International Patterns of Ownership Structure Choices of Start-ups: Does the Quality of Law Matter?

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ABSTRACT

The concentration of ownership of enterprises varies significantly among countries. In this paper we investigate the role that differences in legal systems among nations play in molding founders' preferences with respect to the ownership structure of their start-ups. We develop an economic framework which articulates the impact that the quality of protection offered to shareholders and debt holders has on the supply of debt and equity financing and the incentives of the founders to recruit partners or opt for sole ownership. The theoretical analysis predicts that a positive relationship is likely to exist between the quality of the legal system and ownership concentration of start-ups. This prediction is in contrast to the findings on relationships in large publicly traded firms. Using data obtained from the Adult Population Survey of the Global Entrepreneurship Monitor project from 2001 to 2004 about ownership preference patterns, we confirm the prediction.

Key words: Legal system, Ownership concentration, Start-ups, Entrepreneurship
Journal of Economic Literature Classification: K40, L26, M13

1. Introduction

Ownership concentration has been an important subject in the corporate governance literature (Demsetz and Villalonga, 2001; La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1998; La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1999b). The determinants or optimal design of ownership structure and the impacts of various ownership structures on firm performance have been studied extensively in the context of publicly traded companies. The consequences of ownership concentration, however, are ambiguous. On the one hand, highly concentrated ownership provides the largest equity holders with more rights to deal with corporate matters, probably leading to an efficient governance structure. As the owner - managers' fraction of equity falls, their claims on the outcome fall, leading to an increase in agency costs (Jensen and Meckling, 1976: 313; Ang, Cole and Lin, 2000). On the other hand, a high degree of ownership concentration may cause minority shareholders to fear expropriation of their investment or abrogation of their rights by the large shareholders and thus reduce their willingness to invest unless the legal system provides them with sufficient protection. Without effective legal protection of investors, external financing may be less available to firms (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 2000; La Porta, Lopez-de-Silanes, and Shleifer, 2008).

The macro-effects of having a high quality legal system have been explored by prior research. The evidence to date tends to support the conclusion that a high quality legal system, typically defined as a common law system with effective enforcement and entrenched norms of law and order in the population, can lead to higher

availability of credit and more valuable capital markets with broader and more dispersed ownership (see La Porta et al., 2008; Beck and Levine, 2005; Glaeser, Johnson, and Shleifer, 2001; La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 2003; and Demirguc-Kunt and Levine, 2001). Less is known, however, about the effect that the quality of the legal system has on specific segments of the population of enterprises in a country. Exceptions are the work of La Porta et al. (1998) dealing with ownership concentration of large publicly traded companies and the work of Lerner and Schoar (2005) on ownership structure of private equity investees.

Despite the important contribution of newly-founded small and medium sized enterprises (SMEs) to economic growth (Berger and Udell, 1998), to our knowledge, no study has considered the ownership structures at the founding stage of small and medium firms that are not backed by private equity firms. This segment of new enterprises contains the majority of start-ups, both by value and number. For example, 94.5% of U.S. nonfarm, nonfinancial, nonreal-estate small businesses, or $1,582.4 billion in monetary value, belong to this segment (Berger and Udell, 1998). Indeed private equity backed investments constitute only a very modest share of the value of all investments in most countries. Only 1.85% of U.S. nonfarm, nonfinancial, nonreal-estate small businesses, or $31 billion in monetary value, are funded by venture capital firms (Berger and Udell, 1998). Our paper fills this gap in the literature by developing and empirically testing an analytical framework which takes into consideration the specific differentiating characteristics of firms in this segment and the specific nature of their interactions with different types of external funders.

In their seminal paper La Porta et al. (1998) hypothesized that a higher quality legal system is likely to encourage a dispersed ownership structure. They argued that in a high quality legal system, minority shareholders' rights are well protected. They are, therefore, willing to invest. Consequently, we would expect a dispersed ownership structure of enterprises in countries with a high quality legal system. They found support for their hypothesis using data from large public corporations.

Lerner and Schoar's (2005) study of private equity backed investees concluded that in a low quality legal system private equity firms will substitute for the lack of effective protection by the legal system by acquiring majority positions in the enterprises they invest in. Thus founders face higher costs (including loss of control) of securing external funding from private equity firms where the legal system in place offers less protection to investors. The implication is that ownership structures of investees are likely to be more concentrated in lower quality legal systems. They tested their framework with data obtained from private equity groups operating internationally.

The implications of our theoretical framework suggest that in *de novo* founding of small and medium firms, most of which are not backed by established private equity firms, founders are more likely to have partners in environments with less legal protection. In environments with strong legal protection, they are more likely to retain full ownership at founding.

We test our predictions using data from the Adult Population Survey of the Global Entrepreneurship Monitor project from 2001 to 2004. The empirical setting we

use has several distinct advantages compared to the studies of La Porta et al. (1998) and Lerner and Schoar (2005). Studying ownership structure choices at founding allows for a less biased estimation of the impact of legal systems. The ownership structures of established firms can dramatically differ from their initial ownership choices as they evolve over time. Furthermore, ownership structure and a firm's characteristics (firm size and performance for example) are endogenously determined (Bitler, Moskowitz, and Vissing-Jorgensen, 2005; Cassar, 2004). In addition, studying ownership structure decisions at founding reduces problems of survival bias, a serious problem given the high mortality rate of start-ups. Finally, we use in our econometric analysis micro level data that enables us to analyze ownership preferences of individual entrepreneurs and estimate more accurately the ownership concentration of start-ups in the country. We also are able to examine and control for the impacts of founder and firm characteristics on ownership structure choices. Although some researchers (e.g. Bitler et al., 2005) have found that entrepreneurs' demographic characteristics do not have a significant impact on firms' financing, our study found that they do affect ownership structure choices of founders.

This paper is organized as follows: Section 2 briefly reviews the literature on the role the legal system plays in economic decisions. Section 3 outlines the theoretical framework. Methodology and data are discussed in Section 4 and empirical findings are presented in Section 5. Section 6 concludes the paper.

2. Does law matter?

This section briefly reviews the existing literature that establishes the association between the legal system and investors' protection. Our theoretical framework examining the mechanism through which a legal system affects entrepreneurs' choices of ownership will be presented in the next section. La Porta et al. (1998) argued that legal origin and legal enforcement are the two key measures of a legal system with respect to the protection of investors.

According to La Porta et al. (1998, 1999, and 2003), there are two broad origins of legal systems - common law and civil law systems. Common law originated in England. Civil law has its origins in the Roman Empire, with three representative legal families: French, German, and Scandinavian. These legal families were then transplanted to many other countries through conquest, colonization or voluntary adoption. Although each country's legal system has developed over time and borrowing from other legal families is possible, the essential features of the legal origin remained intact.

Two types of explanations were advanced to suggest why legal origins signal different levels of protection of minority investors. The "judicial" explanation is based on the fact that in the common law system, judges can make their decisions based on general rules or precedent judgment, but are not limited to them in making choices, while in civil law countries, judges cannot make decisions beyond what is prescribed by the legal rules (Glaeser & Shleifer, 2002). This allows the courts in common law countries to adapt to new circumstances and fill in gaps in the legal system. Judges in

this system can offer more efficient and comprehensive protection to investors (Beck, Demirguc-Kunt, and Levine, 2003). In contrast, expropriation may be more difficult to prevent in civil law countries as judges cannot hold back some newly designed sophisticated expropriation methods which the legislator has not foreseen and prohibited. Due to time delays involved in amending laws and/or improving inefficient bureaucratic processes, protection of minority rights is less efficient in these countries. La Porta et al. (1999a) also provided a "political" explanation for the reason why protection of investors is higher in common law countries and why there is variation in the quality of protection among civil law countries. The legal differences are explained by the "relative power of the king and the property owners". As early as the 17th century, the crown in England lost some control of the courts, which were guided by parliament, where the voice of property owners was dominant. As the power of parliament increased, the protection of investors gradually expanded. This was not the case in France or Germany, where the government remained in control of the courts and legislators.

While having its roots in ancient Roman law, the French civil law tradition is usually identified with the French Revolution and Napoleon's codes written in the early 19th century. The development of the law was inspired by the desire to alter property rights and insure that judges did not interfere (La Porta et al. 2008: 289). Thus, French judges were supposed to apply the law with little leeway to interpret it. Although France over time was able to improve its own legal system, countries conquered by France had to adopt rigid rules and were unable to improve on them

after independence because of lack of judicial capacity. Therefore, former French colonies which adopted civil law have much weaker legal protection of minority shareholder rights than France.

The German legal tradition was initially derived from Roman law but had its commercial code written after the unification of Germany late in the 19th century, accommodating greater judicial law making in comparison to the French system. Without the revolution that inspired the French legal tradition, the biases against the protection of private property rights and the judiciary were significantly lower.

The Scandinavian law family is the smallest and is less derivative of Roman law than the French or German families and provides wider latitude to the judiciary (La Porta et al., 2008: 290).

La Porta et al. (2008) provide evidence that though the current manifestations of legal traditions associated with "legal origins" are not pure forms, there are systematic differences that tie the historical origin of a country's law to a number of economically important legal rules, most notably those related to the protection of investors' and creditors' rights.

The validity of the "law and finance theory" described above has been questioned by many influential scholars and economists. "There are disagreements about the comparative flexibility of the Common Law and Civil Law traditions, doubts about the view that the Common Law places greater emphasis on private property rights protection than the Civil Law, skepticism about classifying countries by legal origins, questions about whether legal origin is a fundamental determinant of financial

development, and doubts about the central role of investor protection law in promoting financial development" (Beck and Levine, 2005: 263). In their recent paper, La Porta et al. (2008) respond to the conceptual and empirical challenges to their theory. As a basis for their conceptual argument, they posit and provide evidence to support a "Legal Origin Theory" with three ingredients: (1) the contrast of the very different social control styles of business which evolved over the centuries in England and continental Europe and the legal institutions supporting these styles; (2) the diffusion of both the styles and the legal institutions to most of the rest of the world through transplantation; and (3) the persistence of the styles in addressing social problems despite a great deal of regulation and social change.

Using this theory they develop the links between judicial independence, government regulation, and finance. The evidence confirms their predictions. Common law countries have less formularized contract enforcement, long constitutional tenure of Supreme Court Judges, and greater recognition of case law as the source of law, making the system more adaptable. These characteristics of legal systems predict both efficiency of contract enforcement and security of property rights (La Porta et al., 2008: 310).

A fundamental challenge to their theory is whether legal origins are proxies for other factors that influence legal rules and outcomes. While cultural, political, and historical influences clearly have important roles in shaping legal rules and outcomes, the evidence suggests that legal origins have explanatory power after controlling for the impacts of cultural, political and historical variables (see also Beck and Levine,

2005).

The impact of the legal system in protecting investors depends not only on the decisions of the courts but also on the effective enforcement of these decisions. Several aspects capture the quality of legal implementation. The quality of legal implementation is reflected both in the resources and effectiveness of enforcement institutions, and the propensity of citizens to obey laws. In societies where the rule of law is institutionalized, i.e. taken for granted by their members, most people most of the time voluntarily obey laws and respect judges and their judgments. Similarly, in societies with high social capital, in particular strong trust relationships between members, the incidence of opportunistic behavior is likely to be lower. Transparency in both financial reporting and bureaucracy increases trust in the society. Higher voluntary compliance with laws and less use of litigation to resolve private disputes reduce the burden on the legal system. Thus for a given amount of resources, a higher quality of legal implementation can be achieved. Expenditures by government on courts and enforcement systems can improve their effectiveness. Resource-constrained systems which are overwhelmed by demand for their services and suffer from undue delays in executing their functions and systems which are inefficient, costly, inaccessible, and lack transparency erode citizens' respect for the law and the legal system, and thus their power to deter.

3. The quality of the legal system and financing and ownership decisions by founders of start-ups

To examine the effects of the quality of the legal system on ownership structures of *de novo* start-ups, we use a simple comparative static framework. By using this framework we obtain predictions which are robust with respect to the optimal capital and control structure of the firm[1].

De novo start-ups have some distinct characteristics. They are typically small privately held firms. Problems of opacity and asymmetries in the information held by founders and potential investors are acute as public records of performance (or indeed any records of performance) are not available. Thus obtaining external financing is a challenge irrespective of the level of protection offered by the legal system to investors. Indeed in most cases financing is one of the key factors affecting ownership structures and the allocation of rights or control within start-ups.

In our framework we assume that entrepreneurs are wealth constrained and can use either debt or equity to finance their business. The choice of equity financing requires entrepreneurs to give up some ownership and control rights to investors. If the legal system fails to provide adequate protection, increases in investors' shares of ownership and control rights can work as substitutes for the protection that the legal system fails to give. Bergman and Nicolaievsky (2007) observed that private firms often significantly enhance the legal protection offered to investors. In Mexico, for

[1] There are several theories that explore the issue of capital and ownership structure (e.g. the pecking order theory (Myers, 1984)). These theories do not, however, address the relationship between legal origins and legal rules that protect investors and the choice of ownership structure.

example, the law provides only scant protection to investors, leaving a need for investors to contractually "opt out" of the legal system and obtain protection provided by investees privately (p. 739). Lerner and Schoar (2005), studying private equity investments in developing countries, found that poor legal systems constrained the ability of private equity partners to write sophisticated contracts that can separate control rights from cash flow rights and offer adequate protection for investors. In such cases private equity investors may seek majority ownership to gain control as a substitute for the lack of legal protection. In the case of the smaller start-ups, acquiring a larger stake is less financially prohibitive, thus the "substitution mechanisms" can work. In countries with medium quality legal systems (countries where straightforward simple contracts are enforced but no sophisticated legal protection of investors is offered), private contracts often include provisions that provide veto power to minority shareholders on expenditures greater than a certain amount (Bergman and Nicolaievsky, 2007).

Financing by debt does not require giving up a share of ownership but requires pledgeable collateral and protective bankruptcy laws to enforce the debt contracts. Generally, small firms cannot obtain credit in public debt markets and most depend on intermediaries such as commercial banks. Bank financing often involves a long term relationship that may attenuate information problems (Berger and Udell, 1995). The bank-borrower relationship provides an opportunity for gathering private information and using such information to refine contract terms offered to the borrower in the future. The information collected by the relationship banker over time may serve as a

substitute for some provisions concerning information disclosure that protect lenders. Such valuable information about the project and the entrepreneur takes time to develop and is rarely available at the start-up stage (except in the case of successful serial entrepreneurs).

Thus, when offering initial credit to start-ups, arguably, lenders (including relationship bankers) do not have access to the same level of information, monitoring and control that equity holders in start-ups have to protect themselves when legal protection is weak. Equity holders in start-ups with significant shares in the company are likely to obtain information and exert control through social networks, and to monitor the enterprise through frequent observation and direct engagement with the founders and the firm. Debt financing for start-ups is therefore more "sensitive" to the quality of a legal system than equity financing.

In a good legal system, the law could protect both shareholders and lenders well in terms of more enforceable requirements for information disclosure, effective bankruptcy laws, shorter time needed to sue directors and managers for any misconduct, etc. In the start-up context, a good legal system can reduce the informational opacity and thus the "adverse selection" and "moral hazard" problems. At this stage of our argument, the relationship between the choice of a preferred financing method and the quality of the legal system is ambiguous. It could be true that equity financing is preferred to debt financing because equity suppliers could add some extra value by advising, monitoring the business, and providing access to networks. It could also be true that debt financing is preferred because entrepreneurs

like to maintain absolute control at the very early stage of start-ups. Let the fixed ratio be *Rgood* in a good legal system.

In a poor legal system, the problem of informational opacity and opportunistic behaviors by founders cannot be easily mitigated by laws. In this case, start-up equity holders can rely on their ownership shares and control against expropriation from founders. Their shares are working as a substitute for the legal system in protecting their rights.[2] The bargaining power of shareholders in start-ups is much greater than that of minority shareholders in large firms because share ownership of many large firms across the world is more widely dispersed (La Porta et al., 1999b). Therefore, the influence of minority shareholders in large firms is often insignificant.

Lenders do not have access to information, monitoring, and control as much as equity holders. They have to rely on laws in terms of bankruptcy rules or contract enforcement to protect their interests. Therefore, in a poor legal system, lenders anticipate a higher default rate from entrepreneurs and lower ability to appropriate collateral, leading to a smaller supply of debt and higher interest rates than in a high quality protective legal system. The demand for debt in a poor legal system is likely to be higher since entrepreneurs anticipate the ease of defaulting on loans. These conditions of demand and supply of capital in a country with a poor legal system

[2] According to La Porta et al. (1997, 1998), a poor legal system is ineffective at protecting minority shareholders whose shares and control in large firms are almost negligible. Therefore, minority shareholders cannot exercise control to protect themselves effectively and the "substitution mechanism" has little effect on them. In the context of nascent start-ups, however, shares are concentrated and held by a limited number of owners. Each shareholder has a much bigger share of ownership than their counterparts in large firms. Therefore, the "substitution mechanism" can work better for shareholders in start-up firms.

would lead to a higher *relative cost of debt to equity* than in a good legal system, all else being equal. Therefore, entrepreneurs may tend to use more debt financing in a good legal system. Let the ratio of the number of entrepreneurs with debt financing to the number of entrepreneurs with equity financing be denoted by *Rpoor* in a poor legal system. We predict that in equilibrium *Rgood* > *Rpoor,* i.e. we are more likely to observe sole ownership in a good legal system than in a poor one. Our prediction is in line with some empirical observations. For example, Djankov, McLiesh, and Shleifer (2007) showed how legal protection of creditors affects the supply of credit. They found that stronger legal creditor rights are positively associated with the ratio of private debt to GDP.

4. Data and Methodology

The data used to test our hypotheses was derived from the GEM (Global Entrepreneurship Monitor) project database. GEM is an annual assessment of entrepreneurial activities at the country level. GEM adopts a broad definition of entrepreneurial activities that includes any general start-up activities and is not limited to high technology sectors, although high technology start-ups and venture capital backed start-ups are important constituents of entrepreneurship. Our dataset included start-up founders from 19 countries or regions in 2001, which expanded to 31 countries or regions by 2004. Each country or region participating in the GEM project conducted an Adult Population Survey to get a random sample of no less than 2,000 individuals. Individuals were asked to report their demographic characteristics, status of employment (such as employees, independent start-up entrepreneurs, entrepreneurs

of existing firms, and angels) and characteristics of the start-ups. This paper makes use of the sub-sample of independent founders of start-ups. Only founders who have made significant commitments and taken significant actions to develop their business (e.g. by buying equipment and renting space) were included in our sample. The final sample has 9,561 founders of independent start-ups in the surveys conducted between 2001 and 2004. To check the robustness of our results, we also conducted country level analysis, in which we calculated the percentage of entrepreneurs who expected to fully own the business in each country and explored the relationship between this percentage and legal and economic variables. The country level analysis is comparable to prior research that focused on large publicly traded companies (La Porta et al., 1998). Table 1 presents the country composition in our sample and their legal origins.

[Insert Table 1 here]

To characterize the enforcement quality in the legal system, we used several indices developed by the World Bank between 2004 and 2005. Although the GEM surveys were conducted between 2001 and 2004, we do not expect the legal enforcement to change significantly over such a short horizon. The four legal enforcement variables "Legal Rights of Borrowers and Lenders", "Disclosure Index", "Director Liability Index", and "Shareholders' Suits Index" capture different dimensions of legal enforcement of judicial decisions. "Legal Rights of Borrowers and Lenders" directly captures how collateral and bankruptcy laws facilitate lending and can be used to directly test whether better protection of creditors leads to sole

ownership. “Disclosure Index” measures how transparent the transactions are and thus how the legal system mitigates the asymmetric information problem. “Director Liability Index” measures the liabilities of self-dealing while “Shareholders’ Suits Index” captures the ease with which shareholders can sue officers and directors for any misconduct.

[Insert Table 2 here]

The above four legal enforcement variables are not mutually exclusive. They are correlated to each other and to the legal origins as well. Common law countries usually have better legal enforcement in terms of higher “Legal Rights of Borrowers and Lenders”, “Investor Protection Index”, “Disclosure Index”, and “Director Liability Index”. In a good legal system, the expropriation of investors’ holdings is discouraged and investors are well protected. When the laws are not protective, different types of investors are affected to different extents.

Our micro-level data allows us to examine the effects of entrepreneur level and company level characteristics on ownership preferences. The following paragraphs motivate the choices of our micro-level variables. **AGE** acts as a proxy for experience. The more experienced the entrepreneurs are, the more likely they are to choose full ownership because they perceive themselves more capable of managing their firms on their own. Old age may also mean dislike of the complexity associated with shared ownership.

The effect of **GENDER** on ownership preference is more ambiguous. DeMartino and Barbato (2003) show that female and male entrepreneurs may have different

career motivations. Female entrepreneurs prefer flexibility and balance between work and family while male entrepreneurs tend to choose careers where they can accumulate wealth. On the one hand, female entrepreneurs may want to fully own their business because they enjoy the flexibility of being the sole owner. On the other hand, female entrepreneurs may be more motivated to look for business partners to share the workload so that they can have more time for family obligations.

The effect of **EDUCATION** on ownership preferences is also ambiguous. On the one hand, higher education acts as a positive signal to secure loans so that sole ownership is likely (Bates, 1990). On the other hand, higher education also acts as a positive signal to attract business partners, leading to a partial ownership structure.

Personal wealth has been regarded as an important factor in entrepreneurial finance. Due to the lack of information on wealth, we use **INCOME** as a proxy. Again, wealth could also have ambiguous effects on ownership choice as wealthy entrepreneurs are able to attract both lenders and equity investors.

The ambiguity regarding how gender, education, and income affect entrepreneurs' ownership preferences will be resolved empirically in this study.

The effect of risk preference on ownership choice is straightforward. If an entrepreneur is **RISK AVERSE**, the desire for risk-sharing will lead to partial ownership.

Well-connected entrepreneurs have better access to information and advice about the entrepreneurial process (Hoang & Antoncic, 2003). The entrepreneurial

NETWORK also makes it easier for these entrepreneurs to find suitable business partners and leads to partial ownership structures.

Apart from the entrepreneurs' personal characteristics, **INDUSTRY** type is also assumed to have an impact on ownership choices. Traditional manufacturing industry usually requires significant commitments of capital, making sole ownership infeasible. Some high-tech (software for example) or consulting firms that are human capital intensive may not require large investments, making sole ownership more likely. The GEM survey categorizes startups into ten sectors: agriculture, forest, hunting, and fishing; construction and mining; manufacturing; transportation, communication, and utilities; wholesale, motor vehicle sale, and repair; retail, hotel and lodging, and restaurant and bars; financial, insurance, and real estate; business services; health, education and social services; and consumer services.

FIRM SIZE is also an important factor in ownership determination as the size of commitment affects the ability of a single founder to obtain debt financing or to self finance the start-up. Different measures are used to capture firm size, such as firm's equity, assets or number of employees. Nascent start-ups usually have not recruited enough employees yet and a measure of the expected number of employees in the future can be used to proxy for firm size.

The growth rate of GDP (**GDPGR**) and GNP per capita (**LNGNP**) are both introduced in the regressions. They are measured by a five year average of GDPGR or LNGNP for each country before 2001. In the robustness tests we provide further analysis introducing as control variables indicators of financial development. These

are highly correlated with each other and the GNP per capita measure and are introduced to the regressions one at a time as alternatives. We also introduced a variable measuring national levels of trust.

[Insert Table 3 here]

Among these 9,561 start-up founders, 52% chose to fully own their businesses. For the 9,535 start-ups where the information on the exact number of owners is available, the average number of owners in a start-up is 2. About 40% of the entrepreneurs in our sample operate their businesses in countries with a common law system. Within the civil law family, French civil law systems have the largest number of start-up entrepreneurs, followed by German, Scandinavian, and Russian civil law systems. In our sample, start-up investors enjoy an average "Legal rights" rating of 6.22 (out of 10), an average "Disclosure Index" of 6.89 (out of 10), an average "Director Liability" of 5.57 (out of 10), and an average "Shareholders' suits" of 6.48 (out of 10). Consistent with the depiction of entrepreneurs as optimists, only 19% of them declare themselves to be risk averse. Reflecting the importance of networking, 67% entrepreneurs were connected to others with entrepreneurial experience. The average start-up entrepreneur is in the middle-income group and has obtained a secondary school diploma. About 64% of entrepreneurs are male with an average age of 37. The average GNI per capita in our sample is about $9,240 with an average annual GDP growth rate of 2.16%. For the start-ups in our sample, the average number of employees they plan to hire in 5 years is 155. They are concentrated in

"Transportation, communication, and utilities", followed by "Business services", "Manufacturing", and "Consumer services".

[Insert Table 4 here]

The main research question of this paper is to determine the relationship between the likelihood of a founder choosing sole ownership rather than entering into a partnership and the quality of protection offered by the legal system. We estimate a binary dependent variable model to predict the probability of using one choice against the other (Greene, 2002). Five sets of variables are used to explain ownership choices.

The first set of variables contains legal origins and legal enforcement variables. The second set of variables includes personal characteristics of start-up entrepreneurs. The third set of variables is used to control for differences in macroeconomic environments. The fourth set of variables controls for firm specific characteristics. We also control for time fixed effects.

The estimated function therefore becomes:

Prob (sole ownership=1) = *f* (Legal system, Personal characteristics, Macroeconomics, Firm characteristics, Time fixed effects)

Since the data includes samples of individuals from different countries, there are potential correlations of error terms within each country (Greene, 2002), so in our model standard errors are clustered at the country level.

5. Econometric Analysis

Individual Level Analysis

[Insert Table 5 here]

The results of Logit regressions are reported in Table 5 to show the effects of the explanatory variables on ownership choices. In Column (1) of Table 5, we use legal origin variables to indicate quality of the legal system while in Table 6 we report regression results using legal enforcement variables. The first two regressions in Table 5 are focused only on legal origins and macroeconomic variables, controlling for time fixed effects and clustering standard errors at the country level. We find that entrepreneurs in common law countries are more likely to have sole ownership. Individual specific variables are introduced in the third and fourth regressions. Again, legal origin variables remained significant. Entrepreneurs with more income, with more education, who are more risk averse and who have greater access to entrepreneurial networks are more likely to choose partial ownership, while older entrepreneurs prefer full ownership. Gender, however, does not have a significant coefficient. The fifth and sixth regressions introduce firm specific variables in addition to entrepreneurs' characteristics. The effects of legal origins remained robust except for the coefficients of German and Russian legal systems. Almost all personal characteristics had the same impact on the choice of ownership except that gender has a strong and positive impact in this regression, indicating that male entrepreneurs are more likely to have sole ownership. Firm size had a significant positive effect on the tendency to choose partial ownership. Industry fixed effects are also controlled. The log of GNI per capita and GDP are not significant after controlling for individual and firm characteristics.

[Insert Table 6 here]

Table 6 reports the results of regressions on legal enforcement variables. Efficient legal systems measured by "Legal rights of borrowers and lenders" and "Shareholders' Suits" are more likely to encourage full ownership of start-ups. The variable "Legal rights of borrowers and lenders" serves as a direct test of our theoretical framework: if the lenders are not well protected in a poor legal system, the high cost of debt financing relative to equity financing leads to less debt financing and more equity financing being used by entrepreneurs, leading to more dispersed ownership structures in a poor legal system. The predictive power of "Legal rights of borrowers and lenders" is the strongest among the four types of legal enforcement. As shown in the fifth column, after introducing "Legal rights of borrowers and lenders" the other three measures of legal enforcement become statistically insignificant. Access to networks, income and age display patterns consistent with the results reported in Table 5, showing that entrepreneurs with higher income and greater access to networks would prefer partial ownership while older entrepreneurs would choose sole ownership.

Because some of our individual level variables could affect access to and ability to use the legal system to obtain protection of rights, we have also tested whether interactions of the quality of the legal system with personal characteristics have any effect on the ownership choice. We expected that the education and income would interact with the quality of the legal system as more educated and wealthier founders would be able to use a good legal system more effectively but the interaction coefficients were insignificant.

[Insert Table 7 here]

A series of robustness checks have been done in Table 7. In Column (1) of Table 7, Probit instead of Logit regression is used and generates the same prediction. For other regressions in Table 7, the dependent variable changes from a binary variable to a categorical variable. The larger the value of the categorical variable, the more owners there are in the start-ups. Both Ordinary Least Square models and Ordered Probit models are estimated for the categorical dependent variables. In the OLS and Ordered Probit regressions, entrepreneurs in countries belonging to French and Scandinavian law show a tendency to have more partners. Income, risk aversion, education and network access show consistent results as before but lose some significance while gender loses its explanatory power.

[Insert Table 8 here]

Table 8 provides results of further investigation of some country level characteristics that potentially may affect ownership structure choices of start-up founders. These involve financial development and sophistication and national levels of trust. We have used four measures included in the World Development Indicators constructed by the World Bank to capture development of a country's financial system and the availability of equity and debt financing. **MARKET CAP,** the market capitalization of listed companies as a percentage of GDP in a country and **STOCK TRADE,** the total value of traded stocks as a percentage of GDP in a country, are indicators of the level of development of equity markets. **DOMESTIC CREDIT,** the domestic credit provided by the banking sector as a percentage of GDP, and

PRIVATE CREDIT, the credit offered to private sector as a percentage of GDP, are indicators of the development of debt markets. Due to the correlations among these four variables, we introduce them one at a time in the regressions. The development of equity markets did not have a significant impact on ownership structures, while the availability of debt financing and the development of debt markets did. See Column (3) and (4) in Table 8. The inclusion of these four variables, however, does not eliminate the explanatory power of legal origins and rules on ownership structures (see Columns (6) to Column (9)).

In Column (5) of Table 8, we examine whether one type of "social capital", trust, has an impact on ownership structure choices of founders. We have used national trust measures provided by the World Value Survey. As the surveys of start-up ownership structures used in this paper were conducted in 2001 and 2004, we chose the World Value Surveys conducted in 1995 and 2000. Survey respondents answered two similar questions about trust: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" in the 1995 survey, and "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people" in the 2000 survey. We were able to obtain data on trust for 31 of the countries in our original sample. For each country, we have calculated the percentage of respondents who chose "Most people can be trusted" as an indicator of general trust. If a country participated in both the 1995 and 2000 surveys, we took the average of the scores of trust. Column (10) of Table 8 reports the regression of ownership structures on legal origins, trust, and other control

variables. The regression results suggest that general trust among people does not have a direct impact on entrepreneurs' choices of ownership structures.

Country Level Analysis

The country level analysis can be seen as either a complementary analysis or a robustness check of the individual level analysis. The country index of preference for sole ownership was defined as the percentage of entrepreneurs with sole ownership (Sole Ownership Preference Index). Table 9 shows the country-level regressions explaining Sole Ownership Preference Index as a function of two legal origins and five legal families.

[Insert Table 9 here]

Columns (1) and (2) show the significant and positive relationship between common law countries and the percentage of sole owners in a country without controlling for country level variables. Column (3) and column (4) repeat the regressions in Column (1) and Column (2) except that the legal origin variable is replaced by membership in the five legal families. Only the French law family and the Scandinavian family show significant results without the controls and only the French law family remains significant with controls. This is largely due to the limited number of observations.

6. Discussion and Conclusions

The focus of this paper has been the relationship between the quality of the protection offered by the legal system to investors and lenders and the propensity of founders of start-ups to opt for sole ownership. The issue of concentration of

ownership has received significant attention in the law and economics, and finance literatures. La Porta et al. (1998) highlighted the importance of the quality of the legal protection offered by a country to minority shareholders to the development of its financial markets. They argued that ownership concentration is negatively related to effective legal protection. Without adequate protection minority shareholders are likely to be discouraged from investing. La Porta et al. (1998) found evidence from samples of large publicly owned firms to support their theoretical arguments. Burkart and Panunzi (2006), however, introduced to their models of the relationship between quality of the legal system and ownership concentration, variables reflecting the interactions among legal protection, monitoring, and managerial incentives. They showed a non-monotonic relationship between legal protection and ownership concentration. When legal protection and monitoring are complements, monitoring becomes inefficient in a poor legal system and a highly concentrated ownership structure (e.g. sole ownership) can ensure the desired high level of monitoring. This complementarity between legal protection and monitoring makes concentrated ownership more attractive in a poor quality legal system. When legal protection and monitoring are substitutes, poor legal protection calls for more monitoring from shareholders, which can affect managerial incentives. To restore managerial incentives the large shareholders' stakes need to be reduced. Therefore, substitution between legal protection and monitoring can lead to dispersed ownership structures in a poor quality legal system.

Our theoretical framework that focuses on the impact of external financing as a key variable to explain ownership structures obtains predictions consistent with those of Burkart and Panunzi (2006). The relatively low cost of debt financing in a good legal system encourages start-up founders to finance their start-ups using debt instead of equity as the main mode of financing. In bad legal systems financial institutions are more reluctant to lend the required capital without a means of effective protection as the risks of losing their investments are higher.[3]

The costs of equity financing for start-ups are less sensitive to the quality of the legal system. Minority equity investors in start-ups in a good legal system can use protection offered by the legal system, informal channels (e.g. pressures in social networks, monitoring through direct observation, and use of personal relationships), and private contracting to obtain protection. Informal channels do not lose their efficacy in a lower quality legal system. Private contracting does not lose much efficacy in a medium quality system but is an ineffective means to obtain protection in the lowest quality legal system where contracts are not enforceable. Our empirical findings support our predictions.

Our results shed light on an important area of entrepreneurial research which has received relatively little attention – the relationship between the choices of start-up

[3] Relationship banking can act as a substitute for the protection offered by the legal system. However, valuable information generated by relationship banking takes time to collect. So at the time of initial financing of start-ups, it does not provide an effective substitute for protection offered by the legal system. In the long run, however, relationship banking can act as a partial substitute for protection offered by the legal system. Indeed, there is evidence that positive information about the strength of the relationship between firms and banks increases the value of the firm as such a relationship signals to other creditors the higher quality of the borrower (Berger and Udell, 1995).

founders with respect to modes of financing and ownership structures, and the quality of the legal system. Our results suggest that there is a significant relationship. The findings which imply that the costs of equity financing of start-ups are less sensitive to the quality of the law have interesting ramifications. They may imply that in financing start-ups protection mechanisms which do not depend on the protection offered by the legal system are available and may play a significant role in investment decisions. There is a need for future research to better understand the nature and consequences of these substitutes for protection offered to investors by a legal system. The apparent lower reliance of minority equity investors on protection offered by the law even in good quality systems may suggest that such protection is too costly and not accessible. The policy implications of the study are that clear improvement in protection offered by the legal system increases the supply of debt financing, which allows founders to establish operations without yielding ownership and control at the start-up phase. But what are the consequences of having more founders establish new enterprises without partners when the law offers more protection to creditors and investors? Following Jensen and Meckling (1976), we argue that small firms run by manager-owners owning 100 percent of the residual claims on a firm accrue lower transaction and agency costs. A wholly owned firm managed by the owner is likely to be run so as to maximize the utility of that owner. The decisions made will consider not only the benefits derived from pecuniary returns but also utility generated by a variety of non-pecuniary aspects of the firm's activities. When the manager-owner sells equity claims on the firm identical to his own, agency costs will be generated

since the manager will bear only a fraction, proportional to his share of the equity, of the costs of non-pecuniary benefits he takes out in maximizing his own utility. Anticipating this, potential investors will offer a lower share price to account for higher monitoring costs as well as the divergence between the manager's interests and theirs. In addition to the stifling effects of these agency costs on the growth of the firm, one must consider the decreasing incentives offered to the manager as his reduced equity share discourages him from devoting "significant effort to creative activities such as searching out new profitable ventures . .. He may in fact avoid such ventures simply because it requires too much trouble and effort on his part to manage or learn about new technologies" (Jensen and Meckling, 1976: 313). The result is that the value of the firm is likely to be substantially lower than it otherwise could be.

It is possible, however, that having partners provides the firm with a more diverse base of expertise that may enrich the decision process by offering alternative perspectives. This of course is not costless as the transaction costs associated with decision making and implementation also increase. In any case, the availability and lower cost of debt financing associated with better quality legal systems does not prevent the founders from selling part of their equity holdings, it just provides some founders with the option of being sole owners, while under a low quality system they would be compelled to take on partners. Choices of owners-mangers to be sole owners suggest that the benefits of partnering are lower than the costs they generate. Ang, Cole and Lin (2000) present empirical evidence that confirms that agency costs in small companies are inversely related to a manger's ownership share and that

agency costs increase with the number of non-manager shareholders. Arguably, given a wider choice of ownership structure options for founders in a high quality system and the possibility of reducing the negative incentives created by agency relationships, improvements in the quality of the legal system and thus the availability of debt financing are likely to lead to an increase in the rate of founding of entrepreneurial ventures and increases in their values.

This study is not without limitations. Given the nature of the data available to us, we used associations between legal variables, financing, and ownership decisions to draw insights about the mechanisms that influence entrepreneurial behavior. Direct examination of contracts and fuller details about informal strategies used by both founders and minority investors to deal with risks is needed to validate our conclusions. Future detailed case studies of financing and ownership structure decisions under high and low quality legal systems as well as longitudinal studies of changes in behavior that occurred in systems which have transitioned from a low quality to a high quality legal system will provide a fuller account of the role that protection offered by the legal system has on founders' and investors' behavior.

Another limitation of our study relates to the level of aggregation of our sectoral dummies. We have used as controls industry dummies representing 10 classes of enterprises. Since the ease with which debt or equity flow to new enterprises depends in part on the nature of their products, technology and production processes, a more refined sectoral classification is needed to capture more impacts on financing options

and ownership structures generated by these characteristics[4]. Future studies may benefit from the introduction of less aggregated sectoral dummies.

[4] We are indebted for this observation to an anonymous referee.

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Table 1: Country Composition and Legal Origin

Country	No. of Obs.	Percentage	Year
Australia	216	2.26	2002, 2003, 2004
Canada	193	2.02	2001, 2002, 2003
Hong Kong	65	0.68	2002, 2003, 2004
India	356	3.72	2001, 2002
Ireland	87	0.91	2002, 2004
Israel	96	1	2001, 2002, 2004
New Zealand	165	1.73	2001, 2004
Singapore	286	2.99	2001, 2002, 2003, 2004
South Africa	343	3.59	2002, 2004
Thailand	131	1.37	2002
Uganda	148	1.55	2003
United Kingdom	989	10.34	2002, 2003, 2004
United States	747	7.81	2001, 2002, 2003, 2004
English Origin Total	3822	39.97	
Argentina	494	5.17	2001, 2002, 2003, 2004
Belgium	110	1.15	2002, 2003, 2004
Brazil	284	2.97	2003, 2004
Chile	330	3.45	2002, 2003
France	70	0.73	2001, 2002, 2003, 2004
Greece	68	0.71	2003, 2004
Italy	103	1.08	2001, 2002, 2004
Jordan	194	2.03	2004
Mexico	115	1.2	2002
Netherlands	111	1.16	2002, 2003, 2004
Peru	476	4.98	2004
Portugal	23	0.24	2001, 2004
Spain	687	7.19	2002, 2003, 2004
French Origin Total	3065	32.06	
China	211	2.21	2002, 2003
Croatia	83	0.87	2002, 2003, 2004
Germany	750	7.84	2001, 2002, 2003, 2004
Hungary	127	1.33	2001, 2002, 2004
Japan	45	0.47	2001, 2002, 2003, 2004
Korea	138	1.44	2001, 2002
Poland	118	1.23	2001, 2002, 2004
Slovenia	61	0.64	2002, 2003, 2004
Switzerland	105	1.1	2002, 2003
Taiwan	33	0.35	2002
German Origin Total	1671	17.48	
Denmark	116	1.21	2001, 2002, 2003, 2004
Finland	91	0.95	2001, 2002, 2003, 2004

Iceland	184	1.92	2002, 2003, 2004
Norway	238	2.49	2001, 2002, 2003, 2004
Sweden	353	3.69	2001, 2002, 2003, 2004
Scandinavian Origin Total	982	10.26	
Russia	21	0.22	2002

Note: The sources of countries' legal origins are La Porta et al. (1998) and http://www.nationmaster.com/graph-T/gov_leg_ori

Table 2 Description of the Legal Variables

Variables	Description & Sources
Common law	Dummy variable which equals 1 if the country's legal system has common law origin; equals 0 if the country's legal system has civil law origin Source: La Porta et al. (1998) "Law and Finance" and http://www.nationmaster.com/graph-T/gov_leg_ori
Legalr	Denotes the "Legal Rights of Borrowers and Lenders" index. It is a continuous variable from 0 to 10 to measure how well collateral and bankruptcy laws facilitate lending. The higher the value, the better the laws facilitate lending. Source: World Bank website, "Doing Business" section
Discls	Denotes the "Disclosure Index". It is a continuous variable from 0 to 10 to measure the transparency of transactions. The higher the value, the more transparent the transactions. Source: World Bank website, "Doing Business" section
Dirlia	Denotes the "Director Liability Index". It is a continuous variable from 0 to 10 to measure "the liability of self-dealing". The higher the value, the greater the liabilities of self-dealing. Source: World Bank website, "Doing Business" section
Suits	Denotes the "Shareholders' Suits Index". It is a continuous variable from 0 to 10 to measure the "shareholders' ability to sue officers and directors for misconduct". The higher the value, the easier it is for shareholders to sue directors. Source: World Bank website, "Doing Business" section

Table 3 Description of Other Variables

Variables	Description
Soleown	Dummy variable which equals 1 if an entrepreneur fully owns the business and equals 0 if the entrepreneur partly owns the business.
Owners	Continuous variable which indicates how many people including the interviewed entrepreneurs will own and manage the new business.
Owner4	Categorical variable which equals 1 if the expected number of owners of the new business is 1; equals 2 if the expected number of owners is 2; equals 3 if the expected number of owners between 3 and 5; and equals 4 if the expected number of owners is 6 or above.
Age	Continuous variable between 18 and 64.
Gender	Dummy variable which equals 1 if male; equals 0 if female.
Income	Categorical variable which equals 1 if the income belongs to the lowest third; equals 2 if income belongs to the middle third ; and equals 3 if income belongs to upper third .
Education	Categorical variable which equals 1 if the educational attainment is some secondary; equals 2 if secondary school diploma obtained; equals 3 if post-secondary education; and equals 4 if graduate education.
Network	Dummy variable which equals 1 if the interviewed entrepreneurs know someone personally who started a business in the past 2 years; equals 0 otherwise.
Risk averse	Dummy variable which equals 1 if fear of failure would prevent the interviewed entrepreneurs from starting a business; equals 0 otherwise.
Industry	Categorical variable which equals 1000 if the business is in agriculture, forest, hunting, and fishing; 2000 if construction and mining; 3000 if manufacturing; 4000 if transportation, communication, and utilities; 5000 if wholesale, motor vehicle sale, and repair; 6000 if retail, hotel and lodging, and restaurant and bars; 7000 if financial, insurance, and real estate; 8000 if business services; 9000 if health, education and social services; and 10000 if consumer services.
No. of jobs	Continuous variable which is a log of the number of jobs expected in the next 5 years.
LNGNI	GNI per capita taken as an average over the past five years.
GDPGR	Annual GDP per capita growth rate taken as an average over the past five years.
Market cap	Measures market capitalization of listed companies as a percentage of GDP in a country. This paper uses a five year average of market cap starting from 1996 to 2000. Source: World Development Indicators from the World Bank

Stock trade	Measures the total value of traded stocks as a percentage of GDP in a country. This paper takes the five year average of this measure from 1996 to 2000. Source: World Development Indicators from the World Bank
Private credit	Measures the domestic credit offered to the private sector as a percentage of GDP in a country. This paper takes the five year average of this measure from 1996 to 2000. Source: World Development Indicators from the World Bank
Domestic credit	Defined as domestic credit provided by banking sector as a percentage of GDP. This paper takes the five year average of this measure from 1996 to 2000. Source: World Development Indicators from the World Bank

Table 4 Descriptive Statistics of Variables

Variable	No. of Obs.	Mean	Std. Deviation
Soleown	9561	0.52	0.50
Owners	9535	2.36	16.14
Owners4	9535	1.73	0.87
Common Law	9561	0.40	0.49
French	9561	0.32	0.47
German	9561	0.17	0.38
Scandinavian	9561	0.10	0.30
Russia	9561	0.00	0.05
Legalr	9561	6.22	2.23
Discls	9561	6.89	2.23
Dirlia	9561	5.57	2.23
Suits	9561	6.48	1.70
Risk averse	9423	0.19	0.39
Network	9431	0.67	0.47
Income	8666	2.07	0.80
Education	9452	2.25	1.00
Gender	9561	0.64	0.48
Age	9561	37.01	11.12
LNGNI	9528	9.24	1.26
GDPGR	9528	2.16	1.73
No. of jobs	9350	154.70	5877.56
Agriculture, forest, hunting, and fishing	420		
Construction and mining	504		
Manufacturing	765		
Transportation, communication, and utilities	458		
Wholesale, motor vehicle sale, and repair	704		
Retail, hotel and lodging, and restaurant and bars	2766		
Financial, insurance, and real estate	378		
Business services	1557		
Health, education and social services	659		
Consumer services	724		
Year 2001	853		
Year 2002	3228		
Year 2003	2112		
Year 2004	3368		

Table 5 Individual Level Regressions Analyzing the Effects of Legal Origins on Ownership Choices

SOLEOWN	REG1	REG2	REG3	REG4	REG5	REG6
Common law	0.478***		0.445***		0.439***	
	(0.129)		(0.132)		(0.136)	
French		-0.609***		-0.574***		-0.565***
		(0.139)		(0.139)		(0.137)
German		-0.258**		-0.193		-0.150
		(0.120)		(0.119)		(0.125)
Scandinavian		-0.556***		-0.556***		-0.606***
		(0.162)		(0.164)		(0.159)
Russia		-0.249*		0.091		0.110
		(0.150)		(0.095)		(0.104)
Risk averse			-0.224***	-0.223***	-0.252***	-0.253***
			(0.058)	(0.058)	(0.058)	(0.058)
Network			-0.253***	-0.275***	-0.212***	-0.233***
			(0.059)	(0.053)	(0.057)	(0.052)
Income			-0.104**	-0.110***	-0.089**	-0.095**
			(0.041)	(0.04)	(0.044)	(0.043)
Education			-0.119***	-0.117***	-0.125***	-0.121***
			(0.026)	(0.026)	(0.029)	(0.028)
Gender			0.037	0.041	0.113**	0.122**
			(0.054)	(0.054)	(0.052)	(0.052)
Age			0.018***	0.018***	0.018***	0.018***
			(0.003)	(0.003)	(0.003)	(0.003)
LNGNI	-0.085*	-0.093*	-0.045	-0.051	-0.045	-0.046
	(0.047)	(0.051)	(0.039)	(0.037)	(0.039)	(0.04)
GDPGR	0.009	-0.011	0.008	-0.018	0.019	-0.008
	(0.016)	(0.017)	(0.026)	(0.025)	(0.029)	(0.03)
No. of jobs					-0.139***	-0.142***
					(0.017)	(0.017)
Industry FE	NO	NO	NO	NO	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Constant	0.614	1.263***	0.284	0.904***	0.315	0.892**
	(0.423)	(0.464)	(0.354)	(0.315)	(0.346)	(0.362)
Log pseudolikelihood	-6511.04	-6496.85	-5767.50	-5751.19	-5302.10	-5282.13
No. of Obs.	9528	9528	8527	8527	7985	7985

This table reports regression results based on a sample of 9,561 startup founders. The dependent variable is ***Soleown***, a dummy variable which equals 1 if a startup founder fully owns the business and 0 otherwise. ***Common law*** is a dummy variable to indicate whether a startup founder operates in a common law system. ***Risk averse*** is a dummy variable which equals 1 if fear of failure would prevent the interviewed entrepreneurs from starting a business and 0 otherwise. ***Income*** is a categorical variable which equals 1 if the income belongs to the lowest third; 2 if income belongs to the middle third; 3 if income belongs to the upper third. ***Education*** is a categorical variable which equals 1 if the educational attainment is some secondary; 2 if secondary diploma obtained; 3 if post secondary education and 4 if graduate education. ***Network*** is a dummy variable which equals 1 if the interviewed entrepreneur knows someone personally who started a business in the past 2 years and 0 otherwise. ***Age***

is a continuous variable ranging between 18 and 64. ***Gender*** is a dummy variable which equals 1 if male and 0 if female. ***No. of jobs*** is a log of the number of jobs expected in the next 5 years. ***LNGNI*** is GNI per capita averaged over the past five years. ***GDPGR*** is the annual GDP per capita growth rate averaged over the past five years. All of the regressions are based on the logit model, in which observations are clustered at the founder's country level. Robust and clustered standard errors at country level are reported in parentheses. Start-up industry fixed effects and year fixed effects are controlled but not reported. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Table 6 Individual Level Regressions Analyzing the Effects of Legal Enforcement Variables on Ownership Choices

SOLEOWN	**REG1**	**REG2**	**REG3**	**REG4**	**REG5**	**REG6**
Legalr	0.108***				0.109***	0.029
	(0.042)				(0.041)	(0.042)
Suits		0.065**			0.052	-0.009
		(0.033)			(0.039)	(0.028)
Discls			0.025		-0.019	-0.038
			(0.035)		(0.026)	(0.026)
Dirlia				0.008	-0.025	-0.069**
				(0.026)	(0.027)	(0.031)
Common law						0.659***
						(0.203)
Risk Averse	-0.244***	-0.241***	-0.246***	-0.243***	-0.245***	-0.268***
	(0.061)	(0.059)	(0.06)	(0.058)	(0.059)	(0.059)
Network	-0.233***	-0.248***	-0.243***	-0.245***	-0.245***	-0.218***
	(0.057)	(0.061)	(0.064)	(0.065)	(0.055)	(0.054)
Income	-0.100**	-0.092**	-0.094**	-0.097**	-0.103**	-0.106***
	(0.045)	(0.045)	(0.046)	(0.044)	(0.041)	(0.041)
Education	-0.099***	-0.104***	-0.095***	-0.088***	-0.104***	-0.127***
	(0.031)	(0.031)	(0.03)	(0.031)	(0.03)	(0.027)
Gender	0.106**	0.102**	0.1**	0.093*	0.108**	0.113**
	(0.049)	(0.051)	(0.049)	(0.048)	(0.05)	(0.052)
Age	0.018***	0.018***	0.018***	0.018***	0.018***	0.018***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
LNGNI	-0.162***	-0.057	-0.029	-0.032	-0.167***	-0.033
	(0.062)	(0.055)	(0.057)	(0.054)	(0.05)	(0.061)
GDPGR	-0.006	0.022	0.021	0.023	-0.006	0.012
	(0.031)	(0.028)	(0.028)	(0.03)	(0.028)	(0.024)
No. of jobs	-0.144***	-0.144***	-0.143***	-0.143***	-0.145***	-0.136***
	(0.016)	(0.017)	(0.017)	(0.017)	(0.016)	(0.016)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Constant	0.902*	0.114	0.089	0.237	0.905*	0.737*
	(0.482)	(0.499)	(0.574)	(0.496)	(0.470)	(0.427)
Log pseudolikelihood	-5313.35	-5330.61	-5337.62	-5340.3	-5308.22	-5284.03
No. of Obs.	7985	7985	7985	7985	7985	7985

This table reports regression results based on a sample of 9,561 startup founders. The dependent variable is ***Soleown***, a dummy variable which equals 1 if a startup founder fully owns the business and 0 otherwise. ***Legalr*** is a continuous variable from 0 to 10 to measure how well collateral and bankruptcy laws facilitate lending. ***Suits*** is a continuous variable from 0 to 10 to measure the "shareholders' ability to sue officers and directors for misconduct". ***Discls*** is a continuous variable from 0 to 10 to measure the transparency of transactions. ***Dirlia*** is a continuous variable from 0 to 10 to measure "the liability of self-dealing". ***Common law*** is a dummy variable to indicate whether a startup founder operates in a common law system. Other variables are defined the same as before. All of the regressions are based on the logit model, in which observations are clustered at the founder's country level. Robust and clustered standard errors at the country level are reported in parentheses. Start-up

industry fixed effects and year fixed effects are controlled but not reported. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Table 7 Results of Robustness Checks Using Alternative Regression Models

	SOLEOWN REG1 PROBIT	SOLEOWN REG2 PROBIT	OWNER4 REG3 OLS	OWNER4 REG4 OLS	OWNER4 REG5 OPROBIT	OWNER4 REG6 OPROBIT
Common Law	0.273***		-0.142**		-0.210**	
	(0.084)		(0.063)		(0.086)	
French		-0.352***		0.155**		0.232***
		(0.084)		(0.059)		(0.082)
German		-0.093		0.031		0.061
		(0.077)		(0.059)		(0.081)
Scandinavian		-0.376***		0.279***		0.371***
		(0.098)		(0.087)		(0.111)
Russia		0.065		0.131**		0.194***
		(0.064)		(0.052)		(0.073)
Risk Averse	-0.158***	-0.157***	0.093***	0.093***	0.130***	0.130***
	(0.036)	(0.036)	(0.028)	(0.026)	(0.036)	(0.034)
Network	-0.132***	-0.145***	0.09***	0.091***	0.128***	0.131***
	(0.035)	(0.032)	(0.023)	(0.023)	(0.032)	(0.031)
Income	-0.056**	-0.06**	0.027	0.028*	0.04*	0.043*
	(0.027)	(0.027)	(0.017)	(0.017)	(0.024)	(0.023)
Education	-0.078***	-0.075***	0.061***	0.058***	0.081***	0.078***
	(0.018)	(0.018)	(0.013)	(0.013)	(0.017)	(0.017)
Gender	0.07**	0.075**	0.005	0.001	-0.008	-0.013
	(0.032)	(0.032)	(0.024)	(0.023)	(0.031)	(0.03)
Age	0.011***	0.011***	-0.005***	-0.005***	-0.008***	-0.008***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
LNGNI	-0.029	-0.029	0.016	0.006	0.025	0.013
	(0.024)	(0.025)	(0.019)	(0.018)	(0.025)	(0.025)
GDPGR	0.012	-0.005	-0.006	-0.001	-0.008	6.81e-05
	(0.018)	(0.018)	(0.01)	(0.011)	(0.014)	(0.015)
No. of jobs	-0.085***	-0.087***	0.069***	0.07***	0.096***	0.098***
	(0.01)	(0.01)	(0.007)	(0.007)	(0.009)	(0.009)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Constant	0.197	0.556**	1.499***	1.423***		
	(0.215)	(0.225)	(0.168)	(0.157)		
Log pseudolikelihood	-5301.95	-5281.91			-8666.23	-8645.63
No. of Obs.	7985	7985	7980	7980	7980	7980

This table reports regression results based on a sample of 9,561 startup founders. The dependent variable of regressions in Column (1) and (2) is ***Soleown***, a dummy variable which equals 1 if a startup founder fully owns the business and 0 otherwise. The dependent variable of regressions in Columns (3) to (6) is ***Owner4***, a categorical variable which equals 1 if the expected number of owners of the new business is 1; equals 2 if the expected number of owners is 2; equals 3 if the expected number of owners is between 3 and 5; and equals 4 if the expected number of owners is 6 or above. ***Common law*** is a dummy variable to indicate whether a startup founder operates in a common law system. Other variables are defined the same as before. Regressions in Column (1) and (2) are based on the probit model. Regressions in Column (3) and (4) employ the OLS model. Regressions in last two columns use the ordered probit model. All observations are clustered at the founder's country level. Robust and

clustered standard errors at the country level are reported in parentheses. Start-up industry fixed effects and year fixed effects are controlled but not reported. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Table 8 Robustness Checks with Controls for Financial Sector Development and National Levels of Trust

	SOLEOWN REG1	SOLEOWN REG2	SOLEOWN REG3	SOLEOWN REG4	SOLEOWN REG5	SOLEOWN REG6	SOLEOWN REG7	SOLEOWN REG8	SOLEOWN REG9	SOLEOWN REG10
Market Cap	0.001					-0.002				
	(0.002)					(0.002)				
Stock Trade		0.002					0.0002			
		(0.001)					(0.001)			
Private Credit			0.004***					0.001		
			(0.001)					(0.001)		
Domestic Credit				0.004***					0.002**	
				(0.001)					(0.001)	
Trust					0.069					0.603
					(0.690)					(0.574)
Common Law						0.581***	0.444***	0.392***	0.365**	0.508***
						(0.135)	(0.151)	(0.152)	(0.150)	(0.119)
Risk Averse	-0.251***	-0.254***	-0.247***	-0.244***	-0.252***	-0.268***	-0.261***	-0.252***	-0.250***	-0.255***
	(0.059)	(0.058)	(0.058)	(0.057)	(0.058)	(0.059)	(0.059)	(0.058)	(0.058)	(0.058)
Network	-0.238***	-0.230***	-0.241***	-0.236***	-0.209***	-0.206***	-0.205***	-0.213***	-0.211***	-0.175***
	(0.063)	(0.064)	(0.062)	(0.063)	(0.069)	(0.059)	(0.058)	(0.057)	(0.057)	(0.057)
Income	-0.095**	-0.098**	-0.096**	-0.097**	-0.124***	-0.093**	-0.091**	-0.09**	-0.09**	-0.109**
	(0.047)	(0.045)	(0.045)	(0.044)	(0.048)	(0.044)	(0.045)	(0.044)	(0.043)	(0.045)
Education	-0.097***	-0.09***	-0.096***	-0.094***	-0.087***	-0.125***	-0.126***	-0.124***	-0.123***	-0.143***
	(0.03)	(0.032)	(0.03)	(0.031)	(0.034)	(0.029)	(0.03)	(0.029)	(0.03)	(0.028)
Gender	0.081*	0.081*	0.102**	0.100**	0.115**	0.104**	0.100**	0.114**	0.114**	0.131**
	(0.047)	(0.047)	(0.048)	(0.048)	(0.05)	(0.052)	(0.051)	(0.051)	(0.051)	(0.055)
Age	0.018***	0.018***	0.017***	0.017***	0.017***	0.018***	0.018***	0.018***	0.018***	0.017***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
LNGNI	-0.053	-0.068	-0.112**	-0.118**	0.003	-0.018	-0.063	-0.069	-0.1**	-0.073
	(0.066)	(0.066)	(0.05)	(0.052)	(0.088)	(0.057)	(0.056)	(0.044)	(0.046)	(0.057)
GDPGR	0.016	0.008	0.011	0.014	0.034	0.027	0.018	0.016	0.014	-0.006
	(0.029)	(0.03)	(0.034)	(0.035)	(0.052)	(0.028)	(0.03)	(0.031)	(0.033)	(0.045)
No. of jobs	-0.143***	-0.142***	-0.143***	-0.142***	-0.135***	-0.137***	-0.139***	-0.139***	-0.139***	-0.131***

	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	0.383	0.537	0.745*	0.752*	-0.039	0.173	0.467	0.462	0.606	0.478
	(0.590)	(0.577)	(0.443)	(0.442)	(0.681)	(0.484)	(0.475)	(0.381)	(0.376)	(0.447)
Log pseudolikelihood	-5239.82	-5237.45	-5323.1	-5318.3	-4794.01	-5201.72	-5206.26	-5300.95	-5295.67	-4752.99
No. of Obs.	7842	7842	7985	7985	7157	7842	7842	7985	7985	7157

This table reports regression results based on a sample of 9,561 startup founders. The dependent variable is ***Soleown***, a dummy variable which equals 1 if a startup founder fully owns the business and 0 otherwise. ***Market cap*** measures market capitalization of listed companies as a percentage of GDP in a country. ***Stock trade*** measures the total value of traded stocks as a percentage of GDP in a country. ***Private credit*** measures the domestic credit offered to the private sector as a percentage of GDP in a country. ***Domestic credit*** is defined as domestic credit provided by the banking sector as a percentage of GDP. ***Common law*** is a dummy variable to indicate whether a startup founder operates in a common law system. Other variables are defined the same as before. All of the regressions are based on the logit model, in which observations are clustered at the founder's country level. Robust and clustered standard errors at the country level are reported in parentheses. Start-up industry fixed effects and year fixed effects are controlled but not reported. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Table 9 Country-Level Regressions Analyzing the Effects of Legal Origins on Ownership Choices

SOLEOWNRATIO	REG 1	REG2	REG3	REG4
Common Law	0.067*	0.067*		
	(0.038)	(0.037)		
French			-0.08*	-0.078*
			(0.043)	(0.042)
German			-0.024	-0.028
			(0.049)	(0.053)
Scandinavian			-0.127**	-0.095
			(0.058)	(0.06)
Russia			0.023	-0.019
			(0.112)	(0.113)
LNGNI		-0.03**		-0.027*
		(0.013)		(0.014)
GDPGR		0.008		0.005
		(0.01)		(0.011)
Year FE	YES	YES	YES	YES
Constant	0.482***	0.749***	0.551***	0.785***
	(0.028)	(0.129)	(0.041)	(0.139)
R-squared	0.091	0.240	0.185	0.278
Observations	42	41	42	41

This table reports regression results based on a sample of 42 countries. The dependent variable is ***Soleownratio*** which is defined as the percentage of startup founders opting for sole ownership. ***Common law*** is a dummy variable to indicate whether a startup founder operates in a common law system. Other variables are defined the same as before. All of the regressions are based on the OLS model. Year fixed effects are controlled but not reported. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.