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Choice of Enterprise Form: Spain, 1886-1936

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Abstract

Economists have long neglected study of an important contractual decision, a firm's choice of legal form. Enterprise form shapes the relations among a firm's owners as well as many features of a firm's interactions with the rest of the economy. Using unusual firm-level data on Spain 1886-1936, we estimate nested logit models of the determinants of enterprise form choice. In 1919, Spain introduced a new enterprise form that compromised between partnerships and corporations, and displaced larger partnerships and smaller corporations. This *Sociedad de Responsabilidad Limitada* was especially important for small and median-sized enterprises whose owners were not related.

Entrepreneurs creating a new multi-owner firm face a fundamental contracting decision: the enterprise's legal form. In most legal regimes today, multi-owner firms can be corporations or partnerships, and there are variants on these basic structures. A firm's enterprise form shapes owners' liability, the firm's access to public equity markets, and the rights of minority owners. The ability to formalize and commit to specific organizational forms enables firms to more readily attract outside funding and to contract with other economic agents. Decisions about legal form also shape the owners' scope for contracting on cash-flow and control rights. Economists have studied each of these issues in isolation, but have not considered the prior organizational choice that creates the structure within which these contracting problems unfold.

This paper uses micro-data on firm formation and multinomial choice models to study decisions about legal form in a context that offers both rich data and the absence of some complicating influences: Spain in the period 1886-1936. The focus on a single country overcomes complications that might appear with another approach, such as cross-country regressions. Using micro-evidence from a single country allows us to abstract from potentially confounding influences such as differences in national banking systems or the organization of equity markets. Most importantly, Spain introduced an entirely new legal form in 1919. The *Sociedad con Responsabilidad Limitada* (SRL) allowed entrepreneurs to combine some contractual features of the corporation with the partnership's

3

greater flexibility. Discrete-choice model allows us to ask which firms preferred this new form as well as conduct counter-factual exercises about what would have happened in the absence of the new form.

Our econometric results support three conclusions. First, family connections among owners played an important role in the decision about legal form. Neither the limited partnership nor the SRL appealed to enterprises whose owners were all related. Second, counter-factual exercises show that after 1919, about two-third of firms organized as SRLs would have been ordinary partnerships in that form's absence, and about one-third would have been corporations. The SRL did not play a noticeable role in the limited partnership's demise. Three, and most strikingly, counter-factual calculations demonstrate that if the SRL had been introduced in the 1890s, few firms would have used the form. As Spanish politicians argued, the new enterprise form reflected a new type of business in the 1920s.

Spain's business code offered a clear, discrete set of legal forms from which to choose. The commercial registration system allows us to sample from the universe of multi-owner firms created in that period, and the notarial system yields a set of contracts with consistently-defined provisions. For the United States, the United Kingdom, and other major economies in this period as well as more recently, there is no source that reports the organizational form of all firms; official records usually pertain to corporations alone, and so miss the partnership

forms used by the majority of smaller and medium-sized enterprises. Thus the Spanish data have strengths not available from other sources.

Recent decades have seen the introduction of new legal forms for business enterprises in many economies. During the 1990s, every U.S. state introduced a new limited-liability partnership (LLP) form. Many states have also created or reformed the limited-liability company (LLC), which allows owners to achieve many benefits of the corporation in a form suitable to a smaller enterprise. (Hansmann et al, 2006). Until the nineteenth century, most multi-owner firms in Continental Europe were partnerships, as corporations remained rare in comparison to the U.S. (Lamoreaux and Rosenthal 2005; Guinnane et al 2007). Most countries other than Britain allowed the LLP from the early nineteenth century, and forms similar to the LLC appeared starting in Germany in 1892. Development of enterprise forms remains an active interest of policymakers in several contexts. The European Union (E.U.) and its member states have also considered revision to their menu of enterprise forms. These efforts reflect a desire to harmonize company law across the Union. The EU discussions also reflect the widespread conviction that better company law could encourage economic growth by making it easier to form a broader range of businesses, including new firms.[1]

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[1] For recent European discussion see European Commission (2011).

Economists now broadly accept the idea that institutions affect economic performance.[2] This paper advances the literature on institutions in two ways. First, we focus on how firms dealt with specific legal rules, in contrast to the more common approach of trying to link "good" or "bad" institutions to economic performance at the national level. Second, enterprise form is unusual among institutions in that the legal rules determine the options but still allow firms to choose among those options. Industrial organization economists study similar questions, such as whether a firm franchises its retail outlets, or more broadly whether firms are vertically integrated.[3] Legal form reflects economic institutions in two ways: what the government allows, and what the firm choses.

A recent literature stresses the effect of legal rules governing entry and their effect on growth via the creation of new firms. The World Bank's "Doing Business" project views some constraints on legal form as a barrier to entry for new firms, and has advocated liberalizing the rules governing formation of new firms. Critics of the "Doing Business" project take the view that these barriers to

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[2] This literature is vast. Recent, important examples include La Porta et al (2008) and Acemoğlu and Robinson (2012).

[3] For a recent review of vertical integration, see Lafontaine and Slade (2007). Lafontaine et al (2013) focuses on franchising.

entry do not have the damaging implications the World Bank view implies.[4]

Requiring a firm to adopt a specific legal form allows the enterprise to credibly

signal the important features of their structure and operations to financial markets

and customers alike.

I.   Law and enterprise form

Spain's business code owes much to French legal traditions, a trait

common to many civil-law countries. The 1885 Spanish code allowed firms to

organize as ordinary partnerships, as limited partnerships, or as corporations. The

ordinary partnership required unlimited liability of its owners. In a limited

partnership, some owners could restrict their liability to the sum they had invested,

but could not participate in management. (The LLP introduced in the U.S. differs

in important respects from the version found in the nineteenth century.) All

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[4] For the "Doing Business" project see Djankov et al (2002), as well as Klapper,

Laeven, and Rajan (2006)." Arruñada (2007, 2008) argues that what "Doing

Business" views as a barrier to entry provides legal certainty and reduces long-run

transactions costs for firms in operation. The legal forms we study are a

consequence of the rules Arruñada stresses. The small literature on the choice of

enterprise form includes Abramitzky et al (2010); Nicholas (2015); Hilt and

O'Banion (2009); and Gómez-Galvarriato and Musacchio (2004).

investors in Spanish corporations had limited liability. Another important difference makes the partnership subject to hold-up problems. Partnerships are effectively at-will and so cannot lock in capital effectively; if a partner wants to withdraw, he can leave and take his investment with him. Corporations, on the other hand, are legal persons with locked-in capital. An investor who wants out of a corporation can only sell his shares to someone else.[5]

The Spanish commercial code of 1885, which governs company formation to this day, departs from this tradition in one important way. Ordinarily civil-law countries required firms to use one of the legal forms described in the law. The business code, however allowed firms to modify the standard forms, so long as the resulting firm respected the code's other requirements (§117, 122). Firms took advantage of this flexibility to adopt features of the new enterprise forms appearing elsewhere in Europe. The practice remained rare, however, until 1919, when the Ministry of Justice issued instructions to commercial registries requiring the recognition of the new SRL. The new form resembled a partnership in which owners could lock in capital and all had limited liability. The rules governing the SRL relied on the 1885 code's partnership rules and case law until 1953, when

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[5] Appendix Table A.1 provides an overview of the central features of each legal form for Spain and, for comparison, four large industrial economies.

Spain passed its first legislation governing the form.[6]

II.   Data on choices of legal form in Spain

To enjoy the commercial code's protection, a firm registered its formation and provided a summary of its articles of association to the provincial branch of the commercial registry. We have assembled three distinct databases from information based on this registry. The first source records totals of the number of firms organized under each legal form, along with the total capital in these firms, for every year 1886-1936. These reports ("Yearbooks") provide a rare complete

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[6] Guinnane and Martínez-Rodríguez (2014) provides more detail on the development of Spanish company law. Martínez-Rodríguez (2015) focuses on the SRL's formalization in 1919, which reflected a bureaucratic regulation rather than a new statute. The episode illustrates the central role of notaries and the commercial registry, as Arruñada (2010, 2012) has argued. Spanish notaries (like civil-law notaries in general) both advise their clients and certify that contracts meet the law's requirements. Like most civil-law countries, Spain allows firms to organize under the commercial code or the civil code. We focus on the former; firms organized under the civil code were generally much smaller and less important for economic performance

picture of how firms organized.[7] The other two sources have firm-level data taken

from the firm's articles of association. The first micro-level source encodes a

publication that reports selected information on *every* Spanish firm that registered

n the years 1925, 1926, and 1927. The information available in this source, which

we call "Firm Census," is limited to the variables published in the original source.

The second micro database ("Firm Sample") comprises a random sample of

enterprises from the archives of fifteen peninsular provincial commercial

registries. We randomly selected, for each of these provinces, two firms formed in

every year in the period 1886-1936. Our data reflect the firm's initial

characteristics as provided to the commercial registry at formation. Attributes

such as capital stock could change over the firm's life. Partnerships rarely

changed hands. The individuals we consider a corporation's "owners," however,

are those who signed the original articles of association. Our sources do not

include subsequent performance measures, so we cannot, unfortunately, ask how

legal form affected profitability or longevity.

Figure 1 uses the Yearbooks to summarize the distribution of new firms by

legal form along with the total registrations for all of Spain over our period. The

majority of firms in 1886 were ordinary partnerships, with a small but stable

fraction organized as limited partnerships. Corporations accounted for a modest

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[7] Appendix A provides additional detail and descriptive statistics.

10

share of new firms. The late nineteenth century witnessed the gradual decline of the ordinary partnership and the equally slow rise of the corporation. The limited partnership began to die out at about the time the SRL came into being, although our econometric analysis shows the two forms were not close substitutes; the rise of the SRL reflects a growing number of new firms with little counterpart before 1919.

Figure 1 also reports the total number of firm registered in each year. Spain experienced slow growth of new firms up to World War I, then a short boom in new registrations that ended early in the 1920s. Spain's wartime boom reflects the advantage of being neutral in a Europe at war.

Table 1 summarizes three important dimensions of our firms.[8] Measured by capitalization and owners, the SRLs were somewhat larger than either of the partnership forms, and the corporations much larger than all other forms. We constructed the two "family connections" variables from surnames and internal references (for example, "and his son...").[9] Owners who are all related preferred

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[8] Table 1 is limited to Firm Sample; Appendix Table A.2 reports analogous information for the other sources.

[9] Spaniards use both the father's and mother's (first) surname, and women do not change their surname at marriage. These customs make it possible to identify relatives with more certainty than would otherwise be the case. Consider the

the ordinary to the limited partnership; when the owners combined relatives and non-relatives, the limited partnership was more common. Table 1 also summarizes the practice of stating a contractual duration in a firm's articles of association. This was optional, and most firms leave it open, but corporations are most likely to include a fixed duration in their articles, and to make it longer than 10 years.

We group firms into sectors using a standard industrial classification for Spain. For the econometric analysis we further combine these sectors into four groups: factories, trading enterprises, mining and infrastructure firms, and a (residual) miscellaneous category. (See Appendix Table A.4) Corporations dominate two sectors, mining and the heterogeneous category of agriculture processing, utilities, and construction. Within a given sector, firms organized as corporations have larger total capital investments than firms organized in other ways. The SRL was at first most popular in two large sectors, factories and trade.

ordinary partnership "Carrasco y Viuda e Hijos de Marsal," a firm in the Firms Sample database registered in Alicante in 1934 (firm number 2029). The owners are a widow, Adela Carrasco López and her children Ramón, Alfonso, and Adela Marsal Carrasco, as well as Adela's brother Antonio Carrasco López. These naming practices allow us to identify those who are related through a female line.

The new form also appealed to a range of professional and service-related firms, such as the liberal professions, travel, and health services.

III.   Modelling firm-level decisions about legal form

Entrepreneurs creating a multi-owner firm choose an enterprise form to minimize contracting problems given the characteristics of the firm and its owners, subject to the legal system's constraints. We model this decision using multinomial discrete-choice models. We have two questions: How do the firm's characteristics affect the choice of form? And how did the expansion of the menu of choices represented by the SRL's introduction affect these choices? There is no natural ordering for the choice of legal form, so we restrict our attention to unordered choice models. After considering several alternatives, we rely on nested logit (NL) models.[10]

The NL model can be derived from random-utility maximization, so the estimates imply, for each firm, a rank-ordering of preferences over legal forms. These orderings reflect a relationship between firm characteristics and what owners thought would best mitigate contracting problems. The NL model also reveals the impact of the new SRL on other enterprise forms. When Spain

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[10] Appendix B discusses alternative modelling approaches and provides robustness checks for our econometric models.

13

introduced the SRL, some entrepreneurs preferred that form to any of the older alternatives. For others, the new form was irrelevant in that they preferred some alternative. Our approach allows us to study what firms would have done in the absence of the new form, and, less formally, to examine the characteristics of firms forced to make a sub-optimal enterprise form choice.

The econometric models require an assumption: that a firm's attributes are all fixed when its founders decide on the legal form. We thus abstract from the possibility that legal form is decided as part of a negotiation over other firm attributes. Characteristics such as location or sector can be assumed to be exogenous. Concerns over possible endogeneity of regressors should focus on the possibility that a potential owner might hold out for limited liability or some other firm attribute, for example, thus implying that the participation of some owners was contingent on choice of enterprise form. Given our sources, there is no tractable solution to this endogeneity problem, so we must be cautious in interpreting our results as "causal."

We first apply the NL model to the Firms Census database because it is larger and allows us to study the post-SRL world in detail. We then turn to the Firms Sample. We define variables in the two databases identically unless otherwise noted.

A brief overview will guide our discussion: First, firms that contemplated long-term investments in illiquid projects would be reluctant to organize as

partnerships because of potential hold-up problems. On the other hand, because a corporation can lock in capital, this form may not protect the interests of all investors; minority owners may find the management and/or the majority owners in a corporation making decisions that reflect some private interest over that of maximizing the firm's value. This problem would be most serious for corporations in jurisdictions with prescriptive rules for corporate organization. Spanish corporations enjoyed more flexibility than corporations in other jurisdictions, so minority oppression might not have been a serious drawback to using this form. An SRL's owners could write complex rules to protect minority owners from oppression.

We have two indicators for the role of concerns about untimely dissolution issues. First, in some sectors a firm's physical capital can easily be liquidated, while in others it cannot. Thus sector serves as a proxy for concerns about this form of hold-up. Mining and infrastructure firms are those most engaged in investments of the type that would create untimely dissolution problems. Second, a firm's articles of association could stipulate that it was open-ended or would last only for a specific period. We construct a dummy for whether the firm has a

stated duration, and define another variable as the interaction of that dummy with the number of years stated for firms that have a stipulated duration.[11]

Second, enterprise size affects choice of legal form in two ways. Only the corporate form permits access to equity markets, which eases the task of raising capital for the largest enterprises. (The SRL's equity shares could not be listed on exchanges.) In addition, the corporation requires formalities (such as publication of a balance-sheet) that entail fixed costs, and imply that smaller enterprises would prefer another form. We capture firm-size effects with the natural log of stated capital and its square. We also include a dummy for whether the firm started with any unpaid capital. Firms could and did have nominal capital in excess of what owners had paid in. Shareholders remained liable to pay in more capital, according to rules stipulated in the firm's articles. The difference between nominal and paid-in capital also enhanced the firm's borrowing ability, as the lenders knew the additional capital could be called in bankruptcy proceedings.

Third, family ties among owners may affect the choice of legal form. If close kin create a firm, the limited partnership (and thus limited liability for some owners) may be superfluous because family members insure one another informally, and because each owner will want the other playing an active role in

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[11] We top code the duration variable at twenty years. Only a few firms state a longer duration.

running the firm. Owners who are not close relatives may prefer a form that allows them to restrict their liability, that is, the limited partnership. This partnership form does not allow such owners to participate in management but that again may not be a concern for certain investors. Because it relies on a published source that did not report this information, we do not have the relationship variables for the Firms Census source. For the Firms Sample database we use the number of owners and the family relationships to capture aspects of the legal-form decision that could reflect owner identity.

Four, organizing any type of firm required costs. All new firms paid the notary who drafted the articles of association and incurred fees for the commercial registry. In addition, the government imposed taxes that depended in part on the firm's total capital (Gaceta de Madrid (1916), 687-690). Tax considerations today are an important element of decisions about enterprise form, but that was not the case in Spain in our period. Extant firms faced a number of taxes that changed over the period we study and bear no simple relation to form. Prior to 1900, the relevant tax was levied on each town, and the local mayor raised the necessary funds from local firms. In 1900 Spain introduced a modern tax on corporations of certain types. Corporations classified as "industrial" paid a lower tax rate under this regime, providing an incentive to organized in this way.

The choice of legal form might also reflect local considerations. Notaries outside the main commercial centers had less experience organizing corporations.

A notary inexperienced with the corporation form could impose additional transaction costs for entrepreneurs organizing their firm that way. (In the years 1886 through 1936 a total of eight Spanish provinces did not see the registration of *any* corporations.) And if one reason to organize a corporation was to tap liquid markets for investors, either privately or by listing on the stock market, then a firm located outside financial centers such as Madrid or Barcelona (or places with smaller exchanges, such as Bilbao or Valencia) might think twice about the corporate form.

IV.   Results

The NL model requires judgment about which alternatives are similar and thus belong in the same nest. Figure 2 describes our approach. We group the enterprise forms with limited liability for at least some owners into one nest, and place the ordinary partnership in its own, "degenerate" nest. Table 2 reports the NL estimates for the Firms Census model. (Appendix Table B.1 reports descriptive statistics for the estimation sub-samples.) Several alternative nesting structures seem plausible, but the data reject the other candidates as inconsistent with the random utility-maximization model that underlies NL (see below). The estimates are relative to the ordinary partnership. The choice of normalization does not affect estimated probabilities. The nesting (or "dissimilarity") parameter (which we constrain to "1" for the degenerate nest) lies on the unit interval,

implying that the model is consistent with utility maximization. Because the model has several branches the individual parameters are even more difficult to interpret than is normally the case for nonlinear models. Wald tests reject the null hypothesis that any of the branches are redundant in the sense the model cannot distinguish that form from the ordinary partnership. We cannot, however, reject the null that any branch is equal to any other.[12] Individual regressors do have substantially different effect for different forms, however.[13]

The estimates imply a ranking over legal form options for each firm. We compare the "predicted" legal form (the highest-ranked form, according to the model) to the form the enterprise actually took. With more than two outcomes this is a demanding standard. The predictions generated by the model reported in Table 2 correspond to firm choices in about 58 percent of cases. This statistic varies considerably across enterprise forms. The model correctly predicts about 77 percent of ordinary partnerships and 79 percent of corporations. The limited partnership and SRL are more difficult: the model does not predict *any* limited

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[12] For the individual branches, the smallest Wald χ^2 is 61.64, which with 19 degrees of freedom rejects at any confidence level.

[13] For example, the null hypothesis that the year effects are the same for the limited partnership the SRL the χ^2 statistic is 6.89, which with 2 d.f. has a "p-value" of .0319.

partnerships and only about 16 percent of SRLs. With four alternatives, it is also useful to examine the first and second-ranked forms. Under this more forgiving criterion, the model predicts 94 percent of partnerships, 83 percent of corporations, and 81 percent of SRLs. But the limited partnerships remain a problem; in fact, the model implies that for 64 percent of actual limited partnerships, that form was the firm's *last* choice.

To examine how the firm's characteristics affect the choice of legal form we rely on average marginal effects (AME), the mean change in the predicted probability that firms select a given form when we vary one or a set of regressors. By construction the AMEs sum to one for all choices facing a single firm. Some AMEs are large, but imprecisely estimated. Starting in 1927 compared to 1925 raises the probability of the firm choosing the SRL by .085, with a standard error of .0296. This trend reflects increasing awareness of and comfort with the new form. Increasing the firm's capitalization from the mean by ten percent reduces the probability of forming an ordinary partnership by .0989 (.0358) and increases the chance of a corporation by .1592 (.0565). More capital also makes the SRL less favored (.0602, with a standard error of .0291).[14] A larger firm's preference

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[14] Table B.2 reports AMEs for all enterprise forms. The standard errors are estimated by 200 bootstrap replications. The AMEs for capital account for both the log of capital and its square.

for a form that allows it to tap equity markets does not surprise. The negative

effect for the SRL may reflect entrepreneurs' ability to more effectively sort when

they do not want to issue tradeable shares; the SRL allows limited liability with

locked-in capital at a smaller scale. Comparing the infrastructure sector to trade,

the latter increases the chance of an ordinary partnership by .11 (.0662) and

reduces the probability of the corporation by .1239 (.1119). Infrastructure firms,

as noted, need the corporation's ability to lock-in capital.

V.   Decisions 1886-1918: the Firms Sample database

We now turn to two parallel models using the Firm Sample database for

the period prior to and following the SRL's introduction. We split the Firm

Sample database in this way because the SRL's introduction in 1919 enlarges the

choice set for that year and after. We divide our fifteen sampled provinces into

five groups of three provinces each. To account for trends over the period 1886-

1936, we use a linear spline, with the knot set at 1899, the year Spain began to see

capital repatriated from its former colonies. The Firm Sample has information not

available in the Firm Census. We know the number and identity of the owners

when the firm was established, and use the indicators of family relations

discussed above to infer relationships among owners. We enter the number of

owners in total linearly. A first dummy variable is unity if all owners appear to be

21

related, and another is unity if only some owners appear to be related. The reference category is firms for which the owners appear not to be related. We interact these two dummies with the number of owners, allowing the connection between legal form and family connections to vary with firm size.

Table 3 reports estimates for the Firm Sample model before 1919. The information on owner numbers and family relationships improves the model's ability to distinguish between ordinary partnerships and other forms. The model correctly predicts 77 percent of firms overall, including 95 percent of ordinary partnership and about 70 percent of corporations. The limited partnership remains problematic, however; only eight percent of actual limited partnerships have this as their predicted first choice, but about 85 percent have this option as their predicted second choice. This is admittedly a low standard when there are only three options.

The Firms Sample database has only 500 firms in the post-1919 period, which strains our ability to estimate 45 parameters. We report the estimates in Table 4. Unfortunately, only this database has the family variables in the SRL period, so we must accept the possible problems the small sample poses. This post-1919 model predicts 73 percent of partnerships, 26 percent of limited partnerships, 76 percent of corporations, and 57 percent of SRLs. This is a dramatic improvement for the limited partnership and the SRL; the family

composition of the owners allows the model to more accurately account for decisions concerning these two forms.

Point estimates for the AMEs in the two Firms Sample models are large but imprecisely estimated. We focus on the estimates for the SRL period as reported in Table 4. Comparing a firm with two related owners to one with two unrelated owners, the latter reduces the ordinary partnership's probability by .082 (standard error = .086) and increases the limited partnership's probability by .077 (standard error = .058). The effects are slightly larger comparing a three person firm with all related owners to one for which only two owners are related. A three-person firm with all related owners has a larger chance (.298; standard error =.181) chance of selecting the ordinary partnership and a smaller chance (.294; standard error = .219) chance of taking on the limited partnership. These "relatives" variables have little effect on either the corporation or the SRL.

Our results offer new insights into the role of families in firm creation.[15] In his famous discussion of families and other "F-connections," Ben-Porath (1980) stresses that relatives typically pool risk, which would be one reason we

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[15] The historical literature on family ownership of firms tends to stress the implications of family ownership for firm performance, which is not our focus. Recent contributions include Colli, Fernández-Pérez and Rose (2003); Colli (2003); and James (2006).

find that family members in business together use a partnership form with unlimited liability. Ben-Porath also argues that family members can sustain exchange more efficiently than other agents because their familial ties imply a repeated-game context that would not be the case for individuals who could part company with any personal loss. Family-based businesses reduce transactions costs in the sense of Williamson (1979). The family-firm preference for the ordinary partnership over other forms may reflect the problem of contractual incompleteness as stressed by Grossman and Hart (1986). They argue that ownership amounts to an allocation of residual rights that creates distortions, but is a second-based solution to costly contracting. Family members may be better able to contend with contractual incompleteness without allocation of "ownership" within a firm; that is, two brothers may be better-suited to sharing the management of an ordinary partnership than would two unrelated individuals. In a limited partnership, on the other hand, the law requires control rights to rest with a specified group of owners, the general partners.

The two databases differ in three ways. The Firm Census is mostly cross-sectional, while Firm Sample spans a fifty-year period. The former comprises every firm registered in Spain in those three years, while the latter has two firms chosen randomly from each of fifteen of Spain's provinces in every year covered. These differences alone might lead to at least somewhat different results. But the Firm Sample data also has information on the family connections among owners,

24

and these variables drive the better predictive power. Family firms strongly preferred the ordinary partnership form. Limited partnerships only appealed when the firm included some owners who were not relatives. Most importantly, the post-1919 Firms Sample model does a much better job of predicting the use of the SRL: family firms were less likely to use this form in our period, and knowing which firms consisted of related owners allows the model to distinguish between the SRL and the partnership.

VI.   Robustness

Appendix B reports several robustness checks for the models reported here. We briefly summarize these checks and refer the reader to the Appendix. First, the difference between the Firms Sample and Firms Census results raises the concern that the latter suffer from omitted variables bias, as the Firms Census database lacks the information on owner characteristics that seems so important in the Firms Sample model. We estimate a version of the pre-1919 Firms Sample model that drops the variables that rely on owner characteristics. The point estimates for other variables change little.

Second, our analysis takes as given that the legal forms reported by the commercial registry are distinct and the object of meaningful choices by entrepreneurs starting a new firm. One might worry that firms cared less about legal form than we think. We address this concern by estimating models in which

the real enterprise form is replaced by a placebo. We use two different randomly-assigned placebos. In the first, the probability of each legal form is equal. In the second, we assign forms randomly but respect the unconditional distribution of legal forms for the database in question. These models cannot distinguish the four alternative placebo forms at all, in contrast to the results reported in Tables 2-4.

Finally, the NL model imposes more structure on choices than some alternatives, such as the multinomial probit model (MNP). Appendix B reports a version of the MNP model estimated using the Firms Census database. Given the structure of our data, the MNP model is poorly-identified. The model we report does not imply results much different from the NL models used in this paper, however.

VII.   If there had never been an SRL? A counter-factual

The logic of choice models supports a counter-factual exercise: what would firms have done, after 1919, had the SRL not been a possibility, but nothing else changed? We pose this question by looking to the next-preferred option for firms that organized as SRLs. The Firm Census sample has 783 SRLs. (The model is reported in Table 2.) We consider first the 126 firms that were SRLs and for which the model assigns the SRL as the first choice. Ninety-four of these firms would have been ordinary partnership, and 19 would have been a corporation. None would have chosen the limited partnership form. Most Spanish

26

entrepreneurs apparently viewed the SRL as a form of partnership with limited

liability. A small group treated it as a close substitute for the corporation, perhaps

valuing its ability to lock in capital and offer limited liability at a small scale.[16]

The fact that a firm organized as an SRL when available implies that the

firm preferred that alternative to the other possible forms. Thus eliminating the

SRL alternative implies a loss. Looking at the types of firms forced into the

"wrong" alternatives conveys a sense of the implications of a more restrictive

menu. In the Firms Census model, the firms that would have been ordinary

partnerships instead of SRLs were larger than the typical partnerships, with a

median capitalization of 52,400 pesetas compared to 30,800 pesetas for actual

partnerships. Those that would have been corporations were much smaller than

the typical corporation, at about 293,000 pesetas.[17] The post-1919 Firms Sample

model implies something similar. Firms that were actual SRLs but counter-factual

partnerships had more owners than actual partnerships, and the SRLs were much

less likely to have related owners related (2 percent versus 36 percent). If the SRL

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[16] This counter-factual only considers the SRLs ranked most-preferred by the

model. If we instead consider the next-preferred option after the SRL for all

SRLs, even those ranked second or third by the model, the results are similar.

[17] In 1900, £1=32.56 pesetas =$4.87. (Martín Aceña and Pons, 2005), 704.

had not existed, firms would have been forced to shoehorn themselves into a form best suited to a different kind of enterprise.

A final and more speculative calculation asks what firms would have chosen had the SRL been available in the 1890s. Using the estimates for the post-1919 model (Table 4) and the data for the pre-1919 period leads to a sharp conclusion: no firm prior to 1919 would rank the SRL first, and for 60 percent of all firms, the SRL would have been the last choice. The counterfactual has some limitations: it cannot account for the possibility that some firms would not have organized at all, or organized with other features, had the SRL's features not been available.

The counter-factuals must take as given the characteristics of the firms created in this period. We cannot really know whether the SRL's introduction changed the nature of firms entrepreneurs chose to create. If the SRL reduced the costs of organizing a multi-owner firm (at least for some enterprises) then it might account for an increase in the total number of multi-owner firms, a possibility outside our model's structure. This limitation is another implication of the implicit IIA we imposed by looking only at multi-owner firms, and ignoring the single-owner firms for which we lack data.

VIII. Conclusions

28

Spanish company law reflected the basic ideas current in most civil-law countries in the nineteenth century, offering entrepreneurs a choice of ordinary or limited partnerships, or corporations. Most firms organized as ordinary partnerships, with corporations common only in particular sectors and for the largest enterprises. Spain enlarged the menu of enterprise forms in 1919. The SRL had always been possible, given the flexibility of the Spanish commercial code, but few firms had been organized this way until 1919 because of concerns about confusion with the ordinary partnership. In 1918, the Minister of Justice (Roig i Bergada) attempted to introduce a specific law to govern the SRL. But his government fell before the project came to fruition. Instead, the authorities responsible for the commercial registry promulgated rules clarifying the creation of SRLs. Both Roig i Bergada and the 1919 regulations alluded to a pent-up demand for the new form, reflecting a desire to imitate the new enterprise forms entrepreneurs saw being used elsewhere in Europe. The immediate popularity of the SRL suggests that there was, in fact, a desire for firms to organize in this new way. The minister was right.[18]

The decision to employ one legal form over another form reflected trade-offs related to firm size, sector, the characteristics of owners, and the firm's other

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[18] Martínez-Rodríguez (2015) details the Roig i Bergada proposal and the process that led to the 1919 regulations.

traits. A given attribute could be irrelevant along some margins and important

along others. Most strikingly, we show for the first time that family connections

play a particular role in the choice enterprise form. Family connections among

firm owners alter the importance of contractual rules specified by the law. The

ordinary partnership, to take our strongest results, appeals more to family groups

because close relatives insure each other anyway, reducing the impact of the

unlimited liability for all owners required for that form. Most importantly, we find

that the SRL was a close substitute in some cases for the ordinary partnership and

in others for the corporation. This should surprise; how could one legal form be a

reasonable alternative to firms organizing in such different ways? The answer lies

in the SRL's flexibility, which made it possible to adapt the form closely to the

needs of a firm's organizers. Firms that would otherwise be partnerships could

use the SRL to adapt the partnership-like structure they preferred. Firms that

would otherwise be corporations could use the SRL to create their own preferred

organization.

These results have implications beyond Spain. The choice of legal form

transcends any particular country or period in the past two centuries. Many

countries introduced legal forms similar to the SRL starting at the end of the

nineteenth. Prominent examples include Germany's *Gesellschaft mit beschränkter

Haftung* (1892), the U.K's Private Limited Company (1907), and France's *Société

à responsabilité limitée* (1925). As noted at the outset, U.S. states have recently

expanded the menu of organizational forms they offer to business enterprises. We do not expect that the introduction of a new legal form in New York State, for example, will mimic the patterns we find for Spain. But the new forms we see in recent decades share the feature of offering to smaller firms the possibility of organizing with limited liability without the reporting and other burdens of the corporation, and without sacrificing the contractual freedom of the partnership. The underlying issues are the same: the way heterogeneous firms select and adapt an enterprise form to minimize the costs of establishing and running them firm.

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FIGURE 1. DISTRIBUTION OF LEGAL FORMS FOR ALL ENTERPRISES REGISTERED IN SPAIN, 1886-1936, ALONG WITH TOTAL NUMBER OF FIRM REGISTRATIONS
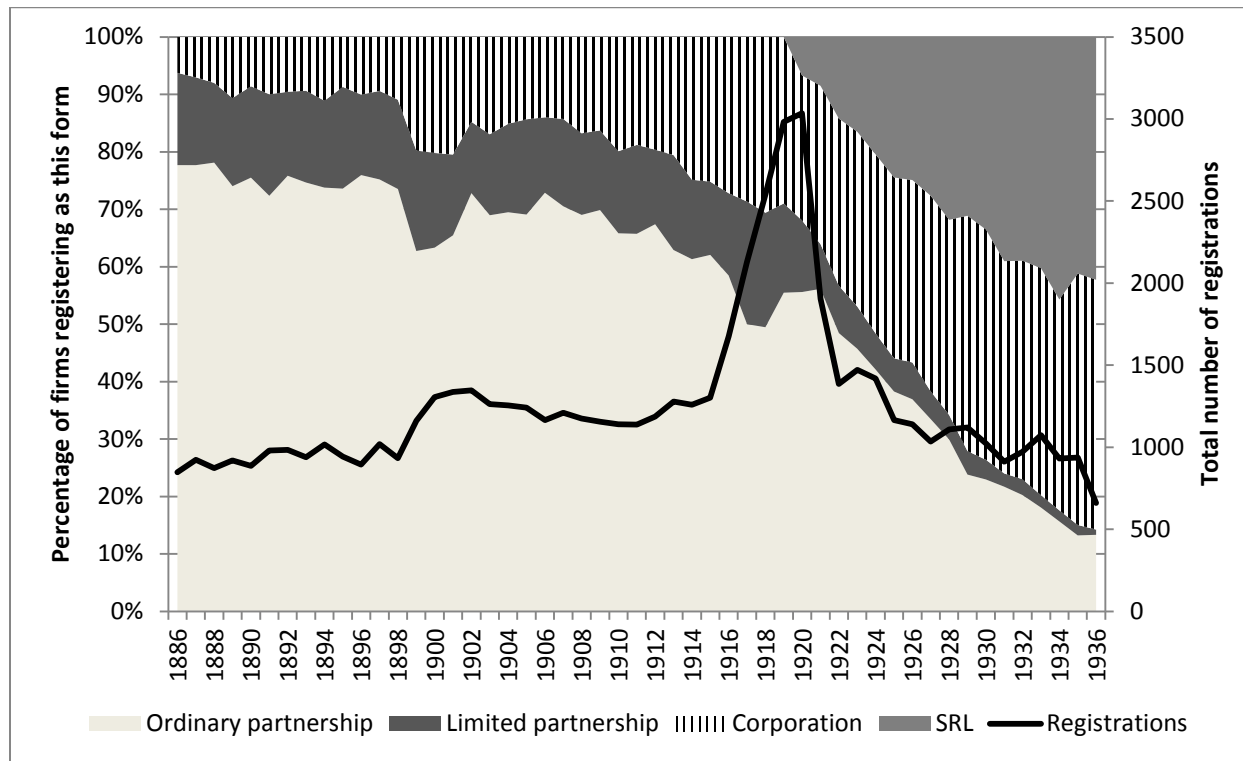
Source: Yearbooks database.

Notes: Left axis is percentage of firms registering as a given legal form; right axis is the total number of registrations. See text for more discussion of legal forms.

FIGURE 2. SCHEMATIC FOR NESTED-LOGIT MODEL STRUCTURES
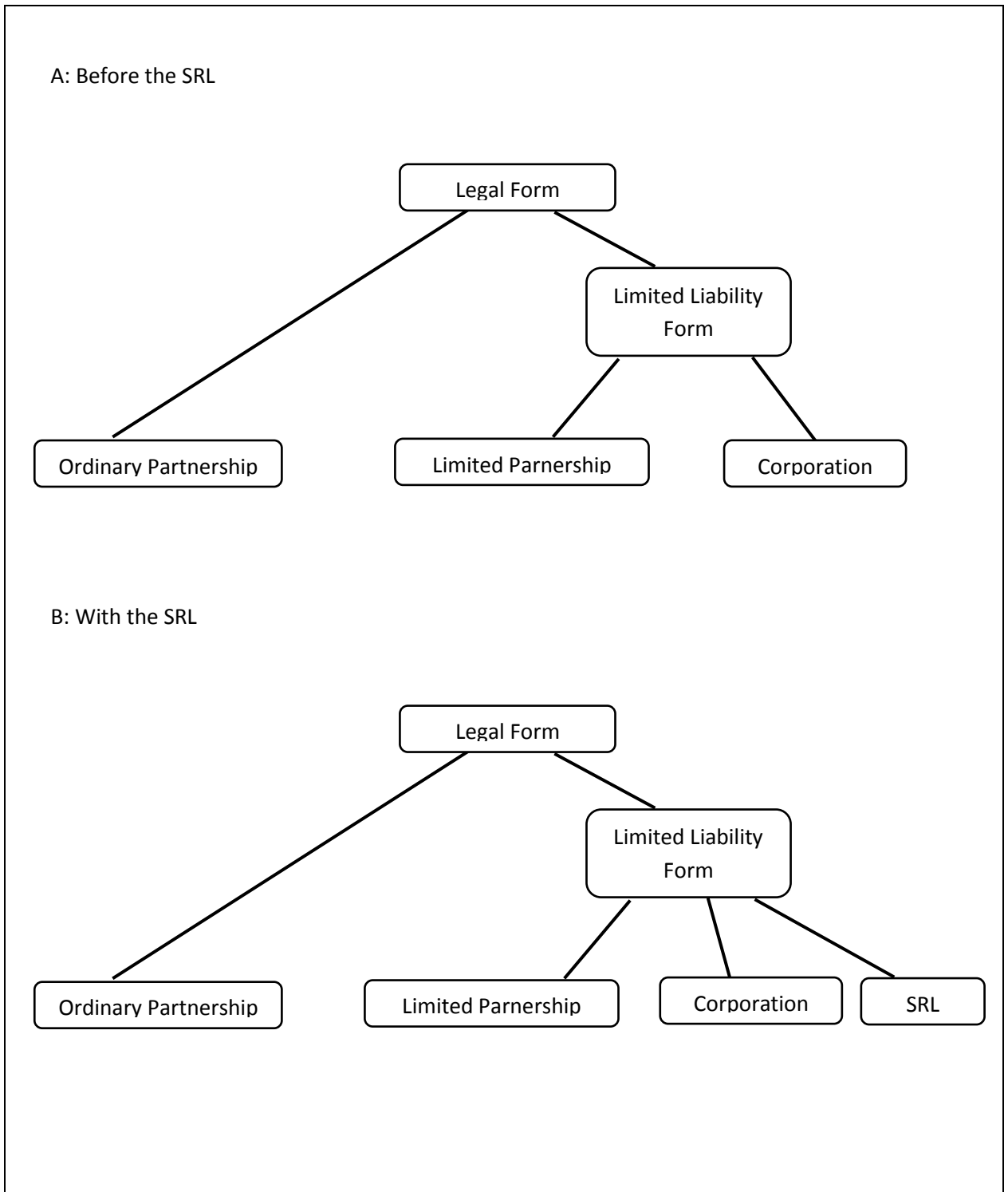
Note: This structure underpins the nested logit (NL) models reported in the text.

TABLE 1— CHARACTERISTICS OF FIRMS BY LEGAL FORM

	Ordinary partnerships			Limited partnerships		
	1886-1898	1899-1918	1919-1936	1886-1898	1899-1918	1919-1936
Capital	58,296	42,279	103,971	150,039	88,382	165,188
Owners	2.68	2.72	2.95	3.43	3.59	3.26
	(224)	(357)	(175)	(56)	(97)	(31)
All Relatives	26.8	24.6	32.5	8.8	16.5	13
Some Relatives	12.5	12.3	10.2	35.1	20.6	29
Percent w/ limit	91.9	75.3	52.5	85.9	78.3	61.3

	Corporations			SRL		
	1886-1898	1899-1918	1919-1936	1886-1898	1899-1918	1919-1936
Capital	3,330,246	631,158	2,152,169			119,255
Owners	7.78	8.31	6.68			3.93
	(36)	(109)	(151)			(140)
All Relatives	2.8	1.7	13.1			10
Some Relatives	11.1	25.9	32			25.5
Percent w/ limit	69.4	58	32.7			36.9

Source: Computed from the Firms Sample database.

Notes: See text for explanation of periods. "Capital" is the mean, in pesetas. "Owners" is the mean (number of firms in parenthesis)."All relatives" is the percentage of firms for which all owners are related; "Some relatives" is the percent of firms for which some owners are related. "Percent w/ limit" refers to firms stating a limit in their articles of association. There was no SRL prior to 1919.

TABLE 2—NESTED LOGIT MODEL FOR THE FIRM CENSUS DATABASE

	Limited partnership	Corporation	SRL
Firm has stated duration	0.161	-2.569	-0.213
	(0.324)	(0.507)	(0.195)
Duration in years	-0.012	0.147	0.006
	(0.024)	(0.031)	(0.015)
Any unpaid capital	1.209	3.340	1.392
	(0.641)	(0.515)	(0.438)
Ln (capital)	-0.656	-0.698	-0.278
	(0.118)	(0.108)	(0.044)
Ln (capital) squared	0.043	0.064	0.022
	(0.006)	(0.009)	(0.004)
Sector			
Factory	0.165	-0.848	-0.256
	(0.283)	(0.198)	(0.153)
Trade	0.216	-1.250	-0.289
	(0.304)	(0.252)	(0.159)
Infrastructure	0.274	0.244	-0.013
	(0.372)	(0.208)	(0.220)
Location			
Catalonia	0.523	0.651	0.040
	(0.186)	(0.153)	(0.138)
Madrid	0.524	0.492	0.376
	(0.257)	(0.185)	(0.163)
Basque Country	-0.303	-0.556	0.605
	(0.284)	(0.280)	(0.158)
Year firm formed			
1926	0.121	0.0511	0.156
	(0.170)	(0.130)	(0.113)
1927	-0.373	0.00751	0.312
	(0.245)	(0.136)	(0.122)
Dissimilarity parameter	0.915		
	(0.236)		

Note: Standard errors adjusted for clustering by province. See Figure 2 for nesting structure. There are 3,142 firms.

TABLE 3– NESTED LOGIT MODEL, FIRM SAMPLE, PRE 1919

	Limited partnership		Corporation	
	Est.	SE	Est.	SE
Any capital outstanding	0.347	(0.399)	1.608	(0.466)
Firm has stated duration	-0.040	(0.364)	-1.877	(0.749)
Duration	-0.021	(0.023)	0.117	(0.048)
Number of owners	0.400	(0.112)	0.494	(0.139)
Year	-0.495	(0.285)	0.259	(0.170)
Year spline, 1899=0	0.025	(0.016)	0.0618	(0.025)
Ln (capital)	1.010	(1.013)	-1.785	(0.725)
Ln (capital) squared	-0.031	(0.049)	0.102	(0.036)
Sector				
Factory	0.044	(0.406)	-1.416	(0.538)
Trade	0.211	(0.417)	-1.937	(0.639)
Infrastructure	-0.354	(0.552)	-0.187	(0.430)
Relationships among owners				
All owners relatives	0.407	(0.524)	-0.336	(0.908)
Some owners relatives	0.503	(0.693)	-0.395	(1.018)
Some owners relatives x no. owners	-0.151	(0.171)	-0.105	(0.211)
All owners relatives x no. owners	-0.438	(0.158)	-0.638	(0.224)
Provinces				
Group one	0.107	(0.290)	0.612	(0.421)
Group two	0.294	(0.279)	-0.290	(0.479)
Group three	-0.126	(0.277)	0.081	(0.351)
Group four	-0.181	(0.284)	0.404	(0.368)
Dissimilarity parameter	0.502	(0.520)		

Note: Province group one consists of Albacete, Murcia, and Almería; Group two, Barcelona, Tarragone, and Alicante; Group three, Vizcaya, Navarra, and A Coruña; Group four, Madrid, Cuenca, and Valladolid. The ommited group consists of Asturias, Cantabria, and La Rioja. There are 884 firms.

TABLE 4— NESTED LOGIT MODEL, FIRM SAMPLE, POST 1919

	Limited partnership		Corporation		SRL	
	Est.	SE	Est.	SE	Est.	SE
Any capital outstanding	1.488	(0.484)	1.764	(0.683)	0.767	(0.688)
Firm has stated duration	-0.653	(0.756)	-2.697	(1.526)	-1.055	(0.472)
Duration	0.059	(0.042)	0.142	(0.084)	0.040	(0.042)
Number of owners	0.126	(0.190)	0.309	(0.232)	0.015	(0.194)
Year	-0.320	(0.554)	0.126	(0.271)	-0.211	(0.282)
Year spline, 1899=0	-0.029	(0.104)	0.053	(0.046)	0.129	(0.048)
Ln (capital)	0.712	(2.094)	-1.305	(1.068)	-0.006	(0.973)
Ln (capital) squared	-0.013	(0.093)	0.086	(0.055)	0.012	(0.050)
Sector						
Factory	-1.053	(0.600)	-1.408	(0.670)	-0.673	(0.465)
Trade	-0.277	(0.589)	-1.513	(0.810)	-0.737	(0.434)
Infrastructure	0.257	(0.679)	0.005	(0.606)	-0.284	(0.707)
Relationships among owners						
All owners relatives	0.907	(1.944)	-1.137	(0.772)	-1.662	(0.844)
Some owners relatives	1.810	(1.269)	1.155	(0.868)	0.081	(0.725)
Some owners relatives x no. owners	-0.315	(0.286)	-0.231	(0.234)	0.066	(0.207)
All owners relatives x no. owners	-0.751	(0.668)	-0.177	(0.228)	0.014	(0.249)
Provinces						
Group one	0.649	(0.893)	0.285	(0.508)	-0.742	(0.740)
Group two	-0.113	(0.458)	0.212	(0.478)	-0.247	(0.335)
Group three	-0.085	(0.540)	0.0976	(0.487)	0.331	(0.387)
Group four	-0.420	(0.808)	0.337	(0.398)	0.451	(0.351)
Dissimilarity parameter	0.811	(0.385)				

Note: See notes for Table 3. There are 500 firms.

Online appendix for "Choice of Enterprise Form: Spain, 1886-1936"

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Appendix A: The sources

This appendix provides detail on the three data sets employed in the paper. Starting in 1886, Spain maintained an exhaustive register of the companies inscribed in each province's commercial register. Our three data sets reflect the information provided by the firms as they enrolled. Each new entity was assigned a number, which it retained for the life of the firm. The law required that changes in the articles of association also be registered, along with the firm's merger, transformation, or dissolution. Many firms wrote a time limit into their articles of association, as we showed, and if the firm ceased operation when originally planned.[1] Some owners of defunct firms had strong incentives to report the fact, since de-registering freed owners of liability associated with the dead firm. But the law imposed no real penalty for failure to register the end of a firm's operations, so if owners had no incentive to report, that fact could go un-reported.[2] The "demise" part of the commercial registry likely suffers from severe sample-selection bias.

We constructed the Yearbooks database from the annual official publication, *Anuarios de la Dirección General de los Registros y del Notariado,* which appeared under various titles during our period: *Estadística del Registro*

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[1] § 38 Reglamento del Registro Mercantil, 1885; §112 Reglamento del Registro Mercantil, 1919.

[2] Tafunell (2005), p. 715-716 discusses the completeness of these de-registrations.

Mercantil (1886-1898), *Estadística del Registro Mercantil* (1899–1909), and *Anuario de los Registros y del Notariado.* This last publication started in 1911 and continues to the present.

The Firms Census data is based on a source that unfortunately was only published for three years. Starting in 1927, the Special Statistics Section of the General Directorate of Commerce, Industry and Services published *La Asociación Mercantil en España*, a nominative list of all the companies registered by the Commercial Register. Apparently this publication was to be maintained indefinitely, but it only appeared for the years 1926, 1927, and 1928. The publication contains three types of information regarding commercial companies that (1) registered (2) dissolved and (3) modified. We focus on initial registration for the reasons discussed above.

We collected the Firms Sample data ourselves. Spain has forty-nine peninsular provinces in our period, and for fifteen of them we selected two firms for each year in the period 1886-1936.[3] (Given the archive's organization, a true randomization strategy was not possible; instead, we sampled the first firm to appear in the records for February and the first firm for July). Our fifteen provinces include the major commercial and industrial centers.

Table A.2 compares the distribution of legal forms in each province as

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[3] We treat the Canary Islands as a single province throughout our period, although in that it was divided in two in 1927.

reported in the Yearbooks and as calculated from the Firms Sample source. In most provinces the match between the sample and the universe is good, with the worst exceptions being the always-problematic limited partnership. Table A.3 is a more complete version of text Table 1, and shows that the other sample moments in the Firm Sample data match those of the other two sources tolerably well.

Table A.4 reports the distribution of legal forms across sector in more detail than used in the econometric models reported in the text. Even at this level of detail, these sectors pertain to the firm's product and do not necessarily indicate much about their operations. "Agriculture," for example, includes firms providing inputs to agricultural as well as firms that process and market agricultural output. There is no one-to-one mapping between any legal form and any one or even two sectors. Corporations are used virtually everywhere, as are the partnership forms. Even in its first years, the SRL was used in a variety of activities.

Table A.1: The Menu of Organizational Forms c. 1919: Industrial Countries vs. Spain

Form	Definition of Form	Availability- Western Countries	Availability- Spain
Ordinary partnership	Two or more partners, all unlimitedly liable	France: yes Germany: yes UK: yes US: yes	Yes
Limited partnership	One or more general partners with unlimited liability, and one or more special partners who cannot participate in management but who have limited liability	France: yes Germany: yes UK: only after 1907 US: yes, but in an unattractive form	Yes
Limited partnership with tradable shares	Same as limited partnership, except special partners' shares can be bought and sold on the market	France: yes Germany: yes UK: no US: no	Yes, but reference in code is indirect, and it was not widely used.
Corporation	All members have limited liability and their shares are tradable	Required special permission until: France: 1867 Germany: 1860s–1870, varied by state UK: 1844 without limited liability and 1855–56 with limited liability US: mostly middle third of nineteenth century, varied by state	General incorporation from 1829 Code to 1847. General incorporation re-introduced in 1869 and affirmed the 1885 Code.
Private limited liability company	All members have limited liability but their shares are not tradable	France: 1925 Germany: 1892 UK: 1907 US: 1870s–1880s for a few states, but unattractive; laws in 1950s–1970s allowed close corporations to mimic; 1980s–1990s	Legally possible after Business Code of 1885; specific regulations for registration introduced in 1919

Source: Adapted from Guinnane *et al* (2007), p. 59.

Table A.2: Comparison of sample to population, *Firms Sample*.

	Pre-1919							
	Sample				Population			
	Partnership	Limited partnership	Corporations	Number of firms	Partnership	Limited partnership	Corporations	Number of firms
Albacete	69.35	19.35	11.29	62	71.05	15.35	13.6	228
Alicante	71.21	18.18	10.61	66	79.08	9.24	11.67	1482
Almería	68.29	21.95	9.76	41	64.62	15.47	19.92	472
Barcelona	69.49	22.03	8.47	59	63.99	21.9	14.12	12212
Coruña, A	56.6	28.3	15.09	53	61.77	22.87	15.36	586
Cuenca	76.36	10.91	12.73	55	77.38	9.52	13.1	84
Madrid	34.43	9.84	55.74	61	52.95	12.07	34.98	3794
Murcia	63.64	7.27	29.09	55	55.75	9.94	34.31	956
Navarra	57.14	12.7	30.16	63	61.88	5.52	32.6	543
Sevilla	64.06	29.69	6.25	64	66	22.15	11.85	1291
Tarragona	73.21	21.43	5.36	56	63.03	27.49	9.48	633
Toledo	81.25	9.38	9.38	64	80.95	6.19	12.86	210
Valladolid	80.7	14.04	5.26	57	80.4	9.2	10.4	500
Vizcaya	62.9	11.29	25.81	62	64.44	7.1	28.46	2635
Zaragoza	60	26.15	13.85	65	62.01	23.92	14.07	1045

Table A.2: Comparison of sample to population, *Firms Sample* (continued).

| | 1919 and later | | | | | | | | | |
| | Sample | | | | | Population | | | | |
	Partnership	Limited partnership	Corporations	SRL	Number of firms	Partnership	Limited partnership	Corporations	SRL	Number of firms
Albacete	38.89	25	22.22	13.89	36	48.04	16.67	26.47	8.82	228
Alicante	47.22	0	25	27.78	36	58.61	5.04	18.61	17.74	1482
Almería	34.38	3.13	56.25	6.25	32	40.52	6.9	46.55	6.03	472
Barcelona	36.11	5.56	38.89	19.44	36	33.88	7.58	40.91	17.63	12212
Coruña, A	27.78	5.56	8.33	58.33	36	39.75	5.74	14.75	39.75	586
Cuenca	35.71	0	25	39.29	28	23.26	2.33	34.88	39.53	84
Madrid	15.15	3.03	54.55	27.27	33	20.35	4.29	49.84	25.51	3794
Murcia	27.27	18.18	45.45	9.09	22	43.36	6.64	28.76	21.24	956
Navarra	51.52	0	21.21	27.27	33	39.62	2.94	26.42	31.03	543
Sevilla	40.54	10.81	24.32	24.32	37	44.85	12.23	23.11	19.81	1291
Tarragona	41.18	2.94	32.35	23.53	34	46.97	9.85	25.76	17.42	633
Toledo	25	6.25	40.63	28.13	32	27.68	3.57	31.25	37.5	210
Valladolid	42.42	0	21.21	36.36	33	32.34	0.5	24.88	42.29	500
Vizcaya	16.67	8.33	27.78	47.22	36	33.71	2.82	20.46	43.01	2635
Zaragoza	41.67	5.56	25	27.78	36	53.79	4.24	21.65	20.31	1045

Source: *Firms Sample* database.

Table A.3. Firm sizes by legal form

Period	Ordinary partnership		Limited partnership		Corporations		SRL	
	Capital	Owners	Capital	Owners	Capital	Owners	Capital	Owners
Panel A: Yearbooks								
1885-1898	50,212		94,687		1,023,309			
	(592)		(369)		(324)			
1899-1919	45,698		101,614		895,463			
	(988)		(685)		(822)			
1920-1936	98,665		135,959		1,522,063		130,842	
	(674)		(305)		(679)		(519)	
Panel B: Firms sample								
1885-1898	58,296	2.68	150,039	3.43	3,330,246	7.78		
	15,000	2.00	35,000	3.00	25,000	5.50		
	(220)	(224)	(57)	(56)	(35)	(36)		
1899-1918	42,279	2.72	88,382	3.59	631,158	8.31		
	10,000	2.00	30,000	3.00	100,000	5.00		
	(356)	(357)	(97)	(97)	(112)	(109)		
1919-1936	103,971	2.95	165,188	3.26	2,152,169	6.68	119,255	3.93
	34,000	2.00	10,000	3.00	300,000	4.00	50,000	3
	(175)	(175)	(31)	(31)	(153)	(151)	(140)	(140)
Panel C: Firms Census								
1925-1927	107,122		197,274		132,091		1,200,000	
	30,000		60,000		50,000		500,000	
	(1,128)		(189)		(781)		(1,034)	

Sources: as indicated.

Notes: In Panel A, the numbers are the mean capitalization, with number of firms in parenthesis. In panels B and C we report the mean and median capitalization with number of firms in parenthesis.

Table A.4.- Sector and the Choice of Legal Form

Panel A: Firms Sample

	Legal Form				
Sector	Partnership	Limited Partnership	Corporation	SRL	Total
Agriculture, Mining, Energy & Sanitation	30 (20.69)	8 (5.52)	99 (68.28)	8 (5.52)	145 (100.00)
Factories	261 (58.78)	55 (12.39)	69 (15.54)	59 (13.29)	444 (100.00)
Building	15 (60.00)	3 (12.00)	7 (28.00)	0 (0.00)	25 (100.00)
Trade	386 (66.10)	103 (17.64)	44 (7.53)	51 (8.73)	584 (100.00)
Finances, Media, Real Estate & Liberal Professionals	25 (35.21)	6 (8.45)	36 (50.70)	4 (5.63)	71 (100.00)
Transportation	16 (36.36)	3 (6.82)	18 (40.91)	7 (15.91)	44 (100.00)
Other Sectors	23 (32.86)	7 (10.00)	28 (40.00)	12 (17.14)	70 (100.00)
Total	756 (54.66)	185 (13.38)	301 (21.76)	141 (10.20)	1,383 (100.00)

Panel B: Firms Census

	Legal Form				
Sector	Partnership	Limited Partnership	Corporation	SRL	Total
Agriculture	4 (10.81)	2 (5.41)	19 (51.35)	12 (32.43)	37 (100.00)
Mining	13 (16.05)	4 (4.94)	53 (65.43)	11 (13.58)	81 (100.00)
Factories	457 (37.68)	79 (6.51)	377 (31.08)	300 (24.73)	1,213 (100.00)
Energy	17 (19.10)	2 (2.25)	61 (68.54)	9 10.11)	89 (100.00)
Water-sanitation	3 (12.50)	1 (4.17)	17 (70.83)	3 (12.50)	24 (100.00)
Building	37 (31.09)	3 (2.52)	51 (42.86)	28 (23.53)	119 (100.00)
Trade	459 (42.86)	81 (7.56)	227 (21.20)	304 (28.38)	1,071 (100.00)
Transportation	55 (38.46)	8 (5.59)	51 (35.66)	29 (20.28)	143 (100.00)

Hotel & Restaurants	16 (33.33)	1 (2.08)	15 (31.25)	16 (33.33)	48 (100.00)
Media	3 (4.92)	4 (6.56)	41 (67.21)	13 (21.31)	61 (100.00)
Finances & Insurances	17 (32.69)	1 (1.92)	32 (61.54)	2 (3.85)	52 (100.00)
Real Estate	8 (23.53)	0 (0.00)	23 (67.65)	3 (8.82)	34 (100.00)
Liberal Professionals	10 (16.13)	1 (1.61)	29 (46.99)	22 (35.48)	62 (100.00)
Rents, Offices & Travel	3 (20.00)	0 (0.00)	4 (26.67)	8 (53.33)	15 (100.00)
Public Administration	7 (70.00)	0 (0.00)	2 (20.00)	1 (10.00)	10 (100.00)
Health	1 (9.09)	0 (0.00)	6 (54.55)	4 (36.36)	11 (100.00)
Leisure Arts	5 (20.00)	0 (0.00)	10 (40.00)	10 (40.00)	25 (100.00)
Other Associations	12 (40.00)	0 (0.00)	11 (36.67)	7 (23.33)	30 (100.00)
Total	1,127 (36.06)	187 (5.98)	1,029 (32.93)	782 (25.02)	3,125 (100.00)

Source: as indicated.

Notes: Figures from Firms Sample span the period 1886-1936. The first number in each cell is the number of firms. Figures in parentheses are row percentages. See text for explanation of classification scheme.

Appendix B: Model choice and robustness checks

This appendix presents further information and robustness checks for the econometric results presented in the text. Table B.1 reports means and standard deviations for the models reported in the text Tables 2-4. Tables B.2 reports the average marginal effects discussed in the text.

The nested logit (NL) model

The text presents results from nested logit (NL) models. This choice reflects experimentation with several different frameworks. We began with the multinomial logit model (MNL), which unfortunately imposes the independence of irrelevant alternatives (IIA) restriction. The IIA property imposes restrictions on substitution. This property is especially undesirable given one of the questions at the heart of this paper: we are interested in how the introduction of a new alternative changed the choices firms made.

There are tests for IIA in the context of the MNL model. One approach compares the estimated coefficients in models with and without a particular alternative and constructs a Hausman-type test of the differences. For the MNL model parallel to that reported in text Table 2, this approach fails to reject the null hypothesis of IIA for any alternative. A second approach (the Small-Hsiao test) improves on the Hausman approach but relies on randomly splitting the sample into two groups. This makes the resulting test statistic sensitive to the random

allocation of observations to different sub-samples. For some seed values the test

rejects IIA for all forms; for others, it cannot reject IIA for any enterprise form.

Given these equivocal test results we elected to avoid the MNL model for the

Firms Census data. IIA tests for MNL models using the Firms Sample also

equivocal, so we rely on NL models for all results discussed in the text.

Robustness check 1: Firms Census sample as an omitted variables problem

The Firms Census database is derived from a published source. The

underlying source lacks some of the variables we chose to include in the database

we created with our own archival work, so we were forced to estimate a more

limited model for that Firms Census. As we discuss in the text, adding the

information on the family relationships among owners improves the model's

ability to predict choice of legal form considerably. Since the Firms Census data

models cannot have these regressors, this result raises the possibility that the

estimates reported from the Firms Census data (as reported in text Table 2) suffer

from omitted variables bias. To address this possibility we estimated a version of

the Firms Sample model for the period after 1919, removing the regressors that

are not in the Firms Census source. Table B.3 reports the results, and repeats the

Firms Census results for comparison. The estimates are substantially similar. The

single important exception concerns the capitalization effects; the number of

owners regression in the Firms Sample source apparently picks up some of the

capitalization effect estimated in the Firms Census model.

Robustness check 2: Placebo enterprise forms

One might ask whether firms actually care about which enterprise form they take, or at least whether our data capture the determinants of that choice. To address this concern we estimate and report placebo NL models using the Firms Census database. In each case, we randomly assign to each empirical firm to a legal form. We construct two kinds of placebos. The first assigns each firm to a legal form with equal probability. The second assigns firms to legal forms in proportions equal to that form's weight in the total sample. Table B.4 reports the estimates. These placebo models underline the strength of the models reported in the text. The dissimilarity parameter estimate lies outside the unit interval for both placebo models; the data reject this specification. In addition, in both versions of the placebo model, we cannot reject the null hypothesis that all of the estimates are zero.[1]

Robustness check 3: the multinomial probit model

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[1] For the equal probability model, the largest of the three χ^2 statistics is 10.75, which with 13 degrees of freedom has a "p-value" of .63. For the second placebo the largest χ^2 is 7.21.

Concerns about the IIA assumption have led researchers to develop discrete-choice models that imply more flexible substitution patterns. Some approaches require panels and thus cannot be used with our data, which have a single observation on each firm. We are also restricted by our lack of "alternative-specific" variables, since we have none in our situation. An alternative-specific variable would be, for a transportation problem, the price of a ticket for each transport mode; the variable differs across choices rather than travelers. For our application this would require some characteristic that differs across legal forms but is the same for all firms of that form. There are none.

The most natural alternative to NL is the multinomial probit (MNP) model. This model allows the researcher to estimate the correlations among the error terms, and thus avoids IIA without requiring the structure of our nested logit models. Keane (1992) notes, however, that if there are no alternative-specific regressors, the MNP model can suffer from a problem akin to multi-collinearity. Table B.5 is our best effort to estimate an MNP model using the Firms Census data and the regressors used in the model reported in Table 2. We found it necessary to constrain several regressors in the way Keane suggests. We also impose structure on our error correlations by estimating the model in a factor representation (Cameron and Trivedi 2005, p.517). The signs of the parameters we are able to estimate this way are the same as with the NL model, which offers reassurance that the potentially more flexible models yields similar results. But

this specification of the MNP model is much more restricted than we would like,

so we stress the NL models reported in the text.

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Table B.1.- Descriptive statistics for estimation samples

	Firms sample		Firms Census	
	Mean	SD	Mean	SD
Any capital pending	0.157	0.364	0.093	0.290
Has stated duration	0.631	0.483	0.429	0.495
Duration in years	5.988	6.587	6.010	6.248
ln(Capital)	10.461	1.981	11.228	1.851
ln(Capital) squared	113.357	42.860	129.496	42.445
Factory	0.322	0.467	0.386	0.487
Trade	0.422	0.494	0.341	0.474
Infrastructure	0.123	0.328	0.111	0.315
Variables only in the *Anotaciones*				
Number of owners	3.978	5.617		
All owners related	0.193	0.395		
Some owners related	0.186	0.389		
All owners related*number of owners	0.584	1.424		
Some owners related*number of owners	1.384	5.459		
Year	1911.665	14.366		
Spline; 1899=0	14.217	12.293		
Albacete, Murcia, Almería	0.179	0.384		
Barcelona, Tarragona, Alicante	0.207	0.406		
Vizcaya, Navarra, A Coruña	0.204	0.403		
Madrid, Cuenca, Valladolid	0.193	0.395		
Variables only in the Firms Sample				
Year is 1926			0.339	0.474
Year is 1927			0.306	0.461
Catalonia			0.341	0.474
Madrid			0.146	0.353
Basque Country			0.193	0.394

Source: Computed from the Firms Sample and Firms Census databases.

Table B.2.- Average marginal effects (AMEs), selected regressors.

Model *Firm Census.*

	Enterprise form			
Effect	Ordinary partnership	Limited partnership	Corporation	SRL
Year from 1925 to 1927	0.0531	0.0111	0.0201	-0.0843
	(0.0274)	(0.0219)	(0.0224)	(0.0296)
Increase capital by 10 percent from mean	-0.0989	-0.0001	0.1592	-0.0602
	(0.0358)	(0.0129)	(0.0565)	(0.0291)
Sector from infrastructure to trade	0.11	0.0096	-0.1239	0.0043
	(0.0662)	(0.038)	(0.1119)	(0.0621)

Model *Firms Sample* Pre-1919.

	Enterprise form			
Effect	Ordinary partnership	Limited partnership	Corporation	SRL
All owners related to none related (two owners)	-0.0817	0.077	0.0046	NA
	(0.086)	(0.0578)	(0.0973)	(NA)
All owners related to some related (two owners)	-0.1201	0.119	0.0015	NA
	(0.0931)	(0.0886)	(0.0534)	(NA)

Model *Firms Sample* Post-1919.

	Enterprise form			
Effect	Ordinary partnership	Limited partnership	Corporation	SRL
All owners related to some related (two owners)	-0.2978	0.294	0.001	0.0027
	(0.1811)	(0.2188)	(0.199)	(0.1488)

Source: Computed from the estimates reported in Tables 2-4, and the relevant databases.

Table B.3: Checking for omitted variable bias, *Firms Sample* after 1919.

	Restricted						Full					
	Limited partnership		Corporation		SRL		Limited partnership		Corporation		SRL	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Any capital outstanding	1.646	(0.647)	2.541	(0.751)	0.495	(0.577)	1.488	(0.484)	1.764	(0.683)	0.767	(0.688)
Firm has stated duration	-0.0683	(0.983)	-3.953	(1.176)	-0.872	(0.438)	-0.653	(0.756)	-2.697	(1.526)	-1.055	(0.472)
Duration	0.0529	(0.0607)	0.226	(0.0684)	0.0335	(0.0375)	0.0593	(0.0422)	0.142	(0.0843)	0.0400	(0.0424)
Number of owners							0.126	(0.190)	0.309	(0.232)	0.0151	(0.194)
Year	-0.799	(0.676)	0.380	(0.322)	-0.468	(0.334)	-0.320	(0.554)	0.126	(0.271)	-0.211	(0.282)
Year spline, 1899=0	-0.113	(0.0955)	-0.00732	(0.0495)	0.162	(0.0448)	-0.0289	(0.104)	0.0529	(0.0458)	0.129	(0.0480)
Ln (capital)	2.616	(2.419)	-1.927	(1.156)	0.863	(1.119)	0.712	(2.094)	-1.305	(1.068)	-0.00580	(0.973)
Ln (capital) squared	-0.0992	(0.106)	0.120	(0.0580)	-0.0379	(0.0563)	-0.0132	(0.0927)	0.0864	(0.0549)	0.0125	(0.0496)
Sector												
Factory	-1.312	(0.769)	-2.013	(0.646)	-0.483	(0.491)	-1.053	(0.600)	-1.408	(0.670)	-0.673	(0.465)
Trade	-0.107	(0.716)	-2.192	(0.752)	-0.572	(0.477)	-0.277	(0.589)	-1.513	(0.810)	-0.737	(0.434)
Infrastructure	0.305	(0.953)	0.757	(0.649)	0.0110	(0.675)	0.257	(0.679)	0.00536	(0.606)	-0.284	(0.707)
Relationships among owners												
All owners related							0.907	(1.944)	-1.137	(0.772)	-1.662	(0.844)
Some owners related							1.810	(1.269)	1.155	(0.868)	0.0807	(0.725)
Some related x no. owners							-0.315	(0.286)	-0.231	(0.234)	0.0665	(0.207)
All related x no. owners							-0.751	(0.668)	-0.177	(0.228)	0.0142	(0.249)
Provinces												
Albacete, Murcia, Almería	1.287	(0.834)	0.346	(0.457)	-1.314	(0.589)	0.649	(0.893)	0.285	(0.508)	-0.742	(0.740)
Barcelona, Tarragona, Alicante	-0.265	(0.788)	0.394	(0.485)	-0.394	(0.336)	-0.113	(0.458)	0.212	(0.478)	-0.247	(0.335)
Vizcaya, Navarra, Coruña	-0.356	(0.737)	-0.364	(0.735)	0.495	(0.399)	-0.0839	(0.540)	0.0976	(0.487)	0.331	(0.387)
Madrid, Cuenca, Valladolid	-0.961	(0.836)	0.0927	(0.495)	0.354	(0.357)	-0.420	(0.808)	0.337	(0.398)	0.451	(0.351)
Dissimilarity parameter			1.019 (.502)						.811 (.385)			

Source: All computation are from the Firms Sample database. There are 500 firms.

Table B.4:Placebo models

	Equal Probability			Respecting Distribution		
	Limited partnership	Corporation	SRL	Limited partnership	Corporation	SRL
Firm has stated duration	0.0710	-0.0235	0.0204	0.164	0.159	0.154
	(0.251)	(0.221)	(0.144)	(0.172)	(0.137)	(0.136)
Duration in years	-0.00753	-0.00119	-0.00499	-0.0177	-0.0130	-0.0105
	(0.0169)	(0.0168)	(0.0115)	(0.0182)	(0.0107)	(0.0114)
Any unpaid capital	0.129	0.175	0.0978	0.197	-0.102	0.0921
	(0.157)	(0.235)	(0.204)	(0.431)	(0.321)	(0.219)
Ln(capital)	0.242	0.243	0.240	-0.0918	0.0254	0.0299
	(0.195)	(0.199)	(0.189)	(0.431)	(0.167)	(0.156)
Ln(capital) squared	-0.0106	-0.0105	-0.0102	0.00280	-0.00135	-0.00194
	(0.00905)	(0.00896)	(0.00762)	(0.0172)	(0.00792)	(0.00662)
Sector						
Factory	0.00657	-0.00660	-0.00742	-0.157	-0.00859	-0.00714
	(0.132)	(0.125)	(0.125)	(0.348)	(0.120)	(0.122)
Trade	-0.0192	-0.0109	-0.0679	0.0306	0.0589	0.0939
	(0.141)	(0.158)	(0.182)	(0.177)	(0.125)	(0.130)
Infrastructure	0.0511	0.0584	0.0503	0.114	0.167	0.130
	(0.163)	(0.167)	(0.163)	(0.216)	(0.159)	(0.162)
Location						
Catalonia	0.0654	0.0300	0.0178	0.146	0.0496	0.0746
	(0.156)	(0.106)	(0.126)	(0.208)	(0.109)	(0.0976)
Madrid	-0.132	-0.191	-0.153	-0.00914	0.0174	-0.0840
	(0.178)	(0.179)	(0.138)	(0.168)	(0.163)	(0.186)
Basque Country	-0.0228	-0.0907	-0.0493	0.152	0.0119	0.0200
	(0.179)	(0.180)	(0.125)	(0.317)	(0.123)	(0.118)
Year firm formed						
1926	-0.0593	-0.0200	-0.0406	0.0196	0.0427	0.00586
	(0.126)	(0.128)	(0.0995)	(0.123)	(0.103)	(0.105)
1927	0.0781	0.0749	0.0888	0.144	0.159	0.123
	(0.105)	(0.106)	(0.109)	(0.126)	(0.105)	(0.107)
Dissimilarity parameter		-.252 (.998)			.491 (1.118)	

Source: In the "equal probability" model each firm as an equal choice of being assigned to one of the legal forms. In "respecting distribution" the firm's probability of assignment to a legal form equals that probability in the data.

Table B.5: Multinomial probit model

	Limited partnership		Corporation		SRL	
	Est	SE	Est	SE	Est	SE
Ln(capital)	0.0	(0.0)	-0.375	(0.237)	1.006	(0.553)
Ln(capital) squared	0.0	(0.0)	0.039	(0.011)	-0.043	(0.025)
Year firm formed						
1926	0.070	(0.124)	0.0	(0.0)	0.075	(0.080)
1927	-0.309	(0.140)	0.0	(0.0)	0.198	(0.102)
Constant	-1.975	(0.113)	-1.059	(1.304)	-6.251	(3.278)
Factors in error terms:						
	-0.475	(0.408)				
	-0.779	(0.946)				

Source: Estimated from the *Firms Census* database

Note: See Appendix B discussion of identification problems in the MNP model for this case. Estimates reported as zero have been constrained to that value.