What Role of Legal Systems in Financial Intermediation? Theory and Evidence

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Abstract

How does the relationship between an investor and entrepreneur depend on the legal system? In a double moral hazard framework, we show how optimal contracts, corporate governance, and investor actions depend on the legal system. With better legal protection, investors give more non-contractible support, demand more downside protection, and exercise more governance. Moreover, investors in better legal systems have stronger incentives to develop the competencies necessary to provide governance and value-adding support. When investing in a different legal systems they bring their competencies with them and behave differently than local investors. We test these predictions using a hand-collected dataset of European venture capital deals. The empirical results confirm the model predictions.

PRELIMINARY, PLEASE DO NOT QUOTE

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1 Introduction

The work of La Porta et al. (1997, 1998, 2000) demonstrates the importance of the legal system for economic activity. Their work, and a large ensuing literature (e.g., Acemoglu, Johnson and Robinson (2001, 2002)) shows that countries with different legal origins also systematically differ in terms of their financial systems. These studies, based on country-level data, document that variations in legal systems induce significant differences in institutions and economic outcomes. However, the aggregate nature of these data makes it difficult to go beyond documenting the existence of strong correlations. Micro-level data are more suitable to identify the channels through which legal systems affect institutions and outcomes.

In this paper we move in this direction and ask how financial intermediation is affected by the nature of the legal system. A large theoretical literature has pointed to the importance of both contractual and non-contractual aspects of financial intermediation when an entrepreneur seeks funds for an investment project (Holmström and Tirole (1997), Hart (2001)). We build on this literature and look at how the relationship between an investor and an entrepreneur depends on the legal system.

Since it is not immediately obvious how the legal system should affect this relationship, we let our analysis be guided by theory. We examine how optimal contracts and the resulting investor behavior depend on the legal system. Our theory makes three central predictions. The better the legal system, (i) the more investors provide value-adding support, (ii) the more they demand contractual downside protection in bad states of the world, using securities such as debt, convertible debt, or preferred equity, and (iii) the more they exercise corporate governance. The underlying intuition is that investing in governance and support are only worthwhile if the legal system provides investors with sufficient guarantees that these efforts will not simply be wasted. We show that in a better legal system it is optimal to give the entrepreneur stronger upside incentives. As a consequence it becomes necessary to give investors additional cash flow rights on the downside in order to satisfy their participation constraint. We then extend our theory to examine how the legal systems might affect financial intermediaries themselves. We consider the influence of the legal system on intermediaries' incentives to develop the competencies necessary to provide value added services and to exert governance. We show that intermediaries from countries with a better legal tradition will provide more governance and value added services, even when investing abroad.

To test the predictions of the theory, we use a hand-collected dataset on European venture capital investments for the period 1998-2001. We focus on venture capital as a form of financial intermediation because prior research has already established the richness of relationships between investors and companies. Venture capital firms can play a value-adding role in the companies they finance, both through contracting and by providing non-contractible inputs such as advice, support, and governance (Gompers (1995), Hellmann and Puri (2002), Hochberg (2003), Kaplan and Strömberg (2003), Lerner (1994), Lindsey (2003), Sahlman (1990), Sorensen (2004)). All of this evidence concerns the US, yet over the last decade venture capital has become a global phenomenon (Megginson (2004)), with Europe becoming a particularly important market (Bottazzi and Da Rin (2004), Da Rin, Nicodano, and Sembenelli (2004)). As the venture capital industry develops, there is

considerably debate about what investment methods are appropriate across these different countries. The suspicion arises that differences in investment methods are related to differences in legal systems. Europe is therefore an excellent place to examine differences across legal systems, since European countries are fairly comparable in their stages of economic growth, yet there is a rich variety of legal systems within Europe.

Our sample consists of over 1,400 venture deals from over 120 venture capital firms in 17 European countries. Our primary data source is a comprehensive survey of all venture capital firms in these countries. We then augmented the data with numerous secondary sources, including commercial databases and websites. Our dataset has several important strengths. We made a significant data collection effort, which required considerable time and effort, but resulted in a dataset that is significantly larger than other hand-collected datasets on venture capital, and much richer than the commercially available datasets. We also collected several measures of the interactions between venture capitalists and entrepreneurs. This allows us to assess not only the contractual, but also the non-contractual aspects of their relationship. Some of these measures cannot be obtained from standard sources of venture capital data (such as VenturExpert), nor from venture capital contracts. Another notable feature of our dataset, which we exploit in the analysis, is that it provides us with investments which 'cross-over' to different legal systems.

We find clear empirical support for our theoretical predictions. Better legal systems tend to be associated with more investor involvement, more downside protection for the investors, and more governance. The results hold for legal origin, using the standard interpretation that the Anglo-Saxon common law system is better for investors than systems based on civil law. They also hold for two widely used alternative index measures of the quality of the legal system: the rule of law and the degree of legal procedural complexity. These results provide new insights into how legal systems affect financial intermediation; in particular, they point to the importance of considering the relationship between investor and entrepreneur in its entirety, accounting for the interdependence between contractual and non-contractual aspects.

Our data allows us to examine whether the effects of legal systems are mainly due to company or investor characteristics. Using the information from investments that cross legal system boundaries, we find that the latter matter most. Consistent with our model, investors from countries with stronger legal traditions provide more support, demand more downside protection, and exercise more governance, both within and outside their legal system. Interestingly, the reverse is also true, i.e., investors from weaker legal system do less of these things, both within and outside their legal system. This supports our theoretical prediction that the legal system affects financial outcomes not only directly, but also indirectly by affecting the extent to which financial intermediaries develop competencies.

Much of the literature uses differences between common and civil law countries to identify the effect of the legal system. Our data allows us to go one step further, and perform some additional, more detailed, tests by using also differences among civil law countries. We find that our results continue to hold even for this subsample, thus providing a new and stronger case for the importance of legal systems.

We discuss these and other results in the main body of the paper. Section 2 addresses the relationship with the literature. Section 3 develops the theoretical model. Section 4

describes the data. Section 5 discusses the empirical results, and Section 6 provides some further discussion. It is followed by a brief conclusion.

2 Related Literature

A number of recent papers address issues related to this paper. On the theory side, Shleifer and Wolfenzon (2002) examine a model where an entrepreneur wants to divert funds for private use. They show how the strength of the legal system affects the willingness to go public, and thus the equilibrium size of the capital market. Burkhart, Panunzi and Shleifer (2003) consider how the legal system affects a manager's ability to divert funds. They show that the willingness of an owner to delegate control to a manager and to sell shares to outsiders depends on the quality of the legal system. We are not aware of any theory paper that specifically addresses the role of the legal system for both the contractual and non-contractual aspects of financial intermediation.

Turning to the empirical literature, papers based on company-level data have started looking at the effects of legal systems on financial or economic outcomes. Demirgüç-Kunt and Maksimovic (1998), for example, provide evidence on the link between legal origin, financial institutions and company growth. Qian and Strahan (2004) look at how legal origin affects the design of bank loan contracts.

Three recent papers which use venture capital data are particularly close to ours. Lerner and Schoar (2004) (LS henceforth) collect a sample of 210 transactions in 26 countries, made by 28 private equity firms, mostly between 1996 and 2001. They focus not on venture capital deals but on private equity deals more broadly defined. Their data are mainly from developing, rather than developed countries. They find statistically significant relationships between legal origin and the type of securities and contractual covenants used. These effects continue to persist after controlling for investor characteristics.

Kaplan, Martel, and Strömberg (2003) (KMS henceforth) collect a sample of 145 venture deals made by 70 venture capital firms in 107 companies in 23 non-US (largely European) countries, mostly between 1998 and 2001. They compare these non-US investments with the US sample analyzed by Kaplan and Strömberg (2003), finding important differences. Their results show a correlation between legal systems and the choice of securities and other contractual features. However, the legal coefficients become insignificant once they control for the investor's degree of sophistication, measured by its being US-based or familiar with the US market.

Cumming, Schmidt and Walz (2004) (CSW henceforth) analyze a sample of 3,848 private equity investments in 39 developed and developing countries between 1971 and 2003. They focus on the exercise of corporate governance by venture capitalists. They find a positive correlation between the quality of the legal system and the exercise of governance, in particular the board representation of the investor.[1]

Our study advances the literature on several counts. To move toward a deeper economic understanding of the effects of the law on finance, we ask how the legal system

[1] In a related vein, Bascha and Walz (2001) examine German data, and Cumming and MacIntosh (2003) examine US and Canadian data.

affects the *entire* relationship, both contractual and non-contractual, between investors and entrepreneurs; and we consider both the direct and the indirect effect of the law. We address this from a new angle, by developing a theoretical model that guides our empirical analysis. This gives us a coherent framework for explaining how the legal system affects the various aspects of the financing relationship.

We also use a different data approach. KMS and LS gather venture capital contracts. This has the advantage of providing very detailed data on the contractual relationship between the venture capitalist and the entrepreneur. CSW use data from venture firms seeking investment from a large fund of funds. We choose a complementary approach of gathering survey data on venture capital activity. This has the advantage that we can obtain data on both contractual and non-contractual aspects of the investment relationship. We are also able to build a substantially larger sample than LS and KMS. And our dataset gives us with a new vantage point for looking at the role of legal systems. First, we consider not only investments of Anglo-Saxon investors in civil law countries, but also the reverse—investments by civil law venture capitalists in common law countries. Second, we are able to repeat our analysis within the subsample of civil law countries, thus eliminating concerns that differences in legal systems are driven by the UK or the US.

Despite the different approaches, there is a remarkable consistency across these papers. We confirm (and provide a theoretical explanation for) the findings of KMS (and in part of LS) that investors from countries with strong legal traditions make more extensive use of securities that afford downside protection. Our results also confirm the findings of KMS and LS that investors retain aspects of their investment styles when investing abroad. KMS focus mainly on the investments of US (or US-tied) investors abroad. LS focus on investment of Anglo-Saxon private equity groups in developing countries. Our empirical analysis finds strong evidence for such investor 'home' effect, which we show to apply not only to investments from stronger to weaker legal systems, but also to investments from weaker to stronger legal systems.

3 Theory

3.1 Assumptions

The double moral hazard model, where both the entrepreneur and the venture capitalist make non-contractible contributions that affect the likelihood of the venture's success, has become the workhorse of the theoretical venture capital literature (Casamatta (2003), Hellmann (1998, 2004), Inderst and Müller (2003), Repullo and Suarez (2004), Schindele (2004), Schmidt (2003)). In this paper, we incorporate the quality of the legal system into such a double moral hazard model.

Consider an entrepreneur who requires an investment amount k_V to start a company. With probability $(1-q)$ the company is a failure, and generates no returns. With probability q, the venture is economically viable. In this case, the company always has some value, and it has a chance to generate considerable profits. Specifically, we assume that, if viable, the company has some assets, that have a value a. These assets cannot be stolen.

With probability p, the company generates additional cash flows π. The problem with the additional cash flows is that their verifiability depends on the legal system. We assume that investor's claims on π are legally enforceable with probability λ. Note that λ will be our measures of the quality of legal system. With probability $1-\lambda$ the entrepreneur identifies a weakness in the legal system that allows her to steal the cash flows π. Stealing is risky or otherwise costly, so that the entrepreneur's expected returns from stealing are given by $(1-\phi)\pi$, where $\phi\pi$ measures the net cost of stealing.

For the double moral hazard problem, we use a tractable specification, where the probability of generating additional cash flows is given by $p = p_G + p_E e + p_V v$.[2] Let e measure the non-contractible effort of the entrepreneur, and v measure the amount of non-contractible value-adding support of the venture capitalist. For simplicity we use quadratic private effort costs $c_E = e^2/2$ and $c_V = v^2/2$. The parameters p_E and p_V measure the relative importance or ability of the entrepreneur and venture capitalist. p_G is discussed below. Throughout we assume that p_G, p_E and p_V are sufficiently low to ensure that $p < 1$. For simplicity we assume that private efforts are made after the realization of q.

An important decision is what role the venture capitalist takes with respect to corporate governance (Dessein (2003), Hellmann (1998)). The corporate finance literature typically argues that governance provides a safeguard for shareholder interests. Typically this increases a company's expected profits, but decreases the entrepreneur's private benefits (Burkart, Gromb and Panunzi (1997)). We capture this trade-off in the following simple manner. If the venture capitalist does not exercise governance (denote this by $G = 0$), the base probability of success is $p_G = p_0$, and the entrepreneur enjoys private benefit β_0. With governance ($G = 1$), p_G rises to $p_G = p_1 > p_0$, but the entrepreneur has lower private benefits $\beta_1 < \beta_0$. The entrepreneur is wealth constrained. Her opportunity cost of doing the venture is given by k_E.

In this simple model, the value of the company can only take three values: $a + \pi$ on the upside, a on the downside, and 0 is case of failure. The venture capitalist's cash flow rights are linear, so that we can focus on debt and equity w.l.o.g..[3] Let d denote the face value of debt, and s the venture capitalist's percentage equity share. The venture capitalist receives $d + s(a-d)$ on the downside and $d + s(\pi + a - d)$ on the upside.[4]

For $\phi > s$ the entrepreneur would never want to steal, since the cost of stealing is greater than the cost of sharing. We then focus on the cases where $\phi < s$, so that the

[2] Hellmann (2004) provides a model extension where not only p, but also q depends on two-sided private effort. That extension makes the model considerably more complex, but yields relatively few additional insights. We therefore limit our analysis here to the more tractable model where q does not depend on private effort.

[3] Some venture capitalists (especially in the US) use convertible preferred equity (Kaplan and Strömberg (2004)). In this simple linear model, this is equivalent to a mix debt and equity. We can map one into the other as follows: let $\widetilde{d}$ denote the face (or preferred) value before conversion, and $\widetilde{s}$ the percentage equity stake after conversion. We then have $\widetilde{d} = d + s(a-d)$ and $\widetilde{s}(a+\pi) = d + s(\pi + a - d) \Leftrightarrow \widetilde{s} = s + \dfrac{(1-s)d}{a+\pi}$.

[4] Let $\underline{k_E}$ such that $u_E(s^*) = 0$ for $d = a$, and $\overline{k_E}$ such that $u_E(s^*) = 0$ for $d = 0$. We assume that $k_E \in [\underline{k_E}, \overline{k_E}]$. This ensures that $d^* \in [0, a]$. This assumption is not essential for the results, but simplifies the exposition.

entrepreneur always prefers stealing over sharing. Define:

$$\Lambda = \lambda + (1-\lambda)(1-\phi),$$

which represents the fraction of total returns that are not lost due to stealing. Let u_E, u_V denote the utilities of the entrepreneur and venture capitalist, respectively, and u the joint utility, then:

$$\begin{aligned} u_E &= \beta_G + q[(1-s)(a-d) + p\pi(\Lambda - \lambda s) - c_E] - k_E \\ u_V &= q[d + s(a-d) + p\pi\lambda s - c_V] - k_V \\ u &= \beta_G + q[a + p\pi\Lambda - c_E - c_V] - k_E - k_V. \end{aligned}$$

Suppose for simplicity that the venture capitalist has all the bargaining power. The optimal contract maximizes u_V, s.t. $u_E = 0$.

The parameters p_V and p_1 can be thought of as measuring the value-adding competencies of venture capitalists. At the time of investment, these can be taken as exogenous. However, venture capital firms can also make decisions about how much they want to develop value-adding competencies. A firm's competencies may thus depend on the kind of investments it plans to do, and the associated legal environment. In section 3.2 we derive the optimal contract for a given level of competencies. In section 3.3 we examine how the legal system influences competencies, and how this affects optimal contracts.

3.2 Optimal contracts

The optimal contract maximizes u_V by choice of d and s, subject to $u_E = 0$, and subject to two incentive constraints. We derive these from the first-order conditions of maximizing u_V w.r.t. v, and u_E w.r.t. e. We obtain:

$$e = p_E\pi(\Lambda - \lambda s) \text{ and } v = p_V\pi\lambda s. \tag{1}$$

Naturally, increasing s increases v and decreases e, so that equity affects incentives. In addition, v and e are independent of d. This means that debt transfers utility between the entrepreneur and the venture capitalist. Put differently, in this simple model, downside protection gives the venture capitalist additional cash flow rights, without upsetting the balance of incentives.

Using standard reasoning, the optimal value of s, denoted by s^*, maximizes the joint utility u. The first-order condition for s^* is given by:

$$\pi\Lambda(p_E\frac{de}{ds} + p_V\frac{dv}{ds}) - e\frac{de}{ds} - v\frac{dv}{ds} = 0$$

Using (1), we can solve for s^*. After some transformations we obtain:

$$s^* = \frac{\Lambda}{\lambda} \frac{p_V^2}{p_E^2 + p_V^2}. \tag{2}$$

Clearly, s^* is larger the larger the venture capitalist's value contribution (p_V), and the smaller the entrepreneur's value contribution (p_E). The following lemma considers the effect of λ on s^*.

Lemma 1 *The venture capitalist's optimal share s^* is decreasing in λ.*

The intuition for Lemma 1 is that a better legal environment redistributes rents from the entrepreneur to the venture capitalist. In a double moral hazard setting, this upsets the balance of incentives. The optimal contract redresses this by allocating a lower share of equity to the venture capitalist. It is interesting to note that Lemma 1 is empirically supported by LS who find that venture capitalist's hold larger stakes in countries with weaker legal protection.

Using (2), the equilibrium effort levels are given by:

$$e^* = \frac{p_E^3}{p_E^2 + p_V^2} \Lambda\pi \text{ and } v^* = \frac{p_V^3}{p_E^2 + p_V^2} \Lambda\pi. \tag{3}$$

With this we examine the provision of value-adding support.

Proposition 1 ***(Support)*** *The optimal level of value-added support v^* is increasing with the quality of the legal system λ: $\dfrac{dv^*}{d\lambda} = \dfrac{p_V^3 \phi\pi}{p_E^2 + p_V^2} > 0$.*

Proposition 1 yields a first testable implication, that there is a positive relationship between the quality of the legal system, and the support provided by venture capitalists.

One might wonder whether the greater effort by the venture capitalist comes at the expense of a lower effort by the entrepreneur. This is not the case, since in fact $de^*/d\lambda = p_E^3 \phi\pi/(p_E^2 + p_V^2) > 0$. Because there is less stealing, less value is wasted, and therefore it is possible to write an optimal contract that generates more effort by both the venture capitalist and the entrepreneur.

Next, we assess how the equilibrium level of debt d^* depends on λ.

Proposition 2 ***(Downside)*** *The optimal level of debt d^* is increasing with the quality of the legal system λ.*

The proof is in the Appendix. Proposition 2 yields a second testable implication, that in a better legal system the optimal contract places more emphasis on giving the venture capitalist additional downside protection. A priori, it is not immediately clear how the quality of the legal system might affect downside protection. The intuition for proposition 2 is that in a better legal system, more value is created. If the venture capitalist were to capture this additional value by increasing his equity stake, this would upset the optimal balance of incentives. The venture capitalist therefore prefers to extract the additional value through stronger downside protection. Hence d^* is an increasing function of λ.

Consider finally the question of optimal governance. To determine the optimal value of G, we rewrite the joint utility as follows:

$$u_G = \beta_G + q[a + p_G\pi\Lambda + (p_E e^* + p_V v^*)\pi\Lambda - c_E - c_V] - k_E - k_V$$

The net benefit of (venture capital) governance is given by:

$$u_1 - u_0 = (p_1 - p_0)q\pi\Lambda - \beta$$

where $\beta = \beta_0 - \beta_1$ denotes the loss of private benefits from the exercise of governance. Naturally, this may differ for different entrepreneurs. Let $\widehat{\beta} = (p_1 - p_0)q\pi\Lambda$ be defined by $u_1 = u_0$, so that governance is efficient whenever $\beta < \widehat{\beta}$.

Proposition 3 ***(Governance)*** *The better the legal system, the more often governance is efficient. Formally,* $\dfrac{d\widehat{\beta}}{d\lambda} = (p_1 - p_0)q\pi\phi > 0$.

Proposition 3 yields our third testable implication, that the range of parameters for which governance is efficient, is increasing with the quality of the legal system. The intuition is that venture capitalists find it easier to reap the benefits of exercising governance within a better legal system.

3.3 Optimal competencies

So far, we have taken the competencies of the venture capitalist as given. However, the legal system can also affect the venture capitalist's competencies. We can ask whether venture capitalists that operate predominantly in a better legal environment also have better incentives to develop value-adding competencies. This will provide a theoretical basis for empirically examining investor "home effects."

Each venture capital firm has an exogenously given home country and develops competencies in line with its expected deal flow. This can be characterized by a probability distribution Ω over the types of entrepreneurs that it expects to invest in. Entrepreneurs may differ in terms of model parameters: β, p_0, p_E, k_E, k_V, π, q or a. The vector x summarizes all these deal characteristics. Moreover, venture capital firms can invest both domestically and abroad. $\Omega(\lambda, x)$ therefore describes the distribution of entrepreneurs not only in terms of different x's, but also in terms of different λ's. With this, we capture the

notion of an investor's home effect as follows. We assume that an investor that is located in a better legal system sees a deal flow with a better distribution of λ's. That is, we equate a better domestic legal system with a first-order stochastic dominant shift of the distribution of λ, holding x constant.

In our model, the value-adding competencies of the venture capitalist are represented by the effort parameter p_V and the governance parameter p_1 (or equivalently $p_1 - p_0$). We assume that the cost of developing competencies is given by standard convex cost functions that we denote respectively by $C_V(p_V)$ and $C_1(p_1)$. Each venture capitalist then maximizes $U_V = \int u_V(\lambda, x) d\Omega(\lambda, x) - C_V(p_V) - C_1(p_1)$ w.r.t. p_V and p_1.

Proposition 4 ***(Investor home effect)***

(i) The better the legal system, the more a venture capitalist develops competencies. Formally, p_V and p_1 are both increasing for any first order stochastic dominant shift of λ.

(ii) For a given λ, the equilibrium depends on the competencies of the venture capitalists in the following way:

$$\frac{dv^*}{dp_V} > 0, \quad \frac{dd^*}{dp_V} \lesseqgtr 0, \quad \frac{d\widehat{\beta}}{dp_V} = 0,$$

$$\frac{dv^*}{dp_1} = 0, \quad \frac{dd^*}{dp_1} > 0, \quad \frac{d\widehat{\beta}}{dp_1} > 0.$$

The proof is in the Appendix. Proposition 4 consists of two distinctive steps. The first step shows that in better legal environments, venture capital firms have greater incentives to develop value-adding competencies. Intuitively, competencies are more valuable if the legal system is good. Formally, the proof shows that the marginal benefit of developing competencies is increasing in λ. The second step shows that, within a given legal system, venture capitalists with higher competencies provide more support and more governance; they might also ask for more downside protection—this effect is unambiguous for p_1 but ambiguous for p_V.

The main implication of Proposition 4 is that in a given country, there might be a systematic difference between domestic and foreign investors. If the foreign investors come from a better legal system, they are likely to provide more support and governance, and possibly ask for more downside protection. But if the foreign investors come from a worse legal system, the opposite will apply.

3.4 Further discussion

In our model, the benefit of governance is better performance, as measured by $p_1 > p_0$. This benefit requires good legal protection, leading to Proposition 3. An intuitively plausible objection to this results might go as follows: In addition to improving performance, governance may also reduce the likelihood of stealing. That is, an additional reason for exercising governance might be to better protect a company's cash flows. This would seem

to suggest a negative relationship between the quality of the legal system and the exercise of governance, since the prevention of stealing is arguably more important in a weak legal system.

We now show that a formalization of this intuitive argument creates some unexpected results. Suppose that the exercise of governance reduces the probability of stealing by θ, so that the probability that cash flows are not stolen is λ without governance and $\lambda+\theta$ with governance. The net benefit of control are now given by $u_1 - u_0 = (p_1 - p_0)q\pi\Lambda - \beta + Z$ where $Z = z(\lambda+\theta) - z(\lambda)$ and $z(\lambda) = (p_E e^* + p_V v^*)\pi\Lambda - c_E(e^*) - c_V(v^*)$. Z measures the benefit of governance, in terms of reducing the probability of stealing. The effect of the legal system on optimal governance is now given by $d\widehat{\beta}/d\lambda = (p_1 - p_0)q\pi\phi + q(dZ/d\lambda)$. Using (3), and after some transformations, we get $z(\lambda) = \Lambda^2\pi^2\tau$ where $\tau = (\frac{p_E^4}{p_E^2+p_V^2} + \frac{p_V^4}{p_E^2+p_V^2}) - \frac{1}{2}(\frac{p_E^3}{p_E^2+p_V^2})^2 - \frac{1}{2}(\frac{p_V^3}{p_E^2+p_V^2})^2$. Note that $z(\lambda)$ is a convex function of λ (through Λ). This means that the marginal benefit of reducing stealing is actually increasing in λ. Formally, we have $\frac{dz(\lambda)}{d\lambda} = 2\Lambda\pi^2\tau\phi > 0$ and $\frac{dZ}{d\lambda} = 2\pi^2\tau\phi^2\theta > 0$. This shows that the benefit of governance in terms of reducing stealing is actually increasing with the quality of the legal system, not decreasing. This reinforces Proposition 3, and refutes the "plausible objection" mentioned above.[5]

So far we assumed that the optimal d^* falls in the range $[0, a]$. It is always possible to find appropriate values of k_E, such that this is true. Formally, let $\underline{k_E}$ be such that $u_E(s^*) = 0$ for $d = a$, and $\overline{k_E}$ such that $u_E(s^*) = 0$ for $d = 0$, then $d^* \in [0, a]$ whenever $k_E \in [\underline{k_E}, \overline{k_E}]$. For $k_E > \overline{k_E}$, the entrepreneur's participation constraint is not satisfied even at $d^* = 0$. The venture capitalist then makes a transfer payment, which we can think of as a higher base wage for the entrepreneur. For $k_E < \underline{k_E}$, the entrepreneur would have to make a transfer payment. But if the entrepreneur faces a binding wealth constraint, the venture capitalist can only set $d^* = a$, and then increase his equity stake above the optimal level s^*. In the Appendix we show that Proposition 1 and 3 continue to hold even under those circumstances.

The model assumes that venture capitalists have all the bargaining power. Relaxing this does not affect Propositions 1 and 3, but it may affect Proposition 2. In the Appendix, after the proof of Proposition 2, we consider the generalized Nash bargaining solution, where the venture capitalist's bargaining power γ can take any value between zero and one. For sufficiently low equilibrium values of d^*, the positive relationship between optimal debt (d^*) and the quality of the legal system (λ) continues to apply for all values of γ.

[5] Obviously, it is also possible to reformulate the "plausible objection" to yield the desired effect. However, this requires an additional strong assumption. In particular, we need to assume that θ itself is a (fast) decreasing function of λ, i.e., $d\gamma/d\lambda$ must be sufficiently negative. In other words, we need to assume that if governance reduces the probability of stealing, this effect is much stronger for a weak legal system. Using standard calculations, we obtain: $dZ/d\lambda = 2\pi^2\tau\phi^2\theta + 2(\Lambda+\theta\phi)\pi^2\tau\phi(d\theta/d\lambda)$. The first term is the same as before, while the second term captures the negative relationship between preventing stealing, and the quality of the legal system. To get $d\widehat{\beta}/d\lambda < 0$, this second effect has to be sufficiently strong, namely $\frac{d\theta}{d\lambda} < -\frac{(p_1-p_0)q\pi\phi + 2q\pi^2\tau\phi^2\theta}{2q(\Lambda+\theta\phi)\pi^2\tau\phi}$. We see that rescuing the "plausible objection" requires rather strong assumptions.

For higher equilibrium values of d^*, we show that there exists $\widehat{\gamma}$ (with $0 < \widehat{\gamma} < 1$), so that there is a negative relationship for $\gamma < \widehat{\gamma}$ and a positive relationship for $\gamma > \widehat{\gamma}$. Thus, while our theory suggests a positive relationship between the legal system and debt levels for a large range of parameter values, we cannot rule out a negative relationship for some parameter values.

Finally, for simplicity we have assumed that ϕ is a constant. As λ increases, it is possible that the cost of stealing also increases, i.e., $d\phi/d\lambda \geq 0$. It is straightforward to show that our results continue to hold as long as Λ is increasing in λ. This condition is entirely natural, since it only requires that a better legal system has fewer inefficiency losses.

4 The Data

In this Section we discuss the sources and nature of our data. We want to point out that the European venture capital markets is an ideal setting for testing our model. European countries are broadly comparable in terms of their stages of economic development. The European venture capital market has matured considerably throughout the 1990s, growing in size and in its ability to invest in innovative companies with a potential for high-growth (Bottazzi and Da Rin (2002), Da Rin, Nicodano, and Sembenelli (2004)). And Europe has a remarkable variety of legal systems, so that we have several countries for both common and civil law countries, and countries with diverse levels of the legal indices.

4.1 Sources of data

Our data come from a variety of sources. Our primary source is a survey that we sent to 750 venture capital firms in the following seventeen countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the UK. This set of countries includes all the members of the European Union in the period under study, plus Norway and Switzerland.

We contacted venture firms that satisfied three conditions: (i) in 2001 they were full members of the European Venture Capital Association (EVCA) or of a national venture capital organization, (ii) they were actively engaged in venture capital and (iii) they were still in operations in 2002.

We deliberately excluded private equity firms that only engage in non-venture private equity deals such as mezzanine finance, management buy-outs (MBOs) or leveraged buy-outs (LBOs).[6] However, we did include private equity firms that invest in *both* venture capital and non-venture private equity deals. For these, we considered only their venture capital investments.

We collected our survey data between February 2002 and November 2003. We asked venture capital firms about the investments they made between January 1998 and December 2001. The questions centered on key characteristics of the venture firm, on the

[6] See Fenn, Liang and Prowse (2003) for a discussion of how the venture capital market is structure in two different segments, 'venture capital' and 'non-venture private equity.'

involvement with portfolio companies, and on some characteristics of these companies.[7] The survey asked respondents a substantial amount of detailed company-level information. We also asked information on the educational background and work experience of each venture partner.

We received 127 responses with various degrees of completeness. Of these, three venture firms had been formed in 2001 but had not yet made any investments, so we do not include them in our sample. We contacted all the venture firms that had sent us incomplete answers, and attempted to complete them whenever possible. As a further step, we augmented the survey data with information from the websites of the respondents and their portfolio companies. We also turned to commercially available databases: Amadeus, Worldscope, and VenturExpert. We use information from these databases for two purposes. First, they allow us to obtain missing information, such as the dates, stages, and amounts of venture deals. Second, we use these databases to cross-check the information obtained from respondents. Such cross-validation further enhances the reliability of our data. Overall, we obtain data on 1,664 deals made by 124 venture firms. Unlike other papers, we refrain from using data from additional rounds that an investor makes in a given company. That is, we restrict our data to the first investment made by the investor in the particular company.

In the main body of the paper we focus the analysis on investments within Europe (we discuss this further in section 6.2). We thus drop also investments in other non-European countries; as a result, our sample consists of a total of 1,430 deals.

Can we assess the quality of our sample relative to the underlying population? Other papers in the literature avoid this question, because it is extremely difficult to gather information on the population. Unlike banks, venture capital firms are not heavily regulated and do not need to disclose information. For the US, commercially available databases like VenturExpert collect information on the vast majority of venture capital firms. In Europe VenturExpert has a much lower coverage, although in the last few years it improved considerably. The European Venture Capital Association (EVCA) also collects data through an annual survey.[8]

To gather data on the population of 750 European venture capital firms, including those that did not respond to our survey, we used both of these data sources. We also made a substantial attempt to collect additional data through direct phone calls and through websites and other trade publications. With considerable effort, we were able to gather information on more than two thirds of the population.

This additional data allows us to perform a variety of checks on how well our sample represents the population of European venture capital firms. First, we look at how the sample fares in spanning the underlying population. Table 1 compares the sample with the population it is drawn from. Panel A looks at the country composition. While there is some variation in response rates across countries, our data represent a comprehensive cross-section which provides a good coverage of all countries. The overall response rate of over 16% provides us with a substantial amount of information. No single country

[7] Throughout the paper we reserve the term 'firm' for the investor (i.e., the venture capital firm) and the term 'company' to the company that receives venture financing.

[8] See the methodology section of EVCA (2002).

dominates the response, and no country is left out. Most notably, our sample performs well in terms of including firms from the larger venture capital markets: France, Germany, and the UK all have response rates above 13%. Another notable strength of our data is it does not rely on a few venture capital firms. Indeed, the single largest venture capital firm accounts for only 5% of the observations, and the largest five venture capital firms for only 16% of the observations.[9]

Panel B looks at the structure of both sample and population in terms of organizational types. We partition the sample into independent, bank, corporate, and public venture capital firms. As we show in Bottazzi, Da Rin and Hellmann (2004), different types of venture firms behave differently, and we want to make sure that our results are not driven by the sample composition. Our sample closely reflects the distribution of types in the population, with the only possible exception of public venture firms, which are slightly under-represented.

Panel C compares the size distribution of our respondents with that of the population. We consider two possible size measures: the number of partners, and the amount under management, both measured at the end of 2001. For the sample and the population the mean and median values of partners virtually coincide. The amount under management includes all funds managed by venture capital firms, including those invested in non-venture private equity. The average firm size is larger for the population, due to the fact that several large private equity firms, that invest mainly in non-venture private equity, chose not to respond to our survey. Consistent with this, the median firm size is very similar for the sample and the population.

4.2 Data Variables

Table 2 summarizes the definitions of our variables. In this Section we discuss how we construct them. Table 3 contains descriptive statistics for all the variables used in the analysis, grouped into four classes: dependent variables, legal origin, legal indices, venture firm and company variables.

4.2.1 Dependent variables

In this paper we focus on how the legal system affects the activities of venture capitalists and their interaction with portfolio companies. Led by our theoretical model, we concentrate on three different dimensions of the venture process: corporate governance, value-adding support, and the choice of securities. Table 2(a) provides formal definitions of these variables

The role of value-adding support (Proposition 1) has also become a central theme in venture capital research (Bottazzi, Da Rin and Hellmann (2004), Hellmann (2000),

[9] We also consider that our respondents may report only part of their portfolio. To this purpose, in late 2003 we checked the websites of all respondents, excluding the 15 that do not list portfolio companies on their website. We find a difference between the portfolio companies listed there with those we have information about of only about 10%. We conclude that it is unlikely that under-reporting affects our results.

Schindele (2004)). For support we use a measure of the amount of interaction, looking at the reported frequency with which a venture capitalist is in contact with the company. This is a useful summary measure of the amount of time and effort that the venture capitalist spends on the company.

INTERACTION is a dummy variable that takes the value 1 if the venture capital firm is reported to interact with the company on a monthly or weekly basis; 0 if it interacts with on an annual or quarterly basis. We obtain the data from our survey instrument, which asked: *How many times per year does (did) the responsible partner(s)/manager(s) personally interact with this company? (check one).* Possible answers were: *annually; quarterly; monthly; weekly.*

Kaplan and Strömberg (2002) explain that while venture capitalists use a variety of securities, many of these perform equivalent functions. Of central importance is how the entire package of securities affects the distribution of cash flows rights, and especially to what extent the venture capitalist gets his returns on the upside as compared to the downside (Proposition 2). In an ideal scenario, we would be able to gather complete data on the allocation of cash flows rights, including all term sheets and valuations. However, since such data is extremely sensitive, and since our aim was to gather a large and representative dataset, we deliberately limited our inquiry. We collected data on the types of securities used, but not on the specific term sheets or valuations.

In our survey we asked about the entire set of securities used for each deal. This question allowed for multiple responses. Since we consider this data of interest by itself, Table 3 tabulates, by legal system, the types of securities used in our dataset. We clearly see that the use of securities varies across legal systems.

To move beyond a mere description of the securities used, we leverage our theory. Proposition 2 predicts that the optimal amount of debt, d^*, is increasing in λ, and Lemma 1 shows that the optimal amount of equity held by the venture capitalist, s^*, is decreasing in λ. This implies that the better the legal system, the more the optimal contract places emphasis on downside protection.

While our data does not allow us to measure the exact values d^* and s^*, we can construct proxy variables for the relative importance of downside protection. For this we use the data from Table 3. We refer to straight debt, convertible debt and preferred equity as 'downside securities,' since they all give the venture capitalist a larger stake on the downside.

DOWNSIDE is a dummy variable that takes the value 1 if the deal includes at least one downside security, and 0 otherwise. We obtain the data from our survey instrument, which asked: *Which of the following financial instruments has your firm used to finance this company?* Possible answers were: *common equity; straight debt; convertible debt; preferred equity; warrants.*[10]

The importance of corporate governance and control for venture investing (Proposition 3) has been extensively shown by prior research (Lerner (1995), Hellmann (1998), Hellmann and Puri (2002), Kaplan and Strömberg (2003, 2004)). Our empirical measure of governance and control is whether a venture capitalist has secured contingent control

[10] In the instructions to the survey we specified functional definitions of these different financial instruments in order to ensure consistency of responses.

rights that increase his/her control over the board if the company performs poorly and fails to meet its milestones.

BOARD CONTROL is a dummy variable that takes the value 1 if the venture capital firm is reported to have the contractual right to take control over the board contingent on the occurrence of certain events; 0 otherwise. We obtain the data from our survey instrument, which asked: *does your firm has a right to obtain control of the board of directors contingent on the realization of certain events?* Possible answers were: *Yes, No.*

4.2.2 Independent variables: legal origin and legal indices

We distinguish among two groups of independent variables, whose formal definitions are given in Tables 2(b) through 2(d).

Our first group of independent variables concerns the legal system of companies and investors. We employ three alternative measures of the quality of the legal system. Legal scholars classify national legal systems according to the legal origins of the Commercial Code. La Porta et. al. (1998) propose two main categories: legal systems with common law origin and legal systems with civil law origin; the former category includes Anglo-Saxon common law, while the latter includes French civil law, German civil law and Scandinavian civil law. We construct dummy variables that classify our companies according to these two categories, using civil law as the default category. Table 2(b) contains their formal definitions.

An alternative approach of classifying legal systems is to use more specific indices, which measure some aspects of the legal system. We use two standard indices: the rule of law and the procedural complexity index. Table 2(c) contains their formal definitions. These two indices relate directly to our concept of the 'quality' of enforcement in a legal system. In our model the parameter $1 - \lambda$ measures the probability with which an entrepreneur can steal from her company without the investors detecting him. We look for empirical counterparts of this concept.

La Porta et. al. (1998) provide a detailed explanation of the rule of law index, which tries to measure the quality of legal enforcement in the early 1990s. Since enforcement evolves over time, we use an updated version of the original rule of law index which measures the quality of enforcement in the year 2000 and is published by the World Bank.

Our second index measure of the quality of the legal system is the index of procedural complexity, which measures the degree of legal formalism, by averaging the cost, length of time and number of steps necessary to perform two simple legal operations: recovering a bounced cheque and evicting a tenant. This index is discussed at length in Djankov et al. (2002) and is published by the World Bank's 'Doing Business' project.

In order to make our results more easily readable, we change sign to the procedural complexity index so that a higher value indicates lower complexity (so that we have an index of 'procedural simplicity'). For both legal origin and the legal indices we construct a variety of measures which allow us to explore the effects of cross-border and cross-system investments. We discuss such measures in more detail in the next Section.

4.2.3 Independent variables: venture firm and company variables

Our second set of independent variables captures investor-level and deal-level effects. Table 2(d) contains their formal definitions. Building on Bottazzi, Da Rin and Hellmann (2004), we focus on the following effects:

INDEPENDENTVC, is a dummy variables that takes the value 1 if the venture capitalist defines itself as an independent venture capital firm; 0 otherwise. We obtain the data from our survey instrument, which asked: *Would you define your firm as (check one): Independent venture firm, Corporate venture firm, Bank affiliated venture firm or Other (specify).*[11]

VCSIZE is the amount under management of the venture capital firm at the end of the sample period (2001), in millions of current euros. We obtain the data by contacting directly respondent companies after receiving their main answers. For those firms for which we had not received the information directly we gathered the data from commercial databases, company websites and industry sources.

VCAGE is the age of the venture capital firm, measured in months at the end of the sample period. We obtain the data from our survey instrument, which asked: *Indicate the date of creation of your firm (mm/yy).* For those firms for which we had not received the information directly we gathered the data from commercial databases, company websites and industry sources.

We then consider two variables which capture the effects of deal-level characteristics.

STAGE is an ordered variable that takes values 1 to 4 if a deal is reported as seed, start-up, expansion or bridge. We obtain the data from our survey instrument, which asked: *Indicate the type of your first round of financing to this company (check one).* Possible answers were: *Seed; Start-up; Expansion; and Bridge.*

INDUSTRY is set of a dummy variables that we obtain the data from our survey instrument, which gave the following choices: *Biotech and pharma; Medical products; Software and internet; Financial services; Industrial services; Electronics; Consumer services; Telecom; Food and consumer goods; Industrial products (incl. energy); Media & Entertainment; Other (specify).*

Table 4 shows how the means (or frequency) of our main dependent and independent variables vary across legal origins. Table 5 contains descriptive statistics for all the variables used in the analysis. The number of observations differs across regressions because of missing values for some of the variables. We discuss this further in section 6.2.

[11] We carefully examined the three respondents which checked the 'other ' category. One is a public university fund, and was classified as public; another is a family-controlled fund, and was classified as independent; the third is a fund owned by a a government company which engages in financing for small businesses, and was classified as public.

5 Empirical Results

5.1 Company effects

We are now in a position to empirically test our theoretical propositions. INTERACTION is an ordered categorical variable, so we use an ordered Probit. BOARD CONTROL and DOWNSIDE are dummy variables, so we use Probit regressions. Since our data consists of multiple investments made by different venture capital firms, we cluster our standard errors by venture capital firms. This allows for the error term to be correlated within venture capital firms, and imposes a conservative standard for accepting statistically significant results. Clustering also implies the use of heteroskedasticity-robust standard errors.

Our starting point is the legal system of the company. The baseline case (or omitted category) is a company in a civil law system. We then examine COMPANY-COMMON to measure the differential effect of the company being in a common law system. For the index regressions, COMPANY-RULE and COMPANY-PROCEDURAL measure the quality of the company's legal system.

As suggested by our theory, the legal system may affect outcomes both directly, and indirectly through the competencies of investors, and possibly through the types of companies that exist in a country. To examine the effect of the legal system, our empirical approach therefore distinguishes between the 'direct' effect and the 'total' effect, which also includes the indirect effect. For the total effect we don't want to exclude any effects that the legal system might have on the distribution of companies and investors. To this purpose, we estimate the effect of the legal system deliberately omitting all investor and deal level explanatory variables. For the direct effect we want to control for the distribution of companies and investors; we thus include all explanatory variables. In terms of company characteristics, we control for industry and stage. In terms of investor characteristics, we control for the age and size of the venture capital firm. Our prior research (Bottazzi, Da Rin and Hellmann (2004)) also shows that an important organizational variable is whether a venture capital firm is independent or captive. Independent venture capital firms are conceived as specialized organizations, whose sole purpose is to maximize profit. Captive venture capital firms are investment vehicles that are used by established firms, banks, or the government, to achieve both profits as well as broader strategic goals (Hellmann (2002), Hellmann, Lindsey, and Puri (2004)). We therefore also control for whether a venture capital firm is independent or not.

In table 6, column (i) reports the total effects and column (ii) reports the direct effects. Panels A, B and C report, respectively, the results for legal origin, rule of law and procedural simplicity. We find that the legal system has strong effects on all three outcome variables. All coefficients have the sign that is predicted by our theory, and almost all of them are statistically and economically significant. Consistent with Propositions 1 to 3, companies in better legal systems receive more support from their investors, give their investors more downside protection, and exercise more control. A comparison of columns (i) and (ii) suggests that the legal system matters both in terms of total and direct effects. The inclusion of the control variables hardly affects significance levels. Interestingly, the direct coefficients in column (ii) are slightly lower than the total coefficients in column (i), suggesting that, overall, indirect effects are present and have a positive effect.

We examine this further by looking at how the legal system affects the control variables. Table 7(a) shows the pairwise correlations between our legal systems measures and company and investor characteristics. There are some significant correlations between the legal systems measures and deal stage (or industry, which we do not report for sake of simplicity). The same applies for investor characteristics. For the investor characteristics we also use a simple regression framework, to examine whether the legal system still matters after we control for company characteristics. Table 7(b) reports those results. The most striking result concerns the statistically and economically significant relationship between the quality of the legal system, and the presence of independent venture capital firms. This is an interesting result by itself. It also provides an intuitive example for a positive indirect effect—the legal system affecting investor characteristics that in turn affect outcomes—as it shows that better legal system have more independent venture capital firms. And table 6 suggests that independent venture capital firms have a positive (and mostly significant) effect on the outcome variables.

5.2 Investor home effects

Having established the base effects that a company's legal system has on outcomes, we may now ask whether there are any investor effects. Proposition 4 predicts than an investor's home country is likely to affect his investment style, both when investing at home and abroad. It predicts that investors from better systems are likely to ask for more downside protection and control, even when investing abroad.

Since the majority of investments are made by domestic investors, multi-collinearity prevents us from simply adding the investor's legal system as a separate variable. Instead, we focus on the additional information contained in investments that are made by investors from different legal systems, and distinguish whether an investors comes from a better or worse legal system. For legal origin, we add two investor variables, capturing investments in civil law companies by common law investors (INVESTOR–COMMON), and investments in common law companies by civil law investors (INVESTOR–CIVIL). For the legal index measures, we add two investor variables: BETTER-INVESTOR–RULE measures the absolute difference between the investor's and company's rule of law index when the investor has a higher index value than the company. Likewise, WORSE-INVESTOR–RULE measures the absolute difference between the investor's and company's rule of law index when the investor has a lower index value than the company. The same applies for the index of procedural simplicity: BETTER-INVESTOR–PROCEDURE and WORSE-INVESTOR–PROCEDURE measure the absolute difference between the investor's and the company's procedural simplicity index when such difference is (respectively) positive and negative.

Table 8 shows the results from the regressions which include the investor's home effects. The investor effects follow the patterns predicted by Proposition 4. All the coefficients have the expected sign, and most are also statistically significant. Specifically, when investing in a civil law company, investors from common law countries provide more support, and ask for more downside protection and control, relative to civil law investors. Moreover, our data also allows us to examine the inverse scenario. When investing in a common

law company, civil law investors provide less support, and ask for less downside protection and control, relative to common law investors. The indices suggest a similar pattern. Investors from better legal systems have a positive effect on the three outcome variables, while investors from worse legal systems have a negative effect. Another interesting finding is that company effects continue not only to have the expected sign but in most cases also retain their statistical significance. Overall, these findings provide strong support for Proposition 4, namely for the existence of a strong 'home effect' which makes investors bring their investment competencies with them when they invest in a different legal system.

5.3 Within civil country effects

The literature on legal systems is typically focused on the distinction between common and civil law countries. Common law effects may depend heavily on the US and the UK, or the English-speaking world more broadly. But if legal systems truly matter, their effect should not be confined to the distinction between common and civil law countries. Indeed, if we could identify effects of the legal system within the subset of civil law countries, this would further strengthen the case for the importance of legal systems.

We therefore look to extend our analysis to the differences among civil law countries. To this purpose, we consider only the subsample of companies in civil law countries that receive financing from civil law venture capital firms. There are three groups of civil law legal systems: the French, the German and the Scandinavian system. The work of LaPorta et. al. (1998) accords the Scandinavian system the highest quality, followed by the German and then by the French. We then use the Scandinavian system as the default category, and examine the differential effect of the German and French systems. There are too few observations to estimate a separate effect for Scandinavian investors investing abroad. We therefore limit investor effects to the German and French systems. Table 9 shows the regression results. Column (i) estimates total effects, similar to column (i) in Table 6; column (ii) estimates direct effects, similar to column (ii) in Table 6; and column (iii) estimates investor home effects, similar to Table 8. The main result is that the pattern of coefficients, predicted by our theoretical model, remains intact. The number of observations is clearly reduced, which may account for the slight loss of statistical significance for some of the coefficients. The overall message from Table 9 is that even among civil law countries, differences in the legal system matter. This result considerably strengthens the main hypothesis of the paper. It also extends the findings of LS and KMS, who rely more heavily on the investments of US and UK investors to identify the effects of the legal system. More generally, it points to the importance for the law and finance literature to broaden its perspective and consider the effect of legal differences on a more fine grained way.

5.4 Are international investors different?

We may ask to what extent our results might be driven by differences in investors that are still not captured by our investor controls. In particular, a relevant question is whether

investors who cross country boundaries are inherently different from their domestic counterparts.

Table 8 shows that investors that come from a stronger legal system provide more support, ask for more downside protection, and exercise more control relative to domestic investors in the company's country. And there is an equivalent negative effect for investors from a weaker legal system. We may question whether the investor home effect is not due to some other investor characteristics that have little to do with the investor's home country, but are instead characteristics of all international investors. To examine this, we construct a measure of investor's international orientation For each venture capital firm, we calculate the share of foreign deals that we observe in our sample.

Table 10 reports regressions similar to those in Table 8 but with the addition of a variable which measures the share of international deals of the venture capital firm involved in the deal. First and foremost, we find that the basic company and investor effects of Table 8 remain essentially unaffected. In addition, we find that the investors' international shares have small and largely insignificant effects.[12]

6 Further Discussion

6.1 Alternative interpretations

In this paper we develop a simple theory for how legal systems affect venture capital activities. When we take the model to the data, we find considerable empirical support. The model thus provides a simple and intuitive explanation for the empirical findings. Naturally, one may still wonder whether there are complementary or alternative explanations for our empirical results.

One important question for the legal systems literature is whether the legal system matters because it forbids investors to take certain actions (or write certain contracts), or because it influences, possibly in more sublte and indirect ways, what investors prefer to do—along the lines of our model. We can address this question in our context by asking whether certain investor actions, such as providing governance or asking for downside protection, are actually precluded by the legal system. The first six rows of Table 4 tabulate our dependent variables across the four legal systems. While there are clear differences in the relative frequency of these activities, there are no cells with 0% or 100%. This shows that none of the legal systems preclude venture capitalists from doing these activities. We can therefore reject one important alternative interpretation of our results, namely that the legal systems matters because it simply doesn't allow investors to take certain actions. This finding is also consistent with Lerner and Schoar (2004).

The analysis so far controls for different types of investor. We can go one step further, and control for each investor separately. This essentially means using investor fixed effects,

[12] We ran numerous robustness checks on these regression. We redefined the international share variable to exclude US deals; we used dummy variables instead of shares; we used the number of international deals instead of shares; and we also reran the regression in an augmented sample that includes the US deals themselves. While the strength of the coefficients the international variable somewhat differ across all these regressions, the basic pattern remains intact.

which in our case requires a conditional logit model.[13] The advantage of this estimation approach is that it relies only on variation within investor portfolios. It tells us how a given investor adapts his investment style when financing companies in a better or worse legal system. The disadvantage is that, by construction, the conditional logit cannot estimate the effects of the investors' legal system themselves. Put differently, the conditional logit addresses a somewhat different question, namely to what extent investors adapt their behavior as they invest across different countries. Because the conditional logit requires variation with venture portfolios, the number of observations is lower. The statistical power of these regressions is also much lower, with some t-values approaching 0. In unreported regressions we found that most of the coefficients are insignificant. They only significant coefficient concerns investors from worse legal systems, who provide even less support when investing in a better legal system.

6.2 Further robustness checks

In section 4 we show that our sample well represents the underlying population. With a hand-collected dataset there are always missing observations for individual data items. While we made a great effort to complete missing observations, we are still left with different numbers of observations across variables. To verify that this does not induce a selectivity bias we perform additional tests. We estimate a Heckman's two-step method (using the maximum likelihood approach). In the first step an ordinary Probit model is used to obtain consistent estimates of the selection equation. We find no particular patterns of the missing observations. Still, we perform a variety of checks on the second step, and verify that there is no correlation between the selection equation and our main regressions. We cannot find any evidence that our results are affected by sample selection problems.

As with any empirical analysis, there is always a question about whether we have controlled for enough other effects. With hand-collected data, there is an additional trade-off that adding variables comes at a cost of loosing observations. Our base specification focuses on a few important investor and company variables. We did numerous additional checks to see whether other variables affect our results.

In our base specifications we aggregate the three families of civil law countries (French, German, and Scandinavian). One could fear that the effects we find are driven by just one of these. To this purpose we run our regressions using the common law system as our default category, and adding separate dummies for the three civil law families. The results clearly show that the effects we find come fairly evenly from all of the three.

Our base model controls for the stage of the deal and the sector the company operates in. Instead of using stage, one can use the closely related (and correlated) measure of company age, and obtain analogous results.

One concern might be that our sample period includes the "dotcom" period. Although still over-hyped, the dotcom wave was much smaller in Europe than in the US. Nonetheless

[13] Since the INTERACTION variable is actually a categorical variable, we condense it into two categories, one for weekly or monthly interactions, the other for quarterly or yearly interactions. We also reran all of the conditional logits as lineanr regression models with fixed effects and obtained very similar results.

we ask whether time periods affect our results. For this we add a set of time dummies (one for each sample year), but find that they do not affect our results. It might also be argued that the dotcom period involved software deals that do not fit the traditional notion of a high technology deal. We reran all of our results reclassifying software as a low technology sector, but found that this does not affect any of our results.

Another deal-related concern is that venture capitalists may assume different roles, depending on syndicate structures. For the deals where we have the data, we include two additional controls, one for whether a deal is syndicated, and one for whether the investor is the lead syndicator. Again we find that this does not affect our results. Kaplan and Strömberg (2003) note that the size of an investor's stake affects his/her incentive to be involved with the company. While we do not have data on equity stakes, we do have some data on the amount of money invested. First, we consider the total amount of money that a venture capitalist invests in the deal. And second we consider what percentage of the total money raised in the round is provided by our investor. Again, we find that including these additional variables does not affect our main results.

We also did some robustness checks on our dependent variables. Our measure of downside protection aggregates across a number of securities. It is possible to provide a more detailed ranking for the strength of downside protection, or degree of concavity. It is commonly argued that debt is the most concave, that preferred equity and convertible debt are less concave, that equity is linear, and that warrants are convex. We can thus construct a simple categorical proxy for concavity (1 for debt, 2 for convertible debt and preferred equity, 3 for equity and 4 for warrants). For the exclusive measure we use the concavity of the main instrument. For the inclusive measure we build the concavity proxy on the most concave instrument used. To re-estimate our models we use an ordered Probit. We find that none of our results were affected by replacing the downside measures with these concavity measures. This suggests that our results does not depend on the details of exactly how we measure downside protection.

7 Conclusion

In this paper we develop a theory of how the legal system affects optimal contracts, investor actions, and their incentives to invest in value-adding competencies. Testing the theory on a hand-collected dataset of European venture capital deals, we confirm the model predictions. We provide a broader perspective than previous studies, which have more narrowly focussed on either contractual or non-contractual aspects of the financing relationship. Our evidence shows that the legal system affects financial intermediation in a rich way. It also shows that the effect of the legal system may operate not only through its direct impact on individual choices of contracts and actions, but also more broadly by affecting the way intermediaries develop their skills and capabilities—an aspect largely ignored by the literature so far.

This evidence opens up some important questions for future research. Exactly which aspects of the legal system matter most for venture capital? A closely related question concerns policy: To what extent it is possible to alter a country's legal system, to promote venture capital markets? Clearly, to fully answer these questions, future research would

benefit from also looking at the regulatory environment, and possible even the institutional and social constraints that affect venture capital activity. We hope that the analysis of this paper provides inspiration and justification for this broader research agenda.

Appendix

Proof of Proposition 2:

We note that d^* is determined by $u_E(d^*) = \beta_G + q[(1-s)(a-d^*) + p\pi(\Lambda - \lambda s) - c_E] - k_E = 0$. Totally differentiating w.r.t. λ we obtain $\frac{du_E}{d\lambda} + \frac{du_E}{dd^*}\frac{dd^*}{d\lambda} = 0 \Leftrightarrow \frac{dd^*}{d\lambda} = \frac{1}{q(1-s)}\frac{du_E}{d\lambda}$. We have $\frac{du_E}{d\lambda} = \frac{\partial u_E}{\partial \lambda} + \frac{\partial u_E}{\partial s^*}\frac{\partial s^*}{\partial \lambda} + \frac{\partial u_E}{\partial e^*}\frac{\partial e^*}{\partial \lambda} + \frac{\partial u_E}{\partial v^*}\frac{\partial v^*}{\partial \lambda}$. Using $\frac{\partial u_E}{\partial \lambda} = qp\pi(\phi - s)$, $\frac{\partial u_E}{\partial s^*} = -q(a-d^*) - \lambda qp\pi$, $\frac{ds^*}{d\lambda} = -\frac{p_V^2}{p_E^2 + p_V^2}\frac{1-\phi}{\lambda^2} = -s^*\frac{1-\phi}{\lambda\Lambda}$, $\frac{\partial u_E}{\partial e^*} = 0$, $\frac{\partial u_E}{\partial v^*} = qp_V\pi(\Lambda - \lambda s)$ and $\frac{dv^*}{d\lambda} = \frac{p_V^3}{p_E^2 + p_V^2}\phi\pi = p_V s^*\frac{\lambda}{\Lambda}\phi\pi$ we obtain $\frac{du_E}{d\lambda} = qp\pi(\phi - s) + q(a-d^*)s^*\frac{1-\phi}{\lambda\Lambda} + qp\pi s^*\frac{1-\phi}{\Lambda} + qp_V^2(\Lambda - \lambda s^*)s^*\frac{\lambda}{\Lambda}\phi\pi^2$. The second and fourth terms are always positive. The first and third term can be combined as $\frac{qp\pi}{\Lambda}[\Lambda\phi - \Lambda s^* + s^* - \phi s^*]$. Using $1 - \Lambda = (1-\lambda)\phi$ we obtain $\frac{qp\pi}{\Lambda}[\Lambda\phi + (1-\lambda)\phi s^* - \phi s^*] = \frac{qp\pi\phi}{\Lambda}[\Lambda - \lambda s^*] > 0$. It follows that $\frac{du_E}{d\lambda} > 0$ and thus $\frac{dd^*}{d\lambda} > 0$.

To see the importance of bargaining power, suppose instead that d^* is determined by the generalized Nash bargaining solution, where γ measures the venture capitalist's bargaining power. The Nash solution maximizes $u_V^{\gamma}u_E^{1-\gamma}$, which yields after standard transformations the following first order condition: $\gamma u_E - (1-\gamma)u_V = 0$. Totally differentiating this w.r.t. λ and d^* we obtain after further transformations $\frac{dd^*}{d\lambda} = \frac{1}{q(1-s)}[\gamma\frac{du_E}{d\lambda} - (1-\gamma)\frac{du_V}{d\lambda}]$. For $\gamma = 1$ we regain the above framework. For $\gamma < 1$, we also have to take $\frac{du_V}{d\lambda}$ into account. We have $\frac{du_V}{d\lambda} = \frac{\partial u_V}{\partial \lambda} + \frac{\partial u_V}{\partial s^*}\frac{\partial s^*}{\partial \lambda} + \frac{\partial u_V}{\partial e^*}\frac{\partial e^*}{\partial \lambda} + \frac{\partial u_V}{\partial v^*}\frac{\partial v^*}{\partial \lambda}$. Using $\frac{\partial u_V}{\partial \lambda} = qp\pi s$, $\frac{\partial u_V}{\partial s^*} = q(a-d^*) + qp\pi\lambda$, $\frac{ds^*}{d\lambda} = -\frac{p_V^2}{p_E^2 + p_V^2}\frac{1-\phi}{\lambda^2} = -s^*\frac{1-\phi}{\lambda\Lambda}$, $\frac{\partial u_V}{\partial e^*} = qp_E\pi\lambda s$, $\frac{\partial e^*}{\partial \lambda} = \frac{p_E^3}{p_E^2 + p_V^2}\phi\pi$ and $\frac{\partial u_V}{\partial v^*} = 0$ we obtain $\frac{du_V}{d\lambda} = qp\pi s^* - q(a - d^*)s^*\frac{1-\phi}{\lambda\Lambda} - qp\pi s^*\frac{1-\phi}{\Lambda} + q\lambda s^*\frac{p_E^4}{p_E^2 + p_V^2}\phi\pi^2$, which we can rewrite as $\frac{du_V}{d\lambda} = qp\pi s^*\frac{\phi\lambda}{\Lambda} - q(a-d^*)s^*\frac{1-\phi}{\lambda\Lambda} + q\lambda s^*\frac{p_E^4}{p_E^2 + p_V^2}\phi\pi^2$. The first and third term are positive, but the second term is negative. $A = p\frac{\phi}{1-\phi}\pi\lambda^2 + \frac{p_E^4}{p_E^2 + p_V^2}\frac{\phi}{1-\phi}\pi^2\lambda^2\Lambda$, then $\frac{du_V}{d\lambda} < 0$ whenever $a - d^* > A$, which is equivalent to $d^* < a - A$. If this condition holds, then we always have $\gamma\frac{du_E}{d\lambda} - (1-\gamma)\frac{du_V}{d\lambda} > 0$ and thus $\frac{dd^*}{d\lambda} > 0$ continues to apply. For $d^* > a - A$, however, there exists $\widehat{\gamma}$, so that $\frac{dd^*}{d\lambda} > 0$ requires $\gamma > \widehat{\gamma}$. For $d^* > a - A$ and $\gamma < \widehat{\gamma}$, we obtain $\frac{dd^*}{d\lambda} < 0$.

The intuition for why d^* is mostly increasing in λ is as follows. Higher λ reduces inefficient loss of value due to stealing. And from Lemma 1, higher values of λ decrease s^*. A higher value of λ will thus always benefit the entrepreneur, i.e., $\frac{du_E}{d\lambda} > 0$. If d^* is small, then $a - d^*$ is large, so that a higher value of λ hurts the venture capitalist, because of the lower equity share s^*. In this case we have $\frac{du_V}{d\lambda} < 0$, and the sign of $\frac{dd^*}{d\lambda}$ is unambiguous. But for large values of d^*, the lower equity stake does not hurt the venture capitalist, so that $\frac{du_V}{d\lambda} > 0$. In this case, $\frac{dd^*}{d\lambda}$ depends on relative bargaining power. If the venture capitalist has low bargaining power ($\gamma < \widehat{\gamma}$), then the entrepreneur takes more of the debt, since the venture capitalist's required returns are already met by the increase in λ. But if the venture capitalist has more bargaining power ($\gamma > \widehat{\gamma}$), then he can extract the benefits of a better legal system through higher debt levels.

∎

Analysis of model where entrepreneur's wealth constraint is binding

Consider the constrained model, where $d = a$ and $u_E(s^*) > 0$. The venture capitalist maximizes $u_V = a + q[p\pi\lambda s - c_V] - k_V$, subject to $u_E = \beta + q[p\pi(\lambda + (1-\lambda)(1-\phi) + \lambda s) - c_E] - k_E = 0$. Using the optimal choices $e = p_E\pi(\Lambda - \lambda s)$ and $v = p_V\pi\lambda s$, we have $q[(p_G + p_E^2\pi(\Lambda - \lambda\widehat{s}) + p_V^2\pi\lambda\widehat{s})\pi(\Lambda - \lambda\widehat{s}) - \frac{(p_E\pi(\Lambda - \lambda\widehat{s}))^2}{2}] + \beta - k_E = 0$. Using $\widehat{S} = \lambda\widehat{s}$, this simplifies to $u_E(\widehat{S}) = q[\pi p_G(\Lambda - \widehat{S}) + \pi^2 p_V^2\widehat{S}(\Lambda - \widehat{S}) + \pi^2 p_E^2\frac{(\Lambda - \widehat{S})^2}{2}] + \beta - k_E = 0$. Note that $u_E(\widehat{S})$ is decreasing in $\widehat{S}$, and increasing in Λ. An increase in λ increases Λ, which will thus require an increase in $\widehat{S}$. From $v = p_V\pi\widehat{S}$, we note that this also increases the optimal choice of v. Thus Proposition 1 remains valid. For Proposition 3 we note that there is an additional benefit of control. With control, the venture capitalist has to take a smaller equity stake, one that is closer to s^*. This increases efficiency. Formally, we have $u_1 - u_0 = q[(p_1 - p_0)\pi\Lambda + \eta(\widehat{s}_1) - \eta(\widehat{s}_0)] - \beta$ where $\eta(\widehat{s}) = [p_E e^*(\widehat{s}) + p_V v^*(\widehat{s})]\pi\Lambda - c_E(e^*(\widehat{s})) - c_V(v^*(\widehat{s}))$. Naturally, $\eta(\widehat{s})$ is highest at s^*. Since $\widehat{s}_0 > \widehat{s}_1 \geq s^*$, we have $\eta(\widehat{s}_1) > \eta(\widehat{s}_0)$. The critical value $\widehat{\beta}$ is now simply given by $\widehat{\beta} = q[(p_1 - p_0)\pi\Lambda + \eta(\widehat{s}_1) - \eta(\widehat{s}_0)]$. ∎

Proof of Proposition 4:

Part (i): Note that in equilibrium we have $u_E = 0$, so that $u_V = u$, so that $\frac{du_V}{d\lambda} = \frac{du}{d\lambda}$. We use the optimal values $e^* = p_E\pi(\Lambda - \lambda s)$ and $v^* = p_V\pi\lambda s$ to obtain $u = q[a + (p_G + p_E^2\pi(\Lambda - \lambda s) + p_V^2\pi\lambda s)\pi\Lambda - \frac{(p_E\pi(\Lambda - \lambda s))^2}{2} - \frac{(p_V\pi\lambda s)^2}{2}] + \beta_G - k_E - k_V$. From the envelope theorem we have $\frac{du}{ds^*} = 0$. Thus $\frac{du_V}{dp_1} = \frac{du}{dp_1} = q\pi\Lambda > 0$ for $\beta < \widehat{\beta}$ and $\frac{du_V}{dp_1} = 0$ for $\beta > \widehat{\beta}$. Moreover, $\frac{du_V}{dp_V} = \frac{du}{dp_V} = qp_V\pi^2\lambda s(2\Lambda - \lambda s) > 0$. We have thus established that u_V is increasing in p_1 and p_V. The optimal levels of p_1 and p_V are determined by $\int \frac{du_V}{dp_1}d\Omega(\lambda, x) = C_1'$ and $\int \frac{du_V}{dp_V}d\Omega(\lambda, x) = C_V'$. To see how these optimal

choices depend on the distribution of λ, we simply note that $\frac{d^2u_V}{dp_1 d\lambda} = \phi q\pi > 0$ for $\beta < \widehat{\beta}$ and $\frac{d^2u_V}{dp_1 d\lambda} = 0$ for $\beta > \widehat{\beta}$. Moreover, $\frac{d^2u_V}{dp_V d\lambda} = 2\Lambda\phi\frac{p_V^2}{p_E^2+p_V^2}(2 - \frac{p_V^2}{p_E^2+p_V^2}) > 0$. The marginal benefit of investing in p_1 and p_V is thus an increasing function of λ. If follows that the optimal choice of p_1 and p_V are always higher for any first order stochastic dominant shift with respect to λ.

Part (ii):We evaluate the comparative statics of v^*, $\widehat{\beta}$ and d^* w.r.t. p_1 (for $\beta < \widehat{\beta}$) and p_V. From $v^* = \frac{p_V^3}{p_E^2+p_V^2}\Lambda\pi$ we note that $\frac{dv^*}{dp_1} = 0$ and $\frac{dv^*}{dp_V} = \frac{3p_V^2p_E^2+5p_V^4}{(p_E^2+p_V^2)}\Lambda\pi > 0$. From $\widehat{\beta} = (p_1 - p_0)q\pi\Lambda$ we have $\frac{d\widehat{\beta}}{dp_1} = q\pi\Lambda$ and $\frac{d\widehat{\beta}}{dp_V} = 0$. Totally differentiating $u_E(d^*) = 0$ w.r.t. p_1, we have $\frac{dd^*}{dp_1} = \frac{q\pi(\Lambda-\lambda s)}{1-s} > 0$. Finally, to see that the effect of p_V on d^* is ambiguous, note that $\frac{dd^*}{dp_V} = \frac{1}{1-s}\frac{du_E}{dp_V}$ as before. We have $\frac{du_E}{dp_V} = \frac{\partial u_E}{\partial p_V} + \frac{\partial u_E}{\partial s^*}\frac{\partial s^*}{\partial p_V} + \frac{\partial u_E}{\partial e^*}\frac{\partial e^*}{\partial p_V} + \frac{\partial u_E}{\partial v^*}\frac{\partial v^*}{\partial p_V}$. Using $\frac{\partial u_E}{\partial p_V} = v^*q\pi(\Lambda - \lambda s) > 0$, $\frac{\partial u_E}{\partial s^*} = -q(a-d^*) - \lambda qp\pi$, $\frac{ds^*}{dp_V} = \frac{\Lambda}{\lambda}\frac{2p_Vp_E^2}{(p_E^2+p_V^2)} > 0$, $\frac{\partial u_E}{\partial e^*} = 0$, $\frac{\partial u_E}{\partial v^*} = qp_V\pi(\Lambda - \lambda s)$ and $\frac{dv^*}{dp_V} = \frac{3p_V^2p_E^2+5p_V^4}{(p_E^2+p_V^2)}\Lambda q\pi > 0$ we obtain $\frac{du_E}{dp_V} = qp_V\lambda s(\Lambda-\lambda s)\pi^2 - q[(a-d^*)+\lambda p\pi]\frac{\Lambda}{\lambda}\frac{2p_Vp_E^2}{(p_E^2+p_V^2)} + qp_V\pi(\Lambda-\lambda s)\frac{3p_V^2p_E^2+5p_V^4}{(p_E^2+p_V^2)}\Lambda\pi$. The second term is negative. Depending on the size of a, it might be bigger or smaller than the sum of the first and third term. The reason for the ambiguity is that a higher value of p_V already requires a higher value of s (i.e. giving the venture capitalist more equity). Whether it also requires a higher value of debt is ambiguous. ∎

References

[1] Acemoglu, Daron, Simon Johnson and James Robinson (2001) 'The colonial Origins of Comparative Development: An Empirical Investigation,' *American Economic Review*, **91** (5), 1369–1401.

[2] Acemoglu, Daron, Simon Johnson and James Robinson (2002) 'Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution,' *Quarterly Journal of Economics*, **117** (5), 1231–1294.

[3] Bascha, Andreas and Uwe Waltz (2001) 'Convertible Securities and Optimal Exit Decisions in Venture Capital Finance,' *Journal of Corporate Finance,* **7** (2), 285–306.

[4] Bottazzi, Laura, and Marco Da Rin (2002) 'Venture Capital in Europe: Euro.nm and the Financing of European Innovative Firms,' *Economic Policy,* **17** (1), 229–69.

[5] Bottazzi, Laura, and Marco Da Rin (2003) 'Financing entrepreneurial firms in Europe: facts, issues, and research agenda,' forthcoming in Christian Keuschnigg and Vesa Kanniainen (eds.) *Venture Capital, Entrepreneurship, and Public Policy*, Cambridge, MA, MIT Press.

[6] Bottazzi, Laura, Marco Da Rin, and Thomas Hellmann (2004) 'Specializing Financial Intermediation: Evidence from Venture Capital,' RICAFE Working Paper n.12.

[7] Brander, James, Werner Antweiler, and Raffi Amit (2002) 'Venture Capital Syndication: Improved Venture Selection vs. Value Added Hypothesis,' *Journal of Economics and Management Strategy*, **11** (3), 423–452.

[8] Burkhart Mike, Fausto Panunzi and Andrei Shleifer (2003) 'Family Firms,' *Journal of Finance,* **58** (5), 2167–2202;

[9] Casamatta, Catherine (2003) 'Financing and Advising: Optimal Financial Contracts with Venture Capitalists,' *Journal of Finance,* **58** (5), 2059–2120.

[10] Cumming, Douglas and Jeffrey MacIntosh (2003) 'A Cross-Country Comparison of Full and Partial Venture Capital Exits' *Journal of Banking and Finance,* **27** (3), 511–548.

[11] Cumming, Douglas, Daniel Schmidt, and Uwe Walz (2004) 'Legality and Venture Finance Around the World,' Mimeo.

[12] Da Rin, Marco, Giovanna Nicodano, and Alessandro Sembenelli (2004), 'Public Policy and the Creation of Active Venture Capital Markets,' RICAFE Working Paper n.13.

[13] Demirgüç-Kunt, Asli, and Vojislav Maksimovic (1998) 'Law, Finance, and Firm Growth,' *Journal of Finance*, **53** (6), 2107–37.

[14] Dessein, Wouter (2002) 'Information and Control in Alliances & Ventures,' Mimeo, University of Chicago.

[15] Djankov, Simenon, Rafael LaPorta, Florencio Lopez-de-Silanes, and Andrei Shleifer (2002) 'Courts,' *Quarterly Journal of Economics*, **118** (2), 453-517.

[16] Fenn, George, Nellie Liang, and Stephen Prowse (2003) ,'The Private Equity Market,'in Dennis Logue and James Seward (eds.) *Handbook of Modern Finance*, New York, RIA Group.

[17] Gompers, Paul (1995), 'Optimal Investment, Monitoring, and the Staging of Venture Capital,' *Journal of Finance*, **50** (4), 1461–90.

[18] Hart, Oliver (2001) 'Financial Contracting,' *Journal of Economic Literature,* **39** (4), 1037–1100.

[19] Hellmann, Thomas (1998), 'The Allocation of Control Rights in Venture Capital Contracts,' *Rand Journal of Economics*, **29** (1), 57–76.

[20] Hellmann, Thomas (2000), 'Venture Capitalists: The Coaches of Silicon Valley,' in Chong-Moon Lee, William F. Miller, Marguerite Gong Hancock, and Henry S. Rowen (eds.) *The Silicon Valley Edge: A Habitat for Innovation and Entrepreneurship*, Stanford, Stanford University Press.

[21] Hellmann, Thomas, and Manju Puri (2000), 'The Interaction between Product Market and Financing Strategy: The Role of Venture Capital,' *Review of Financial Studies*, **13** (4), 959–84.

[22] Hellmann, Thomas, and Manju Puri (2002), 'Venture Capital and the Professionalization of Start-ups: Empirical Evidence,' *Journal of Finance*, **57** (1), 169–97.

[23] Hochberg, Yael (2003), 'Venture Capital and Corporate Governance in the Newly Public Firm,' Mimeo, Stanford University.

[24] Holmström, Bengt, and Jean Tirole (1997) 'Financial Intermediation, Loanable Funds, and the Real Sector,' *Quarterly Journal of Economics,* **112** (3), 663–691.

[25] Inderst, Roman, and Holger Müller (2004) 'The Effects of Capital Market Characteristics on the Value of Start-up Firms,' *Journal of Financial Economics,* **72** (2), 319–56.

[26] Kaplan, Steven, and Per Strömberg (2004) 'Characteristics, Contracts and Actions: Evidence from Venture Capitalists Analysis,' forthcoming in *Journal of Finance*.

[27] Kaplan, Steven, and Per Strömberg (2003) 'Financial Contracting Theory Meets the Real World: An Empirical Analysis of Venture Capital Contracts, *Review of Economic Studies*, **70** (2) 281–315.

[28] Kaplan Steven, Frederic Martel and Per Strömberg, (2003) 'How Do Legal Differences and Learning Affect Financial Contracts?' NBER Working Paper 10097.

[29] LaPorta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny (1998) 'Legal Determinants of External Finance,' *Journal of Finance*, **52** (5), 1131–50.

[30] LaPorta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny (1998) 'Law and Finance,' *Journal of Political Economy*, **106** (6), 1133–55.

[31] LaPorta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny (2000) ' Investors Protection and Corporate Governance', *Journal of Financial Economics*, **58** (1-2), 3–27.

[32] Lerner, Josh (1994) 'Venture Capitalists and the Decision to go Public,' *Journal of Financial Economics*, **35** (1), 293–316.

[33] Lerner, Josh, and Antoinette Schoar (2004) 'Does Legal Enforcement Affect Financial Transactions? The Contractual Channel in Private Equity,' forthcoming in *Quarterly Journal of Economics*.

[34] Lindsey, Laura (2003) 'The Venture Capital Keiretsu Effect: An Empirical Analysis of Strategic Alliances among Portfolio Firms,' Mimeo, Stanford University.

[35] Megginson, William (2004) 'Towards a Global Model of Venture Capital?' *Journal of Applied Corporate Finance,* **17** (1), 8–26.

[36] Merryman, John (1969) *The Civil Law Tradition*, Stanford, Stanford University Press.

[37] Qian, Jun, and Philip Strahan (2004) 'How Law and Institutions Shape Financial Contracts: The Case of Bank Loans,' Mimeo.

[38] Reynolds Thomas and Arturo Flores, (1989) Foreign Law: Current Sources of Codes and Basic Legislation in Jurisdictions of the World, Littleton, Rothman.

[39] Repullo, Rafael, and Javier Suarez (2004) 'Venture Capital Finance: A Security Design Approach,' *The Review of Finance*, **8** (1), 75–108.

[40] Sahlman, William (1990) 'The Structure and Governance of Venture Capital Organizations,' *Journal of Financial Economics,* **27** (2), 473–52

[41] Schindele, Ibolya (2004) 'Advice and Monitoring: Venture Financing with Multiple Tasks,' RICAFE Working Paper n.7.

[42] Schmidt, Klaus (2003) 'Convertible Securities and Venture Capital Finance,' *Journal of Finance*, **58** (3), 1139–66.

[43] Shleifer and Wolfenzon (2002) 'Investor Protection and Equity Markets,',*Journal of Financial Economics,* **66 (**1), 3-27

[44] Sorensen, Morten (2004) 'How Smart is Smart Money: An Empirical Two-Sided Matching Model of Venture Capital, Mimeo, Stanford University.

[45] Reynolds, Thomas, and Arturo Flores (1989) *Foreign Law: Current Sources of Basic Legislation in Jurisdictions of the World*, Littleton, Rothman and Co..

[46] Zweigert, Konrad, and Hein Kotz (1987) *Introduction to Comparative Law*, Oxford, Clarendon Press.

Table 1: Sample properties

This table compares our sample to the population it is drawn from. Panel A looks at the country composition and response rates, Panel B at the composition by venture firm type, Panel C at the size composition, and Panel D at the age composition. Variables are defined in Table 2. Partners are measured in units, the amount managed in million of current euros, and age in months in December 2001.

Panel A: COUNTRY COMPOSITION AND RESPONSE RATE

	POPULATION	SAMPLE	RESPONSE RATE
Austria	23	8	34.8%
Belgium	34	5	14.7%
Denmark	29	4	13.8%
Finland	33	6	18.2%
France	101	15	14.9%
Germany	146	19	13.0%
Greece	8	4	50.0%
Ireland	15	3	20.0%
Italy	37	6	16.2%
Luxembourg	3	1	33.3%
The Netherlands	52	5	9.6%
Norway	22	2	9.1%
Portugal	10	2	20.0%
Spain	38	10	26.3%
Sweden	17	6	35.3%
Switzerland	43	6	14.0%
UK	139	22	15.8%
TOTAL	*750*	*124*	*16.5%*

Panel B: COMPOSITION BY VENTURE FIRM TYPE

	POPULATION	SAMPLE
Independent	65.7%	67.7%
Corporate	8.0%	9.7%
Bank	19.3%	17.8%
Public	6.9%	4.8%

Panel C: COMPOSITION BY SIZE

POPULATION				
	Mean	Median	Min.	Max.
Partners	4.3	3	1	25
Amount managed	333.4	60	1	14,200
SAMPLE				
	Mean	Median	Min.	Max.
Partners	4.2	3	1	20
Amount managed	179.8	52	2	4,500

Table 2(a): Dependent variables

Variable	Description
INTERACTION	ordered categorical variable that takes the values 1 to 4 if the venture firm interacts with the portfolio company monthly, weekly, quarterly, and annually.
DOWNSIDE–ALL	dummy variable that takes the value 1 if the the finacing instruments used for the deal include straight debt, convertible debt, or preferred equity; 0 otherwise.
BOARD CONTROL	dummy variable that takes the value 1 if the venture capitalist is reported to have a contractual right to obtain control of the board if the company fails to meet a specified contingency; 0 otherwise.

Table 2(b): Independent variables: Legal origin

Variable	Description
COMPANY–COMMON	dummy variable that takes the value 1 if the company is located in a legal system of common law, from Laporta et al. (1998); 0 otherwise.
COMPANY–FRENCH	dummy variable that takes the value 1 if the company is located in a country with French legal origin, from Laporta et al. (1998); 0 otherwise.
COMPANY–GERMAN	dummy variable that takes the value 1 if the company is located in a country with German legal origin, from Laporta et al. (1998); 0 otherwise.
INVESTOR–COMMON	dummy variable equal to 1 if the venture investor is located in a legal system of common law and the portfolio company in a legal system of civil law; 0 otherwise.
INVESTOR–CIVIL	dummy variable equal to 1 if the venture investor is located in a legal system of civil law and the portfolio company in a legal system of common law; 0 otherwise.
INVESTOR–FRENCH	dummy variable equal to 1 if the venture investor is located in a country with French legal origin and the portfolio company in a country with a different legal system of civil law; 0 otherwise.
INVESTOR–GERMAN	dummy variable equal to 1 if the venture investor is located in a country with German legal origin and the portfolio company in a country with a different legal system of civil law; 0 otherwise.

Table 2(c): Independent variables: Legal indices

Variable	Description
COMPANY–RULE	measure of the quality of enforcement of legal rules, on a scale from –2.5 to 2.5; originally developed by Laporta et al. (1998) and updated by the World Bank.
BETTER-INVESTOR–RULE	variable equal to the difference of the rule-of-law index for the investor and for the portfolio company if the difference is positive; 0 otherwise; from Laporta et al. (1998) and updated by the World Bank.
WORSE-INVESTOR–RULE	variable equal to absolute value of the difference of the rule-of-law index for the investor and for the portfolio company if the difference is negative; 0 otherwise; from Laporta et al. (1998) and updated by the World Bank.
COMPANY–PROCEDURAL	measure of the degree of legal formalism of a legal system, on a scale from 0 to 100, from the World Bank Doing Business 2001 database. Rescaled to an index of procedural simplicity by taking the opposite of a country's value of the index.
BETTER-INVESTOR–PROCEDURAL	variable equal to the difference of the procedural simplicity index for the investor and for the company if the difference is positive; 0 otherwise; from Laporta et al. (1998) as updated by the World Bank Doing Business 2001 database.
WORSE-INVESTOR–PROCEDURAL	variable equal to the absolute value of the difference of the procedural simplicity index for the investor and for the company if the difference is negative; 0 otherwise; from Laporta et al. (1998) as updated by the World Bank Doing Business 2001 database.

Table 2(d): Independent variables: investor–level and deal level controls

Variable	Description
INDEPENDENTVC	dummy variable that takes the value 1 if the venture capitalist defines itself as an independent venture firm; 0 otherwise.
INTERNATIONALVC	is the share of a venture capital firm's investments made abroad
VC–SIZE	is the amount under management at the venture capital firm.
VC–AGE	is the age of the venture capital firm, measured in months at the end of the sample period.
STAGE	ordered dummy variable that takes the values 1 to 4 if a deal is reported as a seed, start-up, expansion, or bridge.
INDUSTRY	set of a mutually exclusive dummy variables that take the value 1 if the company is reported to operate in one the following industries Biotech and pharma; Medical products; Software and internet; Financial services; Industrial services; Electronics; Consumer services; Telecom; Food and consumer goods; Industrial products (incl. energy); Media & Entertainment; Other; 0 otherwise.

Table 3: Frequency of securities used as financing instruments, by legal system

This Table provides the frequency with which the five securities are used, by the legal system of the company financed (i.e., by column). The table provides the frequency for *all* the financing instruments used in a deal, so that frequencies sum to more than 1. Variables are defined in Table 2.

	Common	Civil			
Security:	Anglo-Saxon	French	German	Scandinavian	*Obs*
Straight Debt	.251	.052	.092	.069	*1,396*
Convertible debt	.138	.131	.157	.190	*1,394*
Preferred equity	.489	.269	.167	.347	*1,401*
Pure equity	.546	.757	.877	.742	*1,396*
Warrants	.063	.131	.071	.055	*1,365*
Obs	*228*	*610*	*342*	*250*	*1,430*

Table 4: Frequency and mean values, by legal system

This table provides mean values (frequency for dummy variables) for all our dependent and independent variables. Variables are defined in Table 2.

	Common	Civil			
VARIABLE	Anglo-Saxon	French	German	Scandinavian	*Obs*
Interaction	0.874	0.523	0.808	0.836	*1,259*
Downside	0.745	0.344	0.336	0.536	*1,401*
Board Control	0.519	0.270	0.460	0.433	*1,272*
Investor–Common	0	0.028	0.029	0.032	*1,430*
Investor–Civil	0.158	0	0	0	*1,430*
Company–Rule	2.024	1.410	1.987	2.023	*1,430*
Better-Investor–Rule	0.013	0.028	0.012	0.012	*1,430*
Worse-Investor–Rule	0.055	0.010	0.056	0.021	*1,430*
Company–Procedural	36.658	73.320	57.866	44.832	*1,424*
Better-Investor–Procedural	3.877	0.566	1.886	0.816	*1,424*
Worse-Investor–Procedural	0.079	1.602	1.053	0.464	*1,424*
IndependentVC	0.767	0.446	0.667	0.576	*1,430*
VC–Size	127.329	340.846	199.925	176.300	*1,418*
VC–Age	93.167	105.505	77.956	80.624	*1,430*
Stage	2.366	2.299	2.130	2.156	*1,265*
Company age	40.576	72.987	48.683	44.611	*1,078*

Table 5: Descriptive statistics

This table provides descriptive statistics for all our dependent and independent variables. Variables are defined in Table 2. For dummy variables the MEAN column reports the frequency of observations.

VARIABLE	MEAN	MEDIAN	MIN	MAX	*OBS*
Interaction	0.705	-	0	1	*1,259*
Downside	0.441	-	0	1	*1,401*
Board Control	0.390	-	0	1	*1,272*
Company–Common	0.159	-	0	1	*1,430*
Investor–Common	0.024	-	0	1	*1,430*
Investor–Civil	0.025	-	0	1	*1,430*
Company–Rule	1.753	1.9	0.66	2.36	*1,430*
Better–Investor–Rule	0.019	0	0	1,07	*1,430*
Worse–Investor–Rule	0.030	0	0	1,07	*1,430*
Company–Procedural	58.737	61	36	83	*1,424*
Better–Investor–Procedural	1.458	0	0	47	*1,420*
Worse–Investor–Procedural	1.025	0	0	43	*1,420*
IndependentVC	0.573	-	0	1	*1,430*
VC–Size	243.864	85	1.3	4,500	*1,418*
VC–Age	92.599	54	12	390	*1,430*
Stage	2.244	2	1	4	*1,265*
Biotech and pharma	0.142	-	0	1	*1,419*
Medical products	0.069	-	0	1	*1,419*
Software and Internet	0.299	-	0	1	*1,419*
Financial services	0.038	-	0	1	*1,419*
Industrial services	0.040	-	0	1	*1,419*
Electronics	0.058	-	0	1	*1,419*
Telecom	0.071	-	0	1	*1,419*
Consumer services	0.123	-	0	1	*1,419*
Food and consumer goods	0.023	-	0	1	*1,419*
Industrial products	0.014	-	0	1	*1,419*
Media & entertainment	0.065	-	0	1	*1,419*
Other sector	0.069	-	0	1	*1,419*

Table 6: Base model

This table reports results from probit regressions for our model with direction of foreign investments. The dependent variables are INTERACTION, DOWNSIDE, and BOARD CONTROL. For each independent variable, column *(i)* reports the estimated coefficients for a model without investor and deal controls; column *(ii)* reports the estimated coefficients for a model with investor and deal controls. Panel A reports results for legal origin. The main independent variable is COMPANY–COMMON. Panel B reports results for rule of law. The main independent variable is COMPANY–RULE. Panel C reports results for procedural simplicity. The main independent variables is COMPANY–PROCEDURAL. Investor controls are INDEPENDENTVC, VC–AGE, AND VC–SIZE. Deal Controls (unreported) are STAGE and INDUSTRY. Variables are defined in Table 2. For each independent variable, we report the estimated coefficient and the T-ratio (in parenthesis), computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by venture firm. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

Panel A: Legal origin

	INTERACTION		DOWNSIDE		BOARD CONTROL	
	(i)	*(ii)*	*(i)*	*(ii)*	*(i)*	*(ii)*
Company–Common	0.411**	0.324*	0.956***	0.823***	0.394	0.358
	(2.27)	*(1.90)*	*(4.84)*	*(3.83)*	*(1.22)*	*(1.02)*
IndependentVC		0.655***		0.576**		0.050
		(2.97)		*(2.23)*		*(0.15)*
VC–Size		–0.001		0.001		–0.001**
		(–0.95)		*(0.26)*		*(–2.06)*
VC–Age		–0.005***		0.003		–0.007***
		(–3.89)		*(1.52)*		*(–2.96)*
Deal Controls	No	Yes	No	Yes	No	Yes
Observations	*1,259*	*1,105*	*1,401*	*1,233*	*1,272*	*1,123*
χ^2	*5.13*	*63.80*	*23.40*	*54.54*	*1.48*	*45.70*
Model p–value	*0.024*	*0.001*	*0.000*	*0.000*	*0.223*	*0.000*
Pseudo R^2	*0.009*	*0.120*	*0.053*	*0.115*	*0.010*	*0.148*

Panel B: Rule of Law

	INTERACTION		DOWNSIDE		BOARD CONTROL	
	(i)	*(ii)*	*(i)*	*(ii)*	*(i)*	*(ii)*
Company–Rule	0.931***	0.774***	0.189**	0.639**	0.698*	0.693*
	(3.95)	*(2.90)*	*(2.53)*	*(2.23)*	*(1.85)*	*(1.72)*
IndependentVC		0.594***		0.603**		0.017
		(2.82)		*(2.27)*		*(0.95)*
VC–Size		–0.001		0.001		–0.001
		(–1.25)		*(0.02)*		*(–1.62)*
VC–Age		–0.005***		0.003		–0.0076***
		(–4.36)		*(1.62)*		*(–2.83)*
Deal Controls	No	Yes	No	Yes	No	Yes
Observations	*1,259*	*1,105*	*1,401*	*1,233*	*1,272*	*1,123*
χ^2	*15.62*	*33.83*	*6.39*	*46.14*	*3.43*	*46.79*
Model p–value	*0.000*	*0.013*	*0.012*	*0.000*	*0.064*	*0.000*
Pseudo R^2	*0.038*	*0.188*	*0.033*	*0.096*	*0.026*	*0.159*

Panel C: Procedural simplicity

	INTERACTION		DOWNSIDE		BOARD CONTROL	
	(i)	*(ii)*	*(i)*	*(ii)*	*(i)*	*(ii)*
Company–Procedural	0.022***	0.020***	0.018**	0.017***	0.016	0.016*
	(4.25)	*(3.68)*	*(2.27)*	*(2.57)*	*(1.97)*	*(1.90)*
IndependentVC		0.589***		0.572**		0.006
		(3.00)		*(2.25)*		*(0.02)*
VC–Size		0.001		–0.001		–0.001
		(0.64)		*(–0.31)*		*(–1.61)*
VC–Age		0.005***		–0.003*		–0.006***
		(4.54)		*(–1.70)*		*(–2.90)*
Deal Controls	No	Yes	No	Yes	No	Yes
Observations	*1,253*	*1,099*	*1,395*	*1,227*	*1,267*	*1,118*
χ^2	*18.04*	*128.12*	*5.13*	*53.27*	*3.86*	*46.80*
Model p–value	*0.001*	*0.001*	*0.024*	*0.000*	*0.049*	*0.000*
Pseudo R^2	*0.047*	*0.149*	*0.039*	*0.113*	*0.032*	*0.161*

√

Table 7(a): Pairwise correlations between legal systems and investor and deal characteristics

This table reports pairwise correlations among the legal variables and investor and deal characteristics. Variables are defined in Table 2. Significance levels are reported in brackets.

	COMMON	RULE–OF–LAW	PROCEDURAL–SIMP.	INDEPENDENTVC	VC–AGE	VC–SIZE	STAGE
COMMON	1.000						
RULE–OF–LAW	0.339 *(0.00)*	1.000					
PROCEDURAL–SIMP.	0.587 *(0.00)*	0.754 *(0.00)*	–1.000				
INDEPENDENTVC	0.171 *(0.00)*	0.195 *(0.00)*	0.231 *(0.00)*	1.000			
VC–AGE	–0.003 *(0.91)*	–0.019 *(0.48)*	–0.067 *(0.01)*	0.067 *(0.01)*	1.000		
VC–SIZE	–0.083 *(0.01)*	–0.049 *(0.07)*	0.113 *(0.00)*	–0.111 *(0.00)*	0.107 *(0.00)*	1.000	
STAGE	0.068 *(0.02)*	–0.069 *(0.02)*	0.031 *(0.26)*	–0.108 *(0.00)*	0.053 *(0.06)*	0.092 *(0.01)*	1.000

Table 7(b): The effect of legal systems on investor characteristics

This table reports results from probit and ordinary least squares regressions where the dependent variable are INDEPENDENTVC, VC–AGE, AND VC–SIZE. For each variable, columns *(i)* through *(iii)* report the estimated coefficients for models where the main independent variable is COMMON–ORIGIN, RULE–OF–LAW, and PROCEDURAL–SIMPLICITY. Each regression employs deal controls (unreported), namely STAGE and INDUSTRY. Variables are defined in Table 2. For each independent variable, we report the estimated coefficient and the T-ratio (in parenthesis), computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by venture firm. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

	INDEPENDENT-VC			VC-SIZE			VC-AGE		
	(i)	*(ii)*	*(iii)*	*(i)*	*(ii)*	*(iii)*	*(i)*	*(ii)*	*(iii)*
Common-Origin	0.961***			–155.890			0.262		
	(2.91)			*(–1.52)*			*(0.02)*		
Rule-of-law		0.966**			–118.713			–17.897	
		(2.35)			*(–0.53)*			*(–0.62)*	
Procedural-simplicity			0.022**			4.528			0.504
			(2.35)			*(0.80)*			*(0.76)*
Deal Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	*1,259*	*1,259*	*1,253*	*1,249*	*1,249*	*1,243*	*1,259*	*1,159*	*1,253*
$\chi^2(orF)$	*20,87*	*19.27*	*18.95*	*1.42*	*1.51*	*1.32*	*2.20*	*1.96*	*2.15*
Model p–value	*0.076*	*0.115*	*0.125*	*0.161*	*0.125*	*0.212*	*0.014*	*0.030*	*0.016*
Pseudo R^2	*0.072*	*0.072*	*0.081*	*0.064*	*0.060*	*0.069*	*0.046*	*0.050*	*0.055*

Table 8: Model with direction of foreign investments

This table reports results from probit regressions for our model with direction of foreign investments. The dependent variables are INTERACTION, DOWNSIDE, and BOARD CONTROL. For each independent variable, column *(i)* reports the estimated coefficients for a model without investor and deal controls; column *(ii)* reports the estimated coefficients for a model with investor and deal controls. Panel A reports results for legal origin. The main independent variables are COMPANY–COMMON, INVESTOR–COMMON and INVESTOR–CIVIL. Panel B reports results for rule of law. The main independent variables are COMPANY–RULE, BETTER–INVESTOR–RULE, and WORSE–INVESTOR–RULE. Panel C reports results for procedural simplicity. The main independent variables are COMPANY–PROCEDURAL, BETTER–INVESTOR–PROCEDURAL, and WORSE–INVESTOR–PROCEDURAL. Investor controls are INDEPENDENTVC, VC–AGE, AND VC–SIZE. Deal Controls (unreported) are STAGE and INDUSTRY. Variables are defined in Table 2. For each independent variable, we report the estimated coefficient and the T-ratio (in parenthesis), computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by venture firm. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

Panel A: Legal origin

	INTERACTION		DOWNSIDE		BOARD CONTROL	
	(i)	*(ii)*	*(i)*	*(ii)*	*(i)*	*(ii)*
Company–Common	0.530**	0.410*	1.118***	0.994***	0.594	0.519
	(2.26)	*(1.92)*	*(4.65)*	*(3.92)*	*(1.55)*	*(1.29)*
Investor–Common	–0.578	–0.414	–0.758**	–0.823**	–1.321***	–1.289***
	(–1.55)	*(–1.17)*	*(–2.14)*	*(–2.22)*	*(–2.87)*	*(–2.62)*
Investor–Civil	0.738**	0.512	0.807*	0.792**	1.127***	0.830*
	(2.14)	*(1.60)*	*(1.82)*	*(2.19)*	*(2.26)*	*(1.74)*
IndependentVC		0.649***		0.564**		0.033
		(2.93)		*(2.20)*		*(0.10)*
VC–Age		–0.005***		0.003*		–0.007***
		(–3.82)		*(1.64)*		*(–2.92)*
VC–Size		–0.001		0.001		–0.001*
		(–0.91)		*(0.33)*		*(–1.95)*
Deal Controls	No	Yes	No	Yes	No	Yes
Observations	*1,259*	*1,105*	*1,401*	*1,233*	*1,272*	*1,123*
χ^2	*6.28*	*59.92*	*23.98*	*55.74*	*14.54*	*56.11*
Model p–value	*0.099*	*0.000*	*0.001*	*0.001*	*0.002*	*0.000*
Pseudo R^2	*0.016*	*0.123*	*0.066*	*0.126*	*0.038*	*0.164*

Panel B: Rule of Law

	INTERACTION		DOWNSIDE		BOARD CONTROL	
	(i)	*(ii)*	*(i)*	*(ii)*	*(i)*	*(ii)*
Company–Rule	1.150***	0.956***	0.847**	0.713**	0.830*	0.756*
	(4.00)	*(3.26)*	*(2.32)*	*(2.26)*	*(1.92)*	*(1.76)*
Better-Investor–Rule	1.498***	0.969*	2.106***	1.330**	0.388	1.142
	(3.05)	*(1.74)*	*(3.38)*	*(2.16)*	*(0.59)*	*(0.18)*
Worse-Investor–Rule	–1.694**	–1.398***	0.132	–0.235	–1.553***	–1.073**
	(–2.52)	*(–3.11)*	*(0.19)*	*(–0.55)*	*(–2.60)*	*(–2.30)*
IndependentVC		0.568***		0.573**		0.005
		(2.78)		*(2.13)*		*(0.02)*
VC–Age		–0.005***		0.003*		–0.006***
		(–4.32)		*(1.67)*		*(–2.70)*
VC–Size		–0.001*		–0.001		–0.001
		(–1.69)		*(–0.18)*		*(–1.62)*
Deal Controls	No	Yes	No	Yes	No	Yes
Observations	*1,259*	*1,105*	*1,401*	*1,233*	*1,272*	*1,123*
χ^2	*18.34*	*113.39*	*14.88*	*58.68*	*6.80*	*46.80*
Model p–value	*0.001*	*0.001*	*0.002*	*0.000*	*0.079*	*0.000*
Pseudo R^2	*0.064*	*0.150*	*0.049*	*0.102*	*0.044*	*0.164*

Panel C: Procedural simplicity

	BOARD CONTROL		INTERACTION		DOWNSIDE	
	(i)	*(ii)*	*(i)*	*(ii)*	*(i)*	*(ii)*
Company–Procedural	0.030***	0.027***	0.020**	0.020***	0.021**	0.019**
	(4.51)	*(4.21)*	*(2.13)*	*(2.76)*	*(2.16)*	*(2.02)*
Better-Investor–Procedural	0.048***	0.043***	0.016	0.014	0.042***	0.034**
	(4.99)	*(3.82)*	*(0.09)*	*(1.29)*	*(2.88)*	*(2.07)*
Worse-Investor–Procedural	–0.045***	–0.032*	–0.041***	–0.030***	–0.019	–0.015
	(3.51)	*(–2.59)*	*(–3.00)*	*(–2.75)*	*(–1.33)*	*(–1.02)*
IndependentVC		0.572***		0.528**		0.034
		(3.00)		*(2.07)*		*(0.10)*
VC–Age		0.004***		–0.004*		0.006***
		(3.95)		*(–1.93)*		*(2.63)*
VC–Size		0.001		–0.001		0.001
		(0.58)		*(–0.30)*		*(1.57)*
Deal Controls	No	Yes	No	Yes	No	Yes
Observations	*1,249*	*1,095*	*1,391*	*1,223*	*1,263*	*1,114*
χ^2	*33.08*	*135.40*	*11.33*	*59.62*	*8.96*	*48.63*
Model p–value	*0.001*	*0.000*	*0.010*	*0.000*	*0.030*	*0.000*
Pseudo R^2	*0.097*	*0.176*	*0.059*	*0.126*	*0.062*	*0.171*

Table 9: Within-civil-law countries analysis

This table reports results from probit regressions for our model with direction of foreign investments. The dependent variables are INTERACTION, DOWNSIDE, and BOARD CONTROL. For each independent variable, column *(i)* reports the estimated coefficients for a model without investor and deal controls; column *(ii)* reports the estimated coefficients for a model with investor and deal controls; column *(iii)* reports the estimated coefficients for a model with investor and deal controls which also includes independent variables which measure the direction of the investment in legal terms. Panel A reports results for legal origin. The main independent variables are COMPANY–FRENCH, COMPANY–GERMAN, INVESTOR–FRENCHand INVESTOR–GERMAN. Panel B reports results for rule of law. The main independent variables are COMPANY–RULE, BETTER–INVESTOR–RULE, and WORSE–INVESTOR–RULE. Panel C reports results for procedural simplicity. The main independent variables are COMPANY–PROCEDURAL, BETTER–INVESTOR–PROCEDURAL, and WORSE–INVESTOR–PROCEDURAL. Investor controls are INDEPENDENTVC, VC–AGE, AND VC–SIZE. Deal Controls (unreported) are STAGE and INDUSTRY. Variables are defined in Table 2. For each independent variable, we report the estimated coefficient and the T-ratio (in parenthesis), computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by venture firm. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

Panel A: Legal origin

	INTERACTION			DOWNSIDE			BOARD CONTROL		
	(i)	*(ii)*	*(iii)*	*(i)*	*(ii)*	*(iii)*	*(i)*	*(ii)*	*(iii)*
Company–French	–0.744***	–0.566**	–0.652**	–0.469	–0.561**	–0.531*	–0.460	–0.535	–0.599
	(–2.74)	*(–2.04)*	*(–2.24)*	*(–1.58)*	*(–1.99)*	*(–1.85)*	*(–1.07)*	*(–1.24)*	*(–1.36)*
Company–German	–0.103	–0.162	–0.178*	–0.506*	–0.638**	–0.628**	0.064	–0.070	–0.110
	(–0.35)	*(0.54)*	*(–0.57)*	*(–1.72)*	*(–2.09)*	*(2.00)*	*(0.14)*	*(–0.15)*	*(–0.23)*
Investor–French			–0.843**			0.369			–0.847**
			(–2.22)			*(0.96)*			*(–2.02)*
Investor–German			–1.195			0.672			–1.036
			(–1.49)			*(1.03)*			*(–1.24)*
IndependentVC		0.564**	0.599***		0.673**	0.658**		0.013	0.025
		(2.41)	*(2.61)*		*(2.49)*	*(2.42)*		*(0.04)*	*(0.07)*
VC–Age		–0.004***	–0.004***		0.004*	0.003*		–0.007***	–0.007***
		(–3.38)	*(–3.21)*		*(1.95)*	*(1.89)*		*(–2.71)*	*(–2.67)*
VC–Size		0.001	–0.001		0.001	0.001		–0.001	–0.001
		(0.66)	*(–0.47)*		*(0.64)*	*(0.61)*		*(–1.17)*	*(–1.17)*
Deal Controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	*1,002*	*889*	*889*	*1,139*	*1,013*	*1,013*	*1,027*	*917*	917
χ^2	*11.99*	69.04	*91.32*	*3.51*	*36.21*	*62.99*	*2.53*	*51.34*	*56.10*
Model p–value	*0.003*	*0.001*	*0.000*	*0.173*	*0.004*	*0.001*	*0.283*	*0.000*	*0.000*
Pseudo R^2	*0.041*	*0.129*	*0.141*	*0.019*	*0.114*	*0.118*	*0.028*	*0.202*	*0.209*

Panel B: Rule of Law

	INTERACTION			DOWNSIDE			BOARD CONTROL		
	(i)	*(ii)*	*(iii)*	*(i)*	*(ii)*	*(iii)*	*(i)*	*(ii)*	*(iii)*
Company–Rule	0.880***	0.779***	0.952***	0.503	0.349	0.368	0.549	0.569	0.601
	(*3.48*)	(*2.68*)	(*3.04*)	(*1.60*)	(*1.29*)	(*1.24*)	(*1.37*)	(*1.26*)	(*1.26*)
Better-Investor–Rule			0.901			1.202			0.065
			(*1.44*)			(*1.41*)			(*0.06*)
Worse-Investor–Rule			–1.394***			0.121			–0.546
			(*–2.27*)			(*0.27*)			(*–1.06*)
IndependentVC		0.532**	0.518**		0.613**	0.596**		–0.031	–0.033
		(*0.66*)	(*2.34*)		(*2.18*)	(*2.11*)		(*–0.08*)	(*–0.09*)
VC–Age		–0.005***	–0.004***		0.003**	0.003*		–0.007***	–0.007***
		(*–4.27*)	(*–4.18*)		(*1.76*)	(*1.73*)		(*–2.71*)	(*–2.66*)
VC–Size		–0.001	–0.001*		0.001	0.001		–0.001	–0.001*
		(*–1.19*)	(*–1.66*)		(*0.54*)	(*0.41*)		(*–1.21*)	(*–1.21*)
Deal Controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	*1,002*	*889*	*889*	*1,139*	*1,013*	*1,013*	*1,027*	*917*	*917*
χ^2	*12.12*	*98.57*	*111.15*	*2.57*	*37.46*	*48.56*	*1.89*	*45.69*	*49.58*
Model p–value	*0.001*	*0.001*	*0.000*	*0.109*	*0.002*	*0.000*	*0.170*	*0.001*	*0.000*
Pseudo R^2	*0.036*	*0.135*	*0.147*	*0.015*	*0.069*	*0.100*	*0.018*	*0.195*	*0.197*

Panel C: Procedural simplicity

	BOARD CONTROL			INTERACTION			DOWNSIDE		
	(i)	*(ii)*	*(iii)*	*(i)*	*(ii)*	*(iii)*	*(i)*	*(ii)*	*(iii)*
Company–Procedural	0.026***	0.026***	0.032***	0.009	0.010	0.011	0.015	0.016	0.017
	(3.79)	(*3.46)*	*(4.07)*	*(0.92)*	*(1.20)*	*(1.28)*	*(1.40)*	(1.46)	*(1.45)*
Better-Investor–Procedural			0.053***			0.004			0.024
			(3.59)			*(0.31)*			*(1.26)*
Worse-Investor–Procedural			–0.047***			–0.035**			0.011
			(–3.77)			*(–1.96)*			*(0.45)*
IndependentVC		0.554***	0.575***		0.613**	0.586**		0.012	0.020
		(2.67)	*(2.78)*		*(2.22)*	*(2.12)*		*(0.03)*	*(0.05)*
VC–Age		0.005***	0.004***		0.003**	–0.004**		0.007***	0.007**
		(4.55)	*(3.87)*		*(1.86)*	*(–1.96)*		*(2.61)*	*(2.48)*
VC–Size		0.001	0.001		0.001	–0.001		0.001	0.001
		(0.61)	*(0.64)*		*(0.67)*	*(–0.67)*		*(1.17)*	*(1.17)*
Deal Controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	*996*	*883*	*879*	*1,133*	*1,007*	*1,003*	*1,022*	*912*	*908*
χ^2	*14.35*	*121.31*	*143.86*	*0.85*	*36.94*	*48.16*	*1.97*	*44.11*	*43.54*
Model p–value	*0.001*	*0.001*	*0.000*	*0.356*	*0.002*	*0.000*	*0.160*	*0.001*	*0.001*
Pseudo R^2	*0.050*	*0.153*	*0.180*	*0.008*	*0.101*	*0.108*	*0.022*	*0.196*	*0.197*

Table 10: Model with international investor effects

This table reports results from probit regressions for our model with international investors effects. The dependent variables are BOARD CONTROL, INTERACTION, and DOWNSIDE. Panel A reports results for legal origin. The main independent variables are DOMESTIC–COMMON, INT'L–COMMON–COMMON, INT'L–CIVIL–CIVIL, INT'L–COMMON–CIVIL, and INT'L–CIVIL–COMMON. Panel B reports results for rule of law. The main independent variables are COMPANY–RULE, INTERNATIONALVC, INVESTOR–RULE–POSITIVE, and INVESTOR–RULE–NEGATIVE. Panel C reports results for procedural simplicity. The main independent variables are COMPANY–PROCEDURAL, , INTERNATIONALVC, INVESTOR–PROCEDURAL–POSITIVE, and INVESTOR–PROCEDURAL–NEGATIVE. VC controls (unreported) are VC–INDEPENDENT, VC–AGE, AND VC–SIZE. Deal Controls (unreported) are STAGE and INDUSTRY. Variables are defined in Table 2. For each independent variable, we report the estimated coefficient and the T-ratio (in parenthesis), computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by venture firm. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

Panel A: Legal origin

	BOARD CONTROL	INTERACTION	DOWNSIDE
Company–Common	0.501	0.434**	1.100***
	(1.24)	*(2.10)*	*(4.26)*
InternationalVC	–0.637	0.356	1.318***
	(–1.28)	*(0.78)*	*(3.13)*
Investor–Common	1.111**	0.344	0.230
	(2.24)	*(0.88)*	*(0.52)*
Investor–Civil	–1.025**	–0.552**	–1.389***
	(–2.10)	*(–1.91)*	*(0.72)*
VC Controls	Yes	Yes	Yes
Deal Controls	Yes	Yes	Yes
Observations	*1,123*	*1,105*	*1,233*
χ^2	*57.53*	*62.70*	*94.57*
Model p–value	*0.000*	*0.001*	*0.000*
Pseudo R^2	*0.170*	*0.125*	*0.156*

Panel B: Rule of Law

	BOARD CONTROL	INTERACTION	DOWNSIDE
Company–Rule	0.807**	0.933***	0.618*
	(1.87)	*(3.29)*	*(1.95)*
InternationalVC	–0.611	0.241	0.960**
	(–1.41)	*(0.52)*	*(2.26)*
Better-Investor–rule	0.717	0.777	0.551
	(0.94)	*(1.45)*	*(0.94)*
Worse-Investor–rule	–0.765**	–1.482***	–0.595
	(–1.78)	*(–3.16)*	*(–1.55)*
VC Controls	Yes	Yes	Yes
Deal Controls	Yes	Yes	Yes
Observations	*1,123*	*1,105*	*1,233*
χ^2	*50.67*	*115.67*	*67.95*
Model p–value	*0.000*	*0.000*	*0.000*
Pseudo R^2	*0.170*	*0.151*	*0.119*

Panel C: Procedural Simplicity

	BOARD CONTROL	INTERACTION	DOWNSIDE
Company–Procedural	0.021**	0.026***	0.019**
	(2.21)	*(4.20)*	*(2.46)*
InternationalVC	–0.943*	0.008	0.794*
	(–1.78)	*(0.02)*	*(1.95)*
Better-Investor–procedural	0.025*	0.043***	0.020*
	(1.89)	*(4.01)*	*(1.95)*
Worse-Investor–procedural	–0.031**	–0.031**	–0.017
	(–1.99)	*(–2.31)*	*(–1.50)*
VC Controls	Yes	Yes	Yes
Deal Controls	Yes	Yes	Yes
Observations	*1,114*	*1,095*	*1,223*
χ^2	*52.50*	*136.23*	*70.62*
Model p–value	*0.000*	*0.000*	*0.000*
Pseudo R^2	*0.184*	*0.176*	*0.136*