

Geography and Contract Design in the Venture Capital Industry

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Abstract

We analyze the impact of the proximity between the lead VC and the portfolio firm on contract design using a very detailed hand-collected pan-European data set and observations of the United States as benchmark. We measure proximity as the travel time in hours or alternatively as the travel distance in 100 kilometers. We distinguish two types of rights: those which guarantee active intervention by the VCs as voting rights and board rights and more passive rights such as veto rights and information rights. If proximity increases, the probability that the VCs hold the majority of voting rights and board rights as well as relatively many veto rights also increases while the allocation of information rights is not affected. Thus proximity and the latter contract elements turn out to be complements. This may be due to the fact that proximity is a necessary condition for using these rights efficiently.

Keywords: venture capital, corporate governance, distance, contract design, active involvement, soft information

JEL classification: G24, G34

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Non-technical summary

The importance of regional proximity between venture capital investors (VCs) and their portfolio firms is broadly acknowledged both by the popular press and the academic literature. The latter attributes this importance especially to the particular role of VCs in financial markets: VCs offer portfolio firms not only financing but also crucial advisory functions. Despite this importance, there exists, however, very little evidence on the impact of proximity on the financing conditions and the financing outcome. Against this background, the present paper tries to partially fill this gap by analyzing the impact of proximity on contract design using a hand-collected pan-European data set.

To be more precise, in a first step, we analyze the determinants of the distance between the lead VC and the portfolio company. We measure distance as the travel time in hours or alternatively as the travel distance in 100 kilometers. We find that the lead VC is located farther away if he has fewer offices in the country of the portfolio firm; if it is a later-stage firm and hence the problems of asymmetric information and moral hazard are less pronounced; if the lead VC is a captive VC and thus does not pursue a strategy of hands-on vis-à-vis the portfolio firm; or if the portfolio firm is located in the United States and not in Germany.

In a second step, we analyze the impact of the proximity between the lead VC and the portfolio firm on contract design after controlling for the endogeneity of proximity. We distinguish two types of rights: those which guarantee active intervention by the VCs as voting rights and board rights and more passive rights such as veto rights and information rights. If proximity increases, the probability that the VCs hold the majority of voting rights and board rights as well as relatively many veto rights also increases while the allocation of information rights is not affected. Thus proximity and the latter contract elements turn out to be complements. This may be due to the fact that proximity is a necessary condition for using these rights efficiently.

Our results clearly show that distance has a great influence on the active involvement of VCs in a new venture. Hence, the added value of a VC in new ventures compared to a traditional investor can only be fully realized if both parties are located closely. This means that policies towards attracting VCs may be an important condition for innovative regions.

1 Introduction

The importance of regional proximity between venture capital investors (VCs) and their portfolio firms is broadly acknowledged both by the popular press (see, for example, Stross, New York Times, (2006)¹) and the academic literature. The latter attributes this importance especially to the particular role of VCs in financial markets: VCs offer portfolio firms not only financing but also crucial advisory functions. But while there exists a relatively broad literature which analyzes the determinants of the proximity between the VC and the portfolio firm, there exists only very limited evidence on the impact of proximity on the financing conditions or the financing outcome. We contribute to filling this gap by analyzing the impact of the proximity between the lead VC and the portfolio firm on contract design using a hand-collected, comprehensive pan-European data set.

This research question is of crucial importance as there do not exist any clear predictions of whether specific contracting elements and proximity should be complements or substitutes. Indeed, the existing literature suggests two alternative explanations. On the one hand, the results of the literature on soft information and geography (see, for example, Petersen and Rajan [2002] or Berger et al. [2005]) suggest that explicit contract elements should be substitutes to proximity because investors can rely on implicit mechanisms when they are located sufficiently close to the company they invest in. Indeed, Tian [2008] and Bengtsson and Ravid [2009] show that this relation seems to hold for staging and certain cash-flow contingencies in the venture capital context². On the other hand, the VC literature underlines the crucial advisory role of the VC which requires an active continuing involvement of the VC in the portfolio firm. If the VCs pursue such a hands-on approach, however, proximity seems to be an essential condition and consequently, contract elements which make such an involvement possible should be rather complements to proximity than substitutes. This idea is further supported by the papers that report a positive impact of proximity on performance (see Cumming and Dai [2008], Tian [2008] and Butler and Goktan [2008])³ and thus suggest that, indeed, closer located VCs seem to be able to better exercise their specific role in the portfolio firm.

¹“if a start-up company seeking venture capital is not within a 20-minutes drive of the venture firm’s offices, it will not be funded.”

²Tian [2008] shows that VCs which are located closer to their portfolio companies receive fewer and thus longer and larger financing rounds. This suggest that round financing as an explicit control mechanism is used less frequently if the VC is located relatively closely to the portfolio firm and is thus able to use implicit control mechanisms. Bengtsson and Ravid [2009] show that cash-flow contingencies diminish if the lead VC is located closer to the portfolio firm.

³All three papers analyze the impact of proximity on performance: Cumming and Dai [2008] show that an exit via an IPO or an acquisition is more probable for firms which are closely related to the VC; Tian [2008] also shows that closer located companies have a higher probability of a successful exit and that their operating performance is better; and finally, Butler and Goktan [2008] show that underpricing is less pronounced if the VC is located closer to the portfolio firm.

We test these alternative explanations using a very detailed hand-collected pan-European data set of 238 investment rounds in 112 portfolio firms by 71 different lead VCs. In a first step, we analyze the determinants of the distance between the lead VC and the portfolio company. We find that the lead VC is located farther away if he has fewer offices in the country of the portfolio firm; if it is a later-stage firm and hence the problems of asymmetric information and moral hazard are less pronounced; if the lead VC is a captive VC and thus does not pursue a strategy of hands-on vis-à-vis the portfolio firm; or if the portfolio firm is located in the United States and not in Germany.

In a second step, we analyze the impact of proximity on different contracting mechanisms. First, we look at whether the VCs together hold the majority of voting rights or the majority of board rights. Second, we look at the veto rights which can be exercised by the VCs and third, we look at the information rights of the VCs. It is important to underline that these different contract mechanisms differ importantly with respect to the degree of involvement of the VCs. Voting and board rights certainly imply the strongest involvement of the VC in the portfolio firm while veto rights may function as pure control rights or may also imply a certain involvement of the VC - even though in a more passive way. Information rights, on the contrary, are the most passive rights. Hence, in the light of the different explanations, it is interesting to see if there exist any differences with respect to the impact of proximity on these different contracting categories.

In order to be able to realize the analysis, we have to take an instrumental variable approach in order to control for the endogeneity of the proximity variables. This endogeneity problem arises as there may be unobservable factors which jointly determine the decision of whether to invest in a firm that is located farther or closer as well as the contract design. Therefore, we take a two stage approach and use the described first stage regression with the number of offices of the VC in the portfolio firm's country as an instrument. We know that this variable is a crucial determinant of travel time or distance and we think that it should not have any impact on contract design as we are able to control for the VC's type as well as his experience. We find that the probability that the VC syndicate holds the majority of voting rights, the board majority as well as a relatively high number of veto rights depends negatively on distance: the farther away the lead VC, the smaller the probability. Thus, we are able to show that voting rights, board rights as well as veto rights seem to be rather complements to proximity than substitutes. This means that proximity seems to be, in effect, a crucial condition in order to be able to efficiently exercise these types of rights. As concerns information rights, we do not find a robust impact of proximity, however.

The paper is organized as follows. In the next section, we provide a detailed literature review on related research focusing in particular on the specific role of VCs and the

thereby induced particular importance of proximity. After describing our data set and the variables which we use in the third section, we also give a first overview about our sample. In the fourth section, we present the results of our univariate t-tests as well as the regression results for the first stage, i.e. the determinants of the proximity between the lead VC and the portfolio firm. Section five reports our results with respect to the second stage probit regressions where we analyze the impact of proximity on contract design. Finally, section six concludes.

2 Literature review

Our paper is closely related to three strands of the literature. First of all, there exist papers which underline the specific role of VC investors and thus try to explain the necessity of proximity. Second, there exists a broad literature which analyzes the interdependence between supply and demand of venture capital. And third, there exists a small number of papers which analyze the impact of proximity on the financing conditions and especially the financing outcome.

As concerns the first strand of literature, we know that venture capitalists - as opposed to traditional investors - have to be aware of investment opportunities in start-up firms which is more probable for closer located firms (see Sorenson and Stuart [2001]). Moreover, we know that VCs submit each proposal to a careful process of due diligence before investing. However, especially for young start-up firms without tangible assets (the types of firms VCs generally invest in) soft information is particularly important (see Butler and Goktan [2008]) and thus a correct evaluation may be only possible if the firm is sufficiently closely located to the VCs. On the other hand, we also know that the matching between a VC and a portfolio company is a two-sided matching process, i.e. the entrepreneur must also choose the VC - often the entrepreneurs send their business plan to the VCs when looking for finance. Hsu [2004] shows, for example, that entrepreneurs are willing to forego better valued offers in order to get financed by a VC with high reputation because the VC's investment takes a certification role for the portfolio company. This argument may also imply that the portfolio firm is willing to accept a more distant VC (and thus to renounce possibly to effective monitoring and advice) in order to get funds from a VC with a higher reputation. Finally, we know that venture capitalists do not only offer money to the portfolio company but also the necessary advice in order to make the company a success (see, for example, Casamatta [2003] who models the convenience of the dual task of the VCs of providing money and advice; or Schindele [2006] who models the convenience of the dual task of the VCs of providing monitoring and advice with capital-constrained entrepreneurs). However, in order to be able to provide effective advice and monitoring to the portfolio company the VC must be sufficiently close. Lerner [1995] shows, for example,

that the probability of VCs being members of the firms' boards increases with a reduction in the distance between the VCs and their portfolio firms. However, this active monitoring is crucial for the reduction of moral hazard problems and the VC's advice is particularly important for entrepreneurs with little management background or firms which are about to enter the market. Taking into account these specific characteristics of the VC industry, it is not surprising that regional proximity seems to be an important factor and that firm as well as VC characteristics seem to be the dominant factors in determining the actual distance.

In addition, there exists a broad literature on geographic specialization and clustering which analyzes the interdependence between supply and demand of venture capital. The discussion in Europe about a high concentration of venture capitalists in certain regions versus a promotion of a more even distribution across regions in order to avoid equity gaps is of particular relevance (see, for example, Martin et al. [2002]). This is especially important as Martin et al. [2005] show, for example, a strong regional preference of VC investors when choosing their portfolio firms and thus a strong interrelation between the location of VC funds and VC supply. Furthermore, they analyze the clustering of VCs and find that major clusters are generally found in major financial centers (due to the important exit channels which are provided for VC investments) and that there exists an important dynamic between supply and demand whereby the demand may later even attract VC investments from outside the region (see, for example, the Munich region in Germany).

Moreover, Lindgaard Christensen [2007] discusses two ambiguous effects of an increased competition between VC investors: VCs may either choose a higher geographic concentration in order to access specialization gains or a lower geographic concentration in order to diversify risk. But, using a Danish data set, he points out that the growth of the venture capital markets has led to a higher specialization of venture capital investors with respect to the geographic location of their portfolio companies.

Finally, there exists a broad literature on syndication in the venture capital industry. Syndication is important in this context as it may help to overcome distance. This may happen through two different channels. On the one hand, a large syndication network may help the VC to find potential interesting firms to invest in which are located farther away (see, for example, Sorenson and Stuart [2001]). On the other hand, syndication may help to mitigate the problems of a higher distance because closer located syndication partners can help with possible monitoring as well as advice.

To the best of our knowledge, there exist only four important articles which try to analyze more closely the mentioned arguments. First, Cumming and Johan [2006] examine geographic proximity between VC investors and their portfolio companies using a com-

prehensive database of Canadian VC investments between 1991 and 2003. They especially focus on inter- versus intra-provincial investments and find that the latter ones are more probable for privately held firms, for turnaround investments with respect to buyouts and early-stage investments, for firms in more traditional industries in comparison to high-tech firms, for earlier years in their sample, for government-sponsored funds as well as for the firms in the Ontario and Quebec provinces. Second, Fritsch and Schilder [2006] analyze the importance of regional proximity for German VC investments. Using a proprietary database of VC investments of the years 2003 and 2004, they find that the travel time between a VC and the portfolio company is, on average, 2 hours and 40 minutes while the average distance is about 250 kilometers: thus regional proximity seems less important for VC investments in Germany than, for example, in Silicon Valley. They are further able to show that there exists a positive correlation between the distance and the amount of capital invested as well as the number of investors which invest in a specific portfolio company. Third, Cumming and Dai [2008] show that there exists a significant local bias in venture capital investments in the U.S. between 1980 and 2000. Moreover, they analyze the determinants and impacts of this local bias and find that more experienced and older VCs, VCs with a less developed syndication network as well as VCs located in areas with less competition among VCs exhibit a significant stronger local bias. Finally, Butler and Goktan [2008] confirm the previous results: Using a U.S. data set of VC investments for the period 1983-2004, they show that the distance between the VCs and their portfolio companies is the smaller, the younger and the smaller the companies and the less tangible assets they have. They attribute these differences to the fact that for these types of companies soft information is more important.

The last two mentioned papers and the paper of Tian [2008], however, go one step further by examining the impact of distance on performance. For instance, Butler and Goktan [2008] point out that underpricing is less pronounced for regionally close portfolio firms even when controlling for endogeneity; Cumming and Dai [2008] show that more closely located VCs are more probable to exit the firm via an IPO or an acquisition and Tian [2008] confirms that closer portfolio firms have a higher chance of successful exits and a better operating performance in the IPO year.

Analogously to the mentioned papers, we also want to analyze the determinants of the distance between the VC and the portfolio firm by using a pan-European data set. We think that this analysis may give us new interesting results due to two specificities of our data. First of all, we have a very extensive data set, which allows us to control in more detail for firm characteristics. Second, and more importantly, we do not focus on a single country but look at an international data set which allows us to analyze distance across country barriers. In a second step, we want to carry forward the understanding of the

impact of the distance by analyzing whether contracts differ between VCs which are more distant or located closer with respect to their portfolio firms. The only two papers that try to analyze this aspect are the papers of Tian [2008] and Bengtsson and Ravid [2009]. The former paper analyzes whether the distance between a VC and the portfolio company has an influence on staging and finds that VCs which are located closer to their portfolio companies receive fewer and thus longer and larger financing rounds. This result seems to underline the hypothesis that VCs use implicit control mechanisms (monitoring) when they are close to their portfolio firm whereas they rely on explicit control mechanisms (staging) when they are farther away. This means that explicit contract mechanisms and proximity are used as substitutes. This result is confirmed by Bengtsson and Ravid [2009] using a US sample who show that contracts include fewer cash contingencies when the VC is located closer to the portfolio firm even after controlling for cultural differences. However, Tian [2008] only looks at liquidation rights in the form of round financing and Bengtsson and Ravid [2009] rather focus on cultural differences between US regions instead of distance. Therefore, in the present paper, we will analyze the impact of the distance between the VCs and their portfolio companies on further contract elements, namely veto rights, voting rights and information rights by using an international dataset in order to obtain a more complete picture of the differences in contract design depending on geographical distance after controlling for endogeneity.

3 Data set

3.1 Data source and sampling

Our analysis uses a unique, proprietary, hand-collected and very detailed pan-European data set which is directly based on the contracts between the VCs and their portfolio firms. We were provided with all the available information including term sheets, shareholders' agreements, articles of association, terms and conditions, contracts of employment, consulting contracts, information on implementation of specific contract elements, business plans, teasers, CVs of founders, investment memoranda, documents on internal analysis (VC based) and documents on subsequent performance. This information was further complemented with data from external data sources.

To be more precise, the data collection process consisted of four steps. First, we looked for VCs from five different European countries (United Kingdom, Germany, Norway, Israel and France) who were willing to provide the required data to us. In order to achieve this goal, we attended different VC events and conferences and contacted already familiar VCs. The second step included the data collection process. Therefore, we visited the different VCs at their offices where they gave us access to the whole range of data about their

different investments. Due to time constraints, we sometimes limited to a random sample of investments which were chosen by us. We coded all the collected information into quantifiable variables. In a third step, using Thomson Financial, we complemented our data base with additional information about all the VCs which participated in each of the financing rounds of our data set. The fourth step consisted in determining the regional proximity between the different VCs and the portfolio firms of our sample. Therefore, we resorted to different internet sources such as Google Earth, Map24 and Opodo. Finally, by combining these different data sources, we obtained a very detailed and comprehensive data set.

Our data set comprises 238 investment rounds in 112 portfolio firms by means of 71 different lead VCs between 1997 and 2007. The portfolio firms in our data set are located in Germany, the United Kingdom, Israel, France, Norway, Austria, Belgium, Switzerland, Finland, Ireland and the Netherlands. In addition, we included 62 US investments as a benchmark.

3.2 Representativeness and possible selection biases

We are confident that our sample is a representative sample of the European market due to three reasons. First of all, the VCs who provided us with information were contacted through different means: either we met them at conferences or we already had some friends or knew friends of friends working at a venture capital company or some of the known VCs helped us to get further contacts through their networks. Second, we drew a random choice of the range of all investments of a specific VC. Third, an important percentage of our collected data comes from VCs who are not only focused on direct investments but are also investing in the secondary market. This enlarged our basis of different VCs importantly.

Despite of these advantages of our data set, there may be potential biases with respect to the types of VCs included. First of all, the VCs which participate at conferences or which have international contacts are rather more advanced, more internationally oriented, more networking or more opened-minded VCs. Second, since a large percentage of our data was collected in a secondary firm, we may have a bias to rather successful VCs as these are typically the ones which need further funding. We do not think, however, that these are major problems: we just have to interpret our data set as a representation of the rather advanced, internationally oriented and successful VCs of each country. As concerns the problem of missing data, we do not seem to have a systematic bias problem because usually, the number of observations was rather high and if we were confronted with missing data, data was missing for various reasons.

3.3 Description of the dependent variables

Measures for the proximity between the lead VC and the portfolio company

Even in a rapidly growing technological society where transportation and communication tools are developing steadily, VCs still have to overcome the matter of distance between them and their portfolio firms in order to collect soft information about the high-risk entrepreneurial firms. We regard two kinds of distances between the lead VCs and their portfolio firms.

First, we construct a continuous variable LEADDISTANCE which captures the physical distance in 100 kilometers between the location of the portfolio firm and the most closely located office of the lead VC. We take the nearest office of the lead VC because we suppose that this office will be in charge of the monitoring and the advising of the portfolio firm. However, the physical distance may not be as important as the time the VC has to invest in order to get to a specific portfolio firm. Therefore, we construct a second variable called LEADTIME which measures the travel duration in hours between the portfolio firm and the most closely located office of the lead VC. To be more precise, we determine the travel duration by car (eventually by train) and by plane if possible using internet sources such as map24 and opodo. As concerns the travel duration by plane, we added one hour in order to control for the check-in and check-out time. Furthermore, we took into account the arrival and departure time to/from the airport if the airport was not located in the same city as the lead VC's closest office or the portfolio firm. We then took the minimum travel duration of the travel duration by car (eventually by train) or by plane to determine our variable LEADTIME. In cases where the lead VC and the portfolio firm are located in the same city both variables take the value zero.

Definition of the contract variables

In order to be able to analyze the impact of the proximity between the lead VC and the portfolio firm on contract design, we have to translate the observed contracting elements in quantifiable variables. We distinguish two types of mechanisms: on the one hand, contract elements which give the VCs the possibility to actively intervene in the operations of the firm; on the other hand contract elements which serve as monitoring or control mechanisms of the VCs vis-à-vis the portfolio firm.

As concerns the first group, we construct two variables which measures the possibility of direct intervention by the VC: the VCs' voting rights in the shareholders' meetings and the board. Both variables (which we name VC VOTING and VC BOARD) are dummy variables which take value one when all the VCs together hold the majority of votes in the respective committee.

As concerns monitoring and control mechanisms, we take into account information

rights and veto rights. In both cases, we sum up the number of different rights which are assigned to the VC syndicate. For information rights, we sum up the obligation of presenting monthly, quarterly and annual reports to the VCs as well as the right to inspect the portfolio firm and access relevant documents. For veto rights, we sum up all the different types of veto rights as, for example, the veto right against changes in the business plan, the veto right against major financial decisions or the veto right against changes in the head count. Based on these numbers, we determine the median number of rights the VCs hold in our sample and construct two dummy variables INFORIGHTS and VETORIGHTS which take value one if the sum of the different information rights or veto rights is larger than the median and zero otherwise.

3.4 Description of the independent variables

Firm characteristics

As concerns the portfolio firm, we observe the age of the entrepreneurial firm at the contracting date (variable: AGE). We further know whether the firm already generates any revenues at the contracting date. This is captured by our dummy variable REVENUE. We also collected information about the firm's development stage. EARLY STAGE is a dummy variable which takes value one if the firm's development stage is either seed or start-up as defined by the German Venture Capital Association. In addition, we control for the portfolio firm's industry. Indeed, we construct a dummy variable GROWTH INDUSTRY which takes value one if the portfolio firm operates in biotechnology, medical health and other life sciences or if it produces any computer related products (both hardware and software) as well as internet specific products or operates in the communication sector. We further have some information about the nature of the firm. We know whether the VC is financing a new corporation, a new project within an existing firm or a spin-off firm. EXISTING FIRM and SPIN OFF are both dummy variables which take value one if the new project which is financed is realized within an existing firm or a spin-off firm respectively. We finally observe the firm's strategy. EXTGROWTH is a dummy variable which takes value one if the firm pursues a strategy of external growth.

VC and entrepreneur characteristics as well as investment conditions

Secondly, we have some information about the entrepreneur managing the portfolio firm as well as the VCs which are investing and, in addition, about the general investment conditions.

As concerns the entrepreneur, we know whether he has some prior experience. The variable REPEAT takes value one if at least one of the founders has run a firm before.

As concerns the VC, we are especially interested in the lead VC of each financing round.

We therefore construct different variables which reflect his experience and investment strategy. LEADINDEPENDENT is a dummy variable indicating whether the lead VC is an independent VC in comparison to, for example, corporate VCs or bank-dependent VCs which may have a different investment strategy. In order to reflect the VC's experience, we construct three variables: LEADAGE refers to the age of the lead VC at the contracting date; LEADFUNDS indicates the number of funds the lead VC has managed until the contracting date and LEADCOMPS refers to the number of portfolio firms the lead VC has invested in until the contracting date. In order to control more exactly for the lead VC's experience, we construct the variable LEADFUNDSFOCUS which indicates the number of funds which were focused on the same development stage as the one of the portfolio firm that the lead VC has managed until the contract date. We further create three respective dummy variables which take value one if the value of the respective variable is larger than their median in our sample and zero if it is equal or smaller than the respective median.

As concerns the general investment conditions, we observe whether the contract is the first VC financing round. If this is the case the dummy variable FIRST CONTRACT takes value one. Moreover, we know the overall financing amount provided by all the VCs in the respective financing round. This information is reflected in the continuous variable INVESTMENT (in mil). Finally, we know the contracting date and, in order to control for the different economic periods of the VC industry, we create three time dummies: PERIOD 1 takes value one if the financing round took place until the year 2000, the boom period; PERIOD 2 indicates whether the investment was made between 2001 and 2002, a period of relative decline in the venture capital industry; PERIOD 3 refers to investments from 2003 onwards, a period of steady growth and consolidation in the venture capital industry.

Cluster, country and geographical characteristics

Finally, we complemented our data set with additional information on the locations of the portfolio firm and the lead VC respectively. In a first step, we classified the portfolio firms' country in four categories based on their legal origin. GERMAN LAW is a dummy indicating whether the portfolio firm is located in a German law country, such as Germany, Switzerland or Austria. The dummy variable COMMON LAW takes value one if the portfolio firm is located in a common law country in Europe, such as the United Kingdom, Ireland or Israel. If the portfolio firm is situated in a French law country such as France, Belgium or the Netherlands, the dummy variable FRENCH LAW takes value one. Finally, the dummy variable SCAND LAW takes value one if the portfolio firm is located in a Scandinavian law country such as Norway or Sweden. As the US may be different to the rest of the countries, we further create a dummy variable COUNTRY USA which

takes value one if the portfolio firm is located in the United States. As we think that not only the legal origin of the portfolio firm’s country but also the experience of the VCs in the portfolio firm’s country may be important, we additionally construct the dummy variable COUNTRY EXPERIENCE which indicates whether the portfolio firm is located in a country with a high developed venture capital industry, i.e. it takes value one if it is located in either the USA, Israel or the United Kingdom.

Moreover, we determined the main location of all VCs who are members of the venture capital associations of the respective country. Based on general considerations, we identified different VC clusters in these countries. Based on these VC clusters, we constructed three dummy variables. First, we determined whether the lead VC or the portfolio firm is located within a VC cluster. Therefore, we construct the dummy variables CLUSTER FIRM and CLUSTER LEAD which take value one if the portfolio firm/the lead VC is located within a VC cluster. Furthermore, we use the quantity of the VCs within the different clusters and the total quantity of VCs who are members of the venture capital organization of that respective country to measure the concentration of the venture capital companies in this country. More precisely, we calculate the Herfindahl-Hirschman-Index (HHI) as the sum of squares of the number of venture capital companies within each cluster divided by the total number of venture capitalists in the respective country. Besides the continual variable COUNTRY HERFINDAHL, we also define the dummy variable COUNTRY HERFINDAHL D. which takes value one if the HHI is larger than 0.18 and thus the country’s VCs are highly concentrated in some areas.⁴

3.5 Instrumental variable to control for the endogeneity of the proximity between the lead VC and the portfolio company

Analyzing the impact of the regional proximity between the lead VC and the portfolio company on contract design implies one major concern. The distance between the lead VC and the portfolio firm is not exogenous. This is due to the fact that some firm characteristics do not only influence the choice of the distance between the VC and the portfolio firm but also the contract design. Some industries like biotechnology, for example, are more complex and therefore more difficult to monitor. Hence, VCs would not finance a company which is situated too far away. However, due to the high asymmetric information problem with this type of company, the VC will also require substantially more control and veto rights. Therefore, in this case, the smaller distance may not be the cause for the

⁴The described approach was taken for all European countries. For our benchmark country, the United States, we took a slightly different approach, however. First, we took the clustering of Babcock-Lumish [2007]. Then, in order to calculate the HHI, we take the mean number of VCs in each cluster and afterwards, we determined the HHI separately for each time zone of the US. Finally, we averaged the different results.

higher number of control and veto rights. In order to control for this endogeneity problem, we need an instrumental variable which does determine the distance but does not have any impact on contract design. We use the number of offices of the lead VC which are located in the same country as the portfolio firm as instrumental variable (OFFICES). We think that this is a suitable instrumental variable for the following reasons. First of all, we think that it has an important impact on the regional proximity between the lead VC and the portfolio company. The intuition behind this is the following: since the matching between the VCs and their entrepreneurial firms is a two-sided process (see Hsu [2004]), the entrepreneur will send his business plan to VCs he knows which are probably closely located and the lead VC will screen firms he knows which are more probable to be closely located as well. Hence, the distance between the entrepreneurial firm and the selected VC should decrease with the number of VC offices located in the portfolio firm's country. Thus, we expect a significantly negative coefficient in the first-stage regression.

Secondly, one may argue that the variable OFFICES is highly correlated with the VC's age and thus his experience and therefore is only a further proxy for experience. However, as we control for the VC's experience, we do not think that this is the case. Moreover, we think that expanding and building offices in diverse places can be regarded as a pure expansion strategy. However, the contract design approach should be independent of this expansion strategy but should rather depend on the VC's experience as well as his general business approach. The business approach, however, depends crucially on the type of VC. As we are able to control for the VC's type, we think that the variable OFFICES should not have any additional impact on contract design.

Finally, it is also possible that our instrument represents a cross border deal as it takes value 0 whenever it is a cross-border deal and higher values for deals within a country. We do not think that this affects the contract design, however: if foreign lead VCs are not familiar with the country they invest in, they often involve a local VC through whom additional asymmetric information problems due to uncertainty about the region can be eliminated. Moreover, less than 23% of our observations refer to cross-border deals.

3.6 Summary Statistics

We analyze 238 financing rounds in 112 portfolio firms by 71 different lead VCs from 13 different countries. 180 (78.26%) of all financing rounds were provided in companies of early-stage development and in 56 (24.78%) cases the company receives financing for the first time (First Contract). The investments were made between 1997-2007, more precisely 25.21% were made up to 2000, 25.21% were made between 2001-02 and 49.58% were made from 2003 onwards. The average amount invested per financing round is about 8.9 million euros. The median is considerably smaller (2.8 million euros) which indicates outliers. The

portfolio firms are on average 4 years old when they receive financing taking into account all financing rounds. However, they are on average only 2.5 years (median: one year) old when they receive VC financing for the first time. The portfolio firms in our sample belong to different industries: 16.39% are active in industries such as biotechnology, medical health and other life sciences, 53.79% are active in computer, internet and communication related industries, 29.83% are active in industries regarding semiconductors as well as industrial or energy projects or other kinds of industries which do not fall in the mentioned categories. The portfolio firms' offices are located in the following countries which represent the legal foundation of the contracts between the VCs and their portfolio firms: 87 (36.55%) in German law countries such as Germany, Austria and Switzerland (whereas almost all of them (81 (34.03%)) are located in Germany), 55 (23.11%) in European Common law countries such as Israel, Great Britain and Ireland, 62 (26.05%) are located in the United States, 20 (8.4%) in French law countries such as France and Belgium and the Netherlands and finally 14 (5.88%) in Scandinavian law countries such as Norway and Sweden. 73.54% of the portfolio firms are located in a VC cluster.

Concerning the characteristics of the lead VC, 71.23% of all lead VCs are independent VCs and 85.65% of all lead VCs are located in a VC cluster. The closest offices of the lead VCs to their portfolio firms are located in the following countries: 100 (44.84%) in German law countries such as Germany, Austria and Switzerland (whereas almost all of them (98 (43.95%)) are located in Germany), 53 (23.77%) in Common law countries such as Israel, Great Britain and Ireland, 54 (24.22%) are located in the United States, 8 (3.59%) in French law countries such as France and Belgium and the Netherlands, 8 (3.59%) in Scandinavian law countries such as Norway and Sweden. In 77.13% of the financing rounds the lead VCs and their portfolio firm are located in the same country and in 26.13% they are located even in the same cluster. Concerning the VC concentration in these countries we observe a high concentration in Common (HHI:0.6327), French (HHI:0.6140) and Scandinavian law countries (HHI:0.5479) unlike in German law countries where VCs are more spread (HHI:0.1462).

On average the lead VCs can reach their portfolio firms in approximately 3h and they are on average 1137 km far away. The median is around 2h and 307 km respectively which indicates outliers. These results are significantly higher than in some other studies, especially when compared to the United States (cf. Tian [2008] observes a mean of 663.66 km and a median of 267 km including only US entrepreneurial firms since 1980). Besides the fact that we use a pan-European data set and observations of the US as benchmark, this could be due to the fact that our sample period starts not until 1997.

Regarding the allocation of contract elements, the VCs have on average 59.28% of the voting rights with a median of 62.37%. The majority of voting rights are captured

by the VCs in 143 (63%) cases. VCs are granted on average 57.86% of the board seats with a median of 57.74%. The majority of board rights are captured by the VCs in 125 (59.52%) cases. Information rights are substantially allocated to the VCs in 140 (62.50%) cases where on average 3.8 of 5 information rights are allocated to the VCs. An extensive allocation of veto rights to all VCs can be observed in 112 (49.56%) cases where on average approximately 10 different veto rights are granted to the VCs.

4 Determinants of the proximity between the lead VC and the portfolio company

As mentioned above, the proximity between the lead VC and the portfolio company is endogenous because there may be some factors as, for example, the development stage of the portfolio firm, that are unobservable and jointly determine both the proximity chosen as well as the contract design between the lead VC and the portfolio firm. Thus, in order to be able to evaluate whether the proximity between the lead VC and the portfolio company has any influence on the contract design, it is important to analyze in a first step, the determinants of the proximity between the lead VC and the portfolio company.

Based on the existing literature, we test whether the portfolio firm and the VC as well as the investment characteristics have any influence on this proximity. Furthermore, we also examine whether the proximity between the lead VC and the portfolio firm has changed over time or distinguishes itself across countries. In order to do so, we present pairwise t-tests in a first step, before running OLS regressions in a second step.

The results of the pairwise t-tests are presented in table 3. As to firm characteristics, both the development stage of the firm as well as the industry seem to determine the proximity: Early stage as well as portfolio firms in growth industries are located significantly closer to the lead VC. The latter result is, however, only significant with respect to the travel time. Taken together, these results are in line with the results of Butler and Goktan [2008] who show that younger firms are located closer to the VC. Moreover, it underlines the importance of physical proximity to portfolio firms for which hard information is difficult to obtain. This importance of proximity is further underlined by our result that a spin-off firm is located significantly closer to the lead VC both in terms of distance as well as travel time.

As concerns VC characteristics, we can see in table 3 that they also have an important impact on the proximity between the lead VC and the portfolio company. Older VCs are located on average 2.5 hours away from their portfolio firm whereas younger VCs are located 3.65 hours away. This confirms the result of Cumming and Dai [2008] for Canada. Moreover, if the lead VC is an independent VC the portfolio company is located closer to

the portfolio firm. We know that independent VCs are usually more inclined to actively intervene in the portfolio firm (see, for example, Hirsch and Walz [2008]). For this reason, proximity seems to be more important for these types of VCs. Finally, the expansion strategy of the VC is an important determinant, too. As expected, VCs with more offices in the country of the portfolio firm are located significantly closer to their portfolio firms than VCs with fewer offices. Thus our instrument is highly significant in the t-tests.

As concerns investment conditions, the results of Fritsch and Schilder [2006] are partially confirmed in our sample: if the total investment amount by all VCs is larger, then the lead VC is located significantly farther away. This result is, however, only significant with respect to distance and not to travel time.

Finally, as concerns country and time effects, we can state that proximity does not have changed across time but that there are important differences between countries. If the portfolio firm is located in Germany, Switzerland or Austria, then the travel time between the lead VC and the portfolio firm on average amounts only to 1.95 hours while it amounts to 3.12 hours for portfolio firms in the United Kingdom, Israel or Ireland; to 2.68 hours for portfolio firms in France, Belgium or the Netherlands; to 3.69 hours for portfolio firms in Scandinavian countries and even to 4.43 hours for portfolio firms in the United States. This last result may be partly due to the specific characteristics of our data set. However, if we look further into the results, it seems to be the case that rather Germany is the outlier as the t-tests show that portfolio firms in countries with a lower VC concentration are located closer to their portfolio firms. This implies that there exists a broader number of VC clusters and thus the number of VCs in one cluster with respect to the total numbers of VCs is not as high as in other countries. Consequently, the probability that the lead VC has an office which is located closer to the portfolio firm is higher compared to other countries. We know that Germany is the country with the by far lowest concentration of VCs in specific areas. In general, we can further state that VCs which are located in a VC cluster are less far away from the portfolio firm than VCs located outside the clusters. This result underlines the fact that supply and demand of venture capital seem to be highly interdependent.

In a second step, we run OLS regressions with standard errors clustered at the firm level for both the distance as well as the travel time as dependent variables. As concerns the independent variables, we have to balance the number of variables included and the resulting missing values which are especially problematic with respect to certain variables. Therefore, we base our decision on the presented results of the t-test. We thus include our instrumental variable OFFICES, the early-stage dummy in order to control for the development stage of the portfolio firm, LEADINDEPENDENT and LEADFUNDSFOCUS⁵

⁵We decided us for this variable because the other possible proxies for the VCs experience are more highly correlated with our further independent variables (see table 4).

in order to control for the VC's strategy as well as his experience, and CLUSTER LEAD in order to control for the location of the VC. We further include time dummies and industry dummies as control variables. In a first specification, we additionally include the different law dummies in order to control for country effects while we include the variable COUNTRY HERFINDAHL in the second specification. In both specifications, we include the dummy variable COUNTRY USA in order to control for the fact that the firms in our benchmark country - the United States - may present specific characteristics. Finally, we run each specification two times: the first time, we include the variable SPIN-OFF in order to control for the type of firm; in a second step, we do not include the variable due to the number of missing value which it produces additionally (9 observations which correspond to 4.5% of the observations).

Table 5 shows important, highly significant and robust results for a number of variables. First, our instrument is negative and significant at the 1% level in all specifications indicating that the more offices the lead VC has in the country of the portfolio firm, the smaller the distance or the travel time to his portfolio firm. Second, as already pointed out in the t-tests, our regression results confirm that early-stage firms are located significantly closer to the lead VC than later stage firms. As concerns the economic significance, we can see that specification 1a shows the lowest coefficients. But even these are still very high: early-stage firms are located on average 1.65 hours or 1015 kilometers closer to the lead VC than later stage firms. As concerns VC characteristics, table 5 shows that the dummy variable LEADINDEPENDENT is significant in 7 out of 8 specifications showing that independent VCs are located closer to their portfolio firms than captive VCs. This impact also has a high economic significance and underlines once more the importance of proximity for an active hand-on approach by the VCs. With respect to country effects, we also get very robust results. Portfolio firms which are located in the United States are significantly farther away from their lead VC than portfolio firms which are located in Common law countries or in European countries in general. This result should be handled with precaution, however, as it may be due to the specific characteristics of our data set. Furthermore, portfolio firms in a German law country (mainly Germany) are located significantly closer to the lead VC than portfolio firms in Common law countries. When looking at the results of the second specification, this result is further confirmed as the variable COUNTRY HERFINDAHL is positive and highly significant indicating that the higher the concentration of the VCs in the portfolio firm's country, the more pronounced is the distance between the portfolio firm and the lead VC.

Besides these highly and very robust results, it is further interesting to have a closer look at the other significant variables. We can see that the variable which shows whether the lead VC is located in a cluster or not is negative and significant in 5 out of 8 speci-

fications. This means that VCs located outside from clusters are farther away from their portfolio firms than VCs located in clusters. This result is interesting as it confirms the strong relation between VC centers and innovative regions. Moreover, the variable LEAD-FUNDSFOCUS which controls for the VC’s experience with firms in the corresponding development stage is negative and significant in 6 out of 8 specifications showing that more experienced VCs are located closer to their portfolio firms. This result again underlines the importance of proximity if the VC has the capacity to actively advise the firm.

5 Does the proximity between the lead VC and the portfolio firm have an influence on contract design?

Our main research question is to analyze whether the proximity between the lead VC and the portfolio firm has any influence on contract design. As outlined above, this question is especially important as there do not exist any clear predictions about whether proximity and different contract elements should be complements or substitutes. Therefore, in a second step, we run probit models with standard errors clustered at the firm level for four different contract elements (voting rights, board rights, information rights and veto rights) controlling for the endogeneity of our proximity variables LEADTIME or LEADDISTANCE.

To be more precise, we run four different probit regressions for each of the contracting elements and for each of our two proximity variables. As in the first stage regression, we control again for the company’s stage of development (EARLY STAGE), the lead VC’s type (LEADINDEPENDENT), the lead VC’s experience (LEADFUNDSFOCUS), the total amount of financing in the respective round (INVESTMENT), the lead VC’s location (CLUSTER LEAD) as well as industry and time effects by including GROWTH INDUSTRY, PERIOD 1 and PERIOD 2. Just as in the first stage regression, we include in a first step, the different law dummies (GERMAN LAW, FRENCH LAW and SCAND LAW) as well as the US dummy (COUNTRY USA) in order to control for country effects whereas in a second specification, we only include the US dummy and the variable COUNTRY HERFINDAHL in order to control for the concentration of the VCs in the country of the portfolio firm. Moreover, due to the problem of missing values, we run each regression with and without the dummy variable SPIN-OFF. In order to control for the endogeneity of the proximity variable, we run the corresponding first stage regressions as shown in table 5 using the variable OFFICES as instrumental variable which indicates the number of offices of the lead VC which are located in the same country as the respective portfolio firm. As shown above, this variable has a highly significant impact on the proximity between the lead VC and the portfolio company, however, we think that it should not influence contract design

as we know from the VC literature that the VCs' investing strategy should depend on their type and their experience - two variables which we control for.

As concerns the different contract elements, it is important to underline that they differ in the degree of involvement of the VCs. Whereas the board rights and the voting rights of the VCs refer to a rather active influence on the company's decisions, veto rights are considerably more passive and information rights do not imply hardly any involvement of the VCs. Hence, we will describe our results for voting and board rights in a first step, for veto rights in a second step and finally, for information rights.

As concerns the influence of our proximity variables on voting and board rights, tables 6 and 8 show that both variables are negative and significant at the 5% or 1% level in all specifications. This means that if the lead VC is located one hour (100 kilometers) closer to his portfolio firm, the probability that all VCs together hold the majority of voting rights is 8% - 9% (1% to 2%) higher depending on the specification. As to board rights, the results are even more pronounced: if the lead VC is located one hour (100 kilometers) closer to the portfolio firm then the probability that the VCs together have the majority on the board is 10% to 12% (2%) higher. This result shows that proximity and decision rights of the VCs in the portfolio firms seem to be rather complements than substitutes. This may be due to the fact that the VCs are not able to adequately exercise their decision rights if the lead VC is located too far away.

With respect to the influence of our proximity variables on veto and information rights, the results are different for the two types (see tables 7 and 9). Whereas proximity also seems to be important for veto rights, it does not have a robust significant impact for information rights. Tables 7 and 9 show that for veto rights, our proximity variables are negative and significant at the 5% or 10% level in all specifications: a lead VC that is located one hour (100 kilometers) closer to the portfolio firm has a 8% (1%) higher probability to have many veto rights (more than the median in our sample which is 9). This means that again proximity and veto rights seem to be rather complements than substitutes although the economic effects are slightly smaller than for the case of voting and board rights. Even though veto rights show a more passive element, this complementarity may still exist as more than 9 veto rights are finally also related to a large number of decisions. Consequently, the VC has to be sufficiently involved with the portfolio firm in order to efficiently use these rights. As concerns information rights, the proximity variables are only significant in three out of eight specifications and only at the 10% level. Thus information rights seem to be rather independent of proximity issues and there does not seem to exist a substitutive relation as expected. Nevertheless, this result seems to be intuitive if we think of the relevance of information rights which depends on the additional contractual rights of the VCs.

Thus to sum up, we can say that the proximity between the lead VC and the portfolio firm is crucial for contract design. Our results suggest that proximity and contract elements which allow an active participation of the VC in the firm's decision are rather complements than substitutes. This may be due to the fact that it is easier for the lead VC to exercise his leading function and thus the syndicate's decision and veto rights if he is located closer to the portfolio firm.

Besides analyzing the impact of our proximity variables on the different contract elements, it is also interesting to have a closer look on the impact of VC and firm characteristics as well as country, industry and time effects. In the following, we will discuss our additional results for each of the four contracting elements.

As concerns voting rights, table 6 reports the following results. The dummy variable EARLY STAGE is negative and significant at the 1% level: if the portfolio firm is an early-stage firm, then the probability that the VC syndicate holds the majority of voting rights is 26% to 28% higher. This result shows that as the company develops and the hold-up problem diminishes VCs take over control. Furthermore, we observe that the dummy variable CLUSTER LEAD is negative and significant at the 5% level. The economic effect is again strong (20% - 23%). This finding shows that if the lead VC is located in a cluster, the competition between VCs may be higher and thus it is more difficult for the VC to take over control in the company. The variable INVESTMENT is positive and significant as expected: a higher total amount of financing increases - given equity financing - the VCs' share in the company and thus the probability of having the majority of the decision rights at the shareholder's meeting. In addition, as concerns country effects, it seems that Germany is the outlier: if the portfolio firm is located in Germany, the probability for a VC majority is almost 40% lower compared to Common law countries. This may be due to the different development stages of venture capital industries or to the particularities of the German VC industry. This result is further strengthened by the variable COUNTRY HERFINDAHL. This variable is positive and significant at the 1% level indicating that the higher the concentration of VCs in the portfolio firm's country, the higher the probability of a VC majority. As shown above, we know that Germany is by far the country with the lowest VC concentration. Finally, as concerns time effects, we can observe that during period 1, the boom period, as well as period 2, the reorganization period - compared to period 3, the period of steady growth - the probability of a VC majority was smaller. This may be due to an increased competition and therefore a decrease in the bargaining power of the VCs during the first two periods. On the other hand, there may also have been a learning process of the VCs in our sample. If we use the variable LEADDISTANCE instead of LEADTIME, table 8 shows that our described results continue to be valid.

As concerns board rights, tables 6 and 8 report the following results. First of all,

the variable INVESTMENT is positive and significant in six out of eight specifications: a higher total amount of financing increases the probability that the VCs together hold the majority of voting rights on the board. Moreover, we find robust country and time effects. If the portfolio firm is located in a German law country, the probability that the VCs hold the board majority decreases 20% - 22%. In addition, the variable COUNTRY HERFINDAHL is also positive and significant at the 10% or 5% in three out of four specifications. This result seems to be again driven by Germany as a country with a very low concentration. Concerning time effects, we can see that the variable PERIOD 1 is negative and highly significant in all specifications indicating that it was less usual to observe a VC board majority during the boom period. This result may again be attributed to the relative bargaining position as well as learning effects. Learning effects seem to be a somehow more probable rationale as for the probit regressions with the distance variable, the variable PERIOD 2 is also negative and significant in three out of four specifications. Finally, the variable SPIN OFF is negative and significant at the 1% level indicating that in cases where the portfolio firm is a spin-off and therefore VC advice is less necessary, it is less probable that VCs control the board, i.e. take an active influence in the company.⁶

As concerns veto rights, tables 7 and 9 confirm our previous country and time effects but they also give further interesting insights of the impact of firm and VC characteristics on the choice of veto rights. As mentioned above, we determine the total amount of veto rights which can be exercised by the VCs together for each financing round. We then construct a dummy variable which takes value one if - in a specific financing round - we observe a number of veto rights which is higher than the median number in our sample. Thus, in the reported regressions, we try to explain the determinants for an extensive allocation of veto rights. Interestingly, the dummy variable EARLY STAGE is negative and significant at the 1% level in all specifications indicating that for an early-stage firm the probability of using more veto rights than the median is between 30% and 36% lower depending on the specification. The economic effect is also large when looking at distance. Thus, this result shows that as the company develops and gains in transparency more detailed veto rights can be defined and included in the contracts. Perhaps, this result is also due to the fact that more diverse decisions have to be taken in more developed firms and so a higher number of different veto rights becomes necessary. In addition, the variable LEADINDEPENDENT is negative and significant at the 5% or 1% level. This means that if the lead VC is an independent VC, the VCs together hold relatively few veto rights. This may be due to various reasons. However, one important reason may be the fact that independent VCs in contrast to captive VCs are rather interested in holding decision rights in the form of voting rights and thus veto rights play a minor role during

⁶The significance of the early-stage dummy is only due to the fact that in the corresponding regressions we do not control for the origin of the idea (spin-off). Thus, it is not a reliable result.

negotiation. As concerns country and time effects, our results show that in German and French law countries compared to European Common law countries it is less probable that the VCs hold many veto rights. This result is again partially confirmed by the variable COUNTRY HERFINDAHL. However, the results are not robust. In addition, we again observe a negative and significant result for period 1 though not for period 2 which may be attributed to bargaining power issues.

Finally, as concerns information rights, tables 7 and 9 show that in line with veto rights, the dummy variable LEADINDEPENDENT is negative and significant at the 1% level. This result may again be attributed to the different schemes of involvement of the different types of VCs. If an independent VC participates, for example, on the board of the company, information rights lose much of their relevance. Moreover, as in the case of the already described contract elements, we again observe important country effects: In German, French as well as Scandinavian law countries compared to European Common law countries, it is less probable that VCs hold many information rights. Interestingly the variable COUNTRY HERFINDAHL is nevertheless positive and highly significant. However, in this case it provides less information than the individual country dummies. Finally, the dummy variable PERIOD 1 is again negative and significant at the 10% or 5% level in all specifications meaning that in boom periods compared to periods of steady growth *ceteris paribus* fewer information rights are allocated to the VCs. Again the period 2 dummy variable is not significant, thus the result seems to be caused rather by bargaining power issues than by learning effects.

6 Conclusion

The aim of the present paper was to identify whether the proximity between the lead VC and the portfolio company has any influence on contract design. This research question is especially relevant as there do not exist any clear predictions of whether the analyzed contracting mechanisms and proximity are rather complements or substitutes. One may think that they should be rather substitutes as explicit contract mechanisms are more important for a lead VC which is farther away as he is not able to use implicit rights. On the other hand, proximity may also be a crucial condition to efficiently use the explicit decision and control rights.

In order to address this research question, we first analyze the determinants of the distance between the lead VC and the portfolio company and we find that the lead VC is located farther away if he has fewer offices in the country of the portfolio firm; if it is a later-stage firm and so the problems of asymmetric information and moral hazard are less pronounced; if the lead VC is a captive VC and thus does not pursue a strategy of hands-on vis-à-vis the portfolio firm; or if the portfolio firm is located in the United States and

not in Germany. The country effects - especially as concerns the United States - should be handled with precaution, however, as they may be due to the specific characteristics of our data set.

In order to address the endogeneity problem of the proximity between the lead VC and the portfolio firm, we use the described first stage regression with the number of offices of the lead VC in the portfolio firm's country as an instrument. We know that this variable is a crucial determinant of travel time or distance and we think that it should not have any impact on contract design as we are able to control additionally for the VC's type and his experience. We find that the probability that the VC syndicate holds the majority of voting rights, the board majority as well as a relatively high number of veto rights depends negatively on distance: the farther away the lead VC, the smaller the probability. Thus, we are able to show that voting rights, board rights as well as veto rights seem to be rather complements to proximity than substitutes. This means that proximity seems to be a crucial condition in order to be able to efficiently exercise these types of rights. As concerns information rights, we do not find a robust significant impact of proximity.

These findings also give us some further hints as to the mechanisms of the venture capital industry. Our results clearly show that distance has a great influence on the active involvement of VCs in new ventures. Hence, the added value of a VC in a new venture compared to a traditional investor can only be fully realized if both parties are located closely. This means that policies towards attracting VCs may be an important condition for innovative regions. It is important to note that our results do not point towards a reduction of cross boarder deals because we only look at the proximity between the lead VCs and the portfolio firms.

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7 Appendix

Table 1: Variable description

Variable	Description
Proximity between the lead VC and the portfolio company	
Leaddistance	Continuous variable which captures the physical distance in 100 kilometers between the location of the portfolio firm and the most closely located office of the lead VC.
Leadtime	Continuous variable which measures the travel duration in hours between the portfolio firm and the most closely located office of the lead VC. The travel duration is defined as the minimum of the travel duration by car (eventually by train) and the travel duration by plane + 1 hour. Furthermore, we took into account the arrival and departure time to/from the airport if the airport was not located in the same city as the lead VC's closest office or the portfolio firm.
Contract elements	
VC Voting	Dummy variable which takes value one if all the VCs which are shareholders of the portfolio company in the current round hold together the majority of votes in the shareholders' meetings.
VC Board	Dummy variable which takes value one if all the VCs which are shareholders of the portfolio company in the current round hold together the majority of votes on the board of the portfolio firm.
Inforights	Dummy variable which takes value one if the number of different information rights of the VCs is larger than the medium number of rights which are hold by the VCs in our sample.
Vetorights	Dummy variable which takes value one if the number of different veto rights of the VCs is larger than the medium number of rights which are hold by the VCs in our sample.
Characteristics of the portfolio firm	
Age	Continuous variable which indicates the age of the portfolio firm at the contracting date.
Early Stage	Dummy variable which indicates whether the portfolio firm is a seed or start-up firm.
Revenue	Dummy variable which indicates whether the portfolio firm already generates any revenues.
Industry Life	Dummy variable which indicates whether the portfolio firm operates in the biotechnology, medical health or other life sciences sector.
Industry Infocom	Dummy variable which indicates whether the portfolio firm produces any computer related products (both hardware and software) as well as internet specific products or belongs to the communication sector.
Industry Trad	Dummy variable which indicates whether the portfolio firm produces semiconductors, realizes industrial or energy projects or belongs to any other industry which does not fall in the other two categories.
Growth Industry	Dummy variable which indicates whether the portfolio is active in a growth industry. Growth industries are captured by the dummy variables Industry Life and Industry Infocom.
Existing Firm	Dummy variable which indicates whether the new project which is financed is realized within an existing firm.
Spin-off	Dummy variable which indicates whether the new project which is financed is realized within a spin-off firm.
Extgrowth	Dummy variable which indicates whether the portfolio firm pursue a strategy of external growth.
Investment conditions and time periods	
Investment	Continuous variable which indicates the total amount in mil invested by all VCs in the observed financing round.
First Contract	Dummy variable which indicates whether the observed financing round is the overall first VC financing round.
Period 1	Dummy variable which indicates that the financing round took place up to 2000.
Period 2	Dummy variable which indicates that the financing round took place in 2001 or 2002.
Period 3	Dummy variable which indicates that the financing round took place from 2003 onwards.

Variable description (cont.)

Variable	Description
Characteristics of the lead VC and the entrepreneur	
Leadindependent	Dummy variable which indicates whether the lead VC is an independent VC and not a captive VC (bank-dependent VC, corporate VC or public VC).
Leadage	Continuous variable which indicates the lead VC's age at the contracting date.
Leadfunds	Continuous variable which indicates the number of funds the lead VC has managed until the contracting date.
Leadcomps	Continuous variable which indicates the number of companies the lead VC has financed until the contracting date.
Leadfundsfocus	Continuous variable which indicates the number of funds whose investment focus corresponds to the portfolio firm's investment stage the lead VC has managed until the contracting date.
Offices	Categorical variable which indicates the number of offices of the lead VC in the country of the portfolio firm.
Repeat E	Dummy variable which indicates whether at least one of the founders has managed a firm before.
Geographical characteristics	
German Law	Dummy variable which indicates whether the portfolio firm is located in Germany, Switzerland or Austria.
Common Law	Dummy variable which indicates whether the portfolio firm is located in the the United Kingdom, Ireland or Israel.
French Law	Dummy variable which indicates whether the portfolio firm is located in France, Belgium or the Netherlands.
Scand Law	Dummy variable which indicates whether the portfolio firm is located in Norway or Sweden.
Country USA	Dummy variable which indicates whether the portfolio firm is located in the United States.
Country Experience	Dummy variable which indicates whether the portfolio firm is located in the USA, Israel or the United Kingdom.
Country Herfindahl C.	Continuous variable which indicates the concentration of VCs in the portfolio firm's country. It corresponds to the Herfindahl-Hirschman-Index (the sum of squares of the number of venture capital companies within each cluster divided by the total number of venture capitalists in the respective country).
Country Herfindahl D.	Dummy variable which indicates whether the portfolio firm is located in a country with a high concentration of VCs in specific regions. It takes value one if the Herfindahl-Hirschman-Index is bigger than 0.18.
Cluster PF	Dummy variable which indicates whether the portfolio firm is located in a VC cluster.
Cluster Lead	Dummy variable which indicates whether the lead VC is located in a VC cluster.

Table 2: Summary Statistics

General characteristics	Number of portfolio firms	112
	Number of financing rounds	238
	First Contract	56
	Number of different lead VCs	71
	Investment (mil): mean (median)	2.8 (8.9)
VC and firm characteristics	Age of the firm (in months): mean (median)	47.3 (40)
	Early Stage	78.26% (180)
	Industry Life	16.39% (39)
	Industry Infocom	53.79% (128)
	Industry Trad	29.83% (71)
	Leadindependent	71.23% (156)
Geographical characteristics	Growth Industry	70.17% (167)
	Cluster Lead	85.65% (191)
	Cluster PF	73.54% (164)
	Equal cluster	26.13% (58)
	Equal country	77.13% (172)
Firm location	German law countries	36.55% (87)
	Germany	34.03% (81)
	Common law countries	23.11% (55)
	United States	26.05% (62)
	French law countries	8.4% (20)
	Scand. law countries	5.88% (14)
Lead VC location	German law countries	44.84% (100)
	Germany	43.95% (98)
	Common law countries	23.76% (53)
	United States	24.22% (54)
	French law countries	3.59% (8)
	Scand. law countries	3.59% (8)
VC concentration (HHI) (mean)	German law countries	0.1462
	Germany	0.1189
	Common law countries	0.6327
	United States	0.4190
	French law countries	0.6140
	Scand. law countries	0.5479
Time characteristics	Period 1	25.21% (60)
	Period 2	25.21% (60)
	Period 3	49.58% (118)
Proximity	Leadtime: mean (median)	3.04 (2.18)
	Leaddistance: mean (median)	11.37 (3.07)
Contracting elements	VC Voting (dummy)	63% (143)
	mean (median)	59.28 (62.37)
	VC Board (dummy)	59.52% (125)
	mean (median)	57.86 (57.74)
	Inforights (dummy)	62.50% (140)
	mean (median)	3.8 (4)
	Vetorights (dummy)	49.56% (112)
	mean (median)	9.92 (9)

Notes: This table gives an overview of our data. The statistics are averages per round not per portfolio firm. If not indicated otherwise, the numbers refer to the percentages and the numbers in parenthesis refer to the absolute number of observations. The explanation of the different variables can be found in table 1.

Table 3: Summary Statistics for the Determinants of the Proximity between the Lead VC and the Portfolio Company

Variable	Travel time in hours			Distance in 100 km		
	0	1		0	1	
	Observations	Mean	Observations	Mean	Observations	Mean
Age	113	2.72	95	3.42	113	9.66
Early Stage	43	3.93	159	2.67**	43	15.76
Revenue	40	2.77	114	3.15	40	11.73
Repeat E	62	3.18	65	2.56	62	12.34
Growth Industry	66	3.70	142	2.74*	66	13.4
Existing Firm	185	2.88	9	4.36	185	10.42
Spin-off	152	3.26	42	1.81***	152	13.38
Extgrowth	46	2.09	138	3.13*	46	7.43
Leadindependent	57	4.42	148	2.50***	57	18.48
Leadage	101	3.65	105	2.50**	101	14.61
Leadfunds	111	3.35	97	2.69	111	13.31
Leadcomps	93	3.12	93	2.40	93	12.08
Leadfundsfocus	66	3.43	142	2.86	66	13.68
Offices	139	3.52	50	1.73***	139	14.07
Investment	100	2.79	108	3.27	100	8.76
First Contract	160	2.87	48	3.63	160	10.88
German Law	133	3.66	75	1.95***	133	15.84
Common Law	160	3.02	48	3.12	160	11.81
French Law	191	3.07	17	2.68	191	11.59
Scand Law	194	2.99	14	3.69	194	11.10
Country Experience	110	2.44	98	3.71***	110	6.02
Country USA	154	2.55	54	4.43***	154	7.11
Country Herfindahl D.	69	1.92	139	3.60***	69	3.34
Cluster PF	51	3.01	151	3.05	51	8.77
Cluster Lead	32	4.79	176	2.72***	32	19.91
Period 1	154	3.05	54	3.01	154	11.16
Period 2	152	3.01	56	3.14	152	11.64
Period 3	110	3.07	98	3.01	110	11.29

Notes: This table shows the summary statistics for our determinants of the distance (travel time) between the Lead VC and the Portfolio Company. Pairwise t-tests with equal variances are made for the means. Significance is indicated by (*, **, ***) for the 1%, 5% and 10% significance level. Leaddistance is a continuous variable which captures the physical distance in kilometers between the location of the portfolio firm and the most closely located office of the lead VC. Leadtime is a continuous variable which measures the travel duration between the portfolio firm and the most closely located office of the lead VC. The variable descriptions for the different variables are indicated in table 1. Note that in case of continuous or categorical variables, we constructed a dummy variable by classifying the observations in two groups with respect to the median of the respective variable in our sample.

Table 4: Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
E. Stage (1)	1.00																			
Growthi. (2)	0.01	1.00																		
Spin-off (3)	0.08	-0.07	1.00																	
Inv. (4)	0.18*	-0.09	-0.09	1.00																
L.ind. (5)	-0.01	0.05	-0.15*	0.24*	1.00															
L.age (6)	-0.07	-0.02	-0.09	0.16*	0.32*	1.00														
L.funds (7)	-0.18*	0.10	0.12*	0.17*	0.36*	0.44*	1.00													
L.comps (8)	-0.01	0.08	-0.06	0.03	0.14*	0.22*	0.28*	1.00												
L.f.foc. (9)	-0.26*	0.14*	-0.03	0.00	0.27*	0.12*	0.55*	0.19*	1.00											
Cl. Lead (10)	-0.00	0.04	0.05	-0.00	0.26*	-0.07	0.18*	0.07	0.23*	1.00										
Offices (11)	0.06	0.14*	0.13*	0.09	0.24*	0.48*	0.41*	0.17*	-0.03	-0.05	1.00									
Ger. L. (12)	-0.07	0.06	0.21*	-0.21*	-0.19*	-0.06	-0.10	-0.02	-0.09	-0.11	-0.12*	1.00								
Com. L. (13)	0.07	0.03	0.02	-0.05	0.08	-0.05	-0.16*	-0.02	-0.13*	0.01	0.11*	-0.42*	1.00							
F. Law (14)	-0.06	0.13*	-0.11*	0.06	0.13*	0.11	0.29*	0.10	0.28*	0.12*	-0.11	-0.23*	-0.14*	1.00						
S. L. (15)	0.09	0.01	-0.04	-0.10	-0.06	-0.14*	-0.16*	-0.08	-0.10	0.11	-0.14*	-0.19*	-0.17*	-0.08	1.00					
C. USA (16)	0.01	-0.18*	-0.15*	0.29*	0.08	0.13*	0.17*	0.02	0.12*	-0.02	0.17*	-0.45*	0.33*	-0.18*	-0.15*	1.00				
Herf. D (17)	0.06	-0.14*	-0.24*	0.23*	0.22*	0.04	0.10	0.00	0.10	0.13*	0.08	-0.95*	0.39*	0.22*	0.18*	0.43*	1.00			
Herf. C. (18)	0.07	-0.06	-0.17*	0.17*	0.22*	0.04	0.11*	0.03	0.10	0.15*	0.05	-0.84*	0.59*	0.30*	0.18*	0.07	0.88*	1.00		
Period 1 (19)	0.22*	0.06	-0.01*	0.07	-0.15*	-0.11	-0.15*	-0.12*	-0.24*	-0.17*	0.13*	-0.02	-0.07	-0.00	0.06	-0.08	-0.01	0.00	1.00	
Period 2 (20)	0.06	-0.00	0.18*	0.09	-0.13*	-0.16*	-0.12*	-0.09	-0.04	0.04	-0.05	0.08	-0.04	-0.07	0.06	-0.04	-0.09	-0.09	-0.34*	1.00
Period 3 (21)	-0.25*	-0.05	-0.15*	-0.13*	0.25*	0.24*	0.23*	0.18*	0.25*	0.12*	-0.07	-0.05	-0.03	0.06	-0.11	0.10	0.09	0.08	-0.58*	-0.58*

Notes: This table shows the pairwise correlations between our independent variables. * refers to a significance level of 10% or lower. Early Stage is a dummy variable which indicates whether the portfolio firm is a seed or start-up firm. Growth Industry is a dummy variable which indicates whether the portfolio firm is active in a growth industry, i.e. if it operates in the biotechnology, medical health and other life sciences sector or if it produces any computer related products (both hardware and software) as well as internet specific products or belongs to the communication sector in general. Spin-off is a dummy variable which indicates whether the new project which is financed is realized within a spin-off firm. Investment is a continuous variable which indicates the total amount in mil invested by all VCs in the observed financing round. Leadindependent is a dummy variable which indicates whether the lead VC is an independent VC and not a captive VC. Leadage is a continuous variable which indicates the lead VC's age at the contracting date. Leadfunds is a continuous variable which indicates the number of funds the lead VC has managed until the contracting date. Leadcomps is a continuous variable which indicates the number of companies the lead VC has financed until the contracting date. Leadfundsfocus is a continuous variable which indicates the number of funds the lead VC has managed until the contracting date and whose investment focus corresponds to the portfolio firm's investment stage. Cluster Lead is a dummy variable which indicates whether the lead VC is located in a VC cluster. Offices is a categorical variable which indicates the number of offices of the lead VC in the country of the portfolio firm. German law is a dummy variable which indicates whether the portfolio firm is located in Germany, Switzerland or Austria. Common law is a dummy variable which indicates whether the portfolio firm is located in the United Kingdom, Ireland or Israel. French law is a dummy variable which indicates whether the portfolio firm is located in France, Belgium or the Netherlands. Scand law is a dummy variable which indicates whether the portfolio firm is located in Norway or Sweden. Country USA is a dummy variable which indicates whether the portfolio firm is located in the United States. Country Herfindahl D. is a dummy variable which indicates whether the portfolio firm is located in a country with a high concentration of VCs in specific regions. It takes value one if the Herfindahl-Hirschman-Index (the sum of squares of the number of venture capital companies within each cluster divided by the total number of venture capitalists in the respective country) is bigger than 0.18. Country Herfindahl C. is a continuous variable which corresponds to the Herfindahl Index of VC concentration of the country of the portfolio firm. Period 1 is a dummy variable which indicates that the financing round took place up to 2000. Period 2 is a dummy variable which indicates that the financing round took place from 2001 to 2002. Period 3 is a dummy variable which indicates that the financing round took place from 2003 onwards.

Table 5: The Determinants of the Proximity between the Lead VC and the PF

Specification	Specification 1a		Specification 1b		Specification 2a		Specification 2b	
Independent Variable	Time	Distance	Time	Distance	Time	Distance	Time	Distance
Offices	-0.81*** (-2.63)	-4.47*** (-2.67)	-0.84*** (-2.71)	-4.69*** (-2.83)	-0.8*** (-2.74)	-4.5*** (-2.89)	-0.86*** (-2.87)	-4.86*** (-3.08)
Early Stage	-1.65** (-1.99)	-10.15* (-1.85)	-1.85* (-2.37)	-10.9** (-2.22)	-1.71** (-2.12)	-10.49* (-1.94)	-1.98** (-2.60)	-11.55** (-2.40)
Spin-off	-0.42 (-0.74)	-3.51 (-1.31)			-0.34 (-0.60)	-3.11 (-1.17)		
Leadindependent	-1.12* (-1.69)	-7.33** (-2.06)	-1.17* (-1.86)	-7.11** (-2.12)	-1.13 (-1.65)	-7.42** (-2.03)	-1.18* (-1.83)	-7.22** (-2.10)
Leadfundsfocus	-0.11 (-1.53)	-0.94** (-2.24)	-0.11 (-1.43)	-0.94** (-2.22)	-0.13* (-1.94)	-1.06** (-2.59)	-1.81** (-2.10)	-1.09** (-2.69)
Cluster Lead	-1.49* (-1.74)	-7.59 (-1.35)	-1.79** (-2.09)	-8.8* (-1.69)	-1.51* (-1.74)	-7.6 (-1.36)	-0.02 (-0.69)	-8.86* (-1.73)
Investment	-0.01 (-0.28)	-0.03 (-0.22)	-0.01 (-0.34)	-0.04 (-0.26)	-0.02 (-0.64)	-0.08 (-0.58)	-0.14* (-1.93)	-0.09 (-0.62)
Country Herfindahl					2.44*** (2.85)	19.31*** (3.55)	2.77*** (3.30)	20.80*** (3.94)
Country USA	1.35 (1.37)	13.62** (2.34)	1.85* (1.94)	16.12*** (2.84)	3.87*** (2.96)	22.74*** (3.01)	4.12*** (3.25)	24.00*** (3.33)
German Law	-2.01** (-2.48)	-11.1** (-2.39)	-1.88** (-2.50)	-10.31** (-2.43)				
French Law	-0.41 (-0.33)	-0.65 (-0.08)	-0.26 (-0.22)	0.24 (0.03)				
Scand Law	-0.21 (-0.16)	0.94 (0.15)	0.07 (0.06)	2.44 (0.39)				
Growth Industry	-0.05 (-0.08)	2.34 (0.66)	-0.1 (-0.16)	2.6 (0.76)	0.11 (0.18)	3.28 (0.93)	-0.04 (-0.06)	3.03 (0.90)
Period 1	0.07 (0.11)	-1.1 (-0.31)	0.1 (0.16)	-0.75 (-0.22)	0.18 (0.29)	-0.48 (-0.14)	0.12 (0.20)	-0.64 (-0.19)
Period 2	0.28 (0.55)	0.07 (0.02)	0.46 (0.87)	0.68 (0.24)	0.39 (0.81)	0.78 (0.28)	0.54 (1.06)	1.14 (0.43)
Constant	8.23*** (4.37)	38.93*** (3.09)	8.38*** (4.74)	38.31*** (3.5)	5.6*** (4.32)	24.21*** (2.78)	6.04*** (4.82)	25.23*** (3.25)
No of Obs.	190	190	199	199	190	190	199	199
F statistic	1.57	1.89	1.93	2.30	1.86	2.09	2.42	2.73
Prob> F	0.1032	0.0388	0.0365	0.0110	0.0506	0.0259	0.0109	0.0043
R ²	0.2924	0.3315	0.3200	0.3490	0.2967	0.3351	0.3352	0.3622

Notes: We run OLS regressions with standard errors clustered at the firm level. Coefficients and t-values (in parentheses) are reported. *, **, *** indicate the 10%, 5% and 1% significance level respectively.

Our dependent variable is the variable LEADDISTANCE (LEADTIME) that measures the distance in 100 kilometers (the travel time in hours) between the lead VC and the portfolio company. We regress LEADDISTANCE (LEADTIME) on our measure for the firm characteristics, VC characteristics, law system dummies, industry dummies and time period dummies. Offices is a categorical variable which indicates the number of offices of the lead VC in the country of the portfolio firm. Early Stage is a dummy variable which indicates whether the portfolio firm is a seed or start-up firm. Spin-off is a dummy variable which indicates whether the new project which is financed is realized within a spin-off firm. Leadindependent is a dummy variable which indicates whether the lead VC is an independent VC and not a captive VC. Leadfundsfocus is a continuous variable which indicates the number of funds the lead VC has managed until the contracting date and whose investment focus corresponds to the portfolio firm's investment stage. Cluster Lead is a dummy variable which indicates whether the lead VC is located in a VC cluster. Investment is a continuous variable which indicates the total amount in mil invested by all VCs in the observed financing round. Country USA is a dummy variable which indicates whether the portfolio firm is located in the United States. German law is a dummy variable which indicates whether the portfolio firm is located in Germany, Switzerland or Austria. Common law is a dummy variable which indicates whether the portfolio firm is located in the United Kingdom, Ireland or Israel. French law is a dummy variable which indicates whether the portfolio firm is located in France, Belgium or the Netherlands. Scand law is a dummy variable which indicates whether the portfolio firm is located in Norway or Sweden. Country Herfindahl is a continuous variable which indicates whether the portfolio firm is located in a country with a high concentration of VCs in specific regions. It corresponds to the Herfindahl-Hirschman-Index (the sum of squares of the number of venture capital companies within each cluster divided by the total number of venture capitalists in the respective country). Growth Industry is a dummy variable which indicates whether the portfolio firm produces any computer related products (both hardware and software) as well as internet specific products, belongs to the communication sector or operates in the biotechnology, medical health and other life sciences sector. Period 1 is a dummy variable which indicates that the financing round took place up to 2000. Period 2 is a dummy variable which indicates that the financing round took place in 2001 or 2002.

Table 6: The Influence of the Proximity between the Lead VC and the Portfolio Company on Contract Design (1a)

Independent var.	VC Voting				VC Board			
	Spec. 1a	Spec. 1b	Spec. 2a	Spec. 2b	Spec. 1a	Spec. 1b	Spec. 2a	Spec. 2b
Leadtime	-0.09** (-2.36)	-0.09*** (-2.66)	-0.09** (-2.18)	-0.08** (-2.35)	-0.12*** (-5.12)	-0.10*** (-3.72)	-0.12*** (-5.24)	-0.10*** (-3.88)
Early Stage	-0.26*** (-3.14)	-0.28*** (-3.51)	-0.26*** (-3.13)	-0.27*** (-3.39)	-0.15 (-1.34)	-0.22** (-2.23)	-0.16 (-1.45)	-0.22** (-2.39)
Spin-off	0.04 (0.30)		0.02 (0.19)		-0.26** (-2.37)		-0.25** (-2.36)	
Leadindependent	0.25 (1.43)	0.25 (1.47)	0.27 (1.55)	0.28* (1.68)	-0.15 (-1.54)	-0.10 (-0.79)	-0.15 (-1.45)	-0.10 (-0.82)
Leadfundsfocus	0.01 (0.52)	0.01 (0.60)	0.01 (0.30)	0.01 (0.36)	0.00 (0.00)	0.00 (-0.18)	0.00 (-0.21)	0.00 (-0.34)
Cluster Lead	-0.23** (-2.51)	-0.23** (-2.40)	-0.21** (-2.13)	-0.20** (-1.96)	-0.16 (-1.39)	-0.18 (-1.61)	-0.16 (-1.36)	-0.19 (-1.63)
Investment	0.02** (2.53)	0.02*** (2.63)	0.02** (2.47)	0.02** (2.59)	0.01 (1.62)	0.01** (1.96)	0.01 (1.48)	0.01* (1.77)
Country USA	0.01 (0.05)	0.02 (0.14)	0.17* (1.67)	0.17 (1.63)	-0.15 (-0.86)	-0.15 (-0.81)	-0.03 (-0.22)	-0.03 (-0.19)
Country Herfindahl			0.68*** (2.90)	0.65*** (2.75)			0.37 (1.57)	0.47** (2.01)
German Law	-0.39*** (-2.94)	-0.38*** (-2.91)			-0.20* (-1.68)	-0.22* (-1.83)		
French Law	0.02 (0.09)	0.02 (0.12)			-0.01 (-0.07)	-0.04 (-0.18)		
Scand Law	0.10 (0.64)	0.10 (0.63)			-0.03 (-0.18)	0.00 (0.00)		
Growth Industry	-0.04 (-0.46)	-0.05 (-0.53)	0.00 (0.02)	0.00 (-0.04)	-0.08 (-0.71)	-0.06 (-0.59)	-0.06 (-0.54)	-0.04 (-0.42)
Period 1	-0.49*** (-3.43)	-0.49*** (-3.64)	-0.46*** (-3.37)	-0.47*** (-3.76)	-0.43*** (-2.59)	-0.47*** (-2.87)	-0.41** (-2.52)	-0.46*** (-2.86)
Period 2	-0.22* (-1.90)	-0.19* (-1.69)	-0.19* (-1.66)	-0.18 (-1.57)	-0.13 (-1.12)	-0.16 (-1.29)	-0.11 (-1.00)	-0.15 (-1.17)
No of Obs.	189	198	189	198	174	183	174	183
Wald chi2	208.51	210.17	144.09	146.01	148.07	145.33	149.86	142.60
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Wald test of exogeneity chi2	1.63	1.89	1.47	1.60	7.33	4.90	8.11	5.27

Notes: We run different probit regressions with standard errors clustered at the firm level which analyze the influence of the proximity between the lead VC and the portfolio company on different contract elements. Marginal effects are indicated. Z-values are reported in parentheses. *, **, *** indicate the 10%, 5% and 1% significance level respectively. The proximity is measured by our variable LEADTIME which indicates the travel time in hours between the lead VC and the portfolio company.

In order to control for the endogeneity of LEADTIME we take an instrumental variable approach: the first regression is specified as shown in table 5. Our instrumental variable is the variable Offices, a categorical variable, which indicates the number of offices of the lead VC in the country of the portfolio firm.

As concerns the second stage regression, we include firm characteristics, VC characteristics, law system dummies, industry dummies and time period dummies. The dependent contract variables are defined as follows: VC Voting is a dummy variable which takes value one if all the VCs which are shareholders of the portfolio company in the current round hold together the majority of votes in the shareholders' meetings. VC Board is a dummy variable which takes value one if all the VCs which are shareholders of the portfolio company in the current round hold together the majority of votes on the board of the portfolio firm.

The independent variables are defined as follows: Early Stage is a dummy variable which indicates whether the portfolio firm is a seed or start-up firm. Spin-off is a dummy variable which indicates whether the new project which is financed is realized within a spin-off firm. Leadindependent is a dummy variable which indicates whether the lead VC is an independent VC and not a captive VC. Leadfundsfocus is a continuous variable which indicates the number of funds the lead VC has managed until the contracting date and whose investment focus corresponds to the portfolio firm's investment stage. Cluster Lead is a dummy variable which indicates whether the lead VC is located in a VC cluster. Investment is a continuous variable which indicates the total amount in mil invested by all VCs in the observed financing round. Country USA is a dummy variable which indicates whether the portfolio firm is located in the United States. German law is a dummy variable which indicates whether the portfolio firm is located in Germany, Switzerland or Austria. Common law is a dummy variable which indicates whether the portfolio firm is located in the United Kingdom, Ireland or Israel. French law is a dummy variable which indicates whether the portfolio firm is located in France, Belgium or the Netherlands. Scand law is a dummy variable which indicates whether the portfolio firm is located in Norway or Sweden. Country Herfindahl is a continuous variable which indicates whether the portfolio firm is located in a country with a high concentration of VCs in specific regions. It corresponds to the Herfindahl-Hirschman-Index (the sum of squares of the number of venture capital companies within each cluster divided by the total number of venture capitalists in the respective country). Growth Industry is a dummy variable which indicates whether the portfolio firm produces any computer related products (both hardware and software) as well as internet specific products, belongs to the communication sector or operates in the biotechnology, medical health and other life sciences sector. Period 1 is a dummy variable which indicates that the financing round took place up to 2000. Period 2 is a dummy variable which indicates that the financing round took place in 2001 or 2002.

Table 7: The Influence of the Proximity between the Lead VC and the Portfolio Company on Contract Design (1b)

Independent var.	VC Inforights				VC Vetorights			
	Spec. 1a	Spec. 1b	Spec. 2a	Spec. 2b	Spec. 1a	Spec. 1b	Spec. 2a	Spec. 2b
Leadtime	-0.06 (-1.19)	-0.05 (-1.21)	-0.07 (-1.53)	-0.07* (-1.67)	-0.08* (-1.99)	-0.08** (-2.26)	-0.08** (-2.27)	-0.08*** (-2.59)
Early Stage	-0.07 (-0.54)	-0.08 (-0.59)	-0.09 (-0.75)	-0.11 (-0.89)	-0.34*** (-3.54)	-0.36*** (-4.16)	-0.30*** (-3.08)	-0.33*** (-3.80)
Spin-off	0.01 (0.09)		0.04 (0.31)		0.03 (0.27)		0.02 (0.16)	
Leadindependent	-0.29*** (-2.92)	-0.31*** (-3.20)	-0.28*** (-2.88)	-0.30*** (-3.15)	-0.31** (-2.92)	-0.34*** (-3.28)	-0.27** (-2.44)	-0.30*** (-2.84)
Leadfundsfocus	0.00 (-0.01)	0.00 (-0.22)	-0.01 (-0.62)	-0.01 (-0.80)	0.00 (-0.13)	0.00 (-0.27)	-0.01 (-0.68)	-0.01 (-0.87)
Cluster Lead	-0.18 (-1.24)	-0.21 (-1.43)	-0.20 (-1.49)	-0.22* (-1.73)	-0.09 (-0.56)	-0.15 (-0.95)	-0.06 (-0.36)	-0.12 (-0.78)
Investment	0.01 (1.07)	0.00 (0.98)	0.00 (0.61)	0.00 (0.46)	0.01 (1.23)	0.01 (1.19)	0.00 (0.54)	0.00 (0.41)
Country USA	-0.23 (-1.37)	-0.24 (-1.38)	0.12 (0.83)	0.13 (0.92)	-0.46** (-2.02)	-0.43* (-1.84)	-0.21 (-0.94)	-0.16 (-0.70)
Country Herfindahl			0.65** (2.47)	0.72*** (2.82)			0.34 (1.40)	0.45** (2.02)
German Law	-0.46*** (-3.48)	-0.50*** (-4.06)			-0.35** (-2.52)	-0.39*** (-2.91)		
French Law	-0.40** (-2.22)	-0.38** (-2.20)			-0.34* (-1.85)	-0.36** (-1.96)		
Scand Law	-0.35** (-2.38)	-0.37*** (-2.57)			-0.01 (-0.04)	-0.03 (-0.15)		
Growth Industry	-0.05 (-0.41)	-0.07 (-0.57)	-0.03 (-0.26)	-0.05 (-0.43)	0.11 (0.87)	0.07 (0.56)	0.11 (0.89)	0.08 (0.63)
Period 1	-0.26** (-2.08)	-0.26** (-2.20)	-0.21* (-1.64)	-0.20* (-1.71)	-0.27** (-2.08)	-0.26** (-2.12)	-0.20 (-1.58)	-0.19* (-1.66)
Period 2	0.01 (0.15)	0.03 (0.31)	0.02 (0.21)	0.04 (0.47)	-0.03 (-0.30)	0.01 (0.12)	0.00 (0.01)	0.04 (0.46)
No of Obs.	182	190	182	190	183	192	183	192
Wald chi2	25.30	26.97	17.59	20.25	70.99	74.84	73.81	78.44
Prob > chi2	0.0317	0.0126	0.1287	0.0420	0.0000	0.0000	0.0000	0.0000
Wald test of exogeneity chi2	1.22	1.14	1.89	2.04	4.16	4.43	5.44	5.91

Notes: We run different probit regressions with standard errors clustered at the firm level which analyze the influence of the proximity between the lead VC and the portfolio company on different contract elements. Marginal effects are indicated. Z-values are reported in parentheses. *, **, *** indicate the 10%, 5% and 1% significance level respectively. The proximity is measured by our variable LEADTIME which indicates the travel time in hours between the lead VC and the portfolio company.

In order to control for the endogeneity of LEADTIME we take an instrumental variable approach: the first regression is specified as shown in table 5. Our instrumental variable is the variable Offices, a categorical variable, which indicates the number of offices of the lead VC in the country of the portfolio firm.

As concerns the second stage regression, we include firm characteristics, VC characteristics, law system dummies, industry dummies and time period dummies. The dependent contract variables are defined as follows: Inforights is a dummy variable which takes value one if the number of different information rights of the VCs is larger than the medium number of rights which are hold by the VCs in our sample. Vetorights is a dummy variable which takes value one if the number of different veto rights of the VCs is larger than the medium number of rights which are hold by the VCs in our sample.

The independent variables are defined as follows: Early Stage is a dummy variable which indicates whether the portfolio firm is a seed or start-up firm. Spin-off is a dummy variable which indicates whether the new project which is financed is realized within a spin-off firm. Leadindependent is a dummy variable which indicates whether the lead VC is an independent VC and not a captive VC. Leadfundsfocus is a continuous variable which indicates the number of funds the lead VC has managed until the contracting date and whose investment focus corresponds to the portfolio firm's investment stage. Cluster Lead is a dummy variable which indicates whether the lead VC is located in a VC cluster. Investment is a continuous variable which indicates the total amount in mil invested by all VCs in the observed financing round. Country USA is a dummy variable which indicates whether the portfolio firm is located in the United States. German law is a dummy variable which indicates whether the portfolio firm is located in Germany, Switzerland or Austria. Common law is a dummy variable which indicates whether the portfolio firm is located in the United Kingdom, Ireland or Israel. French law is a dummy variable which indicates whether the portfolio firm is located in France, Belgium or the Netherlands. Scand law is a dummy variable which indicates whether the portfolio firm is located in Norway or Sweden. Country Herfindahl is a continuous variable which indicates whether the portfolio firm is located in a country with a high concentration of VCs in specific regions. It corresponds to the Herfindahl-Hirschman-Index (the sum of squares of the number of venture capital companies within each cluster divided by the total number of venture capitalists in the respective country). Growth Industry is a dummy variable which indicates whether the portfolio firm produces any computer related products (both hardware and software) as well as internet specific products, belongs to the communication sector or operates in the biotechnology, medical health and other life sciences sector. Period 1 is a dummy variable which indicates that the financing round took place up to 2000. Period 2 is a dummy variable which indicates that the financing round took place in 2001 or 2002.

Table 8: The Influence of the Proximity between the Lead VC and the Portfolio Company on Contract Design (2a)

Independent var.	VC Voting				VC Board			
	Spec. 1a	Spec. 1b	Spec. 2a	Spec. 2b	Spec. 1a	Spec. 1b	Spec. 2a	Spec. 2b
Leaddistance	-0.02*** (-2.51)	-0.02*** (-2.74)	-0.01** (-2.37)	-0.01** (-2.48)	-0.02*** (-5.03)	-0.02*** (-3.90)	-0.02*** (-5.19)	-0.02*** (-4.05)
Early Stage	-0.27*** (-3.34)	-0.28*** (-3.70)	-0.27*** (-3.34)	-0.28*** (-3.55)	-0.16 (-1.51)	-0.22** (-2.38)	-0.17 (-1.60)	-0.23** (-2.51)
Spin-off	0.01 (0.11)		0.00 (-0.01)		-0.27** (-2.41)		-0.27** (-2.42)	
Leadindependent	0.22 (1.30)	0.23 (1.41)	0.24 (1.44)	0.27 (1.65)	-0.17* (-1.85)	-0.11 (-0.94)	-0.17* (-1.77)	-0.12 (-0.96)
Leadfundsfocus	0.00 (0.24)	0.01 (0.33)	0.00 (0.05)	0.00 (0.14)	-0.01 (-0.42)	-0.01 (-0.52)	-0.01 (-0.60)	-0.01 (-0.65)
Cluster Lead	-0.22** (-2.39)	-0.21** (-2.25)	-0.20* (-2.06)	-0.18* (-1.84)	-0.14 (-1.23)	-0.16 (-1.45)	-0.14 (-1.19)	-0.16 (-1.46)
Investment	0.02*** (2.59)	0.02*** (2.75)	0.02*** (2.58)	0.02*** (2.74)	0.01* (1.94)	0.01** (2.26)	0.01* (1.93)	0.01** (2.16)
Country USA	0.10 (0.63)	0.10 (0.66)	0.22** (2.09)	0.22** (1.96)	-0.02 (-0.12)	-0.05 (-0.23)	0.07 (0.51)	0.06 (0.33)
Country Herfindahl			0.67*** (3.06)	0.63*** (2.87)			0.38* (1.86)	0.47** (2.29)
German Law	-0.36*** (-2.88)	-0.35*** (-2.85)			-0.20* (-1.88)	-0.22** (-2.00)		
French Law	0.04 (0.24)	0.05 (0.28)			0.01 (0.04)	-0.02 (-0.08)		
Scand Law	0.13 (0.91)	0.13 (0.90)			0.01 (0.10)	0.03 (0.21)		
Growth Industry	0.00 (0.04)	0.01 (0.06)	0.04 (0.46)	0.05 (0.49)	0.00 (0.01)	0.02 (0.16)	0.02 (0.15)	0.03 (0.32)
Period 1	-0.48*** (-3.64)	-0.49*** (-3.85)	-0.45*** (-3.70)	-0.48*** (-4.09)	-0.45*** (-3.19)	-0.49** (-3.51)	-0.44*** (-3.31)	-0.49*** (-3.71)
Period 2	-0.23** (-2.26)	-0.22** (-2.12)	-0.2** (-2.01)	-0.20** (-1.99)	-0.16* (-1.65)	-0.20* (-1.88)	-0.15 (-1.56)	-0.19* (-1.78)
No of Obs.	189	198	189	198	174	183	174	183
Wald chi2	187.72	189.37	136.13	134.07	136.08	136.70	152.42	150.44
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Wald test of exogeneity chi2	2.20	2.43	2.02	2.08	9.04	6.17	10.25	6.77

Notes: We run different probit regressions with standard errors clustered at the firm level which analyze the influence of the proximity between the lead VC and the portfolio company on different contract elements. Marginal effects are indicated. Z-values are reported in parentheses. *, **, *** indicate the 10%, 5% and 1% significance level respectively. The proximity is measured by our variable LEADDISTANCE which indicates the distance in 100 km between the lead VC and the portfolio company.

In order to control for the endogeneity of LEADDISTANCE we take an instrumental variable approach: the first regression is specified as shown in table 5. Our instrumental variable is the variable Offices, a categorical variable, which indicates the number of offices of the lead VC in the country of the portfolio firm.

As concerns the second stage regression, we include firm characteristics, VC characteristics, law system dummies, industry dummies and time period dummies. The dependent contract variables are defined as follows: VC Voting is a dummy variable which takes value one if all the VCs which are shareholders of the portfolio company in the current round hold together the majority of votes in the shareholders' meetings. VC Board is a dummy variable which takes value one if all the VCs which are shareholders of the portfolio company in the current round hold together the majority of votes on the board of the portfolio firm.

The independent variables are defined as follows: Early Stage is a dummy variable which indicates whether the portfolio firm is a seed or start-up firm. Spin-off is a dummy variable which indicates whether the new project which is financed is realized within a spin-off firm. Leadindependent is a dummy variable which indicates whether the lead VC is an independent VC and not a captive VC. Leadfundsfocus is a continuous variable which indicates the number of funds the lead VC has managed until the contracting date and whose investment focus corresponds to the portfolio firm's investment stage. Cluster Lead is a dummy variable which indicates whether the lead VC is located in a VC cluster. Investment is a continuous variable which indicates the total amount in mil invested by all VCs in the observed financing round. Country USA is a dummy variable which indicates whether the portfolio firm is located in the United States. German law is a dummy variable which indicates whether the portfolio firm is located in Germany, Switzerland or Austria. Common law is a dummy variable which indicates whether the portfolio firm is located in the United Kingdom, Ireland or Israel. French law is a dummy variable which indicates whether the portfolio firm is located in France, Belgium or the Netherlands. Scand law is a dummy variable which indicates whether the portfolio firm is located in Norway or Sweden. Country Herfindahl is a continuous variable which indicates whether the portfolio firm is located in a country with a high concentration of VCs in specific regions. It corresponds to the Herfindahl-Hirschman-Index (the sum of squares of the number of venture capital companies within each cluster divided by the total number of venture capitalists in the respective country). Growth Industry is a dummy variable which indicates whether the portfolio firm produces any computer related products (both hardware and software) as well as internet specific products, belongs to the communication sector or operates in the biotechnology, medical health and other life sciences sector. Period 1 is a dummy variable which indicates that the financing round took place up to 2000. Period 2 is a dummy variable which indicates that the financing round took place in 2001 or 2002.

Table 9: The Influence of the Proximity between the Lead VC and the Portfolio Company on Contract Design (2b)

	VC Inforights				VC Vetorights			
	Spec. 1a	Spec. 1b	Spec. 2a	Spec. 2b	Spec. 1a	Spec. 1b	Spec. 2a	Spec. 2b
Leaddistance	-0.01 (-1.26)	-0.01 (-1.27)	-0.01* (-1.65)	-0.01* (-1.78)	-0.01** (-1.98)	-0.01** (-2.23)	-0.01** (-2.25)	-0.01** (-2.54)
Early Stage	-0.08 (-0.59)	-0.08 (-0.63)	-0.10 (-0.81)	-0.11 (-0.93)	-0.34*** (-3.54)	-0.36*** (-4.13)	-0.30*** (-3.10)	-0.33*** (-3.78)
Spin-off	0.00 (-0.03)		0.02 (0.16)		0.01 (0.14)		0.00 (0.02)	
Leadindependent	-0.31*** (-3.04)	-0.32*** (-3.31)	-0.30*** (-3.11)	-0.31*** (-3.36)	-0.31*** (-3.00)	-0.33*** (-3.31)	-0.27*** (-2.57)	-0.29*** (-2.95)
Leadfundsfocus	0.00 (-0.17)	-0.01 (-0.38)	-0.01 (-0.82)	-0.02 (-1.01)	-0.01 (-0.35)	-0.01 (-0.51)	-0.01 (-0.88)	-0.02 (-1.10)
Cluster Lead	-0.17 (-1.18)	-0.19 (-1.35)	-0.18 (-1.36)	-0.20 (-1.56)	-0.09 (-0.57)	-0.15 (-0.95)	-0.05 (-0.33)	-0.11 (-0.72)
Investment	0.00 (1.07)	0.00 (0.99)	0.00 (0.58)	0.00 (0.45)	0.01 (1.42)	0.01 (1.40)	0.00 (0.69)	0.00 (0.58)
Country USA	-0.17 (-0.85)	-0.19 (-0.92)	0.17 (1.12)	0.18 (1.18)	-0.40 (-1.52)	-0.38 (-1.43)	-0.15 (-0.65)	-0.11 (-0.46)
Country Herfindahl			0.66*** (2.60)	0.73*** (2.96)			0.35 (1.58)	0.45** (2.22)
German Law	-0.45*** (-3.60)	-0.50*** (-4.18)			-0.34** (-2.52)	-0.38*** (-2.86)		
French Law	-0.38* (-1.91)	-0.36* (-1.89)			-0.32 (-1.56)	-0.34* (-1.69)		
Scand Law	-0.30* (-1.80)	-0.33** (-2.02)			0.02 (0.11)	0.00 (-0.01)		
Growth Industry	-0.03 (-0.28)	-0.05 (-0.40)	-0.01 (-0.09)	-0.02 (-0.20)	0.14 (1.21)	0.11 (0.96)	0.14 (1.27)	0.12 (1.08)
Period 1	-0.26** (-2.19)	-0.26** (-2.27)	-0.22* (-1.85)	-0.21* (-1.87)	-0.29*** (-2.63)	-0.28*** (-2.61)	-0.22** (-2.16)	-0.21** (-2.23)
Period 2	0.00 (-0.04)	0.00 (0.06)	0.00 (0.02)	0.02 (0.19)	-0.06 (-0.64)	-0.02 (-0.26)	-0.03 (-0.32)	0.01 (0.09)
No of Obs.	182	190	182	190	183	192	183	192
Wald chi2	27.33	28.69	22.01	23.88	69.20	68.29	73.81	76.60
Prob > chi2	0.0174	0.0072	0.0374	0.0132	0.0000	0.0000	0.0000	0.0000
Wald test of exogeneity chi2	1.35	1.25	2.14	2.26	4.85	5.13	6.37	6.82

Notes: We run different probit regressions with standard errors clustered at the firm level which analyze the influence of the proximity between the lead VC and the portfolio company on different contract elements. Marginal effects are indicated. Z-values are reported in parentheses. *, **, *** indicate the 10%, 5% and 1% significance level respectively. The proximity is measured by our variable LEADDISTANCE which indicates the distance in 100 kilometers between the lead VC and the portfolio company.

In order to control for the endogeneity of LEADDISTANCE we take an instrumental variable approach: the first regression is specified as shown in table 5. Our instrumental variable is the variable Offices, a categorical variable, which indicates the number of offices of the lead VC in the country of the portfolio firm.

As concerns the second stage regression, we include firm characteristics, VC characteristics, law system dummies, industry dummies and time period dummies. The dependent contract variables are defined as follows: Inforights is a dummy variable which takes value one if the number of different information rights of the VCs is larger than the medium number of rights which are hold by the VCs in our sample. Vetorights is a dummy variable which takes value one if the number of different veto rights of the VCs is larger than the medium number of rights which are hold by the VCs in our sample.

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