1 implies the optimal size choice of a firm in the event that the attorneys' wealth constraints are binding, when the IR constraint is binding the attorneys are indifferent about size. Indeed, here, the client always sets contractual terms so that the representative attorney's expected compensation is precisely equal to his reservation utility. Nevertheless, while the attorney is therefore indifferent between implementing a high-effort and low-effort contract, the client strictly prefers a high-effort contract, since the client reaps the gains from that contract. Thus, in order to generate a more precise prediction about firm size when the wealth constraint is not binding, we need to incorporate an additional assumption. The weakest assumption consistent with this intuition is as follows:

Assumption C: *If the attorneys are indifferent, they will always choose an organizational size that efficiently supports high effort (e = H) rather than low effort (e = L).*

Assumption C states that at least when attorneys are indifferent in equilibrium, they will choose an organizational choice that will support an effi-

cient effort level, and thus the attorney always receives a contract that has both fixed and contingent components. This seems a sensible choice, since the parties would be throwing money away if the attorney chose a structure that induced inefficient low effort. One can certainly imagine that prospective clients would be willing to make at least modest payments to firms that organize themselves in a way that encourages efficient legal representation.

With this assumption in hand, we can now proceed to state the following Proposition:

Proposition 2: *Suppose that Assumptions A, B, and C hold. If $\overline{Z} \geq \overline{Z}^*$, the firm selects a size of $m = m^*$. Otherwise, the firm selects any size $m \in [0, m^{**}] \subset [0, m^*]$.*

Proposition 2 states that the firm's optimal choice of size turns crucially whether the stakes of the average case in the firm are sufficiently large that attorneys in that firm are likely to face binding wealth constraints. If so, then the firm's size choice is unique, and is equal to m^*. Conversely if the firm's cases fall short of this threshold, then the firm will choose a discernibly more modest size.
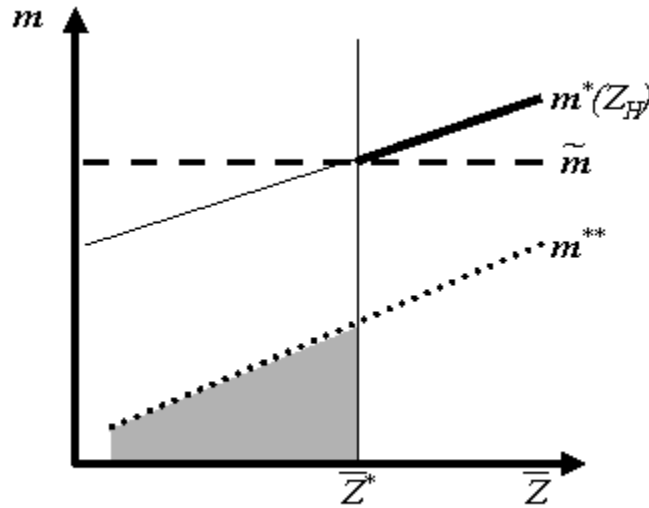

Figure 1

Figure 1 makes this intuition more clear. In the figure, average stakes per client are depicted on the horizontal axis and the firm's size is depicted on

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the vertical axis. The threshold cutoff is denoted as Z^* in the Figure. Note that when $\overline{Z} < \overline{Z}^*$, the firm's optimal size is relatively small, and could be anywhere in the shaded region above the axis. However once $\overline{Z}$ reaches $\overline{Z}^*$, the firm immediately grows in size to $\widetilde{m}$, and grows along the m^* schedule thereafter. From this figure, we can discern a sort of "tipping point" phenomenon: should the type of cases reach a threshold value of $\overline{Z}^*$, it will experience rapid growth as it settles on a new trajectory. This will prove to be an important observation as we turn our attention to the firm's organizational choice when a limited liability structure is made available. (A similar graphical analysis applies to the firm size choice as w varies).

3.6   Allowing Alternative Business Forms

We now consider the central question in this paper: how are firm characteristics (particularly organizational structure and size) likely to change when a limited liability business form (such as with an LLC or LLP) becomes available? Although modeling the precise contours of a limited liability statute would probably require tailoring for each state's specific statute, there is one feature that they all essentially share: the introduction of LLP/LLC status has the effect of reducing the amount of the attorneys' personal assets that are available to creditors. In essence, then, if a firm were to adopt a limited liability regime, it would effectively reduce the amount of available attorney wealth w under an optimal incentive contract.[22] In mathematical terms, then, introduction of limited liability allows the firm effectively to constrain its members' available wealth to some $w' < w$. The key questions for us here, then, are: (a) What sorts of firms would opt to constrain themselves in this way? and (b) How will a firm's size change after it adopts (or fails to adopt) limited liability status?

To answer this question, consider first a firm that was already earning positive rents under the status quo ante. Recall that such a firm tended to have large-stakes clients and was therefore relatively large under the status

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[22]We realize that this is perhaps a generalization, and there may be more subtle nuances that the imposition of limited liability may have. However, the comparative statics derived below capture the general flavor of what such statutory innovation brings without significant technical details that are likley to distract the analysis more than change it.

quo. For this firm, the representative attorney's indirect payoff is as follows:

$$\pi\left(w, m^*; e_H\right) = -\left(w + c_L + \phi\right) + p_H \cdot m\left(\frac{\phi}{\left(p_H - p_L\right)}\right)\left(1 - \frac{\gamma\phi\left(1 - p_H\right)}{\left(p_H - p_L\right)}\right)$$
(11)

At the optimal contract terms, the representative attorney's expected utility exhibits the following comparative static on w :

$$\begin{aligned}\frac{d\pi}{dw} &= -1 + p_H\left(\frac{\phi}{\left(p_H - p_L\right)}\right)\left(1 - \frac{\gamma\phi\left(1 - p_H\right)}{\left(p_H - p_L\right)}\right)\cdot\frac{\partial m^*}{\partial w} \\ &= -\frac{\gamma\phi\left(1 - p_H\right)}{\left(p_H - p_L\right)} < 0\end{aligned}$$
(12)

Thus, "large" firms that already faced a binding wealth constraint would strictly prefer to adopt LLC/LLP status, since it allows them to tighten up that constraint even further, generating additional rents.

But in addition to these firms, the introduction of a limited liability business form makes it potentially attractive for somewhat more modestly sized firms to choose to convert. Indeed, for these firms, if w' is sufficiently small, the ability to adopt the limited business form may allow them to induce a binding wealth constraint, thereby generating positive profits for the representative attorney where before the representative attorney essentially broke even. Such firms, consequently, will also find it profitable to convert.

Together, these insights generate the following proposition:

Proposition 3: *Suppose that Assumptions A, B & C hold. If $\overline{Z} \geq \overline{Z}^*$, the firm will adopt a limited liability business form when it becomes available, and its firm size will shrink marginally in size. In addition, all firms on the interval $\overline{Z} \in \left[\overline{Z}', \overline{Z}^*\right]$ will also adopt the limited liability form and will grow inframarginally in size, where*

$$\overline{Z}' = \frac{\left(u_0 + c_L + w'\right)\left(1 - \left(p_H - p_L\right) + \gamma\phi\left(1 - p_H\right)\right) + \phi}{\left(\left(p_H - p_L\right) - \gamma\phi\left(1 - p_H\right)\right)} < \overline{Z}^*$$

Firms on the interval $\overline{Z} \in \left[0, \overline{Z}'\right]$ will neither convert nor change in size.
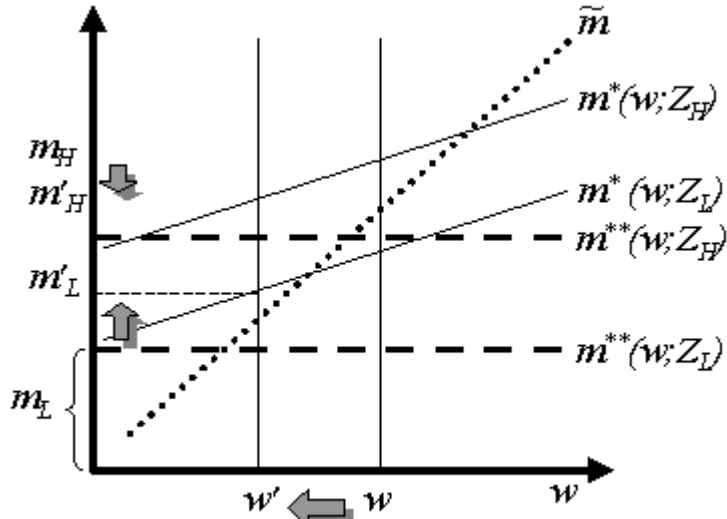
Figure 2

Figure 2 helps illustrate the key intuitions of Proposition 3. In the figure, the horizontal axis represents the available wealth of attorneys within the firm, while the vertical axis represents the size of the firm. In the figure, we consider two types of firms – one with relatively large-stakes clients (represented by Z_H) and the other with relatively smaller-stakes clients (represented by $Z_L < Z_H$). For either firm, however, we suppose that the available wealth per attorney is initially equal to $w > 0$, but an option exists to adopt limited liability status, effectively sharpening the wealth constraint at $w' < w$. As the figure illustrates, at the status quo ante, it is feasible for the large-stakes firm to grow to the point where the wealth constraint is binding and it derives positive rents,[23] and thus it will choose a size of $m_H = m^*(Z_H)$. For the smaller-stakes firm, however, the status quo ante is such that it is not feasible to grow to the size where client pays the firm positive expected rents,[24] and thus the firm selects a size on the interval $[0, m^{**}(w; Z_L)]$. With the introduction of the limited liability form, however, the larger stakes firm finds it optimal to convert, since so doing tightens the wealth constraint and induces the client to pay larger rents on the margin. At the same time,

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[23]To see this, note that at wealth w the value of m^* for the large-stakes firm exceeds $\tilde{m}$, and thus the firm has a non-empty interval of sizes that yield strictly positive rents.

[24]That is, $m^* < \tilde{m}$.

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however, the larger-stakes firm finds it optimal to contract slightly, from m_H to $m'_H = m^* (w', Z_H) < m^* (w, Z_H)$. Similarly, the smaller stakes firm also has an incentive to convert, since tightening its wealth constraint to w' will now allow it to set size in a way that garners positive rents. As such, the smaller stakes firm decides to grow inframarginally to a size of $m'_L = m^* (w'; Z_L) > m^{**} (w; Z_L)$.

3.7 Empirical Predictions

As the analysis above demonstrates, the introduction of limited liability is predicted to have differential effects, depending on the underlying characteristics of firms. First, we would predict that principally moderately large to large find it profitable to convert, given that only those firms can use the liability shield to garner larger rents from clients. Small firms, in contrast (with smaller stakes clients) do not realize the benefits of the limited liability form, since clients can retain their expected revenues by ratcheting back the fixed component of compensation. Consequently, our first prediction is that *moderate to large sized firms will systematically find it profitable to convert to the new limited liability business form(s).*

Second, for firms that are less than moderate in size, the introduction of limited liability has no discernible effects. Not only were these firms unable to take advantage of the wealth constraint before the introduction of the new form, but they remain unable to take advantage after its introduction as well. Consequently, our second prediction is that *non-converters will systematically be comprised of smaller firms who have smaller stakes clients.*

Finally, among those firms that convert, there are competing predictions about size. For the moderately large firms near the margin that decide to convert, we predict inframarginal growth, as the firms aggressively begin to take advantage of the benefits that the limited liability form offers them. For the larger firms, in contrast, we would predict a marginal reduction in size (ceteris paribus), since adopting the limited liability form requires them to scale back operations in order to continue to capture client rents. Consequently, our third prediction is that *among converting firms, the relative rate of growth will be larger for moderate sized firms than it will for large firms.*

Each of the above predictions is testable, and we are now in a position to test our theoretical model against real-world data. It is to this task we now turn.

4 Empirical Strategy & Data

Our theory delivers predictions about the relationship between firms' characteristics and the set of organizational forms available to the legal-services industry. In particular, we predict that a firm that would operate as a general partnership in the absence of an LLC/LLP option (due to tax or governance considerations) has an incentive to reorganize under the new form that is increasing in its economic scale. Furthermore, of those firms that do convert, we would predict that the more modest sized firms have an incentive to grow significantly faster than larger firms who convert.

One approach to testing the theory would compare the distributions of firms by organizational form, economic scale and number of partners among jurisdictions that differ in the set of permissible forms. The fundamental defect of this approach is that the counterfactual distribution of firm characteristics when all jurisdictions have identical forms is unknown. Thus it is difficult to attribute any observed heterogeneity in the cross section to differences in the business form rather than some other factor.[25]

Our strategy, therefore, compares GPs that reorganize after the introduction of new forms to those that do not, both prior and subsequent to reorganization. This approach requires longitudinal data on law firms. The remainder of this section describes a new data set on the characteristics—including business form, size and other measures scale, and location—of law firms in the fifty states and the District of Columbia.

Our principal source for this data set is the Martindale Hubbell Law Directory. Founded in 1865, Martindale Hubbell (MH) is the leading reference on the American legal-services industry. Consistent with a business strategy of publishing a legal yellow pages, the Directory's coverage of the legal universe ostensibly exceeds ninety percent in recent years.[26] Electronic

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[25]Moreover, the reorganization of general partnerships (GPs) cannot be distinguished from the conversion of professional corporations to newer limited liability forms, because our model does not address the choice between the latter forms.

[26]This figure is based on personal communication with a representative of MH. Hillman (2003), who reasonably emphasizes uncertainty, cites coverage in the eighty to ninety percent range. Given that listing in the Directory is voluntary, coverage is probably least comprehensive for small firms, who have a weaker incentive to advertise. These firms are not central to our analysis. Listings are free of charge (though the Directory gives greater prominence to and detail concerning lawyers and firms that advertise).

We are indebted to an anonymous lawyer for his assistance in obtaining the 1993 and 1999 Directories.

versions of the Law Directory from the fall of 1993 and the fall of 1999 were obtained.[27] As Table 1 indicates, our best information is that thirty-eight states introduced the LLC form during this period, while forty-five states allowed LLPs.[28]

The Directory in each year included listings for both firm offices and lawyers. A firm-office listing reports the firm name (including organizational-form designators, e.g., "P.C." or variants thereof), firm size (including partners, associates and in some cases support staff), and the city and state of the office. Firm-office listings in 1999 also include a designator for the home office for some firms. A lawyer listing reports the lawyer's name, title (if any), and firm affiliation and location (if any).

Building the data set was challenging. Approximately eight hundred thousand listings in the 1993 Directory were exported in batches of two hundred. The similarly sized database for the 1999 Directory could be exported more directly, though at the cost of the omission of some fields, including reported firm size. In contrast with Hillman (2003), we derived firm sizes by matching lawyers to firms. While our approach excludes the support staff included in reported firm size, this procedure was imperfect, as when no affiliated lawyers were matched. We have excluded 4,228 and 721 size-zero firms in 1993 and 1999, respectively.[29] Table 2 is an accounting of our treatment of

Excluding bracketing years, the figure for LLCs is twenty-nine states. The figure for LLPs is unchanged. Because fall releases of the MH directory were obtained, we assume for our purposes that a form was permitted in the year of actual introduction if the effective date preceded September and in the subsequent year otherwise.

[27] We are indebted to an anonymous lawyer for his assistance in obtaining the 1993 and 1999 electronic Directories.

[28] Excluding bracketing years, the figure for LLCs is twenty-nine states. The figure for LLPs is unchanged. Because fall releases of the MH directory were obtained, we assume for our purposes that a form was permitted in the year of actual introduction if the effective date preceded September and in the subsequent year otherwise.

[29] A size of zero is likely to indicate serious defects in our approach for imputing firm size. This problem arose, for instance, when a lawyer record's firm affiliation is "Jane Q. Public, Law Office of," while the corresponding firm record is "Law Office of Jane Q. Public." We have made substantial though incomplete progress in addressing such idiosyncrasies. We are confident the data set's imperfections in representing the Law Directory are limited, yet we continue to refine it. In seemingly rare instances the MH database itself includes no affiliated lawyers for an apparently existing firm.

A potential advantage of our approach is that it produces a set of non-retired lawyers apparently unaffiliated with any organization, whether a law firm, another business (e.g., as corporate counsel), or a public concern (e.g., the armed forces, a district attorney's office,

issues we confronted in developing the present version of the longitudinal data set. This table indicates that the exclusion of size-zero firms leaves 61,424 and 65,283 firms in 1993 and 1999, respectively. In comparison Hillman's (2003) total was 65,139 for 2002.

Insert Table 2 Here

The home office is imputed to be the largest office whenever a home office is not designated in the MH database. The distributions of firms by state of home office for 1993 and 1999 can thus be reported in Table 3. These distributions also correspond reasonably well to that reported in Hillman (2003). Because the MH databases do not include a unique firm identifier, distinct firms with identical names (e.g., "Brown and Brown, P.C.") are aggregated into a single multi-office firm.[30]

Insert Table 3 Here

Table 4 reports summary statistics on three measures of scale, namely firm size (i.e., number of lawyers), number of offices, and number of states with offices. Average firm size rose by almost twelve percent between 1993 and 1999. This increase reflects any compositional effect due to entry and exit, as well as any changes in the average size of firms that continued to operate. The average number of offices rose a little over nine percent, while the average number of states in which the firms practice declined by almost one percent.

Insert Table 4 Here

These scale measures exhibit substantial variation. The standard deviation of firm size in 1999 is 27.1 lawyers, with the largest firm comprising 1,586 attorneys.[31] A set of indicator variables for the state of home office as of

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or a court). Some of these lawyers are likely to be sole practitioners. There are 170,482 and 199,153 such lawyers in 1993 and 1999, respectively. We abstract from these potential firms because our focus here is on firms that were GPs in 1993 and their appropriate treatment is uncertain at present. Based on Hillman's (2003) methodology and firm count, these potential firms are also excluded from his data set.

[30] With some effort information in firm-office records on the locations of affiliated offices may be exploited.

[31] Figure 3 illustrates the highly skewed size distribution in 1993 among firms with as many as fifteen lawyers (the 95th percentile of the untruncated distribution). The other distributions are similarly skewed. If small firms are indeed underrepresented in the Directory, the true distributions are even more skewed.

1999 was jointly significant in ordinary-least-squares regressions of firm sizes in 1993 and 1999.[32] This finding reinforces our concern about potentially unobservable heterogeneity.

Following Hillman (2003), firms were classified into one of five broad organizational categories, largely on the basis of any business-form designators in their names. These categories include professional corporation/professional association (PC/PA), limited liability company (LLC), limited liability partnership (LLP), general partnership (GP), and sole proprietorship (SP). These categories mask some potentially important differences, e.g., in the extent of the liability shield provided by the new limited-liability forms across states. Hence care must be taken in our analysis to account for unobserved heterogeneity in the state-specific contours of the privileges and duties attaching to forms. We rely on a state-specific compendium of organizational-form designators for the PC/PA, LLP and LLC categories that Hillman (2003) obtained from a review of state policies. Firms whose name lacks any of the relevant designators were assigned to the GP and SP categories as follows: If the firm is of size one or the term "associates" appears in its name, the firm is a SP.[33]

Table 5 lists the distribution of firms' organizational forms in 1993 and 1999. Among jurisdictions that had introduced at least one of the new forms as of 1999 (i.e., all states but Kentucky), GPs were the leading form in 1993, with 42.8% of firms, followed by PC/PAs (32.7%) and SPs (24.1%). LLCs and LLPs together comprised a negligible 0.5% of all firms. By 1999 PC/PAs were the leading form (47.2%), with the share of GPs having declined somewhat (to 33.3%) and that of SPs moreso (to 8.7%). The new limited liability forms accounted for 10.7% of firms.

Insert Table 5 Here

These figures include 1,932 (2,932) firms in 1993 (1999) with an organizational-form designator not listed for the state in question in Hillman (2003) but

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[32]Unreported results are available from the authors upon request. The F-statistic for the state indicators is a highly significant 9.31 in 1993. The R-squared of the size regression was 0.0044.

[33]Hillman (2003) visually inspected the remaining firms' names and categorized them as SPs if a single surname appeared and as GPs otherwise. In contrast, we have not inspected the names of potential GPs for the presence of a single surname. Also in contrast, in those apparently rare instances in which a firm's organizational designator appears in the second line of the firm record, our parsing procedure does not ignore this information.

always corresponding to a PC/PA for other states (e.g., "Chartered" and its various abbreviations). We have, however, excluded 26 (48) firms in 1993 (1999) whose limited-liability form was impermissible according to Table 1. While these cases may reflect errors in our treatment of adoption dates, their limited number is encouraging.[34] Organizational distributions exhibited substantial variation across jurisdictions: state indicators were economically and statistically significant in a descriptive multinomial-logit analysis of the distributions of organizational forms in 1993 and 1999.[35]

The scale of firms tends to be quite different across broad organizational categories. Table 6 reports average scale by category in 1993 and 1999. In both years GPs have slightly more lawyers on average than PC/PAs and substantially more than SPs. In 1999 LLCs are somewhat larger than GPs (7.8 vs 5.6), while LLPs' mean size of 21.4 dwarfs all other forms.[36] These statistics suggest that the new limited-liability forms may be more important than their shares of the total number of firms suggests. While firms in general had more lawyers in 1999 than 1993, Table 6 indicates that GPs had significantly fewer lawyers in 1999. This may reflect differences in the scale of those GPs in 1993 that do and do not reorganize (as well as entry, exit and changes in unconverted GPs).

Insert Table 6 Here

We developed our longitudinal sample by matching firms in the 1993 and 1999 samples by name (exclusive of any organizational-form designators) and location.[37] Even had the MH databases included unique firm identifiers,

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[34]Additional explanations for these "impermissible" forms include: 1) our September cutoff for the year of adoption is too restrictive (see footnote 11), 2) some firms convert to test the boundaries of related legislation that was not explicit on these matters, and 3) simple errors in a database as large as the Law Directory. We explore the robustness of our results with respect to this issue.

[35]The chi-squared statistic for the 1993 (1999) sample was 6907 (8896), with 198 (196) degrees of freedom. The pseudo-R squared statistics for these results were 0.049 and 0.0783, respectively. The sample for 1999 was restricted to states that had permitted LLPs and/or LLCs as of 1999 so as not to conflate state-level permissibility with variation in permissible form choices.

[36]Qualitatively similar results hold for the relationship between number of offices and the number of states with offices for GPs, LLCs and LLPs, except that 1) the scale is compressed, and 2) the mean number of states is higher for GPs than for LLCs and LLPs in 1993.

[37]Firm names in 1993 were often identical to those in 1999 except for commas between

their value in this context is questionable. For instance, suppose that a divorce among a firm's participants results in the creation of two (smaller) firms, whether of the original organizational form or not. A putative linkage between either of these child firms and their parent would violate the ceteris paribus assumption of our empirical strategy. Our procedure appropriately does not match child firms to parents. The procedure also does not match a firm that had included a new "marquee" partner in its title.

Table 7 reports the number of firms matched in our 1993 and 1999 samples. For the 1993 sample 39.4% of firms were matched to the 1999 sample. These firms account for 57.7% of lawyers in 1993. Among GPs in 1993, these statistics are 49.6% and 64.6%, respectively.[38]

Insert Table 7 Here

The economic scale of firms is highly correlated across time. For instance, Table 8 reports that the correlation between firm size in 1993 and 1999 is 0.9383. Scale in 1993 continues to be a powerful predictor of scale in 1999 in regressions that include state-level indicator variables (which are themselves highly significant). This finding is consistent with stability in unobserved firm-level characteristics that plausibly influence the competitive landscape, such as managerial talent.

Insert Table 8 Here

Table 9 reports the joint distribution of firms in our longitudinal sample by broad organizational categories in 1993 and 1999 within adopting states. The bold-faced row corresponding to GPs in 1993 is relevant to testing our model. While 82.3% of these firms remained GPs in 1999, 12.7% had reorganized under the new limited-liability forms (with the remainder converting

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surnames in one year but not the other. Our matching procedure accounted for this irregularity. The locational criterion is that the city and state of at least one office in 1999 match those of at least one office in 1993.

[38]These figures exclude a few hundred firms that are mistakenly matched due to an error in our algorithm that we are now rectifying. These errors arise as in the following example: Denote the 1993 firms Brown & Brown, PC in Washington, DC and Brown & Brown in Houston, TX as A and B. Firm A continues in 1999 under the same form, while firm B has changed its form to an LLP. Our algorithm strips firm A of its organizational designator, mistakenly linking it to firm B in 1993, to which the 1999 counterparts are then linked. Thus all four offices (i.e., two in each year) are aggregated into a singe firm in our longitudinal sample.

to PC/PAs). Thus our strategy of comparing the characteristics of GPs that do reorganize after the introduction of new forms to those that do not has some promise. No firms converted from a GP to a SP (or vice versa) after we discarded from our longitudinal sample the 1,123 firms in which the firm was of size one in one year but not in the other.[39] Lastly, recalling Table 6, the unconditional shares of LLPs and LLCs in the total number of firms in 1999 are substantially smaller for the longitudinal sample than for all firms in 1999. A multinomial-logit analysis confirms that the shares of these new forms differs between matched and unmatched firms even after including a highly significant set of state indicator variables.[40] A firm that operated in 1993 is 3.38% less likely to be an LLC and 1.78% less likely to be an LLP, all else equal. These very large differences (relative to the unconditional probability) suggest that the costs of reorganization plausibly constrain the share of limited liability firms in the longitudinal sample.[41]

Insert Table 9 Here

5 Testing the Predictions

Our model's specific predictions can be tested on our sample of GPs in 1993 that persisted into 1999. That is, are the GPs that reorganize under the new limited-liability firms larger in economic scale than those that do not (assuming that the cost of conversion does not rise too sharply with scale)? Furthermore, does the number of partners grow for small firms that convert at a rate that is higher than that of larger firms who convert? We address each question in turn.

The first question is whether larger GPs tend disproportionately to reorganize as LLC/LLPs. Firm size (i.e., number of lawyers) is our preferred measure of economic scale because of its greater variation than other mea-

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[39]We verified that in some instances this is due to errors in parsing data from the Law Directory, the structure of which varied between 1993 and 1999. We plan to explore this issue further.

[40]The chi-squared statistic on the state indicator variables is 8428, with 196 degrees of freedom. The pseudo-R squared of the multinomial-logit analysis is 0.0940. Note that the samples in Tables 5 and 7 differ somewhat for the reasons just described.

[41]New firms have sunk no investment in a business form prior to entry. The incremental cost of reorganizing is probably lower for existing firms that underwent other changes (e.g., gaining or losing marquee partners) than for stable firms.

sures and its closer link to the theoretical model.[42] While we intend to derive information on partners from the MH databases in the future, we also use firm size for now as a measure of the number of partners on the view that these two variables move together.

Table 10 reports the average size of GPs in 1993 according to broad organizational category in 1999 for those jurisdictions that had permitted either an LLC or LLP form as of 1999. The average size of firms that remained GPs was 6.6 lawyers in 1993. In contrast, the average size of firms that became LLCs by 1999 was 17.1, while that of firms that became LLPs was 40.2. These differences are economically and statistically quite meaningful.

Insert Table 10 Here

We also estimated a multinomial-logit model of firms' broad organizational categories in 1999 so as to account for other potential determinants of form choice in 1999. The sample here includes Kentucky, which had not yet adopted either new form, because variation in the set of permissible forms can be informative about forms' relative attractiveness. The model's covariates include firm size in 1993, the number of states with offices in 1993, and indicator variables for state of home office. The number of states with offices is included on the view that 1) multistate firms may find conversion less attractive if the other states of operation were slow to permit the new business form, and 2) reorganizing in several states is likely to be more complex and costly. State indicator variables are included because our organizational categories do not account for heterogeneity in the contours of the various forms across jurisdictions. Moreover, reorganization may respond with a lag to the introduction of these forms, and state indicators serve as controls for the year of introduction.

Table 11 reports the results. With a pseudo-R squared of 0.1285, the fit of the model to the data is modest. Nevertheless, the estimated coefficient on firm size is highly significant for both the LLC and LLP categories. The coefficient on number of states is significant for LLPs and marginally for LLCs. The set of state indicator variables is highly significant in this model, as expected.

Insert Table 11 Here

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[42]That is, the law firm's central problem is the elicitation of effort from its professional employees rather than the coordination of activity across offices and regions.

Table 12 reports the estimated mean effects of firm size and number of states on the probability of reorganization under the LLC and LLP forms. The probability of converting from a GP to an LLC increases by 0.024 percent with each additional lawyer in 1993. The probability of conversion to an LLP rises by a more substantial 0.31% at the margin.. The adoption of new limited-liability forms must be even more responsive to the number of partners. The probability of conversion to an LLP, however, declines on average by 2.0% for each additional state in which a firm operates. Under the interpretation of firm size as economic scale, the marginal impact of firms size indicates that the cost of conversion cannot be rising too sharply with scale. We know of no reason to believe that the cost of conversion is declining sharply enough with scale to rationalize the conclusion that larger GPs are more likely to reorganize as LLCs or LLPs. Taken together, these estimated effects are quite large effects relative to the unconditional probabilities of reorganization reported in Table 9.

Insert Table 12 Here

The evidence thus supports the hypothesis that larger GPs should be more likely to avail themselves of the new limited-liability forms. The fact that GPs with more lawyers were more likely to convert mitigates somewhat our use of the number of lawyers as a measure of the number of partners. In larger firms the technology of production for legal work is organized around teams of lawyers, and there may be a relatively fixed number of associates assigned to the partner managing a case (as assumed implicitly in our theoretical model).

Our model predicts that firms that the ranks of a firm's partners should decline post-conversion if the wealth constraint was binding, and vice versa. The wealth constraint binds, if at all, for the largest firms. This implies that small firms which convert should grow relatively quickly, and large firms which convert should (ceteris paribus) contract post-conversion.

To test this hypothesis, we examined the median growth rate for law firms grouped into deciles according to their size in 1993.[43] Figure 4 illustrates the results, with the outer lines representing ninety-five-percent confidence intervals on the true medians.[44] The median growth rate of firms in the

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[43]The median is more representative than the mean by virtue of its relative insensitivity to outliers. Table 13, which is discussed below, is consistent with this observation.

[44]A test of the null hypothesis of heteroscedasticity of unknown form was overwhelm-

smallest decile (with three or fewer lawyers) is roughly twenty-nine percent. Median growth among all other firms is sharply lower at roughly twenty-one percent. Growth exhibits no clear pattern with respect to the corresponding size deciles.

Growth among large adopters of the new forms appears on first glance to be at odds with our model's predictions. At the same time, however, there may be a number of plausible explanations for this observation. Most centrally, our model does not make any predictions about the distribution of firms pre-conversion, but instead takes them as given. If, however, either very few (or no) firms under the status quo ante were able to use size to extract client rents, then most (or all) of the converters would be in the category that we have called "moderate," and we would predict them to grow aggressively after conversion. This possibility (about which our model has little to say) is roughly consistent with our data.[45]

Our empirical findings were robust to a variety of concerns.[46] First, the results were qualitatively similar when economic scale and the number of partners were measured by the number of offices and the number of states instead of the number of lawyers. Next, we excluded firms in a handful of states for which there was greater uncertainty about the permissibility of the new forms.[47] Lastly, we obtained similar results after 1) excluding firms whose organizational designator does not appear in Hillman's (2003)

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ingly rejected [White (1980)]. Heteroscedasticity-consistent standard errors are therefore used. State indicator variables were included in the regression underlying Figure 4. These indicators were highly jointly significant.

This conclusion continues to hold when mean growth is considered.

[45]Another possible explanation for the apparent mismatch between our predictions and the last set of results concerns exogenous growth. Our emperical efforts do not account for independent secular growth within an industry. Table 13 reports mean and median growth rates by broad organizational category as of 1999. The median growth rate is positive and substantial for LLCs and LLPs and zero for GPs and PC/PAs. Thus larger adopters indeed grew significantly more robustly than firms that remained GPs. This is inconsistent with our theory under the maintained hypothesis that firms that converted would have grown like firms that remained GPs.

[46]We have not had an opportunity to explore the robustness of the latest version of the data set, which incorporates LLP adoption dates (rather than assuming they are identical to LLC adoption dates.) We will remedy this omission in future drafts.

[47]Contrary to Donn (2004b) and our best information, Baker and Krawiec (2004) state that LLCs are impermissible only in New York, Nevada and Oregon. The timing of the status of the new forms in Georgia and Tennessee for the period in question was difficult to ascertain.

compendium yet always otherwise corresponds to the PC/PA form, and 2) including firms with apparently impermissible forms. The evidence developed here, then, is consistent in important respects with our model.

Nevertheless, the evidence is open to alternative interpretations. For example, firm size is frequently thought to increase in managerial efficiency within a number of basic frameworks from industrial organization. Thus, the growth trajectories we observe likely may reflect differences in overall managerial talent. Moreover, able managers may be more likely to avail themselves of profitable opportunities, inducing a correlation between firm size, growth rate and organizational form. We are contemplating empirical strategies for distinguishing between this sort of explanation of firm growth and our model, which predicts growth for strategic reasons. Some covariates are plausibly correlated with the decision to convert but uncorrelated with general managerial talent, e.g., the age of a firm's partners, given that the present discounted value of the return to reorganization may be declining with age, while the psychic cost may be rising. Such exogenous variation in the decision to reorganize may constitute valuable controls that we hope to address in future drafts.

6   Conclusion

This paper has presented both theoretical predictions and an empirical test for the effects of the introduction of new limited liability forms as measured by characteristics of professional law firms. We have found, consistent with our predictions, that larger firms tended systematically to take advantage of the new business forms, and growth rates were the strongest within the lower deciles of the set of firms that chose to convert.

These findings potentially have important consequences both for the study of entrepreneurship within the practice of law, and regulatory policy more generally. Indeed, if a goal of the introduction of the professional LLC/LLP forms was to encourage entrepreneurial activity among small, boutique law firms, the experiment has met with only limited success. The smallest firms within our sample appear to have been largely unaffected by the introduction of the new forms, as their scale was insufficient to take advantage of the strategic benefits that the LLC/LLP forms offered. However, among more "moderately" sized firms, which could take advantage of these benefits, we both predicted and found substantial growth. Larger established firms,

however, also appear to have benefited from the new business forms.

From a general policy standpoint, our analysis has something to contribute as well. Indeed, if – as our theory and preliminary findings suggest – law firms strategically adopted the new business forms to extract rents from clients, then it is unclear whether the benefits of such activities is desirable from a social perspective.

There are a number of extensions to this work that are well worth considering. For instance, conversion rates and growth rates appear much stronger in LLPs than in LLCs, a curious fact given that the LLP forms offer, in the main, more modest liability protections. While some of this difference is certainly due to statutory restrictions (California, for example, prohibits law firms from practicing as LLCs), there is almost certainly more to the story here. Also worthy of investigation is the "failure" of PC/PAs to exploit the potential tax advantages and administrative simplicity of the new forms, as well as their very robust growth between 1993 and 1999. We leave these explorations for future work.

7   References

1. Baker, S. & K. Krawiec, 2004. The Economics of Limited Liability: An Empirical Study of New York Law Firms. Unpublished Manuscript.

2. Bromberg. A.R. & L.E. Ribstein, 2003. Limited Liability Partnerships, the Revised Uniform Partnership Act, and the Uniform Limited Partnership Act.

3. Carr, Jack and Mathewson, Frank, The Economics of Law Firms: A Study in the Legal Organization of the Firm, 33 Journal of Law and Economics 307 (1990).

4. Donn, Allan G. 2004a. Limited Liability for Law Firms. ALI-ABA Video Law Review, CHOICE OF ENTITY after the 2003 Tax Act Selecting Legal Form and Structure for Closely-Held Businesses and Ventures.

5. Donn, Allan G. 2004b. "Limited Liability Entities for Law Firms – 10 Years Later. Passthrough Entities (August 2004) 19-27.

6. Gaynor, Martin and Gertler, Paul J., Moral Hazard and Risk Spreading in Partnerships, 26 Rand Journal of Economics 591 (1995).

7. Hillman, Robert W., Organizational Choices of Professional Service Firms: An Empirical Study, 58 Bus. Lawyer 1387 (2003).

8. Holmstrom, Bengt, Moral Hazard in Teams, 13 Rand Journal of Economics 324 (1982).

9. Lang, Kevin and Gordon, Peter-John, Partnerships as Insurance Devices: Theory and Evidence, 26 Rand Journal of Economics 614 (1995).

10. Leibowitz, Arleen and Tollison, Robert, Free Riding, Shirking and Team Production in Legal Partnerships, 18 Economic Inquiry 380 (1980).

11. Ribstein, L. & R.R. Keatinge, 2003. Ribstein and Keatinge on Limited Liability Companies, Volume I.

8   Appendix A:

This appendix contains the central proofs in the analytical results from Section 3.

Lemma 2: *If Assumption B holds, the optimal high-effort inducing contract consists of both a flat fee and a contingency arrangement, so that:*

$$\alpha = \frac{m}{Z}\left(\frac{\phi}{(p_H - p_L)}\right)$$

$$\beta = \max\left\{-w, u_0 + c_L + \phi - m\left(\frac{\phi p_H}{(p_H - p_L)}\right)\left(1 - \gamma\phi\frac{(1 - p_H)}{(p_H - p_L)}\right)\right\}$$

Proof: Suppose that all other attorneys are putting forth high effort. By also putting forth high effort (assuming that all attorneys have identical contracts of (α, β)), the representative attorney's expected monetary payoff will be

$$\beta + p_H \cdot \alpha\overline{Z} - c_L - \phi$$

and a variance of

$$\frac{\left(\alpha\overline{Z}\right)^2}{m}(1 - p_H) \cdot p_H$$

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On the other hand, by expending low effort, our attorney can reap an expected monetary payoff of:

$$\beta + \frac{1}{m} p_L \cdot \alpha \overline{Z} + \frac{m-1}{m} p_H \cdot \alpha \overline{Z} - c_L$$

and a variance of:

$$\frac{1}{m^2} \left(\alpha \overline{Z} \right)^2 (p_L)(1 - p_L) + \frac{(m-1)}{m^2} \left(\alpha \overline{Z} \right)^2 (p_H)(1 - p_H)$$

Thus, the attorney will expend high effort if and only if:

$$\beta + p_H \cdot \alpha \overline{Z} - \gamma \left(\frac{\left(\alpha \overline{Z} \right)^2}{m} (p_H)(1 - p_H) \right) - (c_L + \phi)$$

$$\geq \quad \beta + \frac{1}{m} p_L \cdot \alpha \overline{Z} + \frac{m-1}{m} p_H \cdot \alpha \overline{Z}$$

$$-\gamma \left(\frac{1}{m^2} \left(\alpha \overline{Z} \right)^2 (p_L)(1 - p_L) + \frac{(m-1)}{m^2} \left(\alpha \overline{Z} \right)^2 (p_H)(1 - p_H) \right) - c_L$$

which simplifies to:

$$\left(\frac{\alpha \overline{Z}}{m} \right) \left(1 - \frac{\alpha \overline{Z}}{m} \gamma \cdot (1 - p_H - p_L) \right) \geq \frac{\phi}{(p_H - p_L)}$$

Clearly, the client would like to choose the lowest level of α that induces the attorney to expend high effort. After some analysis,[48] we obtain the following IC constraint[49] for the minimal level of α that is incentive compatible:

$$\alpha \geq \alpha^{IC} \equiv \begin{cases} \frac{m}{Z} \left(\frac{1 - \sqrt{1 - 4\gamma\phi \frac{(1 - p_H - p_L)}{(p_H - p_L)}}}{2\gamma(1 - p_H - p_L)} \right) & \text{if } p_H \neq 1 - p_L \\ \frac{m}{Z} \left(\frac{\phi}{(p_H - p_L)} \right) & \text{if } p_H = 1 - p_L \end{cases}$$

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[48]Note that the LHS of the above expression is a concave down parabola whenver $(1 - p_H - p_L) > 0$, with one root at zero and one strictly positive root. Thus, any α between the roots of the whole expression will solve. On the other hand, when $(1 - p_H - p_L) < 0$ the LHS is a concave up parabola with one root at zero and a strictly negative root. Here, anything larger than the largest root will solve. Finally, when $(1 - p_H - p_L) = 0$, the LHS is linear in α.

[49]Let $\theta = \frac{\alpha Z}{m}$, so the equation becomes:

$$0 = \theta^2 \gamma (1 - p_H - p_L) - \theta + \frac{\phi}{(p_H - p_L)}$$

Note that the simplest case is satisfied when $p_H = 1 - p_L$. We focus on this case in what follows (though our results generally carry over to both cases, under some regularity assumptions).

To complete solving for the optimal high-effort contract, then, we substitute the high effort inducing terms α in and set β such that it satisfies both the attorney's liquidity constraint and the attorney's participation constraint. So doing yields the result that only one of these constraints will be binding. Thus, the expression in the Lemma simply captures whichever of the constraints is the sharpes. QED.

* * *

Proposition 1: *If Assumptions A and B hold, the client will choose to implement high effort if and only the size of the firm satisfies $m \leq \hat{m}$, where*

$$\hat{m} = \begin{cases} m^* \equiv (p_H - p_L) \frac{(p_H - p_L)\overline{Z} + (u_0 + c_L + w)}{p_H \phi} & \text{if } m \geq \tilde{m} \\ m^{**} \equiv (p_H - p_L)^2 \frac{(p_H - p_L)\overline{Z} - \phi}{\gamma \phi^2 p_H (1 - p_H)} & \text{if } m < \tilde{m} \end{cases}$$

Proof: When the client implements low effort, her net expected payoff is given by:

$$p_L \overline{Z} - (u_0 + c_L)$$

This expected payoff does not turn on the size of the firm.

When, in contrast, the client implements high effort, her payoff does turn on m. Suppose first that $m \geq \tilde{m}$ (so that the wealth constraint binds). Here, the client's expected net payoff is given by:

$$p_H \overline{Z} (1 - \alpha) - \beta = p_H \left(\overline{Z} - m \left(\frac{\phi}{(p_H - p_L)} \right) \right) + w$$

Here, then, the high effort contract is favored by the client if and only if the payoff the client receives exceeds her payoff in the low effort contract:

$$p_H \left(\overline{Z} - m \left(\frac{\phi}{(p_H - p_L)} \right) \right) + w \geq p_L \overline{Z} - (u_0 + c_L)$$

$$(p_H - p_L) \overline{Z} + (u_0 + c_L + w) \geq m \left(\frac{p_H \phi}{(p_H - p_L)} \right)$$

$$m \leq m^* \equiv (p_H - p_L) \frac{(p_H - p_L)\overline{Z} + (u_0 + c_L + w)}{p_H \phi}$$

If instead the client implements high effort and $m < \widetilde{m}$ (so that the participation constraint binds), the client's expected payoff is given by:

$$p_H \overline{Z}\left(1 - \alpha\right) - \beta \;\; = \;\; p_H\left(\overline{Z} - m\left(\frac{\phi}{\left(p_H - p_L\right)}\right)\right)$$
$$- \left(u_0 + c_L + \phi - m\left(\frac{\phi p_H}{\left(p_H - p_L\right)}\right)\left(1 - \gamma\phi\frac{\left(1 - p_H\right)}{\left(p_H - p_L\right)}\right)\right)$$

$$p_H\overline{Z} - m\left(\frac{\phi p_H}{\left(p_H - p_L\right)}\right) + m\left(\frac{\phi p_H}{\left(p_H - p_L\right)}\right)\left(1 - \gamma\phi\frac{\left(1 - p_H\right)}{\left(p_H - p_L\right)}\right) - \phi \;\; \geq \;\; p_L\overline{Z}$$

$$\left(p_H - p_L\right)\overline{Z} - \phi \;\; \geq \;\; m\left(\frac{\phi p_H}{\left(p_H - p_L\right)}\right)\left(\gamma\phi\frac{\left(1 - \right)}{\left(p_H\right)}\right.$$

And accordingly, the client will induce high effort if and only if:

$$m \leq m^{**} = \left(p_H - p_L\right)^2 \frac{\left(p_H - p_L\right)\overline{Z} - \phi}{\gamma\phi^2 p_H\left(1 - p_H\right)}$$

which corresponds to the second condition in the proposition. QED.

Corollary 1A: *If Assumptions A and B hold, then $m^* > m^{**}$.*

Corollary 1B: *If Assumptions A and B hold, then attorneys will earn positive economic rents if and only if $w \leq w^*$, where:*

$$w^* \equiv \left(\frac{\left(p_H - p_L\right)}{\gamma\phi\left(1 - p_H\right)} - 1\right)\left(p_H - p_L\right)\cdot\overline{Z} - \frac{\left(p_H - p_L\right)}{\gamma\left(1 - p_H\right)} - \left(u_0 + c_L\right)$$

Corollary 1C: *If Assumptions A and B hold, then attorneys will earn positive economic rents if and only if $\overline{Z} \geq \overline{Z}^*$, where:*

$$\overline{Z}^* \equiv \left(u_0 + c_L + w\right)\left(\frac{1}{\left(\left(p_H - p_L\right) - \gamma\phi\left(1 - p_H\right)\right)} - 1\right) + \frac{\phi}{\left(\left(p_H - p_L\right) - \gamma\phi\left(1 - p_H\right)\right)}$$

Proof of 1A: The proof consists of a simple comparison of m^* to m^{**} :

$$\left(m^* - m^{**}\right) \;\; = \;\; \left(p_H - p_L\right)\frac{\left(p_H - p_L\right)\overline{Z} + \left(u_0 + c_L + w\right)}{p_H\phi} - \left(p_H - p_L\right)^2\frac{\left(p_H - p_L\right)\overline{Z} - \phi}{\gamma\phi^2 p_H\left(1 - p_H\right)}$$
$$= \;\; \frac{\left(p_H - p_L\right)}{p_H\phi}\left[\overline{Z}\left(p_H - p_L\right)\left(1 - \frac{\left(p_H - p_L\right)}{\gamma\phi\left(1 - p_H\right)}\right) + \left(u_0 + c_L + w + \frac{\left(p_H - p_L\right)}{\gamma\left(1 - p_H\right)}\right)\right] > 0$$

where the sign on $\left(1 - \frac{(p_H - p_L)}{\gamma\phi(1-p_H)}\right)$ follows from Assumption B.

Proof of 1B-C: Note from proposition 1 that the following decision rules are adopted by the client:

	$m < \tilde{m}$	$m \geq \tilde{m}$
Implement High Effort If	$m \leq m^{**}$	$m \leq m^*$
Implement Low Effort If	$m > m^{**}$	$m > m^*$

So we still need to check whether the relevant regions described above exist, and if they do, how the firm will organize itself. Our task is simplified a bit by noting that the attorneys in a firm receive rents only when (a) high effort is implemented; and (b) the wealth constrained binds. Equivalently, then, the operative region a firm finds itself in is where $m \in [\tilde{m}, m^*]$. Everywhere else, they will earn no rents. However, in any event they will not earn rents unless $\tilde{m} \leq m^*$. So the first task is to ask when $[\tilde{m}, m^*]$ exists. For it to exist, the following must be true:

$$\tilde{m} = (p_H - p_L) \cdot \frac{u_0 + c_L + \phi + w}{\phi p_H \cdot \left(1 - \frac{\gamma\phi(1-p_H)}{(p_H - p_L)}\right)} \leq (p_H - p_L) \frac{(p_H - p_L)\overline{Z} + (u_0 + c_L + w)}{p_H \phi} = m^*$$

$$\Leftrightarrow$$

$$w \leq w^* = \left(\frac{(p_H - p_L)}{\gamma\phi(1-p_H)} - 1\right)(p_H - p_L) \cdot \overline{Z} - \frac{(p_H - p_L)}{\gamma(1-p_H)} - (u_0 + c_L)$$

$$\Leftrightarrow$$

$$\overline{Z} \geq \overline{Z}^* \equiv \frac{(u_0 + c_L + w)(1 - (p_H - p_L) + \gamma\phi(1-p_H)) + \phi}{((p_H - p_L) - \gamma\phi(1-p_H))}$$

QED.

$* \ * \ *$

Proposition 2: *Suppose that Assumptions A, B, and C hold. If $\overline{Z} \geq \overline{Z}^*$, the firm selects a size of $m = m^*$. Otherwise, the firm selects any size $m \in [0, m^{**}]$.*

Proof: If $\overline{Z} \geq \overline{Z}^*$, then under Assumptions A and B we know that $\tilde{m} \leq m^*$, and thus the firm will choose a size in the interval $[\tilde{m}, m^*]$, since rents are zero for all other firm size. The representative attorney's expected utility under an optimal contract for a firm size in this interval is given by:

$$\pi(w, m^*) = -(w + c_L + \phi) + p_H \cdot m \left(\frac{\phi}{(p_H - p_L)}\right)\left(1 - \frac{\gamma\phi(1-p_H)}{(p_H - p_L)}\right)$$

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Note that this value is strictly increasing in m, and thus the firm will grow to the maximal size in this interval. If $\overline{Z} < \overline{Z}^*$, in contrast, the representative attorney will always garner zero rents, and thus the choice of organizational size is not unique. However, Assumption C implies that this choice must be on the interval $[0, m^{**}]$. QED.

* * *

Proposition 3: *Suppose that Assumptions A, B & C hold. If $\overline{Z} \geq \overline{Z}^*$, the firm will adopt a limited liability business form when it becomes available, and its firm size will shrink marginally in size. In addition, all firms on the interval $\overline{Z} \in \left[\overline{Z}', \overline{Z}^*\right]$ will also adopt the limited liability form and will grow inframarginally in size, where*

$$\overline{Z}' = \frac{(u_0 + c_L + w')(1 - (p_H - p_L) + \gamma\phi(1 - p_H)) + \phi}{((p_H - p_L) - \gamma\phi(1 - p_H))} < \overline{Z}^*$$

Firms on the interval $\overline{Z} \in \left[\overline{Z}', \overline{Z}^*\right]$ will neither convert nor change in size.

Proof: The textual discussion demonstrates the proof for firms such that $\overline{Z} \geq \overline{Z}^*$. For firms on the interval $\overline{Z} \in \left[\overline{Z}', \overline{Z}^*\right]$, note that the Proposition is simply a restatement of Proposition 2 evaluated at w'. The same is true for firms on the interval $\overline{Z} \in \left[0, \overline{Z}'\right]$.

Appendix B

The following table reports the timing and nature of events respecting the permissibility of LLCs and LLPs in each state. Events refer to a favorable stance on form permissibility unless otherwise noted. Where there are multiple events within a state, the date of the event that in our best judgment meaningfully permitted a form appears in bold face. (The reported timing is with respect to the effective date of introduction, not necessarily the date of statutory authorization, etc.) In general, when a statute specifically authorizing a business form for professionals follows a general limited-liability statute, the form plausibly became available to professionals only with the specific statute. A similar argument applies when judicial approval follows a general statute. Other cases are more difficult. While uncertainties remain, their relevance to this paper is limited to cases in which the timing relative to our bracketing years shifts. For example, a Wyoming statute authorized LLPs in 1998, while the Wyoming Supreme Court promulgated its approval in 2000. We continue to refine our understanding of this complex process.

State	LLC Events	LLP Events
Alabama	10/1/93 (Specific Statute)	1/1/97 (Statute)
Alaska	7/1/95 (General Statute)	1/1/97 (Statute)
Arizona	9/30/92 (Specific Statute)	7/17/94 (Statute)
Arkansas	4/12/93 (Specific Statute)	3/28/97 (Statute)
California		10/10/95 (Statute)
Colorado	4/18/90 (General Statute) **12/1/95** (S. Ct. Rule)	5/24/95 (Statute) **12/95** (S.Ct. Rule)
Connecticut	10/1/93	1/1/96 (Statute)
Delaware	10/1/92 (General Statute) Mid 90s (Ct. Rule) — Prohibits law-firm LLCs **5/1/97** (S.Ct. Rule) 12/1/98 (S.Ct. Rule) — Amendment	93 (Statute) — Defers to the S. Ct. to decide whether to allow LLPs for attorneys **5/1/97** (S.Ct. allows it)
District of Columbia	7/23/94	10/15/93 (Statute)
Florida	1982 (General Statute) **10/1/93** (Specific Statute) 7/1/96 (S.Ct. Rule)	7/1/95 (Statute) **7/1/96** (S.Ct. Rule)

Georgia	**3/1/94** (Specific Statute) 8/29/96 (S. Ct. Rule)	7/1/95 (Statute) **8/29/96** (S.Ct. Rule)
Hawaii	4/1/97 (General Statute) **7/1/99** (S. Ct. Rule)	4/1/97 (Statute)
Idaho	Approx. 6/93	7/1/95 (Statute)
Illinois	1/1/94 (General Statute) **12/31/96** (Statute) — States that Supreme Court approval required 3/1/97 (S. Ct. Rule)	8/11/94 (Statute) (S.Ct.) — Prohibited law-firm LLPs until **7/1/03**
Indiana	7/1/93 (Specific Statute) — Allows professional LLCs subject to authorization by the licensing authority **1/1/98** (Admission and Discipline Rule)	10/1/95 (Statute) **1/1/998** (S. Ct. Rule)
Iowa	7/1/92 (Specific Statute)	8/15/94 (Statute)
Kansas	90 (Specific Statute)	4/7/94 (Statute) — Effective date of publication in statute book
Kentucky	7/15/94 (Specific Statute) 9/22/95 (S. Ct. Order) — Prohibits law-firm LLCs **2/1/00** (S. Ct.)	7/15/94 (Statute) **2/1/00** (S. Ct Rule)
Louisiana	7/7/92 (General Statute) **6/9/93** (Specific Statute)	7/7/92 (Statute)
Maine	1/1/95 (Specific Statute)	7/3/96 (Statute)
Maryland	10/1/93 (Specific Statute)	10/1/94 (Statute)
Massachusetts	1/1/96 (Specific Statute) **7/11/96** (S.Ct.) — Implements insurance requirements mandated in statute	1/1/96 (Statute) **1/1/98** (S. Ct. Rule) — Effective date may be 10/1/99
Michigan	6/1/93 (Specific Statute)	10/11/94 (Statute)
Minnesota	1/1/93 (Specific Statute)	8/1/94 (Statute)
Mississippi	7/1/94 (Specific Statute)	7/1/95 (Statute)
Missouri	12/1/93 (General Statute) **1/1/94** (S. Ct. Rule)	8/10/95 (Statute)
Montana	**10/1/93** (Specific Statute) 1/20/94 (Rule)	10/1/95 (Statute)

Nebraska	7/93 (Specific Statute) — Requires Supreme Court approval 4/4/94 (Statute) — Makes S.Ct. approval necessary **12/1/99** (S. Ct. Rule)	7/18/96 (Statute) **12/1/99** (S. Ct. Rule)
Nevada	10/1/91 (General Statute) 10/1/97 (Statute) — Discusses need for licensing agencies to issue regulations regarding LLCs	10/1/95 (Statute)
New Hampshire	**7/1/93** (Specific Statute) 7/7/95 (S. Ct Rule) 2002 (S. Ct Rule) — Amendment	8/9/96 (Statute)
New Jersey	1/26/94 (General Statute) 9/1/94 (S.Ct. Rule) — Prohibits law-firm LLCs **1/1/97** (S.Ct. Rule)	6/30/95 (Statute) 6/30/95 (S. Ct.) — Prohibits law-firm LLPs **1/1/97** (S. Ct. Rule)
New Mexico	6/93 (General Statute) 5/6/94 (State Bar Advisory Opinion) — States that express statutory authority is required	6/16/95 (Statute)
New York	10/24/94 (Specific Statute)	10/24/94 (Statute)
North Carolina	**10/1/93** (Specific Statute) 12/8/94 (S. Ct. Rule) 3/6/97 (S. Ct. Rule) — Amendment 10/1/03 (S. Ct. Rule) — Amendment	10/1/93 (Statute)
North Dakota	8/1/93 (Specific Statute)	3/23/95 (Statute)
Ohio	**7/1/94** (Specific Statute) 11/1/95 (S. Ct. Rule)	**7/1/94** (Statute) 11/1/95 (S. Ct. Rule)
Oklahoma	9/1/92 (General Statute) **11/1/95** (Specific Statute)	11/1/96 (Statute)
Oregon	5/3/95 (Specific Statute) — Eliminates earlier prohibition	Pre-1/1/96 (S. Ct. Rule) **1/1/96** (Statute)
Pennsylvania	**2/5/95** (Specific Statute) 4/29/95 (S. Ct. Rule)	**2/5/95** (Statute) 4/29/95 (S.Ct. Rule)

Rhode Island	**7/28/02** (Specific Statute) 6/27/03 (S. Ct. Order)	7/8/97 (Statute) **1/1/98** (S. Ct. Rule)
South Carolina	**6/16/94** (Specific Statute) 6/1/96 (General Statute) — Supersedes specific statue	6/16/94 (Statute)
South Dakota	7/1/93 (Specific Statute)	7/1/95 (Statute)
Tennessee	**6/21/94** (Specific Statute) 3/1/03 (S. Ct. Rule)	7/1/95 (Statute)
Texas	**8/26/91** (General Statute) 9/1/93 (Specific Statute)	8/26/91 (Statute)
Utah	7/1/91 (Specific Statute)	5/3/94 (Statute)
Vermont	7/1/96 (Specific Statute)	1/1/99 (Statute)
Virginia	**7/1/92** (Specific Statute) — Eliminates earlier prohibition 2/1/93 (S.Ct. Rule) 7/1/95 (S. Ct. Rule) — Amendment 2000 (S. Ct. Rule) — Amendment	**7/1/94** (Statute) 7/1/95) (S. Ct. Rule) — Requires registration of limited liability law practices with the state bar; may be effective 2/4/00 or 3/29/00
Washington	10/1/94 (Specific Statute)	7/1/95 (Statute)
West Virginia	3/6/92 (General Statute) **6/6/96** (Specific Statute) 10/1/96 (S. Ct. Rule)	**6/6/96** (Statute) 10/1/96 (S. Ct. Rule)
Wisconsin	1/1/94 (General Statute) **7/1/97** (S. Ct. Rule)	12/11/95 (Statute) **7/1/97** (S.Ct. Rule)
Wyoming	1977 (General Statute) **7/1/93** (Specific Statute) 8/16/94 (S. Ct.)	7/1/98 (Statute) **6/21/00** (S. Ct.)

Table 1: Effective Dates of Limited Liability Forms by State

State	LLC Date	LLP Date	State	LLC Date	LLP Date
AK	Jul-95	Jan-97	MT	Oct-93	Oct-95
AL	Oct-93	Jan-97	NC	Oct-93	Oct-93
AR	Apr-93	Mar-97	ND	Aug-93	Mar-95
AZ	Sep-92	Jul-94	NE	Sep-93	Dec-99
CA	N\a	Oct-95	NH	Jul-93	Aug-96
CO	Dec-95	May-95	NJ	Jan-97	Jan-97
CT	Oct-93	Jan-96	NM	N\a	Jun-95
DC	Jul-94	May-97	NV	N\a	Oct-95
DE	May-97	Oct-93	NY	Oct-94	Oct-94
FL	Oct-93	Jul-96	OH	Jul-94	Jul-94
GA	Mar-94	Aug-96	OK	Sep-92	Nov-96
HI	Jul-99	Apr-97	OR	May-95	Jan-96
IA	Jul-92	Aug-94	PA	Feb-95	Feb-95
ID	Jun-93	Jul-95	RI	Jul-02	Jan-98
IL	Mar-97	Jul-03	SC	Jun-94	Jun-94
IN	Jan-98	Jan-98	SD	Jul-93	Jul-95
KS	Jan-90	Apr-94	TN	Jun-94	Jul-95
KY	Feb-00	Feb-00	TX	Aug-91	Aug-91
LA	Jul-92	Jul-92	UT	Jul-91	May-94
MA	Jul-96	Jan-98	VA	Jul-92	Jul-94
MD	Oct-93	Oct-94	VT	Jul-96	Jan-99
ME	Jan-95	Jul-96	WA	Oct-94	Jul-95
MI	Jun-93	Oct-94	WI	Jul-97	Jul-97
MN	Jan-93	Aug-94	WV	Jun-96	Jun-96
MO	Jan-94	Aug-95	WY	Jul-93	Jun-00
MS	Jul-94	Jul-95			

Table 2:
Accounting for the Development of the Longitudinal Sample of Law Firms

Sample Description	1993 Sample	1999 Sample	Longitudinal Sample
Potential firms in Law Directory	236134	265154	—
Exclusion of non-retired lawyers unaffiliated with a firm and potentially in private practice	65652	66001	—
Exclusion of firms of size zero	61424	65283	—
Retention of firms with organizational-form designator not listed for the state in question in Hillman (2003) but always corresponding to a PC/PA for other states	61424	65283	—
Exclusion of firms with impermissible limited-liability form	61398	65235	—
Match firms by name	—	—	24352
Exclusion of wrongly matched firms with too many offices	—	—	24076
Exclusion of firms that convert from GP to SP (or vice versa) and have one lawyer as an SP	—	—	22953

Table 3:
Distributions of Firms by State of Home Office in 1993 and 1999

State	1993		1999	
	No. of firms	Share of firms	No. of firms	Share of firms
AK	186	0.3	185	0.3
AL	885	1.4	998	1.5
AR	514	0.8	559	0.9
AZ	894	1.5	1,059	1.6
CA	6,775	11.0	6,706	10.3
CO	1,360	2.2	1,509	2.3
CT	1,191	1.9	1,092	1.7
DC	925	1.5	823	1.3
DE	163	0.3	177	0.3
FL	4,332	7.1	5,629	8.6
GA	1,715	2.8	1,929	3.0
HI	273	0.4	262	0.4
IA	740	1.2	758	1.2
ID	226	0.4	267	0.4
IL	2,616	4.3	2,971	4.6
IN	1,078	1.8	983	1.5
KS	577	0.9	568	0.9
KY	839	1.4	773	1.2
LA	1,220	2.0	1,346	2.1
MA	1,712	2.8	1,728	2.7
MD	1,144	1.9	1,396	2.1
ME	283	0.5	298	0.5
MI	1,875	3.1	2,154	3.3
MN	985	1.6	1,055	1.6
MO	1,113	1.8	1,212	1.9
MS	564	0.9	533	0.8
MT	262	0.4	283	0.4
NC	1,390	2.3	1,304	2.0
ND	160	0.3	153	0.2
NE	458	0.8	441	0.7
NH	278	0.5	322	0.5
NJ	1,968	3.2	2,179	3.3
NM	415	0.7	488	0.8
NV	373	0.6	493	0.8
NY	5,320	8.7	5,320	8.2
OH	2,191	3.6	2,154	3.3
OK	1,022	1.7	934	1.4
OR	673	1.1	721	1.1
PA	2,572	4.2	2,615	4.0
RI	251	0.4	264	0.4
SC	733	1.2	829	1.3
SD	204	0.3	198	0.3
TN	1,066	1.7	961	1.5
TX	3,625	5.9	4,076	6.2
UT	268	0.4	285	0.4
VA	1,459	2.4	1,523	2.3
VT	200	0.3	219	0.3
WA	967	1.6	1,115	1.7
WI	841	1.4	909	1.4
WV	348	0.6	347	0.5
WY	195	0.3	180	0.3
Total	61,424	100	65,283	100

Table 4:
Three Measures of a Firm's Economic Scale in 1993 and 1999

	Firm size (No. of lawyers)		No. of offices		No. of states with offices	
Statistic	*1993*	*1999*	*1993*	*1999*	*1993*	*1999*
Mean	5.53	6.17	1.21	1.32	1.07	1.06
Standard Deviation	21.6	27.1	0.75	0.91	0.41	0.37
Median	2	2	1	1	1	1
Minimum	1	1	1	1	1	1
Maximum	962	1586	30	24	15	14
5th percentile	1	1	1	1	1	1
10th percentile	1	1	1	1	1	1
25th percentile	1	1	1	1	1	1
75th percentile	4	4	1	1	1	1
90th percentile	9	9	2	2	1	1
95th percentile	15	17	2	3	1	1

Note: n=61,424 and 65,283 in 1993 and 1999, respectively.

Table 5:
Distribution of Firms by Broad Organizational Category in 1993 and 1999

	All states		States in which LLC or LLP available as of 1999	
Category	*1993*	*1999*	*1993*	*1999*
PC/PA	19,916	30,726	19,772	30.462
LLC	26	2,372	26	2,372
LLP	264	4,537	264	4,537
GP	25,916	21,930	25,916	21,498
SP	14,587	5,670	14,587	5,611

Note: n=61,398 and 65,235 in 1993 and 1999, respectively.

Table 6:
Average Scale of Firms by Broad Organizational Category in 1993 and 1999

	Firm size		No. of offices		No. of states	
Category	*1993*	*1999*	*1993*	*1999*	*1993*	*1999*
PA/PA	5.60 (0.08)	4.75 (0.07)	1.196 (0.005)	1.270 (0.005)	1.028 (0.001)	1.039 (0.001)
LLC	12.54 (2.97)	7.74 (0.46)	1.308 (0.162)	1.419 (0.020)	1.000 (0.003)	1.086 (0.008)
LLP	21.38 (3.93)	22.53 (1.08)	1.352 (0.060)	1.636 (0.021)	1.053 (0.020)	1.169 (0.010)
GP	7.78 (0.19)	5.81 (0.18)	1.261 (0.005)	1.303 (0.006)	1.087 (0.003)	1.082 (0.003)
SP	1.10 (0.01)	1.36 (0.03)	1.155 (0.005)	1.386 (0.010)	1.105 (0.004)	1.041 (0.003)

Note: n=61,398 and 65,235 in 1993 and 1999, respectively. Standard errors appear in parentheses.

Table 7:
Matching of Firms into Longitudinal Sample

	In 1999 Sample	*Not in 1999 Sample*
In 1993 Sample	24,352	37,046
Not in 1993 Sample	40,601	—

Note: n=61,398 and 65,235 in 1993 and 1999, respectively.

Table 8:
Correlation among 1993 and 1999 Measures of Firms' Economic Scale

	1993 Size	*1999 Size*	*1993 Offices*	*1999 Offices*	*1993 States*	*1999 States*
1993 Size	1.0000	0.9383	0.5342	0.4694	0.5257	0.5427
1999 Size		1.0000	0.4838	0.4028	0.4874	0.4983
1993 Offices			1.0000	0.7029	0.6387	0.5587
1999 Offices				1.0000	0.4801	0.5433
1993 States					1.0000	0.8046
1999 States						1.0000

Note: n=22,953. All correlations are statistically significant at the 1% level.

Table 9:
Joint Distribution of Firms by Broad Organizational Category in 1993 and 1999

1993 \ 1999	*PA/PA*	*LLC*	*LLP*	*GP*	*SP*	*1993 Total*
PC/PA	8,250	27	24	76	19	8,396
LLC	0	14	0	0	0	14
LLP	2	0	105	0	1	108
GP	**617**	**333**	**1,225**	**10,120**	**0**	**12,295**
SP	257	6	8	0	1,553	1,824
1999 Total	9,126	380	1,362	10,196	1,573	

Note: n=22,637 for the states that had permitted LLCs and/or LLPs as of 1999.

Table 10:
Average Firm Size of 1993 GPs by Broad Organizational Category in 1993 and 1999

Category	Average Firm Size	
	1993	*1999*
PA/PA	8.47 (1.01)	9.85 (0.92)
LLC	17.13 (1.68)	22.3 (2.78)
LLP	40.16 (2.45)	51.1 (3.40)
GP	6.64 (0.31)	7.62 (0.38)

Note: n=12,295 for 1993 GPs in states that had permitted LLCs and/or LLPs as of 1999. Standard errors appear in parentheses.

Table 11:
Multinomial-Logit Analysis of Distribution of
1993 GPs by Broad Organizational Category in 1999

Covariate	Estimated Coefficient (Standard Error)
PC/PA	
Firm size in 1993	6.04e-3*** (1.67e-3)
Number of states in 1993	-0.179 (0.126)
State level indicators	Included and highly jointly signficant
LLC	
Firm size in 1993	1.42e-2*** (1.20e-3)
Number of states in 1993	-0.230 (0.156)
State level indicators	Included and highly jointly significant
LLP	
Firm size in 1993	2.18e-2*** (1.31e-3)
Number of states in 1993	-0.380*** (0.9.20e-2)
State level indicators	Included and highly jointly signficant
Other Statistics	
No. of observations	12,521
Log likelihood	-6900.13
Pseudo-R squared	0.1285
Chi-squared statistic on the hypothesis that all state indicator variables are zero	2034.98
Degrees of freedom	156

Notes: Sample includes all 1993 GPs, including states in which neither LLCs nor LLPs were permitted as of 1999. GP is the excluded category in the multinomial-logit analysis. * denotes statistical significance at the 10% level, ** at 5%, and *** at 1%.

Table 12:
Average Effect of Firm Size and Number of States with Offices
on Probability of Converstion by 1993 GPs to LLC and LLP forms as of 1999

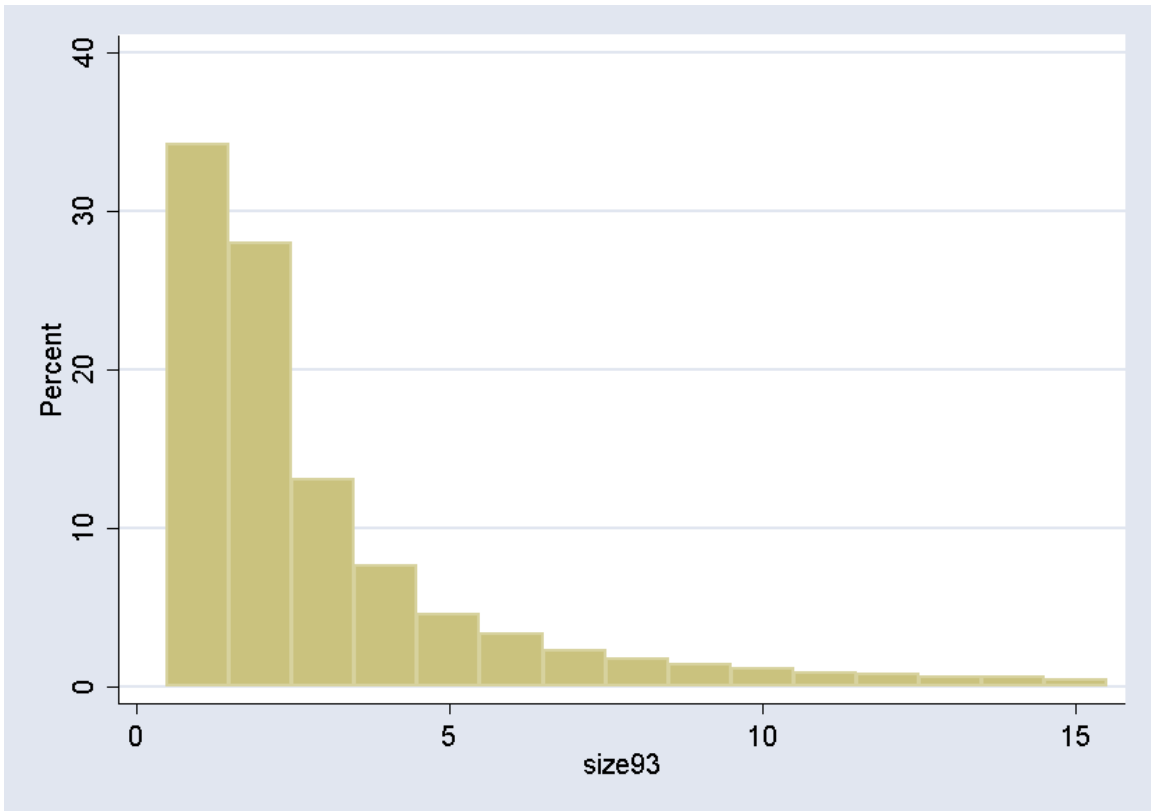| Form	Firm size in 1993	No. of states in 1993
LLC	2.40e-2*** (1.00e-2)	-0.375 (0.243)
LLP	0.311*** (2.00e-2)	-2.00*** (0.334)

Note: Share is expressed in percent. Standard errors appear in parentheses. * denotes statistical significance at the 10% level, ** at 5%, and *** at 1%.

Table 13:
Mean and Median Growth Rates among 1993 GPs
by Broad Organizational Category in 1999

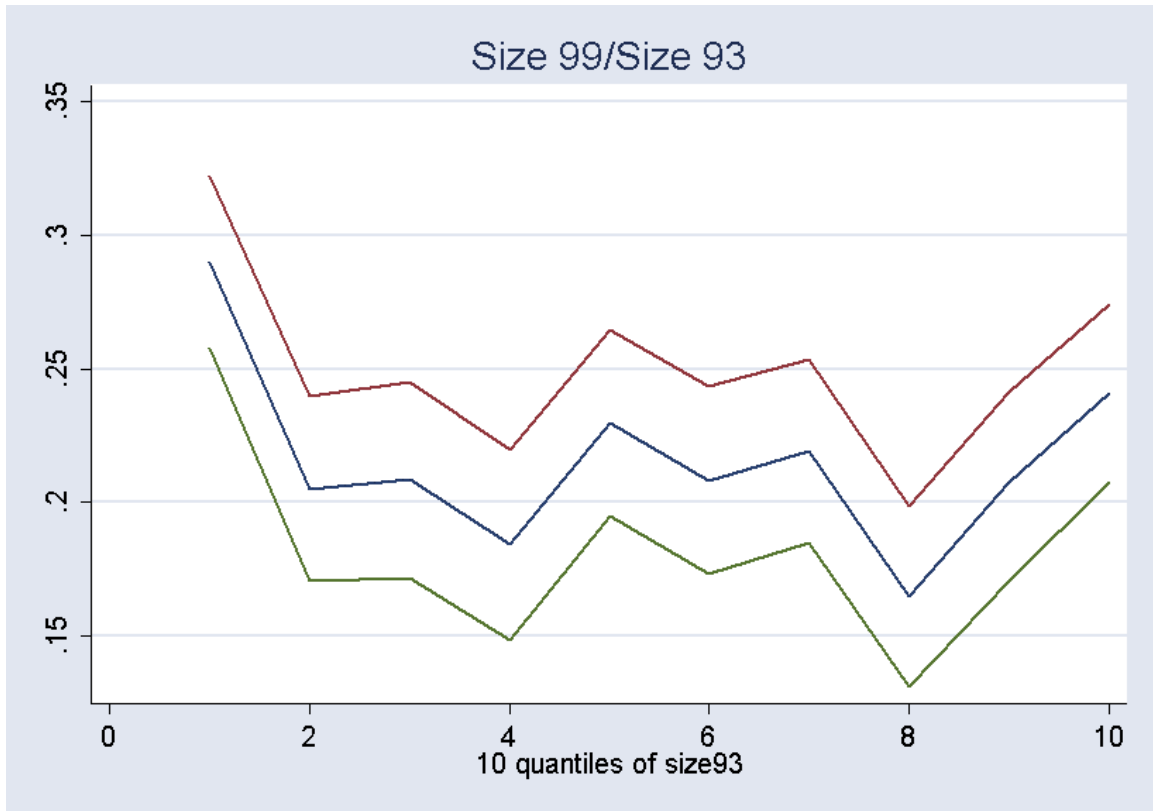| Category	Mean Growth	Median Growth
PC/PA	41.1% (6.20)	0
LLC	27.3% (3.13)	16.7%
LLP	32.2% (1.77)	23.1%
GP	14.7% (0.48)	0

Note: n=12,295 for firms in states that had adopted at least one of the new forms by 1999. Heteroscedasticity-robust standard errors appear in parentheses.

Figure 3:
The Distribution of the Number of Lawyers in a Firm in 1993,
Truncated at the 95th Percentile

Note: n=61,424.

Figure 4:
Median Growth of 1993 GPs that Converted to LLC or LLP Form by 1999,
By Deciles of Firm Size in 1993

Note: n=1,558. Outer lines are ninety-five percent confidence bands.