

**Specialization, Firms, and Markets:
The Division of Labor Within and Between Law Firms**

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Abstract

This paper uses confidential microdata from the Census of Services to examine law firms' field boundaries. We first investigate whether firms, along with individuals, specialize more as market size increases, and then provide evidence on the scope of non-specialized firms. We find that law firms' field scope narrows as market size increases and lawyers field-specialize. Moreover, we find that this pattern varies across fields, appearing only as lawyers specialize more in fields where expertise is applied toward dispute resolution rather than structuring transactions. Last, we find that lawyers in different transactional fields work disproportionately with one another, irrespective of the fields' cognitive closeness and whether these fields tend to serve business or individual clients. We relate these results to theories of law firms' boundaries from the organization economics literature, and discuss how they help explain the size distribution of firms in this industry.

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1. Introduction

Economists since Adam Smith have observed that individuals tend to become more specialized as the size of the market increases. Once individuals specialize, economic institutions become necessary to structure relationships among them. When do firms efficiently govern relationships between specialists? When do markets? This organizational issue has become increasingly salient as human-capital-intensive sectors such as services have grown, and as public policy controversies about outsourcing in such sectors have arisen.¹

This paper investigates these questions in the context of the U.S. legal services industry. In doing so, we seek to illuminate the role firms play in the organization of human capital intensive production. Our empirical analysis relies on confidential law office-level data collected by the Bureau of the Census. A key question in the survey form law offices receive asks how many lawyers in the office specialize in each of 13 areas of the law. This question provides evidence not only on law firms' scope, but also on the scope of individual lawyers' expertise. It allows us to examine central issues in the organization of human capital, because it provides evidence both on patterns of individual specialization and how specialists are organized into firms.

The first part of the paper investigates how firms' boundaries vary with the division of labor. Section 2 analyzes whether firms' scope narrows as market size increases and individuals specialize more. This exercise is related to a large literature in industrial organization following Stigler (1951) that investigates whether firms, like individuals, are more specialized in larger markets. Unlike this earlier literature, our data allow us to examine both changes in firms' scope and changes in the degree to which individuals specialize, connecting an analysis of firms' boundaries to Smith's analysis of human capital.

We find that law firms' field boundaries tend to narrow as market size increases and lawyers field-specialize more. We illustrate that this indicates that law firms' field boundaries reflect not just the scope of individual clients' demand but also supply-side trade-offs and that furthermore, it suggests that law firms' field boundaries are shaped by the broad class of trade-offs examined in the organizational economics literature on firms' boundaries starting with

Coase (1937). We find in addition that these empirical patterns differ across fields of the law; whether law firms' field scope narrows as market size increases and lawyers field-specialize differs systematically according to whether lawyers are mainly involved in structuring transactions or in dispute resolution. We do not find that law firms' field boundaries narrow as individuals specialize in "ex ante" fields where lawyers are mostly involved in structuring contractual relationships: for example, fields such as corporate law tend to be covered in the same firm as other fields regardless of whether these other fields are covered by the same lawyer. In contrast, law firms' field boundaries narrow as lawyers specialize more in "ex post" fields where expertise is applied in litigation and dispute resolution: fields such as insurance law tend only to be covered in the same firm as other fields when insurance law and other fields are covered by the same lawyer. This difference provides preliminary evidence regarding the specific nature of the organizational trade-offs that shape law firms' field boundaries.

The second part of the paper builds from this, and investigates in more detail the benefits and costs of using firms to govern relationships between specialists. We first discuss how fields of the law are related to each other through correlations in demand and cognitive connections, and relate this to theoretical work on law firms' field boundaries from the organizational economics literature that focuses on the benefits and costs of revenue-sharing arrangements. In particular, we consider the possibility that law firms' field boundaries reflect variation in the value of risk-sharing or referrals, and in the cost of monitoring.

We then empirically examine which types of specialists work disproportionately in the same firm with each other. Unlike the empirical exercise in the first part of the paper, this provides evidence on the scope of firms that are not field-specialized. We find that lawyers in each of the "ex ante" fields work disproportionately at the same firm as lawyers in nearly all of the other "ex ante" fields, regardless of whether these other fields serve business or individual clients. For example, specialists in corporate law tend to work at the same firm as specialists in banking law and probate law, but not specialists in insurance or criminal law. An exception to this general pattern is that patent lawyers generally do not work at the same firm as specialists in other ex ante fields. We also find that lawyers are more likely to work at the same firm with

¹ In the U.S., the service sector's share of GDP (not including financial services) increased from 12% to 22% between 1970 and 2000; this sector is currently about 40% larger than manufacturing. In contrast, manufacturing's share fell from 24% to 16% during this time. See *Economic Report of the President*, February 2002, p. 336.

other lawyers in the same field than in any other field. We conclude that these patterns provide little support for the hypothesis that law firms' field boundaries reflect revenue-sharing arrangements' risk sharing benefits. They provide considerable, though not universal, support for the proposition that firms' field boundaries reflect differences in the value of referrals. They provide limited support for the proposition that law firms' field boundaries reflect differences in agency costs related to fields' cognitive closeness. Additional evidence, preferably direct evidence on referral and monitoring patterns, is needed to distinguish definitively among these hypotheses.

Section 4 of the paper contains a brief conclusion in which we discuss some broader implications of these results with respect to the size distribution of firms.

2. Firms' Scope and the Division of Labor

2.1. Individual and Firm Specialization

The first part of this paper examines how firms' scope varies with the division of labor. Specifically, we examine whether individuals specialize more as market size increases, and if so, whether firms become more specialized as well.

We depict our conceptual exercise in Figure 1. Suppose that production requires knowledge, and that one can partition knowledge into fields of expertise. The dashed lines depict the scope of individuals' expertise, and the solid lines depict how individuals are grouped into firms. In the Figure, as market size increases, individuals specialize in field A: one individual covers both field A and other fields in small markets but different individuals cover field A and other fields in large markets. When an individual covers both field A and other fields, the scope of his or her firm necessarily includes field A and other fields. Firms' scope is necessarily broad when individuals' expertise is broad. But once individuals specialize, this need not be the case: firms' boundaries might narrow. Figure 1 depicts two possibilities. Following the upper arrow, increases in market size lead individuals to specialize in field A, but these individuals continue to work at the same firm as individuals who work in other fields. In this case, firms' scope does not change as market size increases and individuals field-specialize: it is invariant to the division of labor. Following the bottom arrow, increases in market size lead individuals to specialize in field A, and these individuals do not work at the same firm as

individuals in other fields: they work in field-specialized firms. Here, firms' scope changes with the division of labor across individuals, narrowing as individuals specialize.

Figure 1 indicates a means of empirically examining whether firms' scope varies with the division of labor. In the upper path, the share of individuals who are field-specialized increases as market size increases, but the share of individuals who work in field-specialized firms does not. In contrast, in the lower path, both the share of individuals who field-specialize and the share of individuals who work in field-specialized firms increases with market size; in fact, they increase at the same rate. Therefore, in cases where individuals field-specialize more as market size increases, finding that the share of individuals that work in field-specialized firms increases with market size is evidence that the upper path does not always hold: firms' boundaries vary with the division of labor, and tend to narrow as individuals field-specialize.² Such a finding would also indicate that firms' field boundaries are shaped by supply-side phenomena and not merely the field distribution of individual demanders' demands. If firms' boundaries are shaped only by the scope of individual demands, firms' scope should not change as market size increases if the composition of demand is held constant.³

This empirical exercise is related to a large literature (e.g., Holmes (1999)) that has empirically tested Stigler's (1951) proposition that firms, like individuals, should specialize more as market size increases. This literature adapts to the firm level Smith's (1776) famous proposition that the division of labor across individuals is limited by the size of the market.⁴ Oddly, neither Stigler's analysis nor the empirical literature that has followed emphasizes that the very phenomenon Smith analyzed – increases in the division of labor across individuals – might be connected to changes in firms' boundaries. Our data, which contain information on

² How broadly fields are defined affects the power, but not the validity, of this test. If fields are defined broadly, one might not be able to detect increases in individuals' field-specialization, and thus could not run the experiment depicted in Figure 1. What matters is that field boundaries are defined consistently across markets and when considering individuals and firms.

³ See Klempner and Padilla (1997) for an analysis in which firms' boundaries are shaped by firms' desire to capture externalities between product lines associated with demanders' costs of using multiple suppliers. Strategy researchers have also argued that offering demanders one-stop-shopping is a particular advantage of broad scope (e.g. Porter (1985)).

⁴ Although this proposition is generally assumed to be true, there are surprisingly few studies that have examined it empirically; see Baumgardner (1988a, 1988b) for evidence in the context of medicine. Below we will provide evidence along these lines in the context of the law.

both the breadth of individuals' expertise and firms' scope, allow us to explore these connections.

Our exploration of these connections provides an additional angle that relates our analysis to the organizational economics literature on the boundaries of the firm. Starting with Coase (1937), this literature emphasizes how various classes of transaction costs affect whether different activities take place in the same or different firms. Such costs only arise when activities are completed by different individuals. This literature thus connects firms' boundaries to the division of labor: the division of labor gives rise to *organizational trade-offs* that do not appear when activities are completed by the same individual, and sometimes these trade-offs lead these activities to be completed in different firms rather than in the same firm. Firms' boundaries sometimes narrow as market size increases and individuals specialize as a consequence. Finding that a narrowing of firms' scope is connected to changes in the division of labor therefore suggests that the supply-side factors that affect firms' scope have to do with organizational trade-offs. We will explore the specific nature of these trade-offs and the underlying theory in Section 3.

We discuss next our data and empirical implementation of this exercise. A central concern with respect to implementation is whether one can obtain the "replication exercise" envisioned in Figure 1 in which market size increases but the distribution of demands is constant. Below we discuss how we address this and provide empirical evidence that the data provide for such an exercise in part of our sample: small, geographically-isolated markets.

2.2. Data

The data are from the legal services portion of the 1992 Census of Services. Like in other industries, the Census surveys individual establishments in this industry. Forms are sent to all law offices that surpass a size threshold (approximately ten employees) or that are part of multi-office law firms. In addition, forms are sent to a random sample of smaller offices, where the sampling rate is set to obtain reliable MSA- and national-level estimates. In all, the Census sends survey forms to law offices that account for approximately 80% of revenues in the industry. The Census publishes MSA-level estimates derived from this survey in Bureau of the Census (1996). In this paper, we use establishment-level data, which are not publicly available.

Our observations are therefore at the law office-level; when an office is part of a multi-office firm, we can identify the firm of which it is part.

Along with standard questions regarding revenues, payroll, and employment, the survey asks law offices industry-specific questions that provide detailed information about the distribution of lawyers across fields of the law. (See Appendix 1 for the survey form.) It asks respondents to classify the lawyers that work in the office by their primary field of specialization and report how many are in each category: how many lawyers at the establishment work primarily in corporate law, for example. Respondents are asked to classify “lawyers who are not primarily engaged in a single specialized field” as general practitioners. Note that the label “general practitioner” here need not imply that a lawyer works in all fields; it instead means that his or her work commonly extends across more than one of the fields the Census defines. The survey thus provides unusually detailed information about organization and specialization at the establishment level. We use data from 1992 because it is the most recent year for which the Census asks about lawyers’ fields.⁵

In all, the Census received responses to these organizational questions from about 28,000 law offices. We omit from our sample law offices with inconsistent responses for the total number of lawyers; for example, those where the number of lawyers summed across fields does not equal the number of partners plus the number of associates. Omitting these offices, our “full sample” includes 26,151 law offices and 219,033 lawyers. These constitute about 17% of law offices and 50% of privately-practicing lawyers in the United States in 1992.

Table 1 contains some summary statistics. All averages and shares are computed using sampling weights supplied by the Census. The average law office has 3.56 lawyers, and the average firm has 3.65 lawyers, a reminder that the average law firm in the U.S. is a very small, single-establishment enterprise. 71% of the lawyers specialize in one of the Census-defined fields. 37% of law offices and 28% of firms are specialized, in the sense that all lawyers in the

⁵ There is one small ambiguity in the survey: the form is not clear on whether lawyers should report according to their range of marketable expertise or the fields in which they actually worked during the sample year. This distinction matters for lawyers who are knowledgeable in multiple fields, but happens to work in only one field during the sample year. We do not see a way of definitively resolving this ambiguity. We discuss our results presuming that lawyers fill out the survey in a way that classifies themselves in the same way they present themselves to each other and clients -- that is, according to the range of their marketable expertise -- but we do not have any way of knowing for sure. We suspect that this distinction matters for a small fraction of lawyers; most lawyers probably work in all of the fields in which they have marketable expertise at some point during the year.

office or firm specialize in the same field. 28% of lawyers work in multiestablishment firms, but only 5% of offices are part of multiestablishment firms. Although only 2% of the law firms have multiple locations, those that do are much larger than most single establishment firms.

Table 2 provides a more detailed look at specialization patterns. We report these patterns for each of the Census-defined fields. To facilitate analysis both here and below, we present patterns for groups of fields that differ in the source and timing of demands. "Individual fields" are those where all or nearly all demand comes from individuals; in our data, these include criminal, domestic relations, negligence-plaintiff, and probate. We label the rest of the fields, fields where a substantial part of demand comes from businesses, as "business fields." Within these groups, fields differ according to the timing of demands. We propose that demand for legal services can arise either before a contractual arrangement is agreed upon, when lawyers may be involved in drafting agreements and predicting the contingencies that agreements should address, or after contractual terms are agreed upon and take force, when lawyers may be involved in dispute resolution and litigation. We label these "ex ante" and "ex post" fields respectively, and classify fields following Abrams' (2000) detailed account of what lawyers who specialize in different fields do. Among the business fields, we classify insurance and negligence-defendant as ex post fields, and the rest as ex ante fields. Expertise in insurance law is generally demanded to assess insurance claims or provide defense for parties covered by insurance. Expertise in negligence is demanded by defendants in tort-related matters. Among individual fields, we classify probate as ex ante and the rest as ex post.⁶ In the Appendix, we report results from survey data that provides additional support for our classification of fields.

The first column of Table 2 reports the share of lawyers in each of the Census fields and groups of fields. 27% of lawyers specialize in an "ex ante" business field; about a third of these are corporate law specialists. 13% specialize in an "ex post" business field. 15% specialize in an individual field; about half of these are classified as "negligence-plaintiff." The second and third columns report the share of lawyers working in specialized offices and firms, by field. These figures are very similar because individual offices within large multi-establishment firms are generally not specialized by field: if a multi-establishment firm contains lawyers in different specialties, its offices usually do as well. The final column reports the fraction of specialists that work in specialized firms, by field. The notable pattern here is that, with the exception of patent

lawyers, ex ante business specialists are less prone to work in a specialized firm than ex post business or individual specialists. Over a third of ex post specialists and nearly half of individual specialists work at specialized firms, but less than 20% of ex ante specialists do. The lowest fraction among the fields is for corporate law: only 5% of corporate law specialists work at firms with only corporate law specialists.

Table 2 thus provides some initial evidence regarding firms' scope. This evidence, however, does not indicate that firms' boundaries are sensitive to the division of labor: the fact that ex post business and individual specialists are more likely to work in field specialized firms than most ex ante business specialists may just reflect differences in the scope of clients' demands. Furthermore, it provides no evidence on the scope of non-specialized firms: with which other lawyers do lawyers in ex ante business specialties work? Our empirical work below provides evidence on these fronts.

The Size and Distribution of Demand

Below we examine whether firms' boundaries change with increases in the size of demand, holding constant the distribution of demands: the exercise that corresponds to Figure 1. We merged our office-level Census data with data from 1992 County Business Patterns to obtain controls for cross-sectional differences in the distribution of demand. County Business Patterns (CBP) provides county-level information regarding the distribution of employment across industries and the employment size distribution of establishments. We compute employment shares for each of seven major (one-digit) industries (e.g., manufacturing) for each county; although information is available for more detailed industry definitions for many counties, the Census withholds more detailed data in many cases because of confidentiality-related restrictions.⁷ We also compute the share of establishments within various employment size categories in the county, and an estimate of employees per establishment by major sector. We derive the latter by multiplying the size category shares by the midpoints of the employment size categories.

⁶ We report these together in Table 2 because there is only one ex ante individual field.

⁷ We have run specifications with two-digit controls, using imputations for county-sectors for which the Census does not report figures. None of the results differ from those reported below, that use one-digit controls.

The CBP data provide information about the distribution and size of local demand for legal services. The employment shares characterize the local economy, and depict the extent to which local demand for legal services comes from different classes of firms: manufacturing versus financial services, for example. They also depict whether local demanders are small or large firms overall and within sectors. For example, counties where the average establishment size in financial services is large contain the country's most important financial districts. If the employment shares capture differences in the distribution of local demand well, one can think of increases in total employment, conditional on these shares, as *rotations* in the demand curve for legal services: proportionate increases in the various legal problems encountered by individuals and businesses located in the county.⁸

An important concern in our empirical work is that variation in county-level employment, conditional on our controls, captures differences in the size and not the distribution of demands faced by lawyers based in the county. This condition seems *a priori* more plausible in some contexts than others. It may be reasonable when comparing relatively small, isolated counties: to a first approximation, the demand for legal services in Lubbock, TX, which is about twice as large as Abilene, TX in terms of employment, may be simply two times that in Abilene. But agglomeration economies may mean that the demand faced by lawyers in very large cities is not just a "scaling up" of those faced by lawyers in very small cities; businesses may choose to locate in very large cities precisely because they require special services that are only available in such cities. Holding constant the employment shares described above, the demand faced by lawyers in Houston may not be simply 18 times that in Lubbock. Furthermore, the distribution of demands addressed by lawyers based in similarly-sized suburban and non-suburban counties may differ, if suburban clients are served by lawyers who are based in nearby cities.

We address this concern by basing this empirical exercise on a part of our sample where problems associated with agglomeration economies and market definition are relatively small: counties that are either part of single-county Metropolitan Statistical Areas (MSAs) as defined by

⁸ Bresnahan and Reiss (1991) use rotations in the demand curve to identify relationships between competitive conduct and entry in concentrated markets. The main issues in this paper – the specialization of individuals and firms' scope – play no role in their analysis. See also Campbell and Hopenhayn (2005).

the United States Census or that are not part of MSAs.⁹ The Census combines counties into a single MSA on the basis of their degree of economic and social integration. Restricting the analysis to counties that fit the above criterion eliminates all counties that are economically integrated with other, neighboring counties; it excludes all suburban counties and all but four of the 50 largest MSAs in the United States.¹⁰ These four single-county MSAs – Honolulu, Las Vegas, San Diego, and Phoenix – are much larger than the rest of the single-county MSAs; we exclude these as well.¹¹ A full list of the MSAs in our “small market subsample” is in Appendix 2. The counties in this subsample are all relatively small and have a low level of economic integration with other counties. The largest of these is Tucson, AZ, which has 212,068 employees.

We examine the degree to which this sample restriction and our controls hold constant the field distribution of demands by exploiting an additional variable in our data. The Census asks offices to report the distribution of revenues by client type: what share of revenues come from individual clients, business clients, and government clients? We regress the share that comes from individual clients on county employment and our controls, weighting each office by the number of lawyers that work there. Finding that this fraction decreases with county employment would imply that our controls do not completely soak up market size-related differences in the distribution of demands: lawyers in larger markets handle disproportionately business and government demands. In contrast, finding no relationship between the “individual client share” and county employment would indicate that the distribution of revenues across clients stays constant with market size, thus lending support to the assumption that, conditional on our controls, the field distribution of demands more generally does not vary with county-level employment.

⁹ The Census defines an MSA as “a core area containing a substantial population nucleus, together with adjacent communities having a high degree of economic and social integration with that core.” To qualify as an MSA, an area must have at least 50,000 population.

¹⁰ The Census combines two counties into the same MSA if at least 15% of inhabitants of one commute to the other counties or at least 15% of employees in one commute from the other.

¹¹ There are two natural breaks in the employment size distribution of single-county MSAs. The four MSAs listed here all have more than 335,000 employees. There are no such counties with between 215,000 and 335,000 employees. There are then six (Albuquerque, NM; El Paso, TX; Fresno, CA; Lancaster, PA; Madison, WI; and Tucson, AZ) with between 170,000 and 215,000 employees, then none again with between 145,000 (Flint, MI) and 170,000 employees. The results reported below include the six counties with between 170,000 and 215,000 employees; they are virtually the same when excluding these six counties.

Table 3 contains the results from this exercise. The first four columns use the small market subsample. The first of these columns reports coefficients from regressions that contain only a set of market size dummies and no controls. The coefficients on these indicate that the individual client share tends to fall with market size, even within the small market subsample. The second column includes our set of controls. All of the coefficients are small and none are statistically significantly different from zero. The fact that the coefficients decrease between the second and first column provides evidence that the controls pick up differences in the distribution of demands for legal services. The third and fourth replace the market size dummies with $\ln(\text{county employment})$; the coefficient on this variable in the fourth column, a specification that includes our controls, is once again not statistically significantly different from zero. These results thus lend support to the assumption that, conditional on our controls, the size but not the distribution of demands varies with employment within this subsample.

The other columns repeat this exercise using the full sample. These results indicate a relationship between the individual share and employment that persists even after including the controls, particularly when comparing very large with smaller markets. This indicates that the distribution of demands varies with employment when using the full sample. While we will show that the patterns that we uncover within the small market subsample also appear when using the full sample, we will base our inferences on results from the small market subsample.¹²

Other Issues

Several notable empirical issues remain, even when restricting the analysis to the small market subsample. One concerns market definition for lawyers working in multi-office firms. If lawyers in multi-office firms serve clients based in all of the regions in which their firm is located, using employment in the county in which the lawyer is based as a measure of market size understates the actual market the lawyer potentially serves, and could bias our estimates of relationships between specialization and market size. While this issue would appear to be relatively minor with respect to our small market subsample – only 10% of lawyers in this

¹² We have also investigated whether lawyers per capita varies systematically with market size across our small market subsample. This addresses a possibility not covered by the evidence in Table 4: the distribution of demand could differ with market size even if the sectoral revenue shares do not if lawyers in larger markets serve more out-of-market demands both from individual and business clients. However, the number of lawyers should increase

sample work at multi-office firms, and very few of the nation's largest law firms have offices in these counties – we investigated it nonetheless. Following the approach described in a working paper version of this paper (Garicano and Hubbard (2003b)), we allowed market size to be a function of employment in all of the counties a lawyer's firm has an office rather than just the county in which the office is located. There is no difference in our results when we do so. This is not a surprise, since the working paper version of this paper had shown that accounting for this had little effect on the results when using our full sample – a sample that includes big-city law firms with sizeable networks of offices.

A second issue is that individuals as well as businesses demand legal services, and employment-based measures may not capture the size and distribution of individual demand well. Better measures of individual demand would be population- rather than employment-based, and demographic variables might capture certain demands well (for example, the demand for probate work should be higher in regions with many elderly residents). We have run specifications that use such controls. While some of the controls do help explain cross-market differences in specialization patterns, none of our results of interest – which concern relationships between specialization and market size – change when including these additional controls.¹³

Finally, a third issue is whether our results persist when controlling for firm size. While this exercise is of empirical interest, it has an uneasy relationship with the view we depict above in Figure 1 in which individuals, not firms, are the units of production. Like in the organizational economics literature, firms are viewed as one possible institution through which relationships among individuals are governed. In this light, firm size is not something to control for; rather, since firms' size in part reflects their scope, it is something that our analysis illuminates.

This is not the only possible view of firms, however. In neoclassical theory, firms are the unit of production, and some scale and scope economies (or diseconomies) are defined at the firm level. Suppose that firm-level scale and scope economies are intertwined, so that it is only efficient for firms to be field-specialized if their scale is sufficiently high. For example, suppose

disproportionately with market size if this is the case. We report the results of this exercise in Garicano and Hubbard (2005); we find no evidence that lawyers per capita is higher in larger markets within this subsample.

¹³ We do not report these results here because they are very similar to those reported below, and releasing results from multiple, closely related specifications can raise disclosure issues for the Bureau of the Census.

it is inefficient for a two-lawyer firm to be field-specialized but more efficient for a seven-lawyer firm to be. Then if firms tend to be larger in larger markets, they would also be more field-specialized as well, but for reasons that need not have to do with the issues we depict in Figure 1, which revolve around increases the division of labor across individuals.

We investigate this by examining whether the relationships we uncover between market size and the share of lawyers working in field-specialized firms persist when controlling for the number of lawyers in the office. If law firms' scope tends to narrow with market size only because of scale effects, there should be no relationship between the share of lawyers working in field-specialized firms and market size once one controls for firm size. As we show later, we do not find this to be the case: if anything, relationships between the share of lawyers who work in field-specialized firms and market size become stronger once we control for the number of lawyers in the firm.

2.3 Empirical Specifications

Our empirical specifications are simple. We run two sets of regressions. One takes the form:

$$s_k = X_j \beta_1 + Z_j \gamma_1 + \varepsilon_{1k}$$

s_k is the share of lawyers in law office k that specialize in one of the 13 Census-defined fields, and X_j our proxy for local market size, $\ln(\text{county employment})$. Z_j is a vector of other observable characteristics of county j . This vector controls for differences in the distribution of local demands for legal services. We weight each observation by the number of lawyers it represents; the specification is thus a grouped-data version of a linear probability model. β_1 is the coefficient of interest; it captures relationships between individual specialization and local market size.

We estimate analogous specifications for particular fields and for groups of fields. These, for example, relate market size and composition to the share of lawyers who specialize in corporate law, or in any one of the ex ante business fields.

The other set of regressions take the form:

$$s_k^{sf} = X_j \beta_2 + Z_j \gamma_2 + \varepsilon_{2k}$$

where s_k^{sf} is the share of lawyers at office k who are in a field-specialized firm and we weight observations by the number of lawyers. Note that $s_k^{sf} = 0$ if lawyers at office k do not share the same field as all other lawyers in their firm and $s_k^{sf} = 1$ if they do; this is a discrete dependent variable model.¹⁴ As above, we estimate analogous specifications for individual fields and groups of fields.¹⁵ β_2 captures relationships between the share of lawyers who work in field-specialized firms and local market size.

Combined, β_1 and β_2 depict how much individual specialization increases with market size, and whether increases in the division of labor are associated with a narrowing of law firms' field scope. They thus provide evidence regarding whether law firms' scope merely reflects the scope of individual clients' demands. If $\beta_1 > 0$ and $\beta_2 = 0$, this indicates that although individuals specialize more as market size increases, the share of individuals working in field-specialized firms does not. This pattern corresponds to the upper arrow in Figure 1, in which firms' boundaries do not narrow as market size increases and individuals specialize. In contrast, if $\beta_1 > 0$ and $\beta_2 > 0$, this indicates that both the share of individuals who specialize and the share of individuals who work in field-specialized firms increase with market size. This would indicate that sometimes the pattern corresponds to the lower arrow in Figure 1, in which firms' boundaries narrow as market size increases and individuals specialize. When $\beta_1 > 0$, β_2/β_1 reflects the fraction of the time the pattern takes the form of the lower path: the degree to which increases in the division of labor are mediated by markets. Finding that $\beta_1 > 0$ and $\beta_2 > 0$ is therefore evidence against the hypothesis that law firms' boundaries reflect only the distribution of clients' demands. It would indicate that firms' boundaries sometimes change with the division of labor, consistent with the view that organizational trade-offs shape law firms' field boundaries.¹⁶

¹⁴ Very few lawyers work in field-specialized offices that are part of non-specialized multi-office firms. Thus, our results and conclusions would be exactly the same if we analyzed relationships between market size and the specialization of law offices rather than firms. Also, our results are unchanged if we define a specialized firm as one where most of the lawyers (rather than all) share the same field, for example as one where 75% or 90% do.

¹⁵ If all lawyers in a firm are classified in "other specialized field," we do not count this as a field specialized firm because we do not know whether the lawyers are all in the same field (e.g., antitrust law) or multiple fields (e.g., antitrust law and labor law). This biases our results against finding that firms' boundaries narrow as individuals field-specialize because we are counting some field-specialized firms as non-specialized.

¹⁶ The ratio β_2/β_1 is an instrumental variables estimate of the effect of lawyer specialization on law firm specialization if county employment is a valid instrument for lawyer specialization. This can be seen by writing the ratio as: $\beta_2 / \beta_1 = [\partial s_k^{sf} / \partial(\ln(\text{county employment}))] / [\partial s_k / \partial(\ln(\text{county employment}))] = \partial s_k^{sf} / \partial s_k$. This identification strategy requires that market size be related to firms' boundaries only through its effect on lawyers' specialization

2.4. Results: Market Size, Specialization, and Organization

Table 4 contains results from eight regressions that use observations from our small market subsample. All specifications include our full set of controls, and all standard errors are Eicker-White.

The first row of the first column reports our estimate of β_1 , the coefficient on $\ln(\text{county employment})$, in a specification where the dependent variable is s_k , the share of lawyers at law office k who are specialized in one of the fields described above. This estimate is positive and significant: the share of lawyers who field-specialize is greater in larger markets. The point estimate of 0.136 indicates that doubling county employment is associated with a 9.5 percentage point increase in the predicted share of specialists. Moving the 25th percentile to the 75th percentile employment level is associated with approximately a 27 percentage point increase in the share of lawyers who field specialize.¹⁷ We report our analogous estimate of β_2 in the bottom panel. This estimate is positive and significant as well: as market size increases, a greater share of lawyers works in field-specialized firms. The point estimate is 0.066, indicating that doubling market size is associated with a 4.6 percentage point increase in the share of lawyers working at specialized firms. This is about one-fourth of the sample mean of 16.2%. The ratio of the point estimates, β_2/β_1 , equals 0.49, indicating that about half of the overall increase in the division of labor is happening between rather than within firms. Firms' field scope tends to narrow as market size increases, indicating that law firms' field boundaries do not merely reflect the distribution of demands. This evidence is consistent with the hypothesis that organizational trade-offs, which appear only when fields are covered by different individuals, influence firms' boundaries.

The other three columns break things down by classes of fields. In the upper panel, the dependent variables are the share of lawyers who specialize in one of the ex ante business, ex post business, and individual fields, respectively. In each case, our estimate of β_1 is positive and

decisions. In Garicano and Hubbard (2003a), we discuss why this assumption is plausible in human capital intensive contexts in light of recent organizational theory. We do not emphasize causal interpretations of β_2/β_1 in this paper.

¹⁷ County employment for the 25th and 75th percentile lawyer within this subsample is about 12,000 and 90,000, respectively. These figures are about 140,000 and 750,000 for the full sample. Thus, in both cases, moving between these percentiles increases $\ln(\text{employment})$ by approximately 2.

significant; lawyers specialize more within each of these groups of fields in larger markets. The bottom panel contains analogous estimates of β_2 . In the second column, the dependent variable is the share of lawyers that work at an office where all lawyers specialize in a single ex ante business field. The coefficient on $\ln(\text{county employment})$ is very small and not statistically significantly different from zero. The estimate in the top panel indicates that as market size increases, lawyers specialize more in these fields; that in the bottom panel does not indicate that they are more likely to work in field-specialized firms. The ratio β_2/β_1 is approximately 0.14, indicating that practically all of the increase in the division of labor is occurring within rather than between firms. In contrast, in the third column of the bottom panel, the dependent variable is the share of lawyers that work at an office where all lawyers specialize in a single ex post business field. Here, the coefficient on market size is positive and significant. From the top panel, as market size increases, more lawyers become insurance and negligence-defendant specialists. Here, we see that a substantial fraction of these specialists work in specialized law firms. The ratio β_2/β_1 provides an estimate of this fraction: 41%. Like the ex ante business fields, the division of labor increases with market size; unlike the ex ante business fields, a significant fraction of it happens between rather than within firms.

This result indicates that ex post business fields tend only to be covered in the same firm as other fields when they are covered by the same person, but ex ante business fields tend to be covered in the same firm as other fields even when they are covered by different individuals. Assuming that variation in our market size proxy captures differences in the size but not the distribution of demand, demand for services that involve each of these fields of the law exists in smaller markets, but the individuals supplying these services tend not to be specialized. For example, lawyers who advise clients on insurance law issues might also advise clients on corporate and tax law issues. When individual lawyers cover multiple fields, so do firms. As market size increases, lawyers specialize more: different lawyers begin to advise clients on different areas of the law. As lawyers specialize, some fields remain within the firm and some are spun off: the scope of the firm continues to include corporate and tax law, but it often no longer includes insurance law.

The last column in Table 4 reports results for the same exercise for the individual fields. In the both panels, the coefficient on $\ln(\text{county employment})$ is positive and significant. The ratio β_2/β_1 equals 0.66. Lawyers specialize more in individual fields as market size increases, and

when they do so, they work in field-specialized firms. Firms' boundaries thus tend to narrow as market size increases.

Table 5 provides a more detailed view. The specifications are analogous to those in Table 5, but use the share of lawyers in individual fields, and the share that work in field-specialized firms, as dependent variables. The contrast between ex ante business and other fields holds in this table as well. The estimates of β_1 indicate that the share of lawyers that specialize in most fields is greater in larger markets, though some of these are not statistically significant. But none of estimates of β_2 for the ex ante business fields indicate relationships between market size and the fraction of lawyers working in field-specialized firms. In contrast, several of the β_2 estimates for the other fields are positive and significant, and all of the point estimates are larger than any of those in the first row.

Full Sample Estimates and Firm Size Controls

Table 6 reports three sets of results. The top panel is the same as Table 4. The middle panel uses the full sample rather than the small market subsample. Although the magnitudes of the estimates are lower, especially in the last column, the general pattern of the results is similar when including large cities and suburban counties in the analysis. The ratio β_2/β_1 in the first column is about one-half, and as before, this ratio is higher for the individual than business fields, and for the ex post than the ex ante fields. We have also run these specifications using *only* large markets (those with more than 200,000 employment; the results are reported in Garicano and Hubbard (2003b)), and the estimates are very similar to those in the middle panel here. While the conceptual exercise is far cleaner when using the small market sample rather than the full sample, the results are quite similar across these samples.

Returning to the small market subsample, the bottom panel reports estimates of β_1 and β_2 when we include a set of dummy variables that depict the number of lawyers in the office along with our other controls.¹⁸ Once again, the estimates of β_2 are positive and significant in the first, third, and fourth columns. To the extent that the point estimates of β_2 change when including the number of lawyers dummies, they increase. There is thus no evidence that the estimates in the

¹⁸ We include 11 dummies that capture whether the law office has 1-12 lawyers, plus a dummy for whether it has more than 12 lawyers. Less than 5% of the offices in the small market subsample have more than 12 lawyers.

top panel, which indicate that firms' field scope tends to narrow as market size increases, reflect just "firm size effects."¹⁹

Summing Up

We conclude that firms' boundaries change with increases in the size of demand, holding constant the distribution of demands. In particular, as lawyers specialize in ex post business fields or individual fields, these fields tend to be spun off into separate firms. This result is inconsistent with the hypothesis that firms' boundaries simply reflect the scope of individual demands. Supply-side factors shape law firms' field boundaries, and the fact that narrowing of firms' field boundaries is associated with increases in the degree to which individuals field specialize suggests that these supply-side factors have to do with the sorts of trade-offs depicted in the organizational economics literature.

Which specific organizational trade-offs matter in determining law firms' boundaries? The next part of this paper investigates this question by analyzing which combinations of fields tend to be found within the same firm and which tend to be found in different firms; unlike the exercise above, this provides evidence on the scope of firms that are not field-specialized.²⁰ This analysis requires more detailed knowledge of the context and the relevant organizational theory than the exercise we present above. It requires understanding not only how fields differ in the timing and source of individual demands, but also how fields of the law are related to each other. We next discuss these relationships.

3. Law Firms' Field Boundaries and Organizational Trade-Offs

3.1 How Are Fields of the Law Related to Each Other?

One way fields of the law are related to each other is that demands for expertise in some combinations of fields tend to be correlated. Part of this reflects that demands in some business fields are pro-cyclical, and part reflects that litigation leads to demands on both sides of the bar. Table 7 provides evidence of this. Here we report the Census' estimates of the number and share

¹⁹ We have also run all of our specifications, dropping single-lawyer offices. Our estimates are nearly identical to those we report in this paper.

²⁰ See also Phillips and Zuckerman (2001), who analyze the determinants of whether Silicon Valley law firms' scope includes family law.

of lawyers in each field in 1982, 1987, and 1992, and the changes in these shares. One notable pattern is that the share of lawyers specializing in banking law, corporate law, and real estate law increases sharply between 1982 and 1987, then decreases sharply between 1987 and 1992.²¹ We believe that this reflects cyclical changes in demand for expertise in these fields, which increased during the mid-1980s economic expansion and decreased after the 1987 stock market crash and during the early 1990s recession. Another notable pattern is that the share of lawyers specializing in insurance law and in negligence work on the plaintiff's side of the bar increased throughout this period. We believe that this reflects that litigation-related demands have steadily increased throughout this period and beyond.

Another way fields are related to each other is through cognitive connections. Fields are distinguished by the area of the law from which they draw, but some areas of the law are cognitively closer than others. Direct evidence of cognitive connections is unavailable. However, some indirect evidence is available from which combinations of fields non-specialists cover, since one would expect non-specialists' field coverage to reflect scope economies in learning as well as the scope of their individual clients' demands. We cannot analyze non-specialists field coverage with our data, but such evidence is available in Heinz, et al (1998), who analyze the "patterns of co-practice" of 788 randomly-selected Chicago-based lawyers. An important finding from this study is that while some business-oriented fields have strong cognitive overlap, others do not. It is not unusual, for example, for non-specialist lawyers who work in corporate law to also work in banking and tax law, but it is highly unusual for them to work in some of the other business oriented fields: none of the lawyers in their sample that spend at least 5% of their time in corporate law also spend at least 5% of their time in real estate law, environmental law, or government-related subfields such as utilities and municipal law. The fact that individuals who work in corporate law rarely also work in real estate law or environmental law is particularly interesting because demanders of expertise in corporate law generally also demand expertise in these other fields; it is thus highly suggestive that corporate law has a very weak cognitive relationship to real estate and environmental law.²²

²¹ A similar pattern holds for negligence-defendant between 1982 and 1987, but the decline in this share between 1987 and 1992 is far smaller than for banking, corporate, and real estate.

²² Heinz, et al's (1998) results are similar to those in Heinz and Laumann (1982), which analyzes data from 1975. One of these authors' main inferences is the conclusion we reach below: the organization of legal services does not simply reflect cognitive relationships between fields.

In sum, one can characterize business fields along several dimensions. One is along the lines of the timing of demands: whether the field is an “ex ante” or “ex post” field (see section 2.2). Another concerns the degree to which demands are correlated: demands for expertise in corporate law, banking law, and real estate law appear to be strongly correlated at the macro level during the period leading up to our sample. A third revolves around fields’ cognitive connections: banking and tax law seem to have closer cognitive connections to corporate law than other business fields such as environmental and real estate law. The next section discusses the theoretical literature’s analysis of the benefits and costs of organizing lawyers in the same versus different firms, and how these benefits and costs might vary along these dimensions.

3.2 Law Firms’ Field Boundaries and the Benefits and Costs of Revenue-Sharing Arrangements

Regardless of their legal form of organization, law firms in the U.S. are always structured around “ex ante” revenue-sharing arrangements among the firm’s partners, i.e. arrangements that are in place before individuals obtain information about specific economic opportunities, and have the feature that all individuals receive some share of revenues from the services any of them supply (although the share the involved individuals receive may be higher). We assume throughout that firms’ field scope reflects the fields that partners cover.²³ From the perspective of the partnership, whether a field is covered by the firm is equivalent to whether an individual with expertise in the field is included in the revenue-sharing arrangement. Thus, when discussing the organizational trade-offs with respect to law firms’ field scope, we emphasize the benefits and costs associated with ex ante revenue-sharing arrangements.²⁴

The benefits and costs of revenue-sharing arrangements, as applied to firms’ horizontal boundaries, have been analyzed by Gilson and Mnookin (1985) and Garicano and Santos (2004).

²³ Thus, we rule out the possibility that the only individual in a firm that covers a particular field is an associate.

²⁴ We focus on issues that bear on revenue sharing arrangements’ effect on firm scope. Revenue sharing arrangements may have other roles as well, such as encouraging the hiring of high-ability individuals (Levin and Tadelis (2005)). Similarly to Holmstrom and Milgrom (1994) and Holmstrom (1999), our account emphasizes how firms can outperform markets by weakening individual incentives. Because the trade-offs we investigate are different, so are our predicted relationships between specialization (job design) and optimal organizational form. We do not address other incentive problems, such as those deriving from the risk of expropriation of specific investments (Klein, et al. (1978)) or to the role of physical assets in providing incentives in the presence of

These papers differ in their analysis of the benefits; the former emphasizes revenue-sharing arrangements' risk-sharing properties, the latter emphasizes how such arrangements affect individuals' incentives to share knowledge with each other. In both, the cost of such arrangements is that they encourage free-riding.

a. Risk Sharing and the Correlation of Demands

Gilson and Mnookin (1985) theorize that the benefit of revenue-sharing arrangements is that they facilitate risk sharing, insuring lawyers against fluctuations in demand for their expertise. In an example, they show that this provides a rationale for specialists in securities law and bankruptcy law to be partners in the same firm; clients' demand for the former and latter tends to peak at different points in the business cycle. This view of the benefit of revenue-sharing arrangements implies that law firms' field boundaries should be shaped by correlations between fields' demands: the greater the positive correlation between fields' demands, the less likely specialists in these fields should work in the same firm.

The time series evidence above suggests that demands for expertise in banking, corporate, and real estate law are positively correlated during the period leading up to 1992, the time of our sample. Finding that specialists in banking law, corporate law, and real estate law tend to work disproportionately with specialists in other fields and not each other would therefore suggest that risk-sharing is an important determinant of law firms' field boundaries. Conversely, finding that specialists in these fields tend to disproportionately work with one another would indicate that, while revenue-sharing arrangements may benefit lawyers by shielding them from risk to some extent, other factors are generally more important in shaping the patterns we uncover with respect to law firms' field boundaries.

b. Referrals and the Timing of Demand

Garicano and Santos (2004) propose that the benefit of ex ante revenue sharing arrangements is that they facilitate the exchange of referrals: knowledge about economic opportunities. The logic of their analysis, discussed in the context of legal services, follows.

incomplete contracts (Grossman and Hart (1986), Hart and Moore (1990)), which may be more important in other environments.

Suppose a client approaches a lawyer with a problem that the lawyer could solve himself, but does not have a comparative advantage in solving. It would therefore be efficient for the lawyer to refer the problem on to another lawyer. But the lawyer faces a dilemma. If he simply tells the other lawyer about the client and the client's problem, this gives away information about the opportunity and the rents associated with his knowledge of the opportunity. As a consequence, referrals take place under asymmetric information, with an information asymmetry that favors the referrer. This information asymmetry would lead lawyers to be concerned that other lawyers will only refer the least valuable opportunities. For standard reasons related to adverse selection (Akerlof (1970)), it follows that there will be too little trade in referrals, and lawyers will hold on to problems they do not have a comparative advantage in addressing.

Garicano and Santos' (2004) analysis shows how ex ante revenue sharing arrangements – revenue-sharing arrangements that are agreed upon before parties know exactly which opportunities they will encounter – facilitate the exchange of referrals. Once in place, these arrangements weaken lawyers' incentives to hold on to problems that their partners have a comparative advantage in solving, because they share revenues with their partners even when no referral takes place. It follows that the benefit of ex ante revenue sharing arrangements -- of transacting "within a firm" -- should be greater, the more valuable are referrals.

The extent to which referrals are valuable varies with clients' ability to diagnose the scope of their legal problem themselves; referrals are not valuable when clients can easily match themselves to the lawyer or lawyers that have a comparative advantage in addressing their problem. One would expect referrals to be valuable when clients have ex ante demands because it tends to be difficult at that point in contractual time for non-experts to diagnose the field scope of their legal problem.²⁵ Clients demand ex ante services in anticipation of potential future disputes among parties or conflicts with the law; these problems often potentially can involve many different areas of the law. (Does this deal have important tax implications or create regulatory problems?) Legal expertise is valuable for determining which of these areas are important, and this would make referrals valuable. In contrast, one would expect cross-field referrals to be less valuable for ex post demands, as it tends to be far easier for clients demanding

²⁵ An exception to this is when clients have in-house lawyers, whose duties often include determining which outside lawyers to hire. An interesting question that we cannot investigate with our data is whether the presence of in-house counsel affects law firms' field boundaries.

ex post services to determine the range of relevant legal expertise. The interaction between a client's situation and the law is often clear, even to non-experts. For example, expertise in insurance law is valuable for a company with a complicated insurance claim; expertise in torts is valuable to a company being sued for negligence. While legal expertise is generally valuable for such clients, referrals across specialists in different areas of the law tend not to be because the scope of clients' legal problems has been revealed at this point in contractual time.

Applying this to our context, if ex ante revenue sharing arrangements facilitate the exchange of referrals, then one would expect law firms' field scope to reflect this: specialists in ex ante fields should work disproportionately with specialists in each of the other ex ante fields, but not with other specialists in their own field or in ex post fields. Our analysis above provides evidence with respect to part of this hypothesis, indicating that specialists in ex ante fields tend not to work at the same firm as specialists in ex post fields; the latter tend to work in field-specialized firms. Below we will provide evidence on the rest of this hypothesis.

c. Free Riding, Monitoring, and Cognitive Connections Between Fields

The general drawback to revenue-sharing arrangements, the drawback to transacting within firms in this context, is that free-rider problems emerge. Individuals do not appropriate the full value of their efforts under such arrangements, and this weakens effort incentives. (Alchian and Demsetz (1972), Holmstrom (1982)) Revenue-sharing arrangements could weaken lawyers' incentives to do high-quality work. The agency costs associated with such arrangements are one reason firms' boundaries might narrow as market size increases and individuals specialize.

Agency costs associated with free-riding should vary with fields' cognitive connections if such connections allow lawyers to monitor each other more effectively. Partnerships have other incentive instruments in addition to revenue-sharing arrangements, such as bonuses, which can mitigate free-rider problems and thus decrease the cost of transacting within firms. Using these effectively requires that lawyers be able to assess each others' output, and this would be more difficult when lawyers work in fields where the fundamental legal doctrines have less overlap.

It follows that, other things being equal, lawyers in fields with strong cognitive connections should be more likely to work in the same firm than those with weak connections, since the monitoring cost of transacting within firms is lower. In light of the evidence presented

above, one would therefore expect specialists in corporate law to work disproportionately with specialists in banking and tax law, but not with specialists in real estate and environmental law, since the cognitive connections between corporate and these latter fields appear to be weaker.

3.3 Evidence on Law Firms' Field Composition

We develop a statistic that indicates the degree to which lawyers in one field work in the same firm with lawyers in other fields, relative to a benchmark in which the field-shares of lawyers in each firm is the same as the field-shares of lawyers in the economy.²⁶ Let N_i be the number of lawyers in firm i and n_i^j be the number of those lawyers who specialize in field j . We start by computing the share of field a lawyers in the average field b lawyer's firm. Define this share as s^{ab} :

$$s^{ab} = \sum \frac{n_i^b}{\sum n_i^b} \frac{n_i^a}{N_i}$$

where all the sums are taken over i . s^{ab} is a weighted average of the share of lawyers in field a , where the average is taken across all firms in the economy and the weight for each firm i is the share of b lawyers in the economy who work in firm i . We then normalize s^{ab} by the share of lawyers in field a in the economy. Thus for any pair of fields a and b , this statistic is:

$$\Gamma^{ab} = \frac{s^{ab}}{s^a} = \frac{1}{s^a} \sum \frac{n_i^b}{\sum n_i^b} \frac{n_i^a}{N_i}$$

Γ^{ab} is the share of field a lawyers in the average field b lawyer's firm, normalized by s^a , the share of lawyers in field a in the economy. It is straightforward to show that this statistic is symmetric: i.e. $\Gamma^{ab} = \Gamma^{ba}$.

This statistic is easy to interpret. $\Gamma^{ab} = 1$ if the share of field a lawyers in each firm where field b lawyers work is equal to the share of field a lawyers in the economy. If $\Gamma^{ab} > 1$, this indicates that field b lawyers work disproportionately in firms with high shares of field a lawyers, relative to the share of field a lawyers in the economy. $\Gamma^{ab} = 1.30$ indicates the share of field a lawyers in the firm where the average field b lawyer works is 30% higher than in the population as a whole. $\Gamma^{ab} = 0.70$ indicates that it is 30% lower.

²⁶ Previous versions of this paper (Garicano and Hubbard, 2003b), reported versions of the Ellison-Glaeser statistic (Ellison and Glaeser (1997)), which uses random allocation rather than a uniform distribution as a benchmark. The

Table 8 presents our results. We first note four important patterns. First, the general pattern with the off-diagonal terms is that ex ante business specialists tend to work at the same firm as one another, but most other pairs of specialists tend not to do so. Most of the statistics in the upper left of the figure are greater than one; most in the rest of the figure are less than one. The second and third patterns are the exceptions to this rule. The second is that specialists in patent law, classified as an ex ante business field, tend not to work at the same firm with specialists in other ex ante business fields (or any other field, for that matter). Unlike other ex ante business specialists, patent lawyers tend to work in firms that are field-specialized. The third is that specialists in probate law, the ex ante individual field, tend to work in the same firm with ex ante business specialists. In fact, they are more likely to work at the same firm as banking, corporate, environmental, and other ex ante business specialists than other types of individual specialists. This is the exception to the general rule that specialists in business and individual-oriented fields tend not to work at the same firm with each other. Last, the diagonal terms are systematically greater than the off-diagonal terms. Some of this is artificial, since part of the high value of the diagonal reflects that specialists always work at firms where the share of their own field is positive – their firm reflects themselves. At the bottom of the table we report statistics for the diagonal terms that do not include this effect; these statistics remain greater than any of the associated off-diagonal terms. Lawyers are more likely to work at the same firm with lawyers in their own field than with lawyers in any other field. This reflects groups of partners and associates in the same field working at the same firm.²⁷

Broadly, these patterns provide little support for the hypothesis that law firms' field boundaries strongly reflect the risk-sharing benefits of revenue-sharing arrangements. Demand for the services provided by banking, corporate, and real estate specialists were strongly positively correlated during the period leading up to the time of this sample, but specialists in these fields disproportionately work with each other. Partnerships may provide risk-sharing

results are very similar. We report the uniform-benchmarked statistics described here because the magnitudes are more readily interpretable.

²⁷ Garicano and Hubbard (2005) study partner-associate ratios and how they vary with returns to specialization. This paper investigates more thoroughly the organization of specialists in the same field.

benefits, but it is unlikely that variation in their risk-sharing benefits explain the first-order patterns we observe in our data.²⁸

They provide considerable, but not complete, support for the proposition that law firms' boundaries reflect differences in the value of referrals. Consistent with this proposition, lawyers in ex ante fields tend to work in the same firm with each other, while lawyers in ex post fields tend to work in field-specialized firms. This proposition can also easily explain the two exceptions to the general empirical pattern we describe above. Patent law is fairly distinct from other areas of the law, and is probably an exception to the rule that clients have difficulty judging the scope of services they need for ex ante problems. Referrals between ex ante business specialists and probate lawyers may be valuable, as when the senior management of corporate clients needs help arranging wills and estates.

An important pattern in the data that is not immediately consistent with this proposition is that lawyers disproportionately work in the same firm others in their own field (the diagonal pattern in Table 8). If lawyers in the same field have the same expertise and face no time constraints, referrals across lawyers in the same field would not be valuable and one would not expect, for example, corporate law specialists to work disproportionately in the same firm as other corporate law specialists. We make the following observations. First, it is highly likely that there are within-field differences in lawyers' expertise that are not picked up in our data: for example, corporate lawyers vary in their ability and sometimes sub-specialize within corporate law (e.g., in securities law). Second, lawyers do face time constraints, and this may make referrals valuable even among lawyers with the same expertise. Either of these conditions could reconcile this fact with the proposition that firms' boundaries are shaped by differences in the value of referrals, although this fact could have other explanations as well.

The contrast between the diagonal and the off-diagonal terms provides some support for the proposition that firms' field boundaries reflect differences in agency costs related to fields' cognitive closeness: specialists are more likely to work with others in their own field than in other fields. However, patterns in the off-diagonal terms do not provide such support: in

²⁸ Risk-sharing benefits may explain patterns that we cannot observe with our data. If within corporate law, as Gilson and Mnookin theorize, securities specialists and bankruptcy specialists are disproportionately likely to work with one another in the same firm, this would provide evidence that partnerships' risk-sharing properties shape firms' field boundaries. An empirical test of this canonical example would shed further light on the degree to which risk sharing shapes law firms' field boundaries.

particular, practically all of the combinations of ex ante fields tend disproportionately to work with one another, including combinations where cognitive connections do not appear to be close. For example, it is unlikely that the legal expertise of corporate law specialists provides them a comparative advantage in monitoring specialists in environmental or real estate law, but corporate law specialists work disproportionately in the same firm as environmental and real estate lawyers just as they do with banking and tax lawyers.

Table 8 thus provides some evidence on the specific organizational trade-offs that affect law firms' field boundaries. We find little support for the hypothesis that law firms' field boundaries are shaped by risk-sharing benefits. We find some support for the proposition that they reflect differences in the value of cross-field referrals and, to a lesser extent, differences in lawyers' ability to assess each others' work. While we believe this evidence to be interesting, additional evidence, particularly direct evidence on referral and monitoring patterns, is needed to distinguish definitively among these hypotheses.

4. Conclusion

This paper provides new empirical evidence on how one human-capital-intensive industry, legal services, is organized. Our evidence indicates that supply-side factors related to increases in the division of labor affect firms' field scope: firms' field scope tends to narrow as market size increases and lawyers specialize. Firms' boundaries reflect not just the scope of clients' demands, but also how relationships between lawyers are optimally governed. Moreover, this pattern varies across fields. Firms' scope does not narrow as market size increases and lawyers field-specialize more, when looking at fields where lawyers are involved in structuring transactions. In contrast, firms' boundaries narrow with market size as individuals become more specialized in fields where lawyers deal with problems arising from existing contractual relationships; in larger markets, these services tend to be supplied by lawyers in field-specialized firms. More detailed evidence on law firms' field composition provides little support for the hypothesis that firms' field boundaries reflect variation in the benefits of risk-sharing, but provides some support for theories that emphasize firms' role in facilitating the exchange of knowledge. In addition, there is some, albeit limited, evidence that firms' field boundaries reflect differences in lawyers' ability to monitor each other. Direct evidence on referral and

monitoring patterns would complement our work, and shed further light on how knowledge-sharing and monitoring costs affect firms' boundaries in this human capital intensive industry.

Our evidence has implications for understanding this industry's structure. Two notable features of the legal services industry in the United States are that the average firm size is small, and that the size distribution of firms is highly skewed: even within large markets, the largest firms have many times more lawyers than the median firm. Our findings suggest that this fragmented, but skewed structure in part reflects differences in whether firms or markets best govern relationships between specialists. The fragmentation results from the fact that the division of labor between lawyers in different fields is usually governed by markets. The skewness in part reflects that relationships between lawyers in ex ante fields such as corporate, tax, and real estate law are often best mediated by firms.²⁹ Organizational theories – in particular those in which firms' boundaries reflect differences in the benefits of knowledge-sharing and in monitoring costs – provide an explanation for these phenomena. Additional research is needed to investigate whether variation in these benefits and costs influence the structure of other human-capital-intensive industries.

²⁹ Forces that affect firms' hierarchical organization appear to contribute to skewness as well. In other work (Garicano and Hubbard (2005)), we show that the distribution of "leverage" (i.e., how many lawyers work under a lawyer) across lawyers is skewed, and becomes increasingly so as market size increases. Our current work examines how the phenomena we investigate in this paper and our other work shape the size distribution of law firms and have led to changes the structure of the U.S. legal services industry during the past twenty years.

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Table 1
Summary Statistics -- Lawyers, Law Offices, and Law Firms

	Lawyers	Offices	Firms
N	219033	26151	23465
Average Number of Lawyers		3.56	3.65
Share Specialized	0.71	0.37	0.28
Share Multiestablishment	0.28	0.05	0.02

Averages and shares computed using sampling weights supplied by the Bureau of the Census.

Table 2
Shares of Lawyers in Specialized Fields, Offices, and Firms

	Share of Lawyers In Specialized Fields	Share of Lawyers In Specialized Offices	Share of Lawyers In Specialized Firms	Fraction of Specialists In Specialized Firms
Ex Ante Business Field	0.270	0.047	0.044	17.4%
Banking	0.047	0.006	0.005	12.9%
Corporate	0.083	0.004	0.004	4.8%
Environmental	0.016	0.001	0.001	6.2%
Governmental	0.015	0.002	0.002	13.7%
Patent	0.020	0.014	0.014	70.4%
Real Estate	0.062	0.014	0.013	22.7%
Tax	0.028	0.005	0.005	17.9%
Ex Post Business Field	0.128	0.044	0.044	34.5%
Insurance	0.061	0.025	0.023	40.8%
Negligence-Defendant	0.066	0.018	0.018	27.2%
Other Specialized Field	0.155			
Individual Field	0.158	0.071	0.071	44.9%
Criminal	0.024	0.012	0.012	49.7%
Domestic Relations	0.026	0.009	0.009	34.8%
Negligence-Plaintiff	0.074	0.042	0.041	57.1%
Probate	0.035	0.008	0.008	23.1%
General Practice	0.289			

All shares computed using Census-provided sampling weights.

Table 3
Share of Revenues from Individual Clients and Market Size

Dependent Variable: Percentage of Law Office's Revenues That Come From Clients Who Are Individuals.

	Small Market Subsample				Full Sample			
Employment 20K-100K	-9.77 (1.88)	-2.59 (2.02)			-8.75 (1.47)	1.04 (2.03)		
Employment 100K-200K	-13.14 (2.27)	-1.05 (3.31)			-20.27 (2.49)	-4.00 (2.90)		
Employment 200K-400K	-17.99 (9.33)	0.45 (8.27)			-27.50 (2.23)	-5.97 (3.37)		
Employment 400K-1M					-36.19 (3.09)	-11.85 (4.11)		
Employment > 1M					-43.74 (2.76)	-19.11 (4.31)		
ln(employment)			-5.10 (0.71)	-1.57 (1.07)			-8.46 (0.75)	-4.42 (0.82)
C								
Includes Controls?	N	Y	N	Y	N	Y	N	Y
N			5780				24984	

Small market subsample includes law offices in non-MSAs and in single-county MSAs with less than 225,000 employment. Standard errors are clustered at the county level, and are reported in parentheses. Bold indicates statistically significantly different from zero, using a two-sided t-test of size 0.05. The number of observations differs from that in other results because of missing values for the dependent variable.

Table 4
Market Size, Lawyer, and Law Firm Specialization
Small Market Subsample

Dependent Variable	Share Any Specialized Field	Share Ex Ante Business Field	Share Ex Post Business Field	Share Individual Field
<i>Market Size and Individual Specialization Regressions (Beta1)</i>				
ln(county employment)	0.136 (0.012)	0.029 (0.007)	0.027 (0.007)	0.047 (0.009)
<i>Market Size and Law Office Specialization Regressions (Beta2)</i>				
ln(county employment)	0.066 (0.011)	0.004 (0.003)	0.011 (0.003)	0.031 (0.008)
Beta2/Beta1	0.49	0.14	0.41	0.66

N = 6032

Controls include share of employment in 7 major sectors, average establishment size within each of these sectors, and a state capital dummy

Small market subsample includes law offices in non-MSAs and in single-county MSAs with less than 225,000 employment.

Standard errors are clustered at the county level, and are reported in parentheses.

Bold indicates statistically significantly different from zero, using a two-sided t-test of size 0.05.

Table 5
Market Size, Lawyer, and Firm Specialization: Detailed Specifications
Small Market Subsample

Ex Ante Business Fields

Dependent Variable	Share Banking	Share Corporate	Share Environmental	Share Governmental	Share Patent	Share Real Estate	Share Tax
Beta1	0.001 (0.003)	0.011 (0.003)	0.002 (0.001)	0.003 (0.002)	0.000 (0.001)	0.008 (0.004)	0.004 (0.001)
Beta2	-0.001 (0.002)	0.001 (0.001)	0.000 (0.000)	0.002 (0.001)	0.000 (0.001)	0.001 (0.002)	0.001 (0.001)

Ex Post Business Fields

Dependent Variable	Share Insurance	Share Negligence-Def
Beta1	0.022 (0.004)	0.005 (0.004)
Beta2	0.008 (0.002)	0.004 (0.003)

Individual Fields

Dependent Variable	Share Criminal	Share Domestic Rel.	Share Negligence-Pla	Share Probate
Beta1	0.009 (0.003)	0.004 (0.004)	0.026 (0.005)	0.007 (0.004)
Beta2	0.009 (0.003)	0.003 (0.003)	0.014 (0.004)	0.005 (0.003)

N=6032

Controls include share of employment in 7 major sectors, average establishment size within each of these sectors, and a state capital dummy

Small market subsample includes law offices in non-MSAs and in single-county MSAs with less than 225,000 employment.

Standard errors are clustered at the county level, and are reported in parentheses.

Bold indicates statistically significantly different from zero, using a two-sided t-test of size 0.05.

Table 6
Market Size, Lawyer, and Law Firm Specialization

Alternative Specifications

Dependent Variable	Share Any Specialty	Share Ex Ante Business Specialty	Share Ex Post Business Specialty	Share Individual Specialty
<i>Small Market Subsample</i>				
Beta1	0.136 (0.012)	0.029 (0.007)	0.027 (0.007)	0.047 (0.009)
Beta2	0.066 (0.011)	0.004 (0.003)	0.011 (0.003)	0.031 (0.008)
<i>Full Sample</i>				
Beta1	0.083 (0.011)	0.020 (0.006)	0.021 (0.004)	0.017 (0.006)
Beta2	0.039 (0.009)	0.000 (0.005)	0.012 (0.003)	0.019 (0.004)
<i>Small Market Subsample, Includes "Number of Lawyers in the Office" Dummies</i>				
Beta1	0.117 (0.012)	0.015 (0.006)	0.014 (0.006)	0.054 (0.009)
Beta2	0.080 (0.011)	0.006 (0.003)	0.013 (0.004)	0.039 (0.008)

Beta1 is the coefficient on ln(county employment) in regressions where the dependent variable is the share of individuals who are specialized.

Beta2 is the coefficient on ln(county employment) in regressions where the dependent variable is the share of individuals who work in field-specialized firms.

Controls include share of employment in 7 major sectors, average establishment size within each of these sectors, and a state capital dummy. In the bottom panel, we also include 11 dummy variables that capture whether a law office has 2-12 lawyers, plus a dummy for whether it has more than 12 lawyers.

Small market subsample includes law offices in non-MSAs and in single-county MSAs with less than 225,000 employment. Standard errors are clustered at the county level, and are reported in parentheses. Bold indicates statistically significantly different from zero, using a two-sided t-test of size 0.05.

Table 7
Lawyers by Primary Field of Practice, 1982-1992

	Number of Lawyers			Share of Lawyers			Change in Share	
	1982	1987	1992	1982	1987	1992	1982-87	1987-92
Total	296344	378277	435219	100.0%	100.0%	100.0%		
Banking	10672	20715	20700	3.6%	5.5%	4.8%	1.9%	-0.7%
Corporate	21866	35462	36678	7.4%	9.4%	8.4%	2.0%	-0.9%
Governmental	3829	5709	6235	1.3%	1.5%	1.4%	0.2%	-0.1%
Environmental			7051			1.6%	N/A	N/A
Tax	10656	13307	12023	3.6%	3.5%	2.8%	-0.1%	-0.8%
Real Estate	16078	28341	26663	5.4%	7.5%	6.1%	2.1%	-1.4%
Negligence-Defendant	16861	26587	29303	5.7%	7.0%	6.7%	1.3%	-0.3%
Patent	5067	6482	8716	1.7%	1.7%	2.0%	0.0%	0.3%
Insurance	10584	19125	26664	3.6%	5.1%	6.1%	1.5%	1.1%
Criminal	5691	7446	9752	1.9%	2.0%	2.2%	0.0%	0.3%
Domestic	6501	9756	11295	2.2%	2.6%	2.6%	0.4%	0.0%
Negligence-Plaintiff	13509	23179	31631	4.6%	6.1%	7.3%	1.6%	1.1%
Probate	12543	14416	15005	4.2%	3.8%	3.4%	-0.4%	-0.4%
Other	31601	51441	66997	10.7%	13.6%	15.4%	2.9%	1.8%
General Practice	130886	116311	126506	44.2%	30.7%	29.1%	-13.4%	-1.7%

Source: Bureau of the Census (1984, 1990, 1996).

Note: Environmental law was a new category on the survey form in 1992.

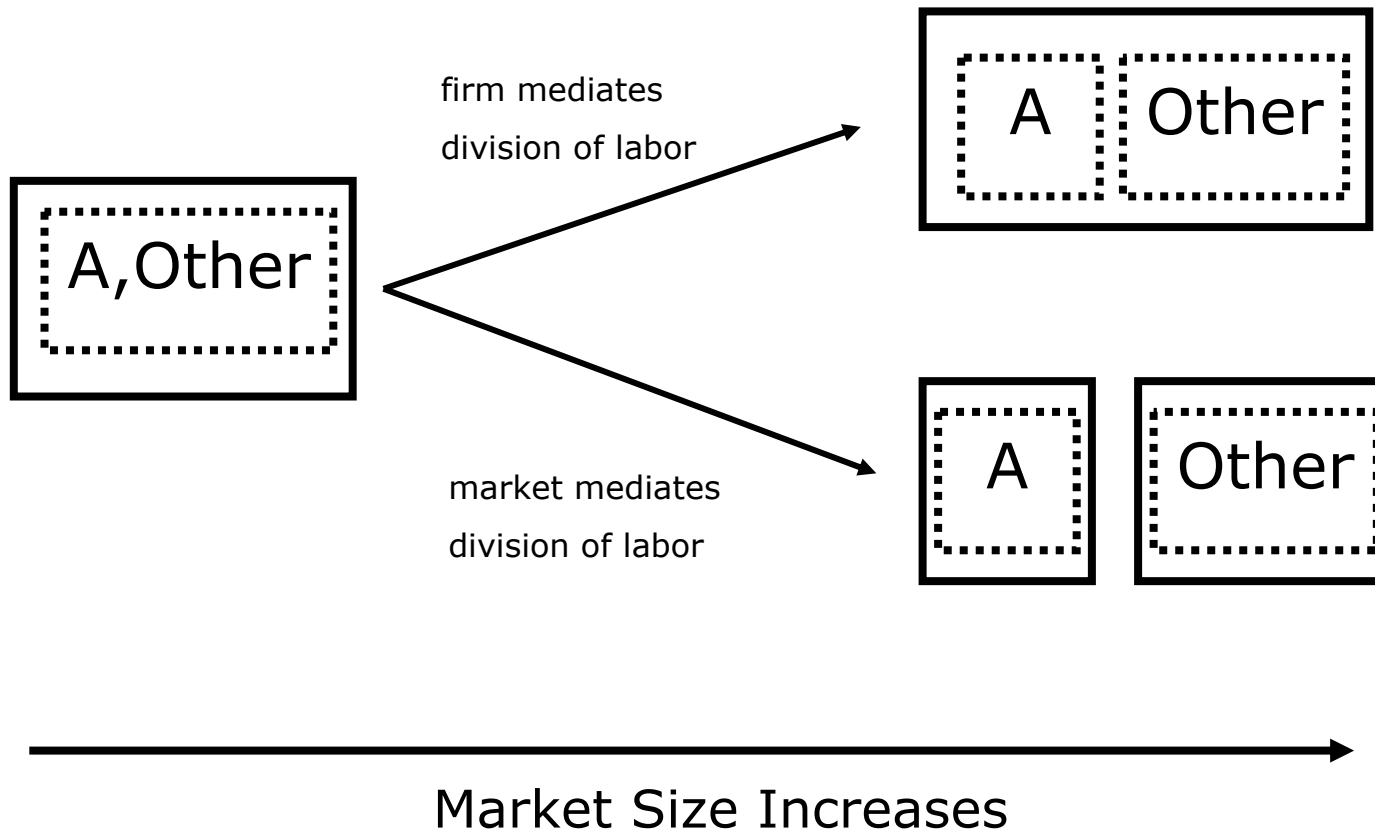
Table 8
Normalized Composition of Law Firms

By Specialty of the Lawyer

	Banking	Corporate	Governmental	Environmental	Tax	Real Estate	Patent	Insurance	Neg-Def	Criminal	Domestic	Neg-Pla	Probate	Other	Gen Prac
Banking	7.52														
Corporate	1.27	4.42													
Government	1.06	1.26	24.28												
Environmental	1.34	1.50	2.36	13.61											
Tax	1.18	1.84	1.13	1.39	10.90										
Real Estate	1.44	1.18	0.85	0.96	1.07	6.79									
Patent	0.35	0.63	0.42	0.62	0.53	0.25	39.05								
Insurance	0.61	0.50	0.56	0.99	0.37	0.35	0.01	11.75							
Neg-Def	0.73	0.65	0.71	1.04	0.60	0.54	0.17	0.58	9.83						
Criminal	0.33	0.48	0.47	0.44	0.41	0.49	0.07	0.19	0.19	26.97					
Domestic	0.61	0.49	0.80	0.47	0.40	0.74	0.07	0.30	0.33	1.61	20.80				
Neg-Pla	0.64	0.31	0.37	0.26	0.22	0.60	0.05	0.14	0.37	0.84	0.78	10.03			
Probate	0.97	1.12	0.81	0.86	1.62	1.27	0.22	0.52	0.64	0.59	1.10	0.43	11.31		
Other	0.65	1.05	0.73	1.02	0.89	0.68	0.31	0.23	0.26	0.28	0.38	0.18	0.53	4.20	
Gen Prac	0.30	0.25	0.29	0.31	0.27	0.25	0.09	0.12	0.15	0.16	0.29	0.13	0.29	0.18	2.95
Diagonal (colleagues only)	4.47	3.48	13.93	10.38	3.73	2.63	32.62	9.95	8.23	6.43	5.95	4.50	3.02	2.83	1.38

Bold indicates values greater than 1.00.

Figure 1
Specialization and Organizational Trade-Offs



Appendix

A.1 Survey Form

LEGAL SERVICES

(Form CB-8100)

Item 10. PERSONNEL AND PAYROLL, BY OCCUPATION				Item 11. NATURE OF LAWYERS' PRACTICE			
Include personnel who perform a variety of functions (secretaries, etc.) on the one line which best describes the primary nature of their work.				Include each individual lawyer reported in items 10a(1) and 10b (associate lawyers plus proprietors and partners at this location) on the one line which best describes the lawyer's primary field of specialization. Lawyers who are not primarily engaged in a single specialized field should be included on line b.			
Line a(1) – Lawyers who are members of a professional service corporation should be included here.							
Line b – Only proprietors and partners not considered employees of the firm for Federal tax purposes should be included here.							
Occupation (include proprietors and partners on line b only)	Personnel for pay period including March 12, 1992 (number)	Annual payroll			Primary fields of practice	Number of lawyers	
		Mil.	Thou.	Dol.			
a. Type of employee	565	570			a. Specialized fields	575	
(1) Associate lawyers (employees of firm)					(1) Banking and commercial law	576	
(2) Paraprofessionals (law clerks, legal assistants, investigators, etc.)	566	571			(2) Corporate law	577	
(3) Managers and other nonlegal professional staff	567	572			(3) Criminal law	578	
(4) All other (stenographers, bookkeepers, etc.)	568	573			(4) Domestic relations	579	
(5) TOTAL (Sum of lines a(1) through a(4) above should equal entries in items 6a and 7)	569	574			(5) Environmental law	580	
					(6) Governmental law	581	
					(7) Insurance law	582	
					(8) Negligence – defendant	583	
					(9) Negligence – plaintiff	584	
b. Active proprietors or partners at this location (unincorporated operations only)	450				(10) Patent, trademark, and copyright law	585	
					(11) Real estate	586	
					(12) Tax law	587	
					(13) Wills, estate planning, and probate	588	
					(14) Other specialized field – Specify	589	
						590	
					b. General practice		
					c. TOTAL (Sum of above lines should equal the sum of items 10a(1) and 10b)		
				Item 13. EXPENSES OF LEGAL AID SOCIETIES			
				040			
Report total operating expenses, including payroll, interest, rent, depreciation, taxes, and other overhead. Exclude capital expenditures, funds invested, and transferred contributions.							

A.2 Survey Evidence On How the Source and Timing of Demands Varies Across Fields

Table A1 reports results from an extensive interview-based survey (“Chicago Lawyers II”) of Chicago lawyers completed in 1995 by Jack Heinz and Bob Nelson of the American Bar Foundation as a follow-up project to Heinz and Laumann (1982). Heinz and Nelson surveyed a random sample of Chicago-based lawyers taken from the State of Illinois’ lawyer registration records, and collected the data by conducting one-hour interviews with subjects at their offices. In all, 788 lawyers from this random sample were interviewed, 526 of whom were in private practice. See Heinz, et. al. (1998) for more details. We are extremely grateful to Jack Heinz and Bob Nelson for sharing their data.

Questions in this survey ask privately-practicing lawyers what share of their time they spend on business, non-business organizational (e.g., governmental), and individual clients, and how many days per month they spend in state and Federal court. Days per month in court is a good indicator for the degree to which lawyers provide “ex ante” or “ex post” services. We report the average response for fields that closely match those defined in the Census data. Even these do not always match perfectly. For example, the Chicago Lawyers II survey does not include a separate category for “insurance law,” but the Census data does. Jack Heinz reported to us that he believes that most of those reporting “insurance law” to the Census would classify themselves in the Chicago Lawyers II survey as “personal injury-defendant.” Fifteen lawyers in the Chicago Lawyers II report themselves to be specialists in “securities;” these lawyers would probably be classified as “corporate” in the Census data. We do not think this matters much, because these lawyers’ responses to the time allocation and days in court questions are very similar to the “general corporate” lawyers reported in Table A1.

Table A1 indicates a sharp break in the share of time lawyers in different fields spend on business clients. Specialists in personal injury (on the plaintiff’s side of the bar), criminal, divorce, and probate law spend almost all of their time on individual clients. The rest (except specialists in municipal law, which predominantly have governmental clients) spend the majority of their time on business clients. Likewise, personal injury, criminal, and divorce specialists spend more days in court than lawyers in any of the other specialties, consistent with the idea that demands for expertise in these fields tend to be more “ex post” than other fields. Although the number of observations is very low, probate specialists appear to spend less time in court than other specialists that serve individual clients, reflecting that the demand they face tends to be more for “ex ante” services.

Table A1**Share of Time on Business Clients, Days per Month in State or Federal Court**

Selected Fields

Specialty	Share of Time Business Clients (percent)	Days per Month In State or Federal Court	N
Commercial Law: Banking	91.3	6.4	8
General Corporate	86.1	1.8	12
Municipal Law	35.6	0.5	6
Environmental Law	82.3	2.8	12
Real Estate	69.9	2.9	43
Tax	64.7	1.3	32
Patents, Trademarks or Copyrights	89.8	2.0	25
Personal Injury -- Defendant	88.3	11.6	20
Personal Injury -- Plaintiff	7.6	13.9	16
Criminal	10.0	16.7	9
Divorce (including family, adoption, etc.)	8.0	16.7	7
Probate (wills and trusts)	3.8	6.0	4

Source: Chicago Lawyers II survey.

Fields are as listed on Chicago Lawyers II survey forms.

A.3 List of Single-County MSAs in Small Market Sample

Abilene, TX	Fort Collins-Loveland, CO	Naples, FL
Albuquerque, NM	Fort Myers-Cape Coral, FL	Ocala, FL
Alexandria, LA	Fort Walton Beach, FL	Odessa, TX
Altoona, PA	Fresno, CA	Olympia, WA
Anchorage, AK	Gadsden, AL	Owensboro, KY
Anderson, IN	Grand Forks, ND	Panama City, FL
Anderson, SC	Great Falls, MT	Pascagoula, MS
Anniston, AL	Greeley, CO	Pine Bluff, AR
Asheville, NC	Green Bay, WI	Poughkeepsie, NY
Bakersfield, CA	Hagerstown, MD	Provo-Orem, UT
Battle Creek, MI	Huntsville, AL	Pueblo, CO
Bellingham, WA	Iowa City, IA	Rapid City, SD
Benton Harbor, MI	Jackson, MI	Reading, PA
Billings, MT	Jackson, TN	Redding, CA
Bloomington, IN	Jacksonville, NC	Reno, NV
Bloomington-Normal, IL	Jamestown-Dunkirk, NY	Rochester, MN
Boise City, ID	Janesville-Beloit, WI	St Joseph, MO
Bradenton, FL	Kalamazoo, MI	Salinas-Seaside-Monterey, CA
Bremerton, WA	Kankakee, IL	San Angelo, TX
Brownsville-Harlingen, TX	La Crosse, WI	Sarasota, FL
Bryan-College Station, TX	Lafayette-West Lafayette, IN	Sharon, PA
Burlington, NC	Lake Charles, LA	Sheboygan, WI
Casper, WY	Lakeland-Winter Haven, FL	Sioux Falls, SD
Cedar Rapids, IA	Lancaster, PA	South Bend-Mishawaka, IN
Champaign-Urbana-Rantoul, IL	Laredo, TX	Spokane, WA
Cheyenne, WY	Las Cruces, NM	State College, PA
Chico, CA	Lawrence, KS	Stockton, CA
Colorado Springs, CO	Lawton, OK	Topeka, KS
Columbia, MO	Lincoln, NE	Tucson, AZ
Daytona Beach, FL	Lubbock, TX	Tuscaloosa, AL
Decatur, IL	Madison, WI	Tyler, TX
Dubuque, IA	Mansfield, OH	Victoria, TX
El Paso, TX	McAllen-Edinburg-Mission, TX	Visalia-Tulare-Porterville, CA
Elmira, NY	Medford, OR	Waco, TX
Enid, OK	Melbourne-Titusville, FL	Wausau, WI
Erie, PA	Merced, CA	W. Palm Beach-Boca Raton, FL
Eugene-Springfield, OR	Midland, TX	Wichita Falls, TX
Fayetteville, NC	Modesto, CA	Williamsport, PA
Fayetteville-Springdale, AR	Monroe, LA	Wilmington, NC
Flint, MI	Muncie, IN	Yakima, WA
Florence, SC	Muskegon, MI	Yuma, AZ

Note: The small market sample also includes all law offices located in non-MSAs.

A.4 Lawyer Specialization Regressions: All Coefficients

Table A2
Market Size and Lawyer Specialization
Small Market Subsample

Dependent Variable	Share Any Specialized Field	Share Ex Ante Business Field	Share Ex Post Business Field	Share Individual Field
ln(county employment)	0.136 (0.012)	0.029 (0.007)	0.027 (0.007)	0.047 (0.009)
sh(mfg)	-0.188 (0.182)	0.090 (0.079)	-0.005 (0.065)	-0.053 (0.144)
sh(trans/util)	0.063 (0.478)	-0.461 (0.263)	0.364 (0.193)	0.325 (0.376)
sh(wholesale)	0.482 (0.445)	-0.360 (0.247)	0.641 (0.195)	0.075 (0.391)
sh(retail)	0.217 (0.294)	0.033 (0.172)	-0.114 (0.137)	0.520 (0.255)
sh(FIRE)	1.153 (0.825)	1.193 (0.545)	0.318 (0.419)	-0.416 (0.698)
sh(services)	-0.059 (0.269)	0.019 (0.142)	0.257 (0.118)	-0.062 (0.207)
state capital	-0.021 (0.029)	-0.022 (0.030)	-0.034 (0.030)	-0.001 (0.025)
emp/estab -- construction	-0.0004 (0.0034)	-0.0004 (0.0017)	0.0040 (0.0023)	-0.0003 (0.0002)
emp/estab -- mfg	-0.0003 (0.0004)	-0.0007 (0.0002)	0.0002 (0.0002)	0.0004 (0.0003)
emp/estab -- trans/util	-0.0007 (0.0017)	0.0017 (0.0013)	-0.0008 (0.0006)	-0.0015 (0.0013)
emp/estab -- wholesale	-0.0011 (0.0045)	0.0031 (0.0020)	-0.0023 (0.0015)	0.0011 (0.0031)
emp/estab -- retail	0.0066 (0.0072)	0.0028 (0.0041)	0.0064 (0.0034)	-0.0046 (0.0051)
emp/estab -- FIRE	-0.0064 (0.0053)	-0.0033 (0.0033)	-0.0013 (0.0026)	0.0009 (0.0043)
emp/estab -- services	-0.0030 (0.0052)	-0.0001 (0.0028)	-0.0031 (0.0021)	0.0002 (0.0035)
C	0.291 (0.160)	0.023 (0.069)	-0.095 (0.061)	0.090 (0.135)

N=6032

This table presents the full set of coefficients for the regressions reported in the top panel of Table 4.

Small market subsample includes law offices in non-MSAs and in single-county MSAs with less than 225,000 employment. Standard errors are clustered at the county level, and are reported in parentheses.

Bold indicates statistically significantly different from zero, using a two-sided t-test of size 0.05.