

How do legal differences and experience affect financial contracts? ☆

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Abstract

We analyze venture capital (VC) investments in twenty-three non-US countries and compare them to US VC investments. We describe how the contracts allocate cash flow, board, liquidation, and other control rights. In univariate analyses, contracts differ across legal regimes. However, more experienced VCs implement US style contracts regardless of legal regime. In most specifications, legal regime becomes insignificant controlling for VC experience. VC firms that do not use US style contracts fail significantly more often, even controlling for VC experience. The results are consistent with US style contracts being efficient across a wide range of legal regimes.

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1. Introduction

Financial contracting plays an important role in aligning incentives and mitigating agency conflicts between investors and entrepreneurs, thus allowing new ventures to obtain financing.¹ Studies of US venture capital (VC) investing, such as Sahlman (1990) and Kaplan and Strömberg (2003, 2004), show that investor contracts carefully allocate cash flow rights, liquidation rights, and control rights between the entrepreneur and the VC investor in order to mitigate agency conflicts. Kaplan and Strömberg (2003, 2004) also show that the characteristics of US VC contracts are consistent with the contracts predicted by financial contracting theories such as Aghion and Bolton (1992), Dessein (2005), and Dewatripont and Tirole (1994).

At the same time, the large and growing literature in law and finance finds that legal and institutional differences among countries appear to be important for the development and nature of financial markets, and also for economic growth.² The ability to design investments and financial contracts is potentially dependent on various elements of the institutional environment—the nature of corporate and contract law, the quality of legal enforcement, accounting systems, tax regulations, financial markets, etc. If the institutional environment affects the types of contracts that can be written, this could change the types of contracts that are used.³

This raises the question of whether the financial contracts observed in the US are suitable in other institutional environments. Theories of financial contracting would suggest yes (because they assume property rights are enforced and little else). Alternatively, sufficient differences in legal institutions or enforcement might lead to a negative answer. In this paper, we address this question by studying VC investments across different institutional environments—145 investments in 107 companies in 23 countries by 70 different lead VCs.

First, we describe how the contracts allocate cash flow, board, liquidation, and other control rights. In univariate analyses, the contracts differ significantly across legal regimes. VCs investing outside the US deals have weaker control, liquidation and exit rights. Non-US investments also are less likely to use contingencies—including milestones, vesting provisions and anti-dilution rights—resulting in less high-powered cash flow incentives compared to their US counterparts. These differences are manifest to some extent by the relatively greater use of ordinary common stock in Europe and less frequent use of convertible preferred.

Next, we consider how the contracts vary across legal regimes. We find that the contracts vary systematically across those regimes. In particular, investments in common law countries are more likely to look like US contracts while investments elsewhere are likely to differ. Liquidation preferences, anti-dilution protections, vesting provisions and redemption rights are more typical in common law countries while milestones are less common. These results are similar to those found in Lerner and Schoar (2005) who study private equity investments in developing countries.

In this part of the analysis, we also consider how well specific measures of the legal and institutional environment (such as creditor protection, efficiency of the legal system, tax treatment, etc.) explain the differences across legal regimes. The specific measures are not consistently related to the contractual differences (in contrast to the legal regime variables).

Given the mixed results for institutional factors, we then consider the importance of individual VC characteristics and experience. In examining the contracts, we find that some VC firms implement US contractual features across all the countries and institutional environments in which

¹ See Hart (2001).

² See King and Levine (1993), La Porta et al. (1997, 1998, 1999, 2000), and Rajan and Zingales (1998).

³ E.g. Robinson and Stuart (in press) find evidence that expected litigation affect contractual completeness.

they invest. In univariate analyses, we find that larger VCs, more experienced VCs, and VCs with more exposure to US are significantly more likely to implement US style contractual terms. The results indicate that while it may not be easy or obvious how to adapt contracts, with enough effort (or legal fees), VCs can replicate most US style contracts.

The results to this point lead us to compare the relative importance of legal regime and VC experience. We estimate the determinants of contracts using regressions that include both legal regime variables and measures of VC experience or sophistication. In the presence of the VC experience variables, legal regime and institutional differences are relatively less important. In fact, the legal regime variables are not significant in most specifications. We also use the country trust indices from [Guiso et al. \(2004\)](#) and find that VCs from more “trusting” countries are less likely to implement US style contracts.

There are two primary interpretations of the experience results. First, they are consistent with the US model and US contracts being more efficient. According to this view, more experienced and successful VCs should use better contracts. The result on “trust” would help explain why less experienced VCs do not use the “tougher” US contracts. The second interpretation is not that the US contracts are more efficient or better, but simply that they are the contracts with which more experienced VCs are familiar.

We provide suggestive evidence to distinguish between these interpretations by studying the survival of the 70 VCs represented as lead investors in our sample. As of March 2005, 59 of the 74 VC firms are still active while 15 have not survived as independent entities. We separate the VC firms depending on the securities they used when acting as lead investors. Only one of the 38 firms that exclusively used convertible preferred (and US style contracts) failed. In contrast, 41% of the 31 firms that exclusively used common stock (and non-US style contracts) have not survived. Said another way, of the 15 firms that have not survived, all but two never used convertible preferred. The results persist in multivariate analyses where we control for other VC and portfolio company characteristics. The survival results suggest that less successful funds do not use US style contracts.

Our results indicate that US style contracts can be implemented across a wide range of legal regimes and are used by the more experienced and successful VCs. Although it is not possible to establish causality, we believe a plausible interpretation is that US style contracts are relatively efficient across a wide range of institutional environments. This interpretation is in the spirit of [Fama and Jensen \(1983\)](#) who argue that contractual features that survive are likely to be efficient. As noted earlier, the separate allocation of cash flow, control and liquidation rights found in US style contracts is consistent with/predicted by standard financial contracting theories. We also discuss other possible interpretations.

Finally, we find some evidence that is consistent with fixed costs of learning. All of the funds in our sample that used both non-US and US style contracts at some point, switched from non-US to US style during the sample period. This result and the survival results suggest that there will be more convergence in contracts over time.

Ours is not the first paper to study VC contracts outside of the US.⁴ Unlike this paper, however, most previous studies focus on a single country and do not compare contracts across institutional environments. Also, most of the studies do not analyze the actual contracts, but, instead, rely on survey evidence and self-reporting from VC firms. This is problematic because the studies

⁴ See [Bascha and Walz \(2001\)](#) for Germany, [Bengtsson and Lindström \(2000\)](#) for Sweden, [Cumming \(2000, 2001\)](#) for Canada, and [Hege et al. \(2003\)](#) for Europe.

critically depend on the details of the survey design and template. For example, as Kaplan and Strömberg (2003) demonstrate, securities with different names can implement identical allocations of cash flow and control rights (such as convertible preferred vs. senior common stock), while securities with the same name can differ substantially in their rights (e.g. standard vs. participating preferred stock).

In contrast to earlier studies, but similar to ours, contemporaneous work by Lerner and Schoar (2005) uses actual contracts in private equity investments in developing countries. We view their sample and paper as an interesting complement to ours. They find similar results in that contracts are significantly related to legal origin. While they do not focus on the experience effects that we consider, their results on legal origin are robust to including a dummy variable for US or UK based organization. Lerner and Schoar (2005) conclude that systematic differences in legal enforcement impose constraints on the type of contracts that can be written and that lack of contract enforcement may not be easily undone by private contracting arrangements that emphasize ownership.

There are at least three possible explanations as to why our results and conclusion appear to differ from theirs. First, legal differences, particularly, differences in enforcement, may be more of a constraint in developing countries. Our sample is taken largely from countries with good legal enforcement. At the same time, however, for the subsample of our companies from developing countries, the experienced VCs still implement US style contracts. Second, Lerner and Schoar primarily study private equity investments in more mature businesses rather than VC investments. It may be more difficult to contract around existing contracts and governance mechanisms in existing companies. This is consistent with discussions we have had with VC investors. Finally, their sample includes a substantial percentage of transactions in which the investors obtain majority control, making separate control and liquidation rights less important, if not irrelevant. Again, even in developing countries, we find that it is unusual for VCs to take majority stakes.

Botazzi et al. (2004) consider similar issues using survey data from a large sample of VC investments across Europe. They also find that downside protection in contracts is more typical in common law countries and countries with better legal protection. In addition, they find that investors provide more non-contractible support in those countries.

In a related paper, Cumming and Johan (2006) look at the contracts between VCs and their institutional investors around the world. They obtain a result similar to ours in that the legal experience of the VCs has an economically greater effect on the contracts than the legal regime of the country of the VC fund.

Our paper also complements earlier work on global venture capital activity. In a cross-country study, Jeng and Wells (2000) show that factors such as IPO activity, government policies toward start-ups, and labor market rigidities help explain differences in aggregate venture capital activity between countries. Similarly, Mayer et al. (2005) argue that country differences in the composition of investors who provide funds to VC firms (banks, insurance companies, pension funds, private corporations) result in different VC portfolio characteristics across countries with respect to stage, geography, and industry focus.

The paper proceeds as follows. In Section 2, we discuss the sample. In Section 3, we present our univariate analyses of the sample contracts and consider the (univariate) relation of those contracts to legal and institutional factors, as well as VC characteristics. In Section 4, we present our multivariate results. In Section 5, we relate the contractual terms to VC survival. In Section 6, we conclude.

2. Sample

2.1. Description

We analyze 145 investments in 107 companies in 23 countries by 70 different lead VCs. We obtained investments from two sources—directly from VCs whom we know who invest outside the US and indirectly from a limited partner (institutional investor) who invests in non-US VC partnerships. All of the VC firms were for profit, non-governmental entities. The majority of the VCs are institutionally funded partnerships. The remaining VCs are captive VC firms of corporations or financial institutions.

For each company and for each financing round for the company, we asked the VC to provide the

- (1) term sheet;
- (2) stock and security purchase agreements;
- (3) company's business plan; and
- (4) the VC's internal analysis of the investment.

The amount of information we obtained differs across investments and the different VCs who provided info.

Table 1 presents summary information.

Table 1A indicates that the sample is relatively recent; all but eight investment rounds were completed after 1997. In the analysis that follows, we compare the contracts in these investments to those in Kaplan and Strömberg (2003) who use a sample of US investments that is roughly two years older.

Table 1B presents the industry distribution of the portfolio companies in our sample. The greatest percentage of companies, 58%, is in software and Internet. Just over 10% of the companies are in each of hardware, telecommunications, and life sciences. The sample industry distribution is qualitatively similar to that for US VC investments over the same period.

Table 1C provides additional information about the investments. We have the first VC round for 89% of the companies and roughly 2/3 of the investments are early stage, meaning that the companies are quite young and have a limited operating history. The average investment is between \$6 and \$7 million with a median of just over \$3 million.

Table 1D organizes the observations by country and legal origin, and reports the number of financing rounds, number of companies, number of VCs, and country institutional characteristics. Investments from countries with common law, French law, German law, and Scandinavian law origins are well-represented. In addition, we have five investments from countries of socialist background. We also report the number of companies that reincorporated from and to the different countries.

2.2. Sample selection issues

In this section, we discuss potential selection issues concerning our sample. Our companies and financings are not a random sample in that we obtained the data from VC firms with whom we have a direct or indirect relationship.

It is possible that we have a bias toward the better investments of a particular VC. We think this is unlikely because the investments we obtained from the VCs we contacted directly included

Table 1

Summary information

Table 1A

Year of VC financing

	Pre-1998	1998	1999	2000	2001	Unknown
First financing round for co.	8	11	23	41	14	10
Financing rounds in sample	7	16	27	63	31	1

Table 1B

Industry distribution of companies

	Software & Internet	Hardware & High-tech	Telecom	Life Science	Other/Unknown
Companies	62	13	12	12	8
Fin. rounds	88	18	14	17	8

Table 1C

Other deal characteristics

	% First round inv	Firm age, mean (med.)	% Early stage deals	Financing committed, \$M
Earliest round we have for each company	88.9%	2.2 (1.0)	67.3%	6.2 (3.1)
All financing rounds we have	66.9%	2.5 (1.0)	65.5%	6.8 (3.4)
<i>N</i>	133	134	139	127

Table 1 (continued)

Table 1D

Portfolio company location and country data

Company's country of operations	No. of fin. rounds	No. of portf. comp' located	No. of comp's reincorp from/to	No. of lead VCs	Rule of law	Account std 1990	Eff. tax on options gains	No. IPOs avg. 1999–2000	Creditor protect. score	Minor. protect. score	Lex Mundi formalism score	Share repos unres-tricted.	GSZ trust, Portf. Co.	GSZ trust, by VC
US	0	0	0/10	13	10	71	0.40	847	1	5	2.60	Yes	−0.0410	–
Hong Kong	1	1	0/0	0	8.22	69	0.15	64	4	5	0.73	Yes	–	–
India	4	4	1/0	2	4.17	57	0	52	4	5	3.34	Yes	–	–
Ireland	7	3	0/0	1	7.8	–	0.44	6	1	4	2.63	No	0.0000	0.0000
Israel	15	7	3/0	4	4.82	64	0	28	4	3	3.30	No	–	–
Singapore	2	1	0/0	1	8.57	78	0.28	70	4	4	2.50	Yes	–	–
UK	10	9	1/2	9	8.57	78	0	293	4	5	2.58	Yes	−0.0665	−0.0873
<i>Common law</i>	39	25	5/15 ^a	30										
Belgium	5	4	0/0	3	10	61	0	18	2	0	2.73	No	0.0591	−0.1262
France	13	11	3/0	4	8.98	69	0.40	78	0	3	3.23	No	−0.0442	−0.1211
Greece	2	2	2/0	1	6.18	55	–	45	1	2	3.99	No	−0.0995	−0.2878
Luxembourg	1	1	0/1	0	10	–	0.53	16	–	–	3.56	–	–	–
Netherlands	5	2	0/5	2	10	64	0	18	2	2	3.07	No	0.0161	−0.0814
<i>French law</i>	26	20	5/6	10										
Austria	1	1	0/1	1	10	54	0.61	6	3	2	3.52	No	0.1259	−0.2207
Germany	14	10	0/0	6	9.23	62	0.56	160	3	1	3.51	No	0.0534	−0.1504
Korea	1	1	0/0	0	5.35	62	–	10	3	2	3.37	Yes	–	–
Switzerland	27	20	5/0	10	10	68	0	23	1	2	3.13	Yes	0.1215	–
<i>German law</i>	43	32	5/1	17										
Denmark	3	2	1/0	2	10	62	0.63	7	3	2	2.55	No	0.0806	0.0119
Finland	2	2	1/0	0	10	77	–	24	1	3	3.14	No	0.1848	0.1393
Iceland	1	1	1/0	0	10	–	0.10	9	–	–	4.13	No	–	–
Norway	3	1	1/0	1	10	74	0.63	18	2	4	2.95	No	0.2436	0.0317
Sweden	23	21	2/0	9	10	83	0.73	50	2	3	2.98	No	0.1259	0.3393

(continued on next page)

Table 1 (continued)

Table 1D

Portfolio company location and country data

Company's country of operations	No. of fin. rounds	No. of portf. comp' located	No. of comp's reincorp from/to	No. of lead VCs	Rule of law	Account std 1990	Eff. tax on options gains	No. IPOs avg. 1999–2000	Creditor protect. score	Minor. protect. score	Lex Mundi formal- ism score	Share repos unres- tricted.	GSZ trust, Portf. Co.	GSZ trust, by VC
<i>Scand. law</i>	32	27	5/0	12										
Hungary	2	1	0/0	0	–	–	0.61	7	–	–	3.42	–	–0.2997	–
Czech Rep.	1	1	1/0	0	–	–	–	–	–	–	4.03	–	–0.3663	–
China	2	1	1/0	0	–	–	–	–	–	–	3.41	–	–0.7934	–
<i>Socialist background</i>	5	3	2/0	0										
<i>Total</i>	145	107	22/22											

Notes. Summary information for 145 investments in 107 portfolio companies from 18 countries by 69 different lead VCs between 1992 and 2001. 'Effective tax rate on option gains' includes social security tax, when applicable, and is calculated based on Ernst and Young (2000a, 2000b), using rules applicable on 1/1/2000. Information on legal origin, 'Rule of law,' 'Accounting standards,' 'Creditor protection,' and 'Minority protection' ('Anti-director rights') are from La Porta et al. (1997). Number of IPOs is the average number of IPOs in the country 1999 and 2000 from FIBV (<http://www.fibv.com>). Data on share repurchase legislation is taken from Sabri (2003). 'Share repurchases unrestricted' refers to countries where corporations are allowed to buy back more than 10% of their shares. 'Lex Mundi formalism score' is a measure of procedural formalism in connection with collecting a bounced check, taken from Djankov et al. (2002). The 'GSZ trust' scores are taken from Guiso et al. (2004). 'GSZ trust of portfolio company' measures the median level of trust that citizens of other countries have for citizens of the country of the portfolio company. 'GSZ trust by VC' measures the median level of trust that citizens in the country of the VC have for citizens in other countries. '% First round inv.' is the fraction of first round VC investments and '% Early stage deals' is the fraction of seed and start-up investments in the sample. 'Firm age' is measured at the time of the investment round. 'Financing committed' is the aggregate amount of VC financing committed in the round.

^a Includes one company reincorporated in Bahamas and two in Bermuda.

most or all of their most recent deals. The investments we obtained with the limited partner's help were not selected by the VCs. They were deals that the VCs had given the limited partner in connection with normal reporting to and due diligence by the limited partner. (They also were not co-investment deals.) Even if some performance bias exists, we do not think it is likely to affect our results because we do not attempt to measure performance of individual investments. Rather, we characterize what contracts look like across different countries.

The more serious potential bias is that we have selected the VC firms. It is possible that the average VC in our sample is different from the average VC in the countries we study. If this is so, then our sample averages may be inaccurate. However, there is, again, no reason to believe that our results on cross-sectional differences across legal regimes and types of VCs are biased.

While we have discussed the more likely biases and do not believe there are any obvious red flags, we acknowledge that the sample is selected and it is difficult to completely rule out any bias.

3. Contract characteristics: univariate analyses

In this section, we present univariate analyses of the sample contracts and consider the (univariate) relation of those contracts to legal and institutional factors, as well as VC characteristics.

3.1. *Non-US versus US financings*

The first two columns of [Table 2](#) describe the contracts in our sample and compare them to the US contracts in [Kaplan and Strömberg \(2003\)](#). There is much more variation in the types of securities used outside the US. Whereas over 95% of the US financings employed some type of convertible preferred stock, fewer than 54% of the non-US financings employed convertible preferred. Ordinary common stock is more typical outside the US, used in almost 28% of financings versus fewer than 1% in the US.⁵ Financings outside the US also make use of senior common stock 14.5% of the time. Although called common stock, senior common stock resembles convertible preferred in that it always has a liquidation preference senior to ordinary common.

[Kaplan and Strömberg \(2003\)](#) show that VC financings separately allocate cash flow rights, board rights, voting rights, liquidation rights, and other control rights. Panels B to E of [Table 2](#) compare these rights in the non-US sample to those in the US sample. It is important to point out here that we are very careful in measuring these rights. As we show in some detail in [Section 4](#) below, VCs can implement the same rights using different securities and different contractual terms. In some cases, previous researchers have failed to understand this distinction. All of our analyses reflect the actual rights that the securities and contracts implement.

[Kaplan and Strömberg \(2003\)](#) find that VCs use anti-dilution rights, contingencies or milestones, and vesting in order to increase the sensitivity of the founder's cash flow rights to performance, consistent with principal–agent theories. Panel B compares incentive mechanisms that affect founder cash flow rights. VCs investing outside the US have a smaller fully diluted ownership percentage than VCs in the US (36.3 versus 46.7%). This difference is not driven by investment round. We also find that the incentive mechanisms—anti-dilution rights (56 vs. 94%), funding milestones (39 vs. 53%), and founder vesting (37 vs. 44%)—are all less typical outside the US.

⁵ [Cumming \(2001\)](#) and [Lerner and Schoar \(2005\)](#) obtain qualitatively similar results, i.e., a lesser use of convertible preferred and a greater use of common stock.

Table 2
VC contract characteristics across legal regimes

Contract characteristics	Compared to US		Across legal regime				
	This. sample	US sample ^a	Common	French	German	Scandi- navian	Socialist background
<i>A. Main VC security:</i>							
Convertible preferred, %	53.8	95.2	66.7	53.8	48.8	37.5	100.0*
Ordinary common stock, %	27.6	0.5	7.7	19.2	37.2	50.0	0.0**
Senior common stock, %	14.5	1.0	25.6	19.2	11.6	3.1	0.0
Convertible debt, %	2.0	1.9	0.0	3.8	0.0	6.2	0.0
Other security, %	2.0	1.0	0.0	3.8	2.3	3.1	0.0
Sample size	145	213	39	26	43	32	5
<i>B. Residual cash flow rights and incentive mechanisms:</i>							
Pre-money valuation \$million,	21.0	–	34.6	10.7	17.2	15.2	34.4
mean (median)	(11.9)		(14.5)	(7.2)	(13.3)	(5.7)	(33.2)***
Sample size	130		36	25	41	24	4
VC equity, milestones met, %	36.3	46.7	37.3	35.7	37.0	34.4	35.0
and full vesting, mean (med.), %	(34.0)	(47.3)	(35.7)	(33.0)	(34.0)	(34.2)	(31.0)
Sample size	130	212	37	25	39	24	5
Founder stock vests over time, %	37.20	43.6	50.0	20.0	31.6	46.7	50.0
Sample size	121	212	24	25	38	30	4
Equity or funding milestones, %	38.90	53.0	29.6	41.7	42.5	36.7	60.0
Sample size	126	212	27	24	40	30	5
VC anti-dilution protection, %	56.40	94.60	88.5	73.9	50.0	25.8	50.0***
Sample size	124	213	26	23	40	31	4
<i>C. Size of VC liquidation preference:</i>							
Less than invested funds, %	34.10	3.00	10.7	25.0	39.0	59.4	0.0**
Equal to invested funds, %	17.80	28.70	39.3	8.3	17.1	9.4	0.0**
More than invested funds, %	48.10	68.40	50.0	66.7	43.9	31.2	100.0**
Cumulative dividends, %	20.60	43.8	7.8	20.8	17.1	29.0	75.0
Participating preferred, % (or equivalent)	34.60	48.0	48.2	37.5	29.3	29.0	25.0
Other “booster” (e.g. 3x), %	15.10	2.4	3.8	20.8	19.5	6.4	75.0
Sample size	129	213	28	24	41	32	4

Table 2 (continued)

Contract characteristics	Compared to US		Across legal regime				
	This. sample	US sample ^a	Common	French	German	Scandi- navian	Socialist background
<i>D. VC exit provisions:</i>							
VC has redemption rights, %	34.5	71.8	41.0	34.6	30.2	28.1	60.0
Other senior exit mechanism, %	50.0	–	66.7	63.6	45.7	28.6	75.0
No senior exit mechanism, %	36.6	28.2	25.6	26.9	39.5	56.2	20.0
Sample size	145	213	39	26	43	32	5
<i>E. Board control</i>							
No. board seats, mean (med)	5.7 (5.0)	6.0 (6.0)	6.0 (6.3)	5.8 (5.0)	4.8 (5.0)	5.7 (5.0)	6.5 (7.0)**
% VC board seats	37.0 (40.0)	41.4 (40.0)	32.0 (33.3)	40.4 (40.0)	42.2 (33.3)	34.3 (40.0)	38.6 (34.3)
Degree of board control:							
Founder controls board, %	27.6	13.9	18.0	46.2	18.6	34.4	40.0
Neither/state-contingent	60.0	60.7	71.8	42.3	65.1	56.2	40.0
VC controls board	12.4	25.4	10.3	11.5	16.3	9.4	20.0
Sample size	145	201	39	26	43	32	5

Notes. Contract characteristics for 145 investments in 107 portfolio companies from 18 countries by 69 different lead VCs between 1992 and 2001. Except where noted, the numbers in the table denotes the fraction of investments in the sample exhibiting a certain contract characteristic. US sample statistics are taken from Kaplan and Strömberg (2003). 'Legal regime' is taken from La Porta et al. (1997). Contractual provisions are explained in the text.

^a Kaplan and Strömberg (2003).

* Contract characteristics differ significantly across sub-samples the 10% levels.

** Idem, 5%.

*** Idem, 1%.

Kaplan and Strömberg (2003) also show that the allocation of liquidation rights is an important feature of US VC contracts. In the US, VC securities are almost always senior (97% of financings) to common stock in liquidation, and for an amount equal to or greater than the amount invested.⁶ The seniority of the VC claim is a standard prediction of many financial contracting theories, such as classical moral hazard theories (Holmström, 1979), signaling and screening theories (Ross, 1977), as well as the stealing theories of debt (Hart and Moore, 1998). Panel C indicates that VC liquidation preferences are smaller in non-US financings. In 34% of the non-US financings, the VC security has a liquidation preference less than the amount invested. It also is less common for non-US financings to have a liquidation preference that exceeds the amount invested (48 vs. 68%).

Panel D compares the VC's ability to force the liquidation of its investment. Redemption rights give the VCs the ability to put their shares back to the company at some future date. When used, the rights typically provide bargaining power to force a sale. Redemption rights are present in 72% of the US financings and only 34% of the non-US financings. VCs can obtain similar bargaining power by including drag-along rights together with seniority.⁷ Drag-along rights force founders to sell their shares if the VCs decide to sell the company. When drag-along rights and other senior exit mechanisms are combined with redemption rights, we find that the VCs can force an exit in almost 64% of the non-US financings.

As predicted by control theories (Aghion and Bolton, 1992 and Dessein, 2005), Kaplan and Strömberg (2003) show that US contracts allocate substantial control rights such as board seats and voting rights to the VC. Panel E shows that VCs in non-US financings are less likely to obtain board control of the portfolio company (12 vs. 25%), despite obtaining a similar percentage of board seats.

Overall, then, the first two columns of Table 2 suggest that the VC contracts outside the US have weaker rights of all types than those in the US.

3.2. *Relation to legal origin*

A substantial literature studies how differences in legal origins and institutions affect various aspects of financial market activity across countries.⁸ Countries with French law origins and weaker outside investor protection tend to have smaller and less liquid capital markets, more concentrated corporate ownership, lower corporate dividends, and lower valuations. Some papers also have attempted to link such factors specifically to the extent of VC activity.⁹

The legal system may affect the design of financial contracts in such a way that certain contractual provisions may be infeasible or more costly to enforce. In addition, the contracts may need to incorporate new protective mechanisms to make up for the legal deficiencies.

We now consider how the non-US contracts in our sample vary with the legal origin of the country in which the portfolio company is located. The last five columns of Table 2 classify the non-US contracts in our sample into one of five different legal regimes—common law, French law, German law, Scandinavian law, and socialist background. Except for socialist background

⁶ This is not a period specific result. Recent surveys, such as those by Fenwick and West (2004), show that US VC securities are still practically always senior to common stock. In addition, VCs investing in later rounds often receive securities that are senior to VC securities issued in earlier rounds.

⁷ For an analysis of drag-along rights, see Chemla et al. (in press).

⁸ See La Porta et al. (1997, 1998, 2000), Demirgüç-Kunt and Maksimovic (1998).

⁹ See Black and Gilson (1998), Jeng and Wells (2000), and Mayer et al. (2005).

with only five contracts, we have at least 26 contracts in the other four legal regimes. In our discussion, we generally will not refer to the results for the socialist background countries because of the small number of observations.

Table 2 shows that for most provisions, common law country contracts tend to resemble US style contracts more than those in countries with other legal origins. Common law country deals tend to make greater use of convertible preferred and less use of ordinary common stock while Scandinavian law country deals tend to do the opposite. Common law country contracts

- (1) include more anti-dilution protection;
- (2) make greater use of vesting provisions;
- (3) are more likely to have a liquidation preference at least equal to the amount invested;
- (4) are more likely to have some type of exit mechanism; and
- (5) are the least likely to keep the founder in control of the board.

The one sense in which common law country contracts are less like those in the US is that the common law country deals are the least likely to use milestones.¹⁰

Overall, these results suggest that legal origins/legal regimes affect the nature and types of contracts that are written. This is consistent with the evidence in the La Porta et al. papers that countries differ in their corporate law and in the ability to write and enforce contracts. To this point, our tests and our results also are similar to those in Lerner and Schoar (2005).

3.3. Relation to legal, tax, and accounting institutions

The results in the previous section indicate that legal origins matter for contracts, but do not indicate why. In this section, we consider whether nine specific measures of differences in legal rules, tax rules, accounting rules, and market institutions drive those results.

First, we consider the rule of law index used by La Porta et al. (1997). The index is a measure of the quality of a country's legal and enforcement system.¹¹ The first column of Table 3 indicates that US style contracts are negatively correlated with the rule of law measure. Convertible preferred, anti-dilution rights, liquidation preferences, and exit provisions are more common in countries with low rule of law. One might interpret this result as showing that US style contracts are more appropriate when rule of law is low. There are two caveats to this interpretation. First, US contracts make the highest use of control and liquidation provisions despite the US having the highest rule of law. Second, the results are largely driven by the fact that non-US contracts are more typical in Scandinavian countries that have a high rule of law.

Apart from the legal system, corporate governance also may be affected by a country's accounting system (see Bushman and Smith, 2001). This should be more important for contingencies or milestones that use accounting-based performance measures. Under a less reliable accounting system, such milestones might be less feasible, leading to fewer contingencies. In the second column of Table 3, we consider how the contracts in our sample vary with the accounting standards of the company's country using the measure of accounting standards from

¹⁰ It could be that the *types* of milestones used differ across legal regimes or investors rather than the frequency of milestones. Unfortunately, the relatively small number of observations does not allow a more detailed classification of milestones such as the one in Kaplan and Strömberg (2003).

¹¹ We assume that this measure (and other various measures we use), calculated in La Porta et al. (1997), are still valid for our slightly later sample period.

Table 3
VC contracts and other institutional characteristics

Contract characteristics:	Rule of law		Accounting standards		Creditor protection		Minority Protection		Share repos unrestricted		Favorable options tax		IPO activity		Lex Mundi legal formalism		GSZ trust, portfolio comp.	
	High	Low	High	Low	Low	High	Low	High	Yes	No	Yes	No	Low	High	High	Low	High	Low
<i>A. Main VC security:</i>																		
Convertible pref.	43.7	60.9**	40.7	55.8*	49.4	56.9	51.7	52.5	44.4	56.4	53.7	47.1	61.6	43.4**	58.1	47.5	42.1	57.8*
Ordinary common	39.4	17.4***	40.7	23.4**	36.8	15.7***	29.3	28.8	33.3	26.6	20.9	38.2**	20.6	36.2**	25.6	30.5	45.6	18.8***
Senior common	12.7	17.4	9.3	19.5	8.1	25.5***	17.2	12.5	22.2	10.6*	25.4	5.9***	16.4	13.0	12.8	17.0	8.8	17.2
Convertible debt	2.8	1.4	5.6	0.0	3.5	0.0	0.0	3.8	0.0	3.2	0.0	4.4	0.0	4.4	1.2	3.4	3.5	1.6
Other security	1.41	2.9	3.7	1.3	2.3	2.0	1.7	2.5	0.0	3.2	0.0	4.4	1.4	2.9	2.3	1.7	0.0	4.7
Sample size	71	69	54	77	87	51	58	80	45	94	67	68	73	69	86	59	57	64
<i>B. Residual cash flow rights and incentive mechanisms:</i>																		
Pre-money, \$m,	13.9	26.9**	17.8	19.3*	27.4	16.9***	16.2	24.3	18.9	21.6	19.3	22.8	22.8	19.3	19.1	24.0	13.3	24.5**
mean, median	8.7	13.9	7.8	13.4	17.5	8.3	12.7	9.9	10.7	11.8	10.9	11.0	11.0	10.9	12.1	10.1	7.9	13.9
No. of obs	62	64	45	72	46	78	54	70	42	83	64	59	70	58	81	49	48	60
VC equity %	34.2	38.4	36.0	36.0	35.8	36.8	35.6	36.6	36.3	36.5	36.8	35.2	34.6	38.3	37.6	34.2	35.5	36.7
No. of obs	61	64	44	72	76	47	53	70	41	83	63	59	70	57	80	50	47	59
Fdr time vesting	38.8	34.0	41.7	32.8	35.4	38.9	28.8	42.9	46.2	32.5	41.8	31.6	37.9	35.0	34.7	40.8	37.7	32.7
No. of obs.	67	50	48	64	79	36	52	63	39	77	55	57	58	60	72	49	53	52
Equity / funding milestones	35.8	40.7	40.8	36.9	37.0	39.5	41.5	34.8	43.9	34.2	33.9	41.0	39.3	38.7	42.7	33.3	37.0	46.4
No. of obs.	67	54	49	65	81	38	53	66	41	79	56	61	61	62	75	51	54	26
VC anti-dilution protection	43.5	74.5***	44.7	60.0	50.6	68.6*	54.7	56.9	57.5	55.7	65.4	42.6**	68.2	42.4***	61.6	49.0	33.9	71.2***
Sample size	69	51	47	65	83	35	53	65	40	79	55	61	63	59	73	51	56	52

Table 3 (continued)

Contract characteristics:	Rule of law		Accounting standards		Creditor protection		Minority Protection		Share repos unrestricted		Favorable options tax		IPO activity		Lex Mundi legal formalism		GSZ trust, portfolio comp.	
	High	Low	High	Low	Low	High	Low	High	Yes	No	Yes	No	Low	High	High	Low	High	Low
<i>C. Liquidation pref.:</i>																		
< invested funds	44.3	23.0*	51.0	26.9*	43.4	20.0	30.9	39.7	34.9	35.8	24.6	47.6	25.4	43.8*	30.7	38.9	49.1	25.4***
= invested funds	14.3	23.0*	9.8	26.9*	10.8	35.0	18.2	19.1	27.9	13.6	31.6	7.9	22.2	14.1*	21.3	13.0	15.8	10.9***
> invested funds	41.4	52.7*	39.2	46.3*	45.8	45.0	50.9	41.2	37.2	50.6	43.9	44.4	52.4	42.2*	48.0	48.2	35.1	63.6***
Cumul. dividends	22.2	13.2	20.4	18.2	21.7	10.8	18.5	18.2	12.2	22.5	16.4	22.6	19.4	21.0	22.7	17.7	25.0	17.0
Participating pref	30.4	40.7	32.0	30.3	32.5	36.8	33.3	34.3	31.0	36.2	32.1	30.6	37.1	31.8	29.3	42.3	26.8	42.6*
Other (e.g. 3x liquidation pref.)	13.0	13.2	6.1	19.7**	13.2	13.5	22.2	6.1***	12.2	13.8	14.6	12.9	17.7	11.3	18.7	9.8	10.7	20.8
Sample size	70	55	51	67	83	40	55	55	43	81	57	63	63	64	75	44	57	55
<i>D. Exit provisions:</i>																		
Redemption rights	23.9	43.5**	31.5	35.1	26.4	45.1**	32.8	33.8	35.1	31.1	31.3	30.9	35.6	33.3	39.5	27.1	22.8	39.1*
Other senior exit	41.9	59.1*	38.1	54.2	43.8	61.3	55.3	43.9	51.4	47.1	52.9	48.1	51.8	48.2	48.5	52.4	38.5	65.9***
No senior exit	46.5	27.5**	46.3	32.5	46.0	23.5***	32.8	41.2	35.6	38.3	32.8	44.1	32.9	40.6	33.7	40.6	50.1	26.6***
Sample size	71	69	54	77	87	51	58	80	45	94	67	68	73	69	86	59	57	64
<i>E. Board control</i>																		
No. seats, total,	5.4	6.0	5.8	5.2	5.7	5.6	5.0	6.1	5.3	5.8	5.4	5.9	5.7	5.6	5.5	5.9	5.2	6.0
mean, median	5.0	6.0**	5.0	5.0**	5.0	6.0	5.0	6.0***	5.0	5.3	5.0	6.0*	5.0	5.5	5.0	6.0	5.0	6.0**
% VC board seats,	37.1	37.4	34.3	39.1	38.0	34.9	41.2	34.4	35.6	38.0	36.3	38.1	37.5	36.6	39.8	34.2	37.5	38.9
mean, median	40.0	38.8	35.4	40.0	40.0	33.3	40.0	37.5	33.3	40.0	33.3	40.0	40.0	33.3	40.0	33.3	36.7	38.8

(continued on next page)

Table 3 (continued)

Contract characteristics:	Rule of law		Accounting standards		Creditor protection		Minority Protection		Share repos unrestricted		Favorable options tax		IPO activity		Lex Mundi legal formalism		GSZ trust, portfolio comp.	
	High	Low	High	Low	Low	High	Low	High	Yes	No	Yes	No	Low	High	High	Low	High	Low
Degree of board control:																		
Founder control	28.3	32.6	36.6	28.0	28.4	33.3	28.2	31.0	21.9	33.3	29.8	34.7	30.0	33.3	27.6	35.6	20.9	40.0
Neither / state-cont.	54.7	50.0	51.2	50.0	53.7	50.0	51.3	53.4	62.5	48.5	51.1	49.0	50.0	52.9	50.0	53.3	60.5	44.4
VC controls	17.0	17.4	12.2	22.0	17.9	16.7	20.5	15.5	15.6	18.2	19.2	16.3	20.0	13.7	22.4	11.1	18.6	15.6
Sample size	53	46	41	50	67	30	39	58	32	66	49	47	50	51	58	45	43	45

Notes. Contract characteristics for 145 investments in 107 portfolio companies from 18 countries by 69 different lead VCs between 1992 and 2001. ‘Rule of law, High’ refers to the sub-sample of investments with a ‘Rule of law’ index of 10. ‘Accounting standards, High’ refers to the sub-sample of investments with an ‘Accounting standards’ index of 69 or higher. ‘Creditor protection, High’ refers to the sub-sample of investments with a ‘Creditor protection’ index of 3 or higher. ‘Minority protection, High’ refers to the sub-sample of investments with a ‘Minority protection’ index of 3 or higher. ‘Favorable options tax’ refers to the sub-sample of investments in countries where there is no tax on employee stock options upon exercise. ‘Share repos unrestricted’ refers to the sub-sample of investments in countries where corporations are allowed to buy back more than 10% of their shares. ‘Per cap. VC invest.’ refers to the sub-sample of investments in countries with VC investment in 1999 above \$41 per capita. ‘IPO activity, High’ refers to the sub-sample of investments in countries with more than 30 IPO’s per year on average 1999–2000. ‘Lex Mundi legal formalism high’ refers to the sub-sample of investments in countries with a legal formalism score above 3. ‘GSZ trust of portfolio company’ measures the median level of trust that citizens of other countries have for citizens of the country of the portfolio company. Tests for degree of liquidation preference and degree of board control are joint across the three degrees of liquidation preference / board control, using a Kruskal–Wallis test. All other tests refer to differences in means tests, using a rank-sum test.

* Contractual provisions are significantly different across sub-samples at the 10% levels.

** Idem, 5%.

*** Idem, 1%.

La Porta et al. (1997). The column indicates that the contracts are qualitatively identical across countries with strong and poor accounting standards.¹²

Third, contracts may be affected by the strength of a country's bankruptcy laws and creditor protection. We use the index of creditor protection calculated in La Porta et al. (1997). One might expect creditor protection to have an effect on liquidation rights. On the other hand, the creditor protection index reflects the efficacy of bankruptcy laws which may not be relevant for VC investments that consist largely of equity securities. Column 3 of Table 3 indicates that contracts in high creditor protection countries have greater liquidation rights and make greater use of exit provisions. Again, the caveat to this result is that US contracts have strong liquidation rights, but the US has the lowest creditor protection score.

Next, we consider differences in minority shareholder protection. We use the index of shareholder protection calculated in La Porta et al. (1997). To the extent that minority shareholders are not protected, it may be more important for the VCs to get explicit control rights. On the other hand, this measure reflects the protection of minority shareholders of publicly traded companies and, therefore, may not be so relevant for investments in private companies. Column 4 of Table 3 indicates that there are no substantive differences across low and high minority protection countries.

Fifth, we consider restrictions on the ability of corporations to buy back their own shares. Such restrictions are potentially important in that they might make it more difficult to implement redemption and vesting provisions that typically require the company to repurchase shares. We distinguish between countries in which companies can or cannot repurchase more than ten percent of their shares (see Sabri, 2003). Column 5 of Table 3 indicates that differences in repurchase rules are unrelated to the contract provisions in our sample.

Sixth, we consider the tax environment that firms face. One area where taxation differences might play an important role in contract design is the tax treatment of equity-based compensation (including employee stock options). The European Venture Capital Association (see EVCA, 2001) argues that the heavy taxation of stock option grants in Europe hampers the ability of investors to provide incentives to portfolio company management. The EVCA's lobbying activity has recently led several countries to change their tax rules for employee stock options to more closely resemble the US treatment.¹³

We distinguish between countries with favorable and unfavorable taxation of stock options. We code as unfavorable those tax regimes that tax stock option gains at vesting (rather than at exercise or sale) or tax option gains at marginal tax rates that exceed 40%. We might expect to see less incentive compensation and less use of vesting in countries with unfavorable taxation. Column of Table 3 indicates that the only significant difference across favorable and unfavorable tax regimes is the use of anti-dilution provisions that are not particularly related to tax. Vesting provisions are more common in favorable tax regimes, but not significantly so.

We then consider the liquidity of the stock markets in the portfolio company countries.

Black and Gilson (1998) argue that an active venture capital market relies heavily on the VCs' ability to exit their portfolio investments through a public offering. In support of this argument, Jeng and Wells (2000) find that VC investing is higher in countries with greater numbers and values of initial public offerings of stock (IPOs). We distinguish IPO activity by whether the

¹² There are reasons to believe that the accounting system is more important for public firms than for private, VC-backed firms. The VC can probably observe firm performance at least as well as an external auditor, and may be able to enforce contingent contracts without relying on the verifiability provided by external auditors.

¹³ Also, see Keuschnigg and Nielsen (2004) for a discussion of the impact of capital gains taxation on VC activity.

country had more than thirty IPOs in 1999.¹⁴ We might expect the strength of exit provisions to be related to this measure. In column 7 of Table 3, the only significant difference across IPO activity is that ordinary common is more prevalent in countries with high IPO activity.

Next, we consider a measure of the efficiency of the legal system. We use the ‘Lex Mundi formalism score’ from Djankov et al. (2002) that measures the amount of time it takes the legal system to deal with collecting on a bounced check. One might expect that VCs would require more control and liquidation rights in regimes with less efficient legal systems. There is some modest support for this. Liquidation rights and exit provisions are somewhat stronger in more formal (less efficient) legal systems. It is interesting to note that this result in our sample differs from a similar one in Lerner and Schoar (2005). They find that common stock is more prevalent in less efficient legal systems.

Finally, we consider a measure of trust for the portfolio company. Trust may be important in an entrepreneur’s decision to accept the imposition of control rights (as well as a VC’s decision to impose control rights). We rely on measures of trust created by Guiso et al. (2004) and reported in their Table 2. “Guiso et al. (2004) trust of portfolio company” measures the median level of trust that citizens of other countries have for citizens of the country of the portfolio company. Because the Guiso et al. (2004) surveys do not sample all countries, we only have the trust measure for a subset of our data. The last column of Table 3 indicates that investments in countries deemed more trustworthy have less antidilution protection, less liquidation preference, weaker exit rights.

Overall, then, the direct measures of legal, tax, other institutions, and trust that we have explored are moderately successful although not uniformly so in explaining the previous results on the relation of the contracts to legal origin.

3.4. Implementation of US style contracts outside the US

The modest results in the previous section suggest that legal, tax, and institutional differences are only part of the story in explaining the observed distribution of contracts. In this section, we obtain support for this conjecture by finding that some VCs implement US style contracts in all of the countries in which they invest. Table 4 summarizes this discussion.

First, even if convertible preferred stock is disfavored in corporate law, it is generally possible to use senior common stock or combinations of common and non-convertible preferred stock or debt to mimic the control and liquidation rights of convertible preferred.

Second, even if the legal regime makes it difficult to impose standard anti-dilution provisions, it is generally possible to mimic those provisions using warrants that are exercisable conditional on a subsequent financing at a lower valuation.

Third, even if vesting and other contingencies are hampered by unfavorable tax laws, it is generally possible to use put options on the entrepreneur’s stock that are exercisable by the VC if the entrepreneur leaves or misbehaves. In countries where additional equity for the entrepreneur is taxed as compensation, it is possible to provide contingent equity by making the valuation or financing contingent rather than the entrepreneur’s equity stake.

Fourth, it seems unlikely that legal differences could explain the absence of liquidation preference. VCs can use seniority clauses in all of the countries in our sample.

Fifth, even if redemption rights are infeasible due to restrictions on a company buying back its own stock, the VC can mimic these rights by combining a senior claim with drag-along rights.

¹⁴ While this is admittedly a coarse measure of IPO activity, our results are qualitatively identical using other measures, including the value of IPOs and both the number and value normalized by population or GDP.

Table 4
Implementation of US style contracts outside the US

US contractual feature	Purpose and potential institutional obstacles	Alternative implementation
Convertible preferred stock	<i>Purpose:</i> Allocates cash-flow and control rights between VC and entrepreneur. <i>Problem:</i> Convertible preferred stock disfavored in corporate law.	Common + Straight preferred stock. Common + Zero-coupon debt. Senior common stock with liquidation preference. Convertible debt.
<i>Anti-dilution rights</i> (Full ratchet): Upon a subsequent financing at a valuation lower than the original financing, the conversion price of the original convertible preferred stock is adjusted downward to the issuance price of the dilutive financing. Written into the articles of incorporation.	<i>Purpose:</i> Protect VC from subsequent dilutive financing rounds. <i>Problem:</i> Various, restrictions e.g.: Convertible preferred stock disfavored in corporate law; shareholder vote needed for adjustment to conversion price.	<i>Anti-dilution warrants:</i> Warrants attached to the VC's stock can be exercised by an investor in case of a capital increase or in case of an issuance of stock to finance the acquisition of another company, given that the price per share involved is below the original subscription price. The number of shares to be acquired this way will be such that the resulting price obtained by the investors after these transactions is equal to the original subscription price.
<i>Vesting Provisions:</i> Company will have a repurchase option to buy back at cost a portion of the shares of common stock held by a certain shareholder (founder) if such shareholder's employment with the company ends before some specified date. A portion will be released each month from the repurchase option based upon continued employment.	<i>Purpose:</i> Make it costly for founder to leave firm prematurely. Increase pay-performance sensitivity. <i>Problem:</i> Vesting of shares may be treated as income, and as a result vested shares are taxed at the ordinary income tax rate upon the vesting date.	<i>"Good leaver" and "bad leaver" provisions:</i> (example) "Good leavers" (i.e. founder employees voluntarily terminating their employment contract with the company) shall offer their shares in the company to the other shareholders at a price incorporating a considerable penalty. "Bad leavers" (i.e. founders being terminated as a result of material breach by the founder employees of the applicable terms and conditions of their employment contract with the company) shall offer their shares to the other shareholders of the company at a price corresponding to the valuation of the last financing less 25%. Agreement will terminate upon an IPO or a sale of the company."
<i>Equity milestones:</i> Upon company reaching a performance milestone, additional shares will be issued to founders.	<i>Purpose:</i> Increase pay-performance sensitivity. <i>Problem:</i> Granting shares to founders treated as income, and granted shares taxed at the ordinary income tax rate.	<i>Contingent valuations:</i> Upon company reaching a performance milestone, investors will put in additional funds in the company.

(continued on next page)

Table 4 (continued)

US contractual feature	Purpose and potential institutional obstacles	Alternative implementation
<i>Redemption provisions:</i> (example) At the election of the holders of a majority of the preferred, the Company shall redeem the outstanding preferred shares in two equal installments beginning on the fifth anniversary of the prior preferred closing date.	<i>Purpose:</i> To be able to exit an unsuccessful investment. <i>Problem:</i> Share repurchases restricted by corporate law.	<i>Drag-along provision:</i> After five years, if investors offer to sell their shares to a 3rd party, it may require all the other shareholders also to sell or dispose of their shares on a pro rata basis and on the same terms to the 3rd party. <i>Other exit provision:</i> If listing does not occur in five years, the parties agree that upon request of the majority of investors, the company shall instruct an investment bank to find a buyer for all of the company's shares.

This effectively gives the VC the right to liquidate because drag-along rights force all shareholders to sell when the senior claimant decides to sell even if the senior claimant gets all or most of the proceeds.

Sixth, if the local legal, tax, and institutional rules become too restrictive, it is generally possible to reincorporate the company in a country that is less restrictive. This may be particularly easy to implement in younger companies. As column 3 of Table 1 shows, 21% of the companies in our sample do reincorporate in another country. There is a net flow of companies from countries of German and Scandinavian legal origin to countries of common law origin.

These six examples indicate that while it may not be easy or obvious how to adapt a particular contract, with enough effort and legal expertise, it appears possible to replicate most US style contractual mechanisms elsewhere. As noted earlier, we incorporated these and any other adaptations in our coding of the various rights in our analyses.

3.5. Contracts and lead VC characteristics

The previous section describes how some VCs are able to get around institutional constraints to implement US style contracts. In this section, we examine the characteristics of those VCs who do so. For each financing, we identify the lead VC as the VC who invests the greatest amount in that financing. The lead VC typically plays the greatest role in negotiating the contract with the entrepreneur.

We consider three measures of lead VC experience and sophistication because experience may affect the contracts a VC writes. First, we distinguish between smaller and larger VCs, using a breakpoint of (the sample median of) \$200 million under management. Second, we distinguish between younger and older VC firms, using a breakpoint of (the sample median age of) four years. Third, we classify VCs according to their familiarity with the US. 21 financings were led by VCs based in the US; 87 financings were led by VCs who had previously syndicated (or invested) with US VCs; and 37 financings were led by VCs with no US experience. We determined if the VC had US experience by examining the Venture Economics financing database, the VentureOne financing database, and the individual VC websites.

Table 5 indicates that US style provisions are positively and significantly correlated with all three VC experience variables. Larger and older VCs, and VCs with US experience are all more likely to use convertible or participating preferred, stronger liquidation preferences, and stronger exit provisions. Larger and older VCs own a larger percentage of fully diluted equity. Older VCs and VCs with US experience also use more time vesting, have stronger anti-dilution protection, and are less likely to leave the founder with board control. It is only in the use of milestones where there are no clear differences across VC experience.

The strong results for VC experience contrast with the modest results for legal, tax, and accounting institutions. The multivariate analysis in Section 4 will address the relative importance of these factors.

We also consider a measure of how trusting the lead VC's country is because culture and social norms may affect the contracts a VC writes. Again, we rely on a measure of trust created by Guiso et al. (2004). Guiso et al. base their measure on the median level of trust that citizens in a country have for citizens in other countries. Our variable, "Lead VC Trusting," equals one if the level of trust in the VC's country is above the median of all countries. Again, because Guiso et al. do not cover all countries, we lose a number of observations.

The last columns of Table 5 show that VCs from more trusting countries are significantly more likely to use ordinary common stock and significantly less likely to have antidilution protection, liquidation preferences, milestones, and a senior exit mechanism. In other words, VCs from more trusting countries appear to write weaker contracts. As with the VC experience variables, the VC trust variable is more consistently related to the contracts than the legal, tax, and institutional variables.

3.6. Relation to financing round characteristics

It also is possible that the contractual characteristics vary with other characteristics of the financing round. Accordingly, our final univariate analysis considers how contractual characteristics vary with the size of the investment, whether the investment is the first by a VC, and the age of the portfolio company.

Column 1 of Table 6 shows that larger financing rounds (greater than \$3 million) tend to use more US style contracts. Larger rounds are less likely to use ordinary common, have stronger liquidation preferences, stronger exit provisions, and more VC board control. Not surprisingly, larger rounds also are associated with greater VC percentage ownership.

Column 2 of Table 6 indicates that subsequent VC rounds also make somewhat greater use of US style contracts. Subsequent VC rounds are less likely to use ordinary common, have marginally stronger liquidation preferences, and more VC board control. VC percentage ownership also increases in later rounds.

Finally, column 3 of Table 6 shows that younger portfolio companies are somewhat more likely to have US style contracts. They are more likely to use convertible preferred, have stronger liquidation preferences and stronger exit provisions.

4. Multivariate results

At this point, we have found that VC contracts are related to a country's legal origin and to measures of VC experience or sophistication. The contracts also are related to deal characteristics and legal, accounting and institutional features. In this section, we assess the relative importance of these different variables using multiple regression analyses.

Table 5
VC contract characteristics and Lead VC characteristics

	Lead VC funds		Lead VC age		Lead VC degree of US experience			Lead VC trusting?	
	> \$200 m	< \$200 m	≥ 4 yrs	< 4 yrs	US VC	Syndicated w. US VC	No US exp.	Yes	No
<i>A. Main VC security:</i>									
Conv./part. preferred	82.5%	26.4%***	78.3	30.6%***	94.7%	62.1%	10.8%***	40.0	55.6
Ordinary common stock	12.7%	41.7%***	15.9	38.9%***	0.0%	18.4%	64.9%***	53.3	17.8***
Common w. liq. preference	3.2%	25.0%***	1.4	26.4%***	0.0%	18.4%	13.5%	0.0	26.7***
Convertible debt	0.0%	4.2%	1.4	2.8%	0.0%	0.0%	8.1%	6.7	0.0
Other	1.6%	2.8%	2.9	1.4%	5.3%	1.2%	2.7%	0.0	0.0
Sample size	63	72	69	72	19	87	37	30	45
<i>B. Residual cash flow rights and incentive mechanisms:</i>									
Pre-money val, mean, med.	20.3	14.0***	27.6	14.9**	34.6	21.5	11.7***	12.4	18.2
	40.6	7.6	14.9	7.8	20.0	9.9	6.0	6.5	8.5
VC equity %	42.9%	31.5%***	39.6%	33.3%**	45.2%	35.6%	34.0%	39.5	36.9
Sample size	58	63	58	69	17	80	31	23	42
Founder time vesting	39.1%	38.8%	52.7%	25.0%***	66.7%	40.3%	18.8%**	38.5	36.1
Equity/funding milestones	34.5%	43.3%	46.7%	32.30%	25.0%	48.0%	22.6%**	30.8	52.6*
Sample size	52	67	60	65	16	77	31	26	38
VC anti-dilution protection	65.3%	52.2%	72.9%	40.6%***	86.7%	67.6%	18.2%***	22.2	73.0***
Sample size	49	69	59	64	15	74	33	27	37
<i>C. Liquidation pref.:</i>									
Less than invested funds	15.7%	47.9%***	23.7%	42.6%***	0.0%	22.4%	77.1%***	66.7	20.0***
Equal to invested funds	3.9%	28.2%***	8.5%	25.0%***	18.8%	21.0%	11.4%***	7.4	20.0***
More than invested funds	80.4%	23.9%***	67.8%	32.4%***	81.2%	56.6%	11.4%***	25.9	60.0***
Cumulative dividends	36.0%	11.4%***	33.2%	10.6%***	25.0%	25.3%	9.1%	26.9	28.2
Part. pref. (or equiv.)	58.8%	15.7%***	45.8%	25.4%**	62.5%	42.1%	0.0%***	26.9	35.0
Other “booster” (e.g. 3x)	18.0%	12.9%	23.3%	7.6%**	12.5%	17.3%	12.1%	9.8	20.5*
Sample size	51	71	59	68	16	76	35	27	40

Table 5 (continued)

	Lead VC funds		Lead VC age		Lead VC degree of US experience			Lead VC trusting?	
	> \$200 m	< \$200 m	≥ 4 yrs	< 4 yrs	US VC	Syndicated w. US VC	No US exp.	Yes	No
<i>D. Exit provisions:</i>									
VC has redemption rights	46.0%	22.2%***	46.4%	20.8%***	63.2%	35.6%	18.9%**	23.3	33.3
Other senior exit mechanism	53.5%	45.9%	49.0%	51.7%	33.3%	62.7%	24.1%***	25.0	73.5***
No senior exit mechanism	25.4%	48.6%***	30.4%	43.1%	21.0%	28.7%	64.9%***	63.3	22.2***
Sample size	63	72	69	72	19	87	37	30	45
<i>E. Board control</i>									
No. seats, total, mean (med)	6.0 (6.0)	5.5 (5.0)	6.1 (6.0)	5.3 (5.0)**	6.2 (6.5)	5.6 (6.0)	5.6 (5.0)	5.6 (5.0)	5.4 (5.0)
% VC board seats	42.1 (40.0)	34.0 (33.3)***	39.7 (40.0)	35.5 (33.3)	46.8 (42.9)	36.6 (33.3)	34.4 (31.0)**	34.2 (33.3)	35.9 (36.7)
Degree of board control:									
Founder controls board	25.0	31.4	19.2%	40.0	0.0%	31.2	41.7***	31.8	41.4
Neither / state-contingent	56.2	51.0	59.6%	45.4	53.8%	54.7	45.8%***	50.0	55.2
VC controls board	18.8	17.8	21.3%	14.6	46.2%	14.1	12.5%***	18.2	3.4
No. obs.	48	51	47	45	13	64	24	22	29

Notes. Contract characteristics for 145 investments in 107 portfolio companies from 18 countries by 69 different lead VCs between 1992 and 2001. The ‘Lead VC’ is defined as the VC committing the largest amount of funds in the syndicate in the current financing round. ‘VC from US’ is a dummy equal to one if the Lead VC investor is located in the United States. ‘Syndicated with US VC’ is a dummy equal to one if the Lead VC investor is (1) not located in the United States, and (2) had previously invested in a portfolio company located in the United States or had previously co-invested with a US-based VC at the time of the financing. ‘No US exp.’ is a dummy equal to one if both previous dummy variables are zero. ‘Lead VC trusting?’ is a ‘Yes’ if the level of trust exhibited by the citizens in the country where the lead VC is located is above median for the sample, and ‘No’ otherwise, using the origin country trust fixed effects from Table 2 of Guiso et al. (2004). Tests for degree of liquidation preference and degree of board control are joint across the three degrees of liquidation preference / board control, using a Kruskal–Wallis test. All other tests refer to differences in median tests, using a rank-sum test.

* Contractual provisions are significantly different across sub-samples at the 10% levels.

** Idem, 5%.

*** Idem, 1%.

In the first set of regressions, the dependent variable is an index of US style terms. We form the index as the sum of dummy variables for the presence of vesting, milestones, anti-dilution rights, liquidation preference (at least equal to investment), redemption rights, and (non-founder) board control. The index, therefore, varies from zero to six. We estimate the models using Poisson regressions. In the second set of regressions, we estimate models using dummy variables for the individual measures of cash flow, liquidation and control rights.

The regressions include independent variables that measure legal regime and VC experience. Some of the regressions also include the portfolio company and VC trust measures. Most of the regressions measure legal origin as a dummy variable equal to one if the portfolio company is in a country with a common law legal origin. We also estimate some regressions using the indices for legal formalism (Lex Mundi), accounting standards, creditor protection, minority protection, and

Table 6
VC contracts and deal characteristics

	Funds committed		First VC investment		Firm age	
	>\$3M	≤\$3M	First round	Subs. round	< 2 years	≥ 2 years
<i>A. Main VC security:</i>						
Conv./part. preferred, %	72.9	31.6 ^{***}	44.9	77.3 ^{***}	61.0	41.0 ^{**}
Ordinary common stock, %	14.3	36.8 ^{***}	31.5	11.4 ^{**}	23.2	28.2
Common w. liq. preference, %	11.4	22.8 [*]	18.0	11.4	11.6	25.6 ^{**}
Convertible debt, %	0.0	5.3	3.4	0.0	2.1	2.6
Other, %	1.4	3.5	2.3	0.0	2.1	2.6
Number of observations	70	57	89	44	95	39
<i>B. Residual cash flow rights and incentive mechanisms:</i>						
Pre-money valuation, \$m, mean, median	29.5	11.4	12.9	34.4	20.9	22.1
	20.0	5.1 ^{***}	6.6	21.7 ^{***}	9.0	14.2
	68	56	80	44	87	39
VC equity, %	44.1	28.8 ^{***}	31.1	48.2 ^{***}	38.2	31.2 [*]
Number of observations	64	54	82	42	90	36
Founder time vesting, %	41.7	33.3	39.0	34.3	42.1	32.4
Number of observations	60	51	77	32	76	34
Equity/funding milestones, %	41.5	33.3	39.0	29.0	37.5	38.9
Number of observations	65	54	77	38	80	36
VC anti-dilution protection, %	66.7	49.1 [*]	52.0	69.4 [*]	56.4	63.9
Number of observations	63	53	77	36	78	36
<i>C. Liquidation pref.:</i>						
Less than invested funds, %	17.5	44.4 ^{***}	37.0	16.7 [*]	29.3	36.1
Equal to invested funds, %	17.5	20.4 ^{***}	17.3	22.2 [*]	15.8	25.0
More than invested funds, %	65.1	35.2 ^{***}	45.7	61.1 [*]	54.9	38.9
Cumulative dividends, %	24.2	15.7	22.5	11.4	18.5	22.9
Part. preferred (or equiv.), %	44.4	27.8 [*]	32.5	44.4	42.0	22.2 ^{**}
Other “booster” (e.g. 3x), %	21.0	9.3 [*]	15.0	17.0	9.9	25.7 ^{**}
Sample size	63	54	81	36	82	36
<i>D. Exit provisions:</i>						
VC has redemption rights, %	37.1	21.0 ^{**}	32.6	38.6	34.7	33.3
Other senior exit mechanism, %	53.6	47.9	47.9	56.7	55.1	45.2
No senior exit mechanism, %	30.0	45.6 [*]	38.2	29.6	32.6	41.0
Sample size	70	57	89	44	95	39

Table 6 (continued)

	Funds committed		First VC investment		Firm age	
	>\$3M	≤\$3M	First round	Subs. round	< 2 years	≥ 2 years
<i>E. Board control</i>						
No. seats, total, mean (med)	6.1 (6.0)	5.2 (5.0)***	5.5 (5.0)	5.9 (6.0)	5.8 (6.0)	5.5 (5.0)
% VC board seats	41.2 (40.0)	33.5 (33.3)***	35.6 (33.3)	41.8 (40.0)**	39.8 (40.0)	32.4 (35.4)*
Degree of board control:						
Founder controls board	20.4	48.8***	39.3	22.2**	30.4	34.6
Neither/state-contingent	55.6	39.5***	49.2	50.0**	52.2	46.2
VC controls board	20.1	11.6***	11.5	27.8**	17.4	19.2
Sample size	56	50	89	44	71	32

Notes. Contract characteristics for 145 investments in 107 portfolio companies from 18 countries by 69 different lead VCs between 1992 and 2001. 'Funds committed' is the total VC funds committed in the financing round, expressed in US dollars. Tests for degree of liquidation preference and degree of board control are joint across the three degrees of liquidation preference/board control, using a Kruskal–Wallis test. All other tests refer to differences in median tests, using a rank-sum test.

* Country, deal and investor characteristics are significantly different at the 10% levels.

** Idem, 5%.

*** Idem, 1%.

the dummy for option taxation.¹⁵ All of the regressions include a dummy variable for whether the VC is US based. The regressions also include an additional VC experience variable: non-US VC who has syndicated (invested) with a US VC, the VC age at the time of the financing, or the logarithm of VC funds under management.

All of the regressions control for the portfolio company age and if the financing is the first VC round. Some of the regressions include controls for industry (software and Internet, hardware, Telecom, and life science), year of investment, deal size and if the portfolio company reincorporated from its home country to a different one. All standard errors are clustered by lead VC to avoid overweighting VCs with more observations. We obtain (but do not present) statistically similar results when we cluster by year or industry.

Table 7A presents the Poisson regressions for the index of US style contracting. The regressions show that the VC experience variables dominate the legal, accounting and institutional variables. The VC experience variables, particularly VC based in the US and non-US VC with US syndication experience, are significant in every specification. In contrast, the legal regime, accounting and institutional variables are not significant in any specification.

The economic magnitudes of the VC experience variables are also substantial. For example, non-US VCs with US syndication experience include almost two additional US style provisions in their financings. This compares to coefficients (marginal effects) of 0.0 to 0.46 for the common law dummy variable that are never significant.

The VC trust variable is also economically and statistically significant. The coefficient implies that VCs from trusting countries use 2.81 fewer US style provisions than VCs from other countries. In contrast, portfolio company trust is not significant. This suggests that the culture and social norms of the VC culture drives the contractual terms rather than those of the entrepreneur.

¹⁵ The reported regressions do not include share repurchase restrictions or IPO activity. When these variables are included, they are never significant.

Table 7 (continued)

Table 7B

Regressions of individual rights

	Deal uses conv.		Vesting		Milestones		Anti-dilution		Liquidation pref.		Redemption		Board control	
	Pref. (probit)		(probit)		(probit)		(probit)		(ord. probit)		rights (probit)		(ord. probit)	
<i>1. Individual rights and common law dummy</i>														
First VC round	−0.76	(0.26) ^{***}	−0.08	(0.16)	0.09	(0.14)	−0.20	(0.14)	−0.55	(0.34)	−0.25	(0.13) ^{**}	−0.83	(0.34) ^{**}
Age of firm	−0.41	(0.06) ^{***}	−0.20	(0.07) ^{***}	0.00	(0.06)	−0.02	(0.08)	−0.33	(0.18) [*]	−0.18	(0.06) ^{***}	−0.10	(0.18)
Common law	0.17	(0.14)	0.06	(0.16)	−0.09	(0.13)	0.33	(0.13) ^{**}	0.17	(0.33)	−0.06	(0.13)	−0.19	(0.34)
Lead VC is based in US	1.42	(0.30) ^{***}	0.50	(0.23) ^{**}	0.08	(0.21)	0.65	(0.21) ^{***}	2.13	(0.50) ^{***}	0.42	(0.18) ^{**}	1.35	(0.50) ^{***}
Non-US VC w. US experience	0.84	(0.21) ^{***}	0.22	(0.15)	0.28	(0.15) [*]	0.35	(0.13) ^{***}	1.39	(0.34) ^{***}	0.19	(0.13)	0.30	(0.35)
1st VC rnd. 2001	0.52	(0.30) [*]	0.42	(0.24) [*]	0.36	(0.26)	0.16	(0.24)	0.21	(0.64)	0.41	(0.22) [*]	1.25	(0.70) [*]
Industry/year effects	Yes	/Yes	Yes	/Yes	Yes	/Yes	Yes	/Yes	Yes	/Yes	Yes	/Yes	Yes	/Yes
No. of obs./Pseudo <i>R</i> ²	126	0.50	103	0.18	109	0.14	106	0.26	111	0.21	126	0.19	91	0.16
<i>2. Individual rights and specific institutional controls</i>														
First VC round	−0.82	(0.26) ^{***}	−0.22	(0.16)	0.04	(0.15)	−0.25	(0.18)	−0.25	(0.39)	−0.37	(0.15) ^{**}	−0.63	(0.40)
Age of firm	−0.44	(0.09) ^{***}	−0.32	(0.09) ^{***}	−0.03	(0.08)	0.03	(0.09)	−0.21	(0.22)	−0.26	(0.10) ^{***}	−0.27	(0.21)
Lex Mundi measure	0.14	(0.21)	0.15	(0.10)	−0.06	(0.20)	−0.24	(0.17)	−0.07	(0.43)	0.04	(0.13)	0.93	(0.77)
Accounting stand.	0.00	(0.01)	0.03	(0.01) ^{***}	−0.01	(0.01)	−0.01	(0.01)	0.03	(0.03)	−0.01	(0.01)	0.02	(0.04)
Creditor Prot.	−0.01	(0.06)	0.04	(0.04)	−0.04	(0.05)	0.02	(0.04)	0.28	(0.12) ^{**}	−0.03	(0.04)	−0.05	(0.12)
Minority Prot.	0.02	(0.05)	0.01	(0.04)	0.06	(0.06)	−0.04	(0.06)	−0.38	(0.14) ^{***}	0.05	(0.04)	−0.05	(0.15)
Option tax low	−0.33	(0.38)	−0.50	(0.29) [*]	0.09	(0.28)	−0.42	(0.26)	−0.20	(0.65)	0.06	(0.24)	−1.00	(0.76)
Lead VC is based in US	1.37	(0.33) ^{***}	0.23	(0.22)	0.09	(0.22)	0.73	(0.23) ^{***}	2.40	(0.62) ^{***}	0.12	(0.16)	1.73	(0.59) ^{***}
Non-US VC w. US experience	0.73	(0.23) ^{***}	0.28	(0.14) ^{**}	0.18	(0.15)	0.44	(0.13) ^{***}	1.61	(0.38) ^{***}	0.13	(0.10)	0.18	(0.36) ^{***}
1st VC rnd. 2001	0.56	(0.29) [*]	0.63	(0.29) ^{**}	0.38	(0.26)	0.11	(0.31)	−0.08	(0.72)	0.63	(0.26) ^{***}	1.04	(0.87)
Industry/year effects	Yes	/Yes	Yes	/Yes	Yes	/Yes	Yes	/Yes	Yes	/Yes	Yes	/Yes	Yes	/Yes
No. of obs./ Pseudo <i>R</i> ²	107	0.47	90	0.29	93	0.13	90	0.28	95	0.24	107	0.26	75	0.18
<i>3. Individual rights and trust</i>														
First VC round	−1.29	(0.35) ^{***}	−0.11	(0.13)	−0.22	(0.24)	−0.35	(0.25)	−1.29	(0.68) [*]	−0.54	(0.22) ^{**}	−1.44	(0.60) ^{**}
Age of firm	−0.31	(0.16) [*]	−0.05	(0.08)	−0.14	(0.14)	0.00	(0.16)	−0.21	(0.32)	−0.19	(0.09) ^{**}	0.14	(0.30)
Common law	−0.14	(0.22)	0.19	(0.16)	0.38	(0.19) ^{**}	0.33	(0.20)	0.27	(0.56)	0.06	(0.22)	0.05	(0.56)
Non-US VC w. US experience	0.99	(0.36) ^{***}	0.02	(0.18)	0.43	(0.25) ^{**}	0.22	(0.20)	1.43	(0.45) ^{***}	0.05	(0.15)	0.52	(0.68)
VC trust	−1.23	(0.74) [*]	0.04	(0.51)	−1.15	(0.47) ^{**}	−1.44	(0.52) ^{***}	−2.14	(1.45)	−0.94	(0.52) [*]	0.59	(1.55)
1st VC rnd. 2001	1.20	(0.39) ^{***}	1.62	(0.30) ^{***}	0.70	(0.33) ^{**}	−	−	0.80	(1.00)	0.56	(0.29) [*]	2.69	(1.12) ^{**}
Industry/year effects	No	/Yes	No	/Yes	No	/Yes	No	/Yes	No	/Yes	No	/Yes	No	/Yes
No. of obs./ Pseudo <i>R</i> ²	60	0.51	49	0.22	51	0.41	44	0.39	54	0.24	60	0.31	42	0.18

(continued on next page)

Table 7 (continued)

Table 7C

Experience interaction terms, Country (C) and Country-Year (CY) fixed-effects regressions of Index of US style contracting

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	Fixed-effects Poisson		Fixed-effects Poisson		Fixed-effects Poisson		Fixed-effects Poisson		Fixed-effects Poisson		Fixed-effects Poisson		Fixed-effects OLS		Between-effects OLS	
<i>Index of terms</i>																
First VC round	−0.07	(0.20)	−0.16	(0.20)	−0.08	(0.21)	−0.07	(0.20)	−0.21	(0.25)	−0.27	(0.21)	−0.75	(0.51)	−0.34	(0.44)
Ln (Age of firm)	−0.10	(0.14)	−0.20	(0.13)	−0.24	(0.13)*	−0.04	(0.03)	−0.12	(0.15)	−0.01	(0.13)	−0.35	(0.29)	−0.23	(0.26)
Lead VC from US	1.32	(0.37)***					1.30	(0.39)***	1.29	(0.40)***	1.31	(0.34)***	2.79	(0.76)***	2.39	(0.65)***
Non-US lead VC	0.87	(0.26)***					0.86	(0.26)***	0.88	(0.27)***	0.77	(0.24)***	1.85	(0.46)***	1.55	(0.59)***
with US exper.																
Non-US lead VC																
with US exper.																
*Common law							0.51	(0.87)								
dummy																
Log VC age			0.20	(0.09)**												
Log VC Size					0.10	0.05**										
1st VC rnd. 2001									0.65	(0.45)	0.56	(0.42)	2.03	(1.02)*	0.63	(0.75)
Ind. dummies:																
Internet/software									−0.54	(0.58)	−0.21	(0.54)	−2.02	(1.49)	1−06	(1.09)
High-tech									−0.07	(0.62)	0.16	(0.59)	−0.86	(1.56)	1.36	(1.33)
Telecom									−0.21	(0.66)	0.00	(0.62)	−1.21	(1.62)	1.85	(1.25)
Media									−0.36	(0.68)	−0.08	(0.62)	−1.76	(1.64)	1.12	(1.22)

Table 7 (continued)

Table 7C

Experience interaction terms, Country (C) and Country-Year (CY) fixed-effects regressions of Index of US style contracting

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Fixed-effects Poisson	Fixed-effects Poisson	Fixed-effects Poisson	Fixed-effects Poisson	Fixed-effects Poisson	Fixed-effects Poisson	Fixed-effects OLS	Between-effects OLS
Year dummies:								
1998						0.18 (0.87)		
1999						0.07 (0.83)		
2000						0.19 (0.81)		
2001						−0.01 (0.85)		
Grouping	CY	CY	CY	CY	CY	C	CY	CY
Number of obs	72	72	68	72	72	83	90	90
Number of groups	19	19	18	19	19	12	37	37
R ²								
Within							0.47	0.37
Between							0.37	0.55
Overall							0.40	0.42

Notes. Summary information for 145 investments in 107 portfolio companies from 18 countries by 69 different lead VCs between 1992 and 2001. ‘Index of terms’ is an index of US-style contractual terms and is calculated as the sum of the dummy variables for the presence of milestones, vesting, VC anti-dilution provisions, VC liquidation preference equal to or greater than investment, VC redemption rights, and VC having more board seats than the founder. ‘First VC round’ is a dummy equal to one if the investment refers to the first round where any VC invested. ‘Age of firm’ is the age of the portfolio company at the time of the investment, in years. ‘Common law,’ ‘French law,’ ‘German law’ and ‘Scand. law’ are dummy variables equal to one if the portfolio company is located in a country with a common law, French, German, or Scandinavian legal system, respectively. ‘Lead VC has US experience’ is a dummy equal to one if the lead VC has previously invested in a company with US-based VC funds as co-investors. ‘VC is based in the US’ is a dummy equal to one if the Lead VC investor is located in the United States. ‘Non-US VC with US exper’ is a dummy equal to one if the Lead VC investor is (1) not located in the United States, and (2) had either previously invested in a portfolio company located in the United States or co-invested with a US-based VC at the time of the financing. ‘VC age’ is the age of the VC firm in years. ‘Accounting standards,’ ‘Creditor protection,’ and ‘Minority protection’ (‘Anti-director rights’) are from [La Porta et al. \(1997\)](#). ‘Option tax favorable’ is a dummy taking the value of one if employee and management stock options are not taxed at the point of exercise. ‘Lex Mundi’ is the formalism score referring to collecting a bounced check from [Djankov et al. \(2002\)](#). ‘Log Deal Size’ is the logarithm of VC financing committed in the round, measured in million USD. ‘Reincorporation’ is a dummy variable taking the value of one if the portfolio company reincorporated in another country. The trust scores are taken from [Guiso et al. \(2004\)](#). Portfolio company trust is a dummy variable equal to one if the level of trust that citizens of other countries have for citizens of the country of the portfolio company is greater than the median. VC trust is a dummy variable equal to one if the level of trust that citizens in the country of the VC have for citizens in other countries is above median. ‘1st VC rnd. 2001’ is a dummy variable taking the value of one if the deal is a first VC financing occurring in 2001. ‘Industry effects include dummies for 5 industries: Internet/Software, High-tech/Hardware, Telecom, Medical, Other. Panel E shows Country (C) and Country-Year (CY) fixed-effects regressions. Standard errors are in parentheses, and for [Tables 7A, 7B](#) these standard errors are clustered by VC firm.

* Regression coefficients are significantly different from zero at the 10% levels.

** Idem, 5%.

*** Idem, 1%.

Some of the control variables also are significant. Younger portfolio companies are less likely to use US style provisions, while larger deals are more likely to include such provisions.¹⁶ In the last regression in panel A, first VC financings are associated with significantly fewer (−0.56) US style provisions. At the same time, portfolio companies receiving their first VC financing in 2001 use significantly more (1.33) US style provisions than those receiving their first VC financing earlier. This is consistent with the overall VC market converging toward US style contracts over time.

In Table 7B, we estimate probit and ordered probit regressions using dependent variables that measure the individual provisions:

- (i) whether the round uses convertible or participating preferred¹⁷;
- (ii) whether the round uses founder vesting;
- (iii) whether the round uses milestones;
- (iv) whether the round uses anti-dilution protection;
- (v) whether the liquidation preference is less than, equal to, or greater than the amount invested;
- (vi) whether the round uses redemption rights; and
- (vii) whether the founder has control, shares control, or does not have control of the board.

In panel 1 of Table 7B, we estimate the regressions with the common law dummy and the VC experience variables. Again, the regressions suggest that VC experience dominates the effect of legal origin. The common law dummy is significant only for the use of anti-dilution provisions. In contrast, both (1) VC based in the US and (2) non-US VC with US syndication experience are individually significant in all but one specification. One of the two is significant in every specification. The reported marginal effects of the VC experience variables are also economically larger than those for the common law variable.

Panel 2 of Table 7B, we estimate the regressions using the more detailed legal, accounting and tax variables. We lose some observations because we do not have the relevant indices for all of the countries in our sample. Again, the VC experience variables are economically and statistically significant in all but one specification. Only in the milestone regression are they both insignificant. (None of the other variables are significant in this regression.)

In contrast, the legal, accounting and tax variables are only occasionally successful in explaining the use of US style contracts. In five of the seven regressions, none of the variables is significant at better than the 5% level. Accounting standards are significantly related to time vesting although not to milestones. Minority protection is negatively related to liquidation preferences, while creditor protection is positively related.

In panel 3 of Table 7B, we estimate the regressions with the common law dummy, the VC experience variables, and the VC trust variable. We caution that there are relatively few observations. Nevertheless, the results are similar. The VC experience variables and the VC trust variable explain more variation than the common law variable.

One potential concern is that the VC experience variables may be correlated with other unobserved institutional characteristics that are affecting contract structure and that are not captured by our legal, accounting, and tax variables. For example, if more experienced VCs consistently choose to invest in countries and time periods with better exit opportunities and/or better con-

¹⁶ In most of the regressions, we do not control for deal size because it is arguably endogenous with the contracts.

¹⁷ The results are qualitatively and quantitatively identical when we use a dummy for ordinary common stock.

tractual enforcement, and if US style contracts are more beneficial in these environments, the VC experience variables may be measuring these effects rather than experience. To address this alternative interpretation, we estimate the US style contracting index regressions including country and country-year fixed effects. (Note that we cannot include any legal, accounting, and tax variables because they are constant for a given country-year.) The results in [Table 7C](#) show that VC experience remain strongly economically and statistically significant across all specifications, both within and between country-years.

Finally, we examine the possibility that VC experience has a different effect across legal environments. If more experienced VCs have a greater ability to write and enforce contracts in weak legal environments, for example, we would expect the correlation between experience and contracts to be particularly strong in such environments. We address this hypothesis by including interaction terms of experience and legal regime in our regressions, and regression (4) of [Table 7C](#) shows the results from one such specification. We find no support for this hypothesis, as the interaction terms are never statistically significant, while the VC experience coefficients retain their magnitudes and statistical significance.

Overall, then, [Table 7](#) shows that the VC experience variables and the VC trust variable consistently dominate the legal, accounting and institutional variables in both economic and statistical significance.

5. The relation of contractual terms to VC survival

The analysis so far suggests that more experienced VCs implement US style contracts across many different legal regimes. There are two primary interpretations of this result. (We discuss several others at the end of this section.) One interpretation is that more experienced VCs are superior investors who use more efficient contracts. Under this interpretation, US style contracts are the most effective of available contracts. This interpretation also is consistent with [Kaplan and Schoar \(2005\)](#) who find that more experienced VCs outperform less experienced VCs. The finding that VCs from more trusting countries are less likely to use US style contracts could help explain how this occurred. Alternatively, one might interpret the results as finding that VCs use contracts with which they are familiar. Because the more experienced VCs are more familiar with US contracts, they use them regardless of whether they are efficient.

In this section, we attempt to distinguish between those two interpretations by looking at the ex post performance of the lead VCs in our sample. A finding that VCs using US style contracts do no better than other VCs would favor the second interpretation over the first. A finding of superior performance for VCs who use US style contracts would favor the first interpretation, but would not prove it because superior performance could be due to other factors.

There are seventy-three different lead VCs in our sample financings. Although we cannot collect ex post VC returns, we can observe whether the VC firms are still operating entities. We use Venture Economics, VentureOne, CapitalIQ, and the VC firm websites to determine the current status of the VC firms. [Table 8](#) reports that as of August 2006, fifty-two of the seventy-three lead VCs are still active and independent while twenty-one had failed or had been acquired.¹⁸

In panel A of [Table 8](#), we classify the lead VCs according to whether they always used, sometimes used, or never used convertible or participating preferred stock. The use of such securities is a simple univariate measure of the use US style contracts. In panel B of [Table 8](#) we classify

¹⁸ A VC firm is typically acquired only when the firm's investments are not performing well. Anecdotal information regarding the acquisitions in our sample supports this interpretation.

Table 8

Lead VC contracts and survival

	Number of Lead VCs in sample	Number of VCs failed/no longer independent by 8/10/2006	Failure rate, %
Panel A:			
All VCs	73	21	29
VCs always using preferred	38	3	8
VCs sometimes using preferred	4	1	25
VCs never using preferred	31	17	55
Chi square test (2 df) =		18.1***	
Panel B:			
All VCs	51	16	31
VC US style contracting index ≥ 3	27	5	18
VC US style contracting index < 3	24	11	46
Rank-sum test, <i>t</i> -statistic		2.08**	

Notes. Survival and failure statistics for 74 lead VCs from 18 countries making investments between 1992 and 2001. Failure rate is the percentage of the VC funds that had closed down or acquired by August 8, 2006. Lead VC is defined as the VC fund providing the largest amount of financing in a given financing round. Survival, failure and independence status was determined from Venture Economics, VentureOne, and VC firm websites. A VC is no longer independent if the VC was acquired by some other entity. The VC US style contracting index for each VC is the average of the index for the VC's deals in our data set. Preferred stock represents the use of convertible or participating preferred stock.

** Chi square tests of difference in failure rates are significantly different at the 5% levels.

*** Idem, 1%.

VCs based on the average US style contracting index for each lead VC's deals in our data set. We distinguish between VCs with an average index above or below 3.

The results in panel A are highly statistically significant. Of the thirty-one VCs that never used preferred stock, 55% (seventeen) have not survived. Of the thirty-eight VCs that always used preferred stock, only 8% (three) have failed. The four VCs who sometimes used preferred stock fall in between, with one of four having not survived. Said another way, eighteen of the twenty-one non-surviving VCs never used preferred stock. It is worth adding that the four VCs that sometimes used preferred stock always switched to preferred stock from some other security.

Panel B reports qualitatively similar results when we distinguish lead VCs by the US style contracting index. The results are statistically significant but have less power partly because we lose some observations when we use the index.

While suggestive, the univariate results may be driven by correlations between contracts and VC characteristics or strategies. We address this possibility in Table 9 by estimating probit regressions on the relation of VC survival to VC contracts controlling for VC characteristics and strategies. The dependent variable equals one if the VC survived. We measure contracting by a dummy variable equal to one if the VC always used preferred stock. As control variables, we include VC experience variables—log of VC fund size, VC age, and whether the VC syndicated with US VCs before 2001. We also control for differences in the overall risk of the VC fund, including dummy variables for whether the VC is an early stage investor,¹⁹ whether the VC is

¹⁹ We obtain similar results when we use the percentage of a VC's sample deals that are first rounds and the average portfolio company age of the VC's sample deals.

Table 9
Lead VC contracts and failure: Multivariate analysis

	(1)		(2)		(3)		(4)		(5) Excluding US VCs	
VC always used convertible preferred dummy	−0.453	(0.101) ^{***}	−0.275	0.115 ^{**}	−0.256	0.118 ^{**}	−0.312	0.125 ^{**}	−0.350	0.129 ^{***}
Log VC size (\$100M)			−0.078	0.036 ^{**}	−0.079	0.036 ^{**}	−0.082	0.036 ^{**}	−0.057	0.035
VC age (years)			0.002	0.006	−0.003	0.004	−0.002	0.003	−0.007	0.007
VC syndicated with US investors pre-2001 dummy			0.003	0.106	0.028	0.098	−0.056	0.109	−0.003	0.119
Early stage fund focus dummy					−0.043	0.089	−0.064	0.075	−0.044	0.112
Captive/corporate VC fund dummy					0.156	0.141	0.22	0.14	0.206	0.161
Offices in several countries dummy					0.046	0.103	0.091	0.100	0.097	0.150
VC home country legal regime:										
French Law dummy							0.086	0.151		
German Law							−0.108	0.070		
Scandinavian Law							−0.130	0.068 [*]		
VC trust										
Pseudo R^2	0.21		0.38		0.39		0.44		0.39	
No. of obs.	73		66		66		66		53	

Notes. Probit regressions on the likelihood of lead VC failure for 70 lead VCs from 18 countries making investments between 1992 and 2001. The dependent variable takes the value of one if the VC fund had closed down or been acquired by August 10, 2006. Survival and failure status and lead VC fund characteristics were determined from Venture Economics, VentureOne, CapitalIQ, and VC firm websites. Preferred stock represents the use of convertible or participating preferred stock. ‘Average US contract term index for VC when lead investor’ is the average of an index of US-style contractual terms across all the investments in our sample where the VC was the lead investor. The index is calculated as the sum of the dummy variables for the presence of milestones, vesting, VC anti-dilution provisions, VC liquidation preference equal to or greater than investment, VC redemption rights, and VC board control. ‘Log VC size’ is the logarithm of the funds under management by the VC firm (across all funds) in 2001. ‘Captive/corporate VC fund’ is a dummy taking the value of one if the VC fund was a subsidiary of a corporation or financial institution. VC trust is a dummy variable equal to one if the level of trust that citizens in the country of the VC have for citizens in other countries is above median. Coefficients reported are marginal effects, with corresponding robust White (1980) standard errors in parentheses.

* Regression coefficients are significantly different from zero at the 10% levels.

** Idem, 5%.

*** Idem, 1%.

controlled by a financial institution or other corporation, and whether the VC firm has offices in several countries.²⁰

The results in Table 9 are consistent with those in Table 8. The convertible preferred contracting variable is economically significant and statistically significant in all five specifications. With the exception of VC size and the Scandinavian law dummy, the control variables are not significant.²¹

Tables 8 and 9 show that more successful VCs use US style contracts. In the spirit of Fama and Jensen (1983), our preferred interpretation of this result is that US style contracts are more efficient:

- (1) VCs using US style contracts are more likely to survive and
- (2) to the extent that VCs changed their contracting style, they moved to the US style contracts.

Again, we are not claiming to have proved causality, only that a causal interpretation is consistent with the results. We think this interpretation is buttressed by three other findings in this paper. First, we find that VCs who use both US style and non-US style contracts always switch from non-US to US style contracts. Second, in the multivariate regressions, first round financings in 2001 (the last year of the sample) are significantly more likely to use US style contracts suggesting a movement toward US style contracts over time. Third, when both the contracts and VC experience are included in the VC survival regressions, the contracts have explanatory power while VC experience does not. Finally, VCs from more trusting countries are more likely not to have used US style contracts. This provides a plausible explanation as to why they initially used inefficient contracts.

There are several other possible interpretations of our results that are worth examining.

First, VCs might use US style contracts when there are greater differences of opinion about company valuation between the VC and the entrepreneur. This will be the case if the entrepreneur is more optimistic than the VC. Under this interpretation, VCs will prefer greater downside protection (embodied in US style contracts) and will trade this for some of the upside. This interpretation also would be consistent with US style contracts performing better *ex post* in light of the tech “crash” experienced from 2000 to 2002. By this argument, US style contracts provide better downside protection, but do less well when the portfolio companies succeed.

We address this interpretation in Table 10 by testing whether the VCs in our sample trade off downside protection (by using US style terms) in exchange for reduced upside. The first set of regressions uses the pre-money value of the financing round as a dependent variable. The pre-money value is the implicit valuation of the entrepreneur’s (pre-VC) equity in the financing round. If there is a trade off between downside protection and upside, the pre-money value should be increasing in US style terms. I.e., the VC gets more US style terms, but gives a higher valuation to the entrepreneur. The second set of regressions uses the percentage of equity (cash flow rights)

²⁰ In order to be classified as a failure the VC firm has to cease operating as an independent entity. Hence, if the VC had offices in several countries, and subsequently closed down operations in some of these countries but kept the operations in the others, we do not classify this as a failure. In these cases, we would not capture such “local” failure in our dependent variable, which in turn could lead to spurious results to the extent that the presence of international offices is correlated with VC experience. Our “multiple office” dummy is a partial, but not perfect control for this. Although collecting more detailed data on local office openings and closings would have been useful, we believe it is beyond the scope of the present paper. Moreover, we are not aware of any local office closings among the surviving VC funds in our sample.

²¹ We obtain qualitatively similar results when using the average contract index value as the dependent variable. The statistical significance is somewhat weaker in these regressions, however, partly due to a smaller sample size.

Table 10
Relationship between valuations and US-style contracting

	Ln Pre-money		Ln Pre-money		Ln Pre-money		VC equity, %		VC equity, %		VC equity, %	
First VC round	−1.09	(0.30) ^{***}	−1.16	(0.33) ^{***}	−0.65	(0.27) ^{***}	0.59	(5.96)	1.08	(5.77)	3.63	(5.70)
Round	0.06	(0.22)	−0.04	(0.23)	−0.10	(0.19)	13.42	(4.49) ^{***}	15.05	(4.18) ^{***}	12.46	(4.19) ^{***}
Age of firm	−0.01	(0.03)	0.00	(0.03)	0.01	(0.03)	−0.81	(0.42) [*]	−0.85	(0.41) ^{**}	−0.70	(0.37) [*]
Common law	0.73	(0.36) ^{**}	0.63	(0.33) [*]	0.41	(0.26)	−4.32	(4.77)	−4.26	(5.02)	−7.21	(4.48)
Index	0.03	(0.07)	−0.06	(0.10)	−0.15	(0.07) [*]	3.48	(1.66) ^{**}	3.73	(1.96) [*]	2.36	(1.63)
Lead VC is based in US			0.87	(0.54)					−0.03	(0.08)		
Non-US lead VC with US syndication experience			0.40	(0.43)					−0.04	(0.05)		
Log Deal size					0.68	(0.10) ^{***}					0.05	(0.02) ^{**}
Industry & year effects	Yes		Yes		Yes		Yes		Yes		Yes	
Adjusted R^2	0.22		0.22		0.56		0.32		0.34		0.38	
No. of obs.	99		97		98		94		92		93	

Notes. Summary information for 145 investments in 107 portfolio companies from 18 countries by 69 different lead VCs between 1992 and 2001. ‘Ln Pre-money’ is the logarithm of the pre-money valuation. ‘VC equity %’ is the percentage of the firms fully diluted residual cash-flow rights allocated to all the VCs investing in the company, assuming that all performance milestones are met and all founder and employee equity has vested. ‘Index of terms’ is an index of US-style contractual terms and is calculated as the sum of the dummy variables for the presence of milestones, vesting, VC anti-dilution provisions, VC liquidation preference equal to or greater than investment, VC redemption rights, and VC board control. ‘First VC round’ is a dummy equal to one if the investment refers to the first round where any VC invested. ‘Round’ is the number of VC investment rounds the portfolio company has received, including the current round. ‘Age of firm’ is the age of the portfolio company at the time of the investment, in years. ‘Common law’ is a dummy equal to one if the portfolio company is located in a country with a common law legal system. ‘Lead VC has US experience’ is a dummy equal to one if the lead VC has previously invested in a company with US-based VC funds as co-investors. ‘Lead VC is based in the US’ is a dummy equal to one if the Lead VC investor is located in the United States. ‘Non-US lead VC with US syndication experience’ is a dummy equal to one if the Lead VC investor is (1) not located in the United States, and (2) had either previously invested in a portfolio company located in the United States or co-invested with a US-based VC at the time of the financing. ‘Log Deal Size’ is the logarithm of VC financing committed in the round, measured in million USD. Industry effects include dummies for 5 industries: Internet/Software, High-tech/Hardware, Telecom, Medical, Other.

^{*} Standard errors, clustered by VC firm, are in parentheses. Regression coefficients are significantly different from zero at the 10% levels.

^{**} Idem, 5%.

^{***} Idem, 1%.

that the VC gets in the financing round. If there is a trade off, the VCs percentage equity will be decreasing in US style terms. I.e., the VC gets more US style terms, but gets a smaller percentage of the cash flow rights and accompanying upside.

The results in Table 10 do not indicate a tradeoff between downside protection and upside. In fact, whenever the index variable is significant (in three of the six specifications), the sign suggests more US style terms are associated with more VC upside, not less. These results hold controlling for VC experience and other control variables.

The second alternative explanation is that experienced VCs know that they can fool entrepreneurs because the entrepreneurs treat convertible preferred the same as common equity. Given the ubiquity of US style terms in the US, this explanation seems to carry the implausible implication that European entrepreneurs are smarter than US entrepreneurs. Although we cannot rule out this explanation, we note that it is still consistent with the interpretation that US style contracts are a more efficient security for VCs.

A third alternative explanation is that experienced VCs have greater bargaining power which enables them to extract more value from the entrepreneur through the use of US style terms. This may be efficient for the VC, but not for the entrepreneur. The results in Table 10 are consistent with this. This explanation, however, again raises the question as to why we do not see similar variation in contracts in the US. In fact, Hsu (2004) suggests that bargaining power is reflected in valuations rather than in variation in the contractual terms.

Finally, experienced VCs may not only write better contracts, but may also be superior in other aspects of the VC investment process, which may be at least as important to investment success. Kaplan and Strömberg (2004) document the extensive screening that VCs do before investing, while and Hellmann and Puri (2000, 2002) show the importance of VC post-investment monitoring and support. While there is some merit to this argument, we view this as a complementary rather than alternative explanation. Kaplan and Strömberg (2001, 2004) show that control and cash-flow allocations in VC contracts affect the ability and incentives of the investors to provide the screening, monitoring and support of their portfolio companies.²² Contract design and other aspects of the VC investment process are therefore interdependent and very hard to disentangle.

6. Summary and conclusion

In this paper, we compare VC contracts in twenty-three other countries to those in the US. We analyze how the contracts allocate cash flow, board, liquidation, and other control rights. In univariate analyses, contracts differ across legal regimes. US style contracts are more typical in common law countries. However, there appear to be few institutional impediments to implementing US style terms. More experienced VCs are able to implement US style contracts regardless of legal regime. VCs from less trusting countries also are more likely to implement US style contracts. In multivariate specifications, measures of VC experience and trust are more influential in explaining the use of US style terms than legal regime or other legal, and institutional variables. Finally, we consider the subsequent survival rate of the VCs in our sample. VCs who use US style contracts are substantially and significantly less likely to fail. The VCs who switched styles all moved from non-US to US style contracts. And the VCs do not appear to use US style contracts to trade off downside protection for upside.

²² This interpretation is also consistent with the theoretical work of Casamatta (2003), Repullo and Suarez (2004) and others.

We think the most plausible interpretation of our results is as follows. The contracts in the US have developed over several business cycles and are effective. The results in Kaplan and Strömberg (2003) suggest that many elements of these US contracts are consistent with the predictions of optimal contracting theories. Venture capital investing outside of the US is relatively more recent, the VC firms are less experienced overall, and the legal rules are different. Learning about effective contracts takes time and effort. Even in cases where VCs would like to implement US style contracts, it may not be costless to do so. First, US style contracts require legal expenses to adapt to different legal systems. Second, such contracts can complicate the bargaining with entrepreneurs who also must be educated. Third, VCs from more trusting cultures may not understand the need for or usefulness of US style contracts.

If contracts are important for VC success, VCs using efficient contracts will be more likely to survive and surviving VCs will be more likely to switch to more efficient contracts. One might also expect the evolution to accelerate in periods of high volatility such as the post-2000 tech crash. This interpretation is supported by the survival results, the switching results, and the finding that first VC financings at the end of our sample use more US style provisions.²³

This interpretation also is suggested by anecdotal evidence. When one of the co-authors collected the data in 2000, he asked one of the VCs why the VC did not use US style contracts. The VC responded that he “did not think it mattered.” Two years later, in early 2002, when the technology market was depressed, the co-author met the VC again. The VC complained that he wanted to exert control in or force a sale of several of his portfolio company investments, but was unable to do so. The VC acknowledged that the contracts did matter. A year later, in 2003, the VC was out of business. From talking to VCs and lawyers, it is our understanding that in 2004 most VC deals in that country use US style contracts.

We believe the results have implications for the law and finance literature. The intuitions and predictions of financial contracting theories appear to be valid across different institutional and legal regimes. Based on this, we would expect more convergence toward US style contracts in the future. The results also suggest that it is beneficial for less experienced, local investors to syndicate with and learn from more experienced, multinational investors.

One caveat to our results and predictions is that they are based on start-ups largely in developed countries. There are two forces that may favor convergence for these types of firms. First, enforcement of laws is generally not a major problem in most of the countries we study. Second, it may be easier to write desirable contracts for new businesses than for existing ones. The somewhat different results in Lerner and Schoar (2005) for private equity investments in developing countries suggest that either or both of these forces may be important.

In fact, our results in conjunction with those of Lerner and Schoar (2005) are consistent with the findings and conjectures in Acemoglu and Johnson (2005). Our results suggest that sophisticated investors contract around existing contracting institutions to implement similar (optimal) contracts for

- (i) start-ups located in countries in which property rights are enforced and
- (ii) for start-ups in developing countries with poor property right enforcement that are able to reincorporate in countries in which property rights are enforced.

²³ Crocker and Reynolds (1993) find some evidence that contracts becoming more complete over time as parties learn, using data on Air Force engine procurement.

It may be more difficult for more mature companies in developing countries to incorporate elsewhere.²⁴

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²⁴ Qian and Strahan (2004) study a sample of international bank loans and draw similar conclusions.

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