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**Does Venture Capital Investment Really Require Spatial
Proximity? An Empirical Investigation**

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Does Venture Capital Investment Really Require Spatial Proximity? An Empirical Investigation*

Michael Fritsch^{‡+} and Dirk Schilder[‡]

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Abstract

We examine the role of spatial proximity for Venture Capital (VC) investments in Germany. The main database is a survey of 85 personal interviews with representatives of different types of financial institutions. The analysis shows that spatial proximity is far less important for VC investments than is often believed. For example, the results indicate that syndication is partly used as an alternative to spatial proximity. Telecommunication does not work as a substitute for face-to-face contact. On the whole, regional proximity is not a dominant factor in VC partnerships. Therefore, the absence of VC firms in a region does not appear to cause a severe regional equity gap.

JEL-classification: G24, O16, D21, M13, R12

Keywords: Venture Capital, spatial proximity, start-up financing.

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1. Introduction

It is largely undisputed that spatial proximity of Venture Capital (VC) firms and the location of their investments should be important. The assumption underlying this conjecture is that spatial proximity may in many cases constitute a precondition for the formation of a VC relationship and that it makes supervision of investments easier. This hypothesis implies that innovative firms in regions with no VC investment companies nearby may experience a serious disadvantage due to an “equity gap”, i.e. poor availability of capital, and that this capital shortage could severely hamper their emergence and development. But does this supposition that spatial proximity plays such a decisive role really hold? Based on an inquiry of VC suppliers in Germany, we cast serious doubt on the importance of spatial proximity in VC partnerships, especially in comparison to other types of financiers. We will show that geographic distance does matter, but its role is largely overestimated in the literature. Furthermore, we find evidence that regional proximity is less important for VC companies in comparison to other types of suppliers of smart capital, such as banks or Business Angels.

Based on a short review of the literature about the importance of spatial proximity for VC investment (section 2), we investigate the spatial distribution of VC firms and their investments in Germany (section 3). Section 4 then provides an overview on the characteristics of the different types of financial institutions offering smart capital in our sample of interviewed firms and the spatial proximity of their investments. We then analyze the role of the two means that may be used for overcoming problems of spatial distance between VC suppliers and their investment, telecommunication, and syndication (section 5). Finally, we discuss reasons for the relatively low importance of regional proximity for VC investments in Germany (section 6) and draw conclusions for a policy as well as for further research (section 7).

2. Why should spatial proximity be important?

The dominant goal of VC investments is to add value to the financed company and to sell the investment share with considerable profit. The VC companies' main tasks are the identification of promising investment opportunities and a strong post-investment involvement; i.e., monitoring and supervising the companies in their portfolio. Several studies suggest that identification of promising investment opportunities and involvement in business affairs of the portfolio firms may require intensive communication combined with frequent face-to-face contact and that such a close relationship cannot be maintained over larger distances.¹

There are a number of arguments for the importance of spatial proximity in VC investments. First, regional proximity may be necessary in order to gain knowledge about companies that could be a promising investment (Green, 1991, 23; Doran and Bannock, 2000). Since such knowledge may be tacit and mainly be communicated by personal contact, it can be largely limited to the local business community (Florida and Kenney, 1988; Powell et al., 2002; Thompson, 1989). Spatial proximity may also be conducive for making a final investment decision which will in most cases require close face-to-face and on-site inspection of the project (Sorensen and Stuart, 2001). Second, proximity may be needed for an appropriate exchange of knowledge with the portfolio company and a high level of monitoring by the VC firm (Gompers, 1995; Lerner, 1995). A regular exchange of information may be an important factor for the success of the portfolio company and, therefore, of the investment (Sorensen and Stuart, 2001; De Clercq and Sapienza, 2006). Empirical research has shown that this information flow is in both directions, i.e., from the firm to the VC company as well as from the investor to the portfolio firm (Schäfer and Schilder, 2006; Sapienza and Gupta, 1994; Sapienza et al., 1996). It is commonly assumed that the costs of monitoring and supervision will sharply increase as the distance between the partners increases

¹ Fried and Hisrich (1995), Gompers (1995), Hellmann and Puri (2002), Kaplan and Strömberg (2004), Lerner (1995), Macmillan et al. (1988), Sahlman (1990), Sapienza (1992), Sapienza et al. (1996), Sorensen and Stuart (2001)

(Mason and Harrison, 2002a; Sorensen and Stuart, 2001). If a portfolio firm is not located within the distance of a day trip, personal contacts will probably require much higher transaction costs and, therefore, be less frequent than if the investment would be close to the site of the investor. As contacts via telecommunication can be regarded as a partial substitute for face-to-face contacts, one may expect a negative relationship between regional proximity and the frequency of telecommunication. Accordingly, the number of personal face-to-face contacts should be higher if investments are located nearby (Petersen and Rajan, 2002).

There are good reasons to assume that the need for monitoring and consulting and, therefore, the importance of spatial proximity depends to a considerable degree on the development stage of the financed firm. A young company in the early phase of its technical and organizational development, which still does not generate considerable turnaround or profit, is likely to require more involvement by the VC firm than a company at a later stage (Gupta and Sapienza, 1992). This may particularly hold for innovative businesses which are still in the phase of developing their product. Possible reasons are a lack of business and management skills in young innovative companies which are in most cases run by engineers or natural scientists (Gupta and Sapienza, 1992) as well as a high uncertainty of the technical and economic success of the project (Sapienza et al., 1996). Therefore, monitoring and supervision of investments in earlier stages may be more time-consuming and cause higher transaction costs than in the case of an investment in a later stage. Hence, spatial proximity can be expected to be more important for early stage investments (Sorensen and Stuart, 2001). Accordingly, a VC supplier with a high share of early stage investments in its portfolio should have pronounced preferences for investments being located nearby (Elango et al., 1995).

A further factor that is said to influence the distance between the VC supplier and the portfolio firm is the size of the VC company. The larger the VC firm in terms of the number of investments or the number of managers, the more likely it is that investments are made in more distant locations (Gupta and

Sapienza, 1992; Powell et al., 2002). One reason for this is that a large venture capitalist with voluminous available funds is perhaps faced with only rather limited investment opportunities in his region and, therefore, has to explore investment opportunities in more distant locations in order to utilize the available resources. Another reason why VC suppliers with larger funds may have more investments at distant locations is that they have greater and, perhaps, also better resources for monitoring and consulting. Presence of large amounts of resources also raise the probability for having a closely tied communication network available which facilitates access to a greater number of investment opportunities and to more syndication partners (Fried and Hisrich, 1995). Syndication here means that the investment involves several investors which allows for sharing the volume of investment as well as the risk and the work involved (Lerner, 1994; Brander et al., 2002; Lockett and Wright, 2001; Gompers and Lerner, 2001; Doran and Bannock, 2000). It can constitute an important strategy of VC suppliers to reduce the disadvantages of spatial distance to a portfolio company (Florida and Kenney, 1988; Sorensen and Stuart, 2001). In the case of a syndicated investment, the so-called lead-investor undertakes the main task of monitoring and consulting whereas the co-investors are involved with the business of the financed firm to a considerably lesser degree (Gupta and Sapienza, 1992). For these co-investors, regional proximity is not as important as for the lead-investor because of the lower need of direct face-to-face contact with the portfolio company (Wright and Lockett, 2003). Therefore, joining a syndicate as a co-investor may be a measure of overcoming possible problems attached to spatial distance to the portfolio firm.

If VC firms are publicly funded or in public ownership they may face governmental restrictions with regard to the location of their investments (Doran and Bannock, 2000; Gupta and Sapienza, 1992). Quite frequently, publicly owned VC suppliers are destined for providing capital in a specific region and are, therefore, not allowed to make investments outside this region or abroad (Doran and Bannock, 2000). Furthermore, the scope of investments of VC companies in public ownership may be concentrated on projects in later development stages.

They may also have relatively few equity investments and more mezzanine products² or silent partnerships (Schilder, 2006). The two latter forms of financing instruments are located between the two poles of equity and debt in balance-sheet terms. They usually do not include voting rights and do, in most cases, involve less risk than equity financing. A focus of public VC companies on these products may be grounded in a higher degree of risk aversion. Moreover, it may not be the primary goal of a public VC company to sell its shares on the market but to transfer them back to the company. This is easier for mezzanine products as they mostly have fixed maturity (Tykvova, 2004; Bascha and Walz, 2002). The fewer early stage investments can be explained by their common governmental mission of promoting all kinds of companies and not only start-ups. On the one hand, a relatively low share of early stage investments in the portfolios of public VC firms, fewer direct equity investments and, therefore, less involvement in the management of the portfolio companies may lead to only low importance of regional proximity for their investments. On the other hand, publicly owned VC companies can be expected to localize their investments due to governmental restrictions. Consequently, the public ownership of VC companies will probably shape the regional focus of their investments and, hence, the importance of spatial distance to portfolio companies.

3. The spatial distribution of VC supply and investments in Germany

The spatial distribution of VC suppliers and investments on VC markets can provide the first indications of the role of spatial proximity for investments. For the VC market in the USA several studies found a high degree of spatial clustering of suppliers and investments on the east and west coasts of the country (Sorensen and Stuart, 2001; Powell et al., 2002; Florida et al., 1991; Leinbach and Amrhein, 1987). The UK VC market is also highly clustered around London and the southeast part of the country, thus, playing a dominant role (Mason and

² Mezzanine products refer to unsecured, high-yield, subordinated debt, or preferred stock that represents a claim on a company's assets that is only senior to that of a company's shareholders.

Harrison, 1999, 2002a; Martin, 1989; Martin et al., 2005). For the 'emerging' VC markets in continental Europe, such as France and Germany, Martin et al. (2002) also found a considerable degree of spatial concentration but this concentration was not as pronounced as in the case of the USA or the UK.

The data from the German Private Equity and Venture Capital Association (Bundesverband Deutscher Kapitalbeteiligungsgesellschaften; BVK) confirm this result of a relatively low degree of spatial concentration of the German VC market. The suppliers of this market are clustered in five regions with Munich as the leader having around 30 of the more than 170 regular members of the BVK in January 2006 and Frankfurt a. M. is in second place with 27 VC suppliers (figure 1). However, Berlin, Hamburg, and the Rhine-Ruhr area (Duesseldorf, Cologne, Bonn) have around 20 VC suppliers each and several of the VC firms can also be found in smaller places. The black color in figure 1 indicates VC companies which could be clearly identified as having an underlying predominantly public influence, either through direct public ownership or a majority of public funding. Such public VC companies obviously play a considerable role in the German market (Sunley et al., 2005). The more obvious dispersion in space of the predominantly public VC suppliers is probably a result of the influence of public bodies on their choice of location. The spatial distribution of the German Business Angels Networks³, which are indicated by flags in figure 1, is quite similar to the distribution of the formal private VC firms. Although, these networks only represent a small fraction of the informal VC investors, they give indication for their regional distribution.

The spatial distribution of the total VC investments made by the members of the German Private Equity and Venture Capital Association (figure 2) also shows a considerable degree of regional concentration. About 60 percent of the overall 2.5 billion € of the public and private VC investment in the years 2003, 2004 and 2005 was made in three out of the fifteen federal states – Bavaria, Baden-

³ Members of the German Business Angels Network association (*Business Angels Netzwerk Deutschland e.V.*).

Wurttemberg, and North Rhine-Westphalia. However, only slightly more than 40 percent of the German start-ups can be found in these states.

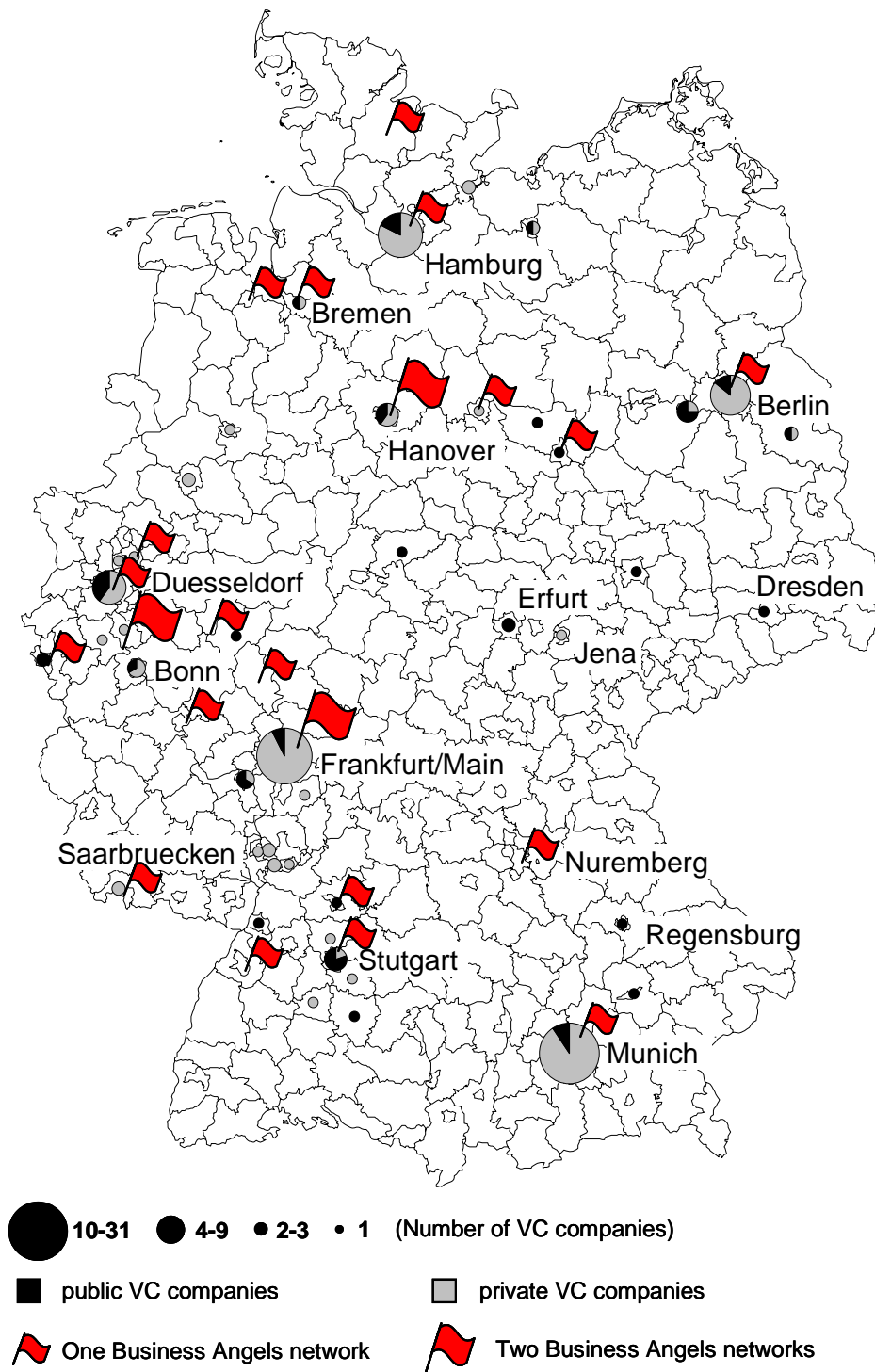


Figure 1: The spatial distribution of VC firms in Germany (symbol size shows total figures)⁴

⁴ Regular members of the German Private Equity Venture Capital Association and members of the German Business Angels Network Association in January 2006.

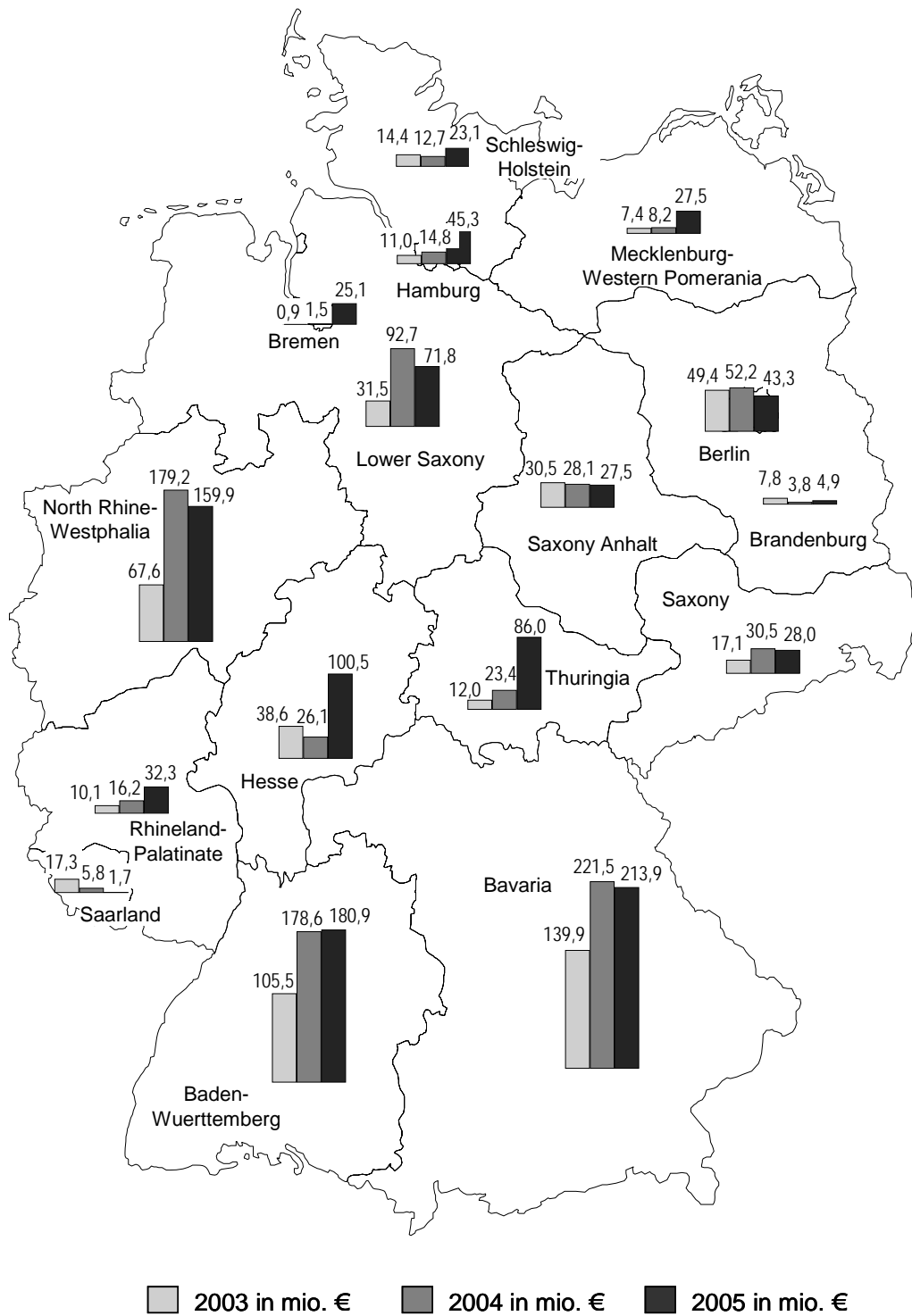


Figure 2: The geographical distribution of VC investments in Germany⁵

⁵ Source: German Private Equity and Venture Capital Association: VC Investments in the years 2003, 2004 and 2005 in million €

Table 1: Comparing inequality of the regional distribution in the VC industry

	Donaldson-Weymark relative S-Gini inequality measures
Number of private VC companies	<i>0.97</i>
Number of public VC companies	<i>0.96</i>
Number of banks (all types)	0.45
Number of savings banks with specialist for start-up financing	0.39
Number of R&D intensive start-ups (mean over the years 1990-2003)	0.45
Number of technology intensive start-ups (mean over the years 1990-2003)	0.52
Number of technology intensive start-ups (mean over the years 1990-2003)	0.60
Number of patents (mean over the years 1995-2000)	0.42

In order to assess the spatial concentration of the German VC industry, we calculated Gini coefficients for the regional distribution of the VC companies and other types of financial institutions as well as for some measures of innovative activity⁶ (table 1). These measures of innovative activity such as the number of innovative start-ups or the number of patents point to locations of VC investment opportunities.⁷ The Gini coefficients clearly show a much stronger spatial concentration of public and private VC companies compared to the distribution of banks⁸. The difference is even more pronounced when comparing the value of the Gini coefficients for the VC companies with the value for the public savings banks which have at least one employee who is specialized in the financing and consulting of start-ups. The indicators for innovative activity also show a much lower degree of spatial concentration compared to the VC companies. These

⁶ See e.g., Fritsch and Slavtchev (2005, 2006) for a more detailed analysis.

⁷ Unfortunately, we cannot use the regional distribution of VC investments for this comparison because these data are only available on the state level and not on the level of districts.

⁸ These banks are accredited by the German Federal Financial Supervisory Authority.

results indicate that the spatial clustering of VC firms in Germany is much more pronounced than the geographic concentration of the overall finance industry and innovative activity. If spatial proximity should be important for the emergence and the maintenance of a VC partnership this higher concentration of VC firms could be seen as an indication that there may exist an equity gap in some regions.

Table 2: Rank correlation coefficients for the relationship between the location of VC companies, banks, and potential investment targets

	Variable:	1	2	3	4	5	6
1	Number of start-ups (mean over the years 1990-2003)	1.00					
2	Number of R&D intensive start-ups (mean over the years 1990-2003)	0.89**	1.00				
3	Number of technology intensive start-ups (mean over the years 1990-2003)	0.91**	0.87**	1.00			
4	Number of knowledge intensive start-ups (mean over the years 1990-2003)	0.89**	0.82**	0.94**	1.00		
5	Number of banks (all types)	0.40**	0.50**	0.51**	0.49**	1.00	
6	Number of public VC companies	0.27**	0.25**	0.28**	0.29**	0.19**	1.00
7	Number of private VC companies	0.35**	0.32**	0.39**	0.39**	0.26**	0.32**

Spearman and Kendall's rank correlation coefficients. ** Statistically significant at the 1%-level.

The regional distribution of VC suppliers may be shaped by two factors (Mason and Harrison, 1999, 173-176). First, if VC companies want to be close to their portfolio companies their locational choice may be strongly shaped by the distribution of potential investments. Second, VC companies may prefer locations close to other financial institutions in order to benefit from all kinds of agglomeration advantages such as close contact to co-investors (Martin et al., 2005). The Gini coefficients (table 1) indicate clear differences in the spatial concentration between VC companies, potential investment targets, and the

overall banking sector. Rank-correlation coefficients have been calculated (table 2) in order to assess in how far the spatial distribution of the VC companies corresponds to the location of their potential investment targets or of other financial institutions. The results show that the regional distribution of public and private VC companies is linked to both the distribution of investment targets and financial institutions. Though, the distribution of the public VC firms is less dependent on the two factors. According to these coefficients, the correspondence of the location of VC companies and the location of banks is somewhat less pronounced than the relationship between the location of VC companies and innovative start-ups. However, the values of these coefficients, although all statistically significant at the one percent level, do not point to a dominant influence. Therefore, we still cannot say if necessity of spatial proximity to portfolio investments is the main reason for the location of VC companies.

Unfortunately, the data which was used from the German Private Equity and Venture Capital Association do not allow one to identify the location of investments made by a specific VC company. For a further analysis of the role of spatial proximity between VC firms and their portfolio companies we, therefore, use another database that entails a sample of this industry. This database is introduced in the next section.

4. Types of smart capital and investment behavior

4.1 The database

The empirical in depth-analysis of the role of spatial proximity for VC in Germany is based on an interview survey that was carried out between September 2004 and September 2005. The survey consists of 85 personal interviews with managers that were actively involved in corporate financing and were specialized in start-up financing. All interviews were based on a largely standardized questionnaire. Questions pertained mainly to investment behavior, to selection of investments as well as to monitoring and supervision of portfolio companies. A special focus was on the role of spatial proximity for the selection and

management of an investment. We interviewed one manager per firm. The firms from the sample were located in diverse areas of Germany. For the purpose of this paper, we will not use the ten financiers which did not offer start-up financing. Therefore, only 75 usable questionnaires remain for the analysis. The sample covers different types of financiers which offer money for innovative young companies. It contains 22 independent and corporate VC companies, eleven Business Angels, nineteen banks, fourteen VC subsidiaries of banks, and nine public providers of equity. The firms from the sample can be regarded as a representative for the respective type of financial institutions; we are, at least, not aware of any bias in the sample.

In contrast to the data used in section 3, the structure of the sample has two main advantages. Firstly, it provides a detailed insight into the investment behavior of the German VC suppliers. Secondly, since the survey is not solely limited to financial institutions which are completely specialized in VC, it allows us to analyze the heterogeneity of the market for smart capital and to compare different types of financiers. By smart capital we mean a financial relationship between a provider of finance and new innovative businesses that is connected with pronounced reciprocal information flows between the financier and the financed company (Schäfer and Schilder, 2006). In addition to equity investments with hands-on support, the typical element of VC, smart capital also comprehends of credit financing offered by banks and informal VC investments by Business Angels.

While there is pronounced heterogeneity between the financiers in the sample with regard to a number of characteristics, they all focus on nearly the same financial products. This is very important issue because different financial products may require different degrees of spatial proximity. Silent partnerships, mezzanine products, and credits, for example, may require considerably less monitoring, consulting, and regional proximity than direct equity investments due to lower participation in the portfolio company's return and fewer rights of involvement (Bascha and Walz, 2002).

Apart from banks, which almost exclusively use credit financing, all other intermediaries in our survey offer equity capital or at least products that are equity linked. Table 3 shows the average importance of the financial products offered from a range from one, i.e., the investor does not supply this product at all, to four, which means that this is the most frequently used product. In line one, for example, we can see that the banks focus on credit, whereas the other types of financiers in our sample hardly use this type of financing. Silent equity investments and mezzanine financing occur more frequently with the bank's VC subsidiaries and public VC suppliers. Direct investments in the form of minority holdings are particularly preferred by VC companies and Business Angels.

Table 3: Importance of financial products (mean values)

	VCs	Business Angels	Banks	Bank-VCs	public VCs
Credits	1.05	1.27	3.95	1.00	1.00
Silent partnerships	1.04	1.00	1.31	2.43	3.33
Mezzanine products	1.00	1.00	1.37	1.19	1.33
Direct investments up to 25%	3.00	2.28	1.00	2.29	1.67
Direct investments 25-50%	3.14	3.64	1.00	3.57	2.67

1 = not used; 2 = seldom used; 3 = often used; 4 = very frequently used

4.2 Number of investments and share of early stage financing

In addition to the relatively small differences of the financial products used, there is an enormous degree of heterogeneity of VC suppliers and other types of financiers offering smart capital with regard to the structure of the companies and their portfolios. The average number of professional investment managers in a firm ranges from one for the Business Angels to 10.5 within the public VC firms. The average number of portfolio companies is between 3.6 investments for

Business Angels and 417 VC investments in the average portfolio of a bank.⁹ This difference becomes even more pronounced with regard to the average number of firms that one employee has to monitor and advise (figure 3).

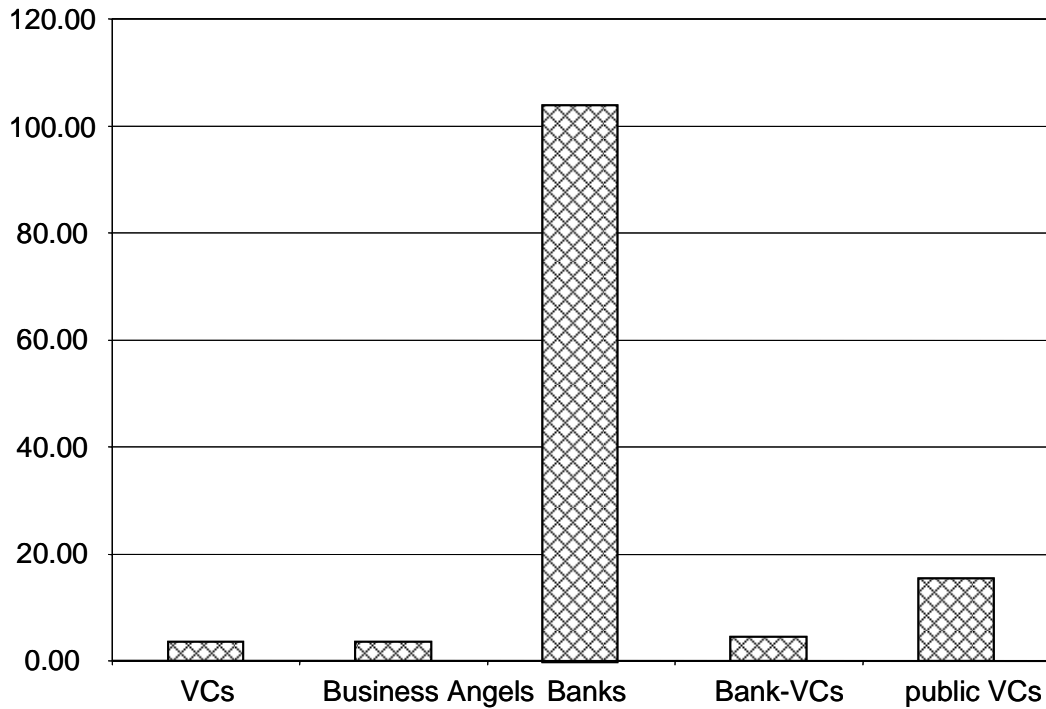


Figure 3: Average number of portfolio companies per investment manager

The ratio of portfolio companies per investment manager is important because the more companies a manager has to maintain, the less time he can spend on each of these companies; thus, the importance of spatial proximity may be relatively high. For the VC companies, the bank-dependent VC firms, and the Business Angels, the average number of companies per manager is about four. The number of companies per manager is considerably higher for the public VC companies (more than fifteen investments per manager). The largest number of portfolio companies per manager, on average 100 investments, is found for the banks which are credit financiers. The fewer management resources per portfolio

⁹ All figures pertain to the department in which the interviewee worked. Since this mainly affects banks, their total size might be underestimated by these figures.

firm among the banks may lead to higher importance of regional proximity to the location of the investment.

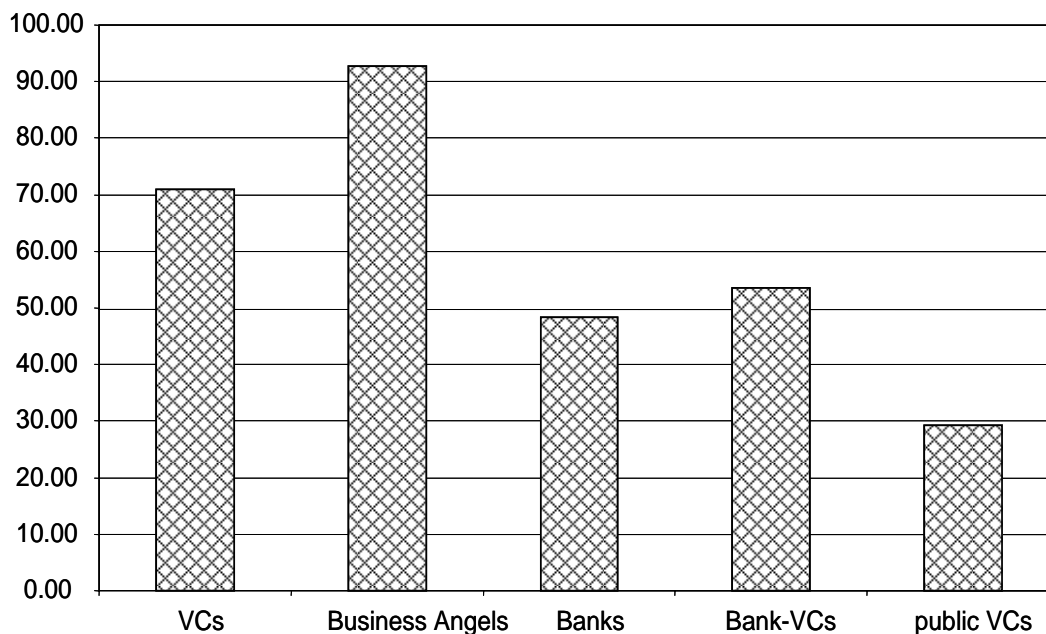


Figure 4: Average share of early stage investments within a portfolio (in percentage)

There are considerable differences between the types of financiers with regard to the share of early stage investments in their portfolio (figure 4). Investments in companies which are in the early stages of their technological and organizational development may require relatively intensive consulting and, therefore, spatial proximity. While this share of early stage investment amounts to more than 90 percent for the Business Angels in our sample and about 70 percent for the VC companies, it is much lower for banks¹⁰ and for bank-dependent VCs (about 50 percent). The lowest share of start-up investment, less than 30 percent, is found for VC providers in public ownership. These figures suggest that regional proximity may be of less importance for the latter group.

¹⁰ As this figure pertains only to the department in which the interviewee is working, the average share of start-ups within the whole banks portfolio is even smaller.

4.3 Spatial proximity of investors and investments

In the interviews we asked for the average share of investments in four spatial categories: at the same site, not at the same site but within a distance of 100 km, more than 100 km away but within Germany, and investments abroad. The results reveal great differences between the types of providers of smart capital in our sample (figure 5).

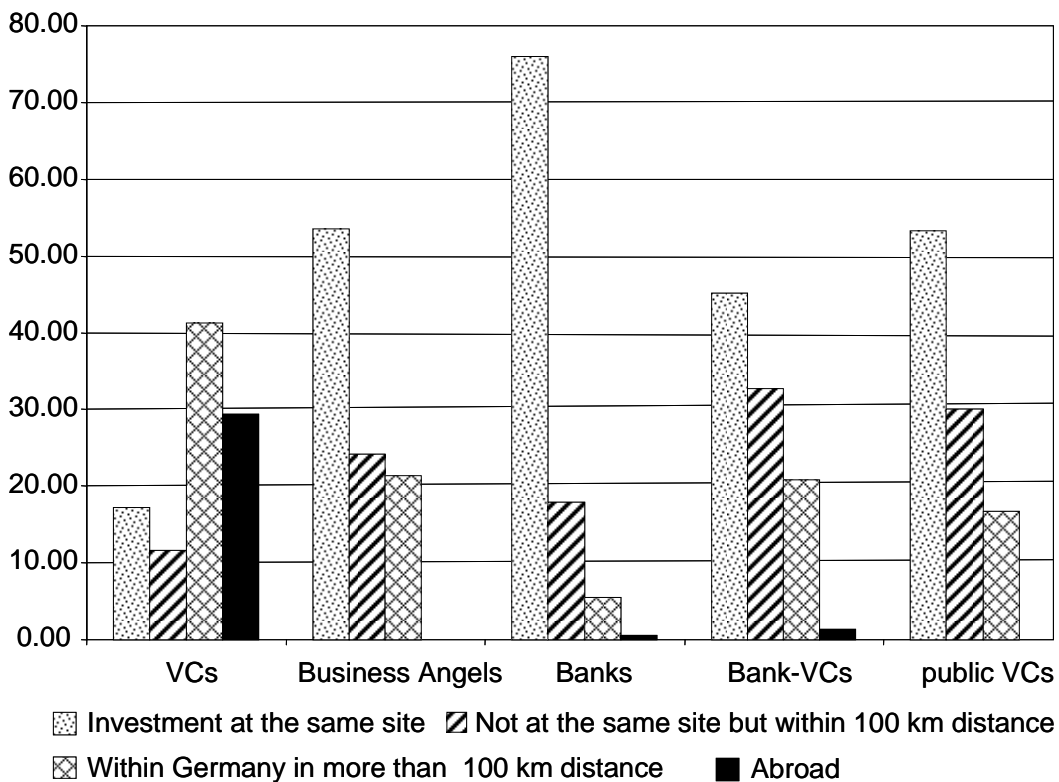


Figure 5: Average share of investments within a certain distance (in percentage)

Banks, bank-dependent VC firms, public VC companies, and Business Angels all have more than 75 percent of their investment within a distance of 100 km; thus, these portfolio firms can be easily reached. In contrast, the independent VC investors in our sample have less than 30 percent located within such a short distance but have spread their investments all over Germany and abroad. The high concentration of banks having investments in close proximity is, at least at first sight, rather astonishing because Schäfer and Schilder (2006) show that banks offer a lower amount of consulting than VC companies; hence, spatial proximity should be of relatively low importance. The high share of investments nearby can

be explained by their tight net of regional branches which makes investments in distant locations unnecessary. While the high share of investment within the region, which we find for Business Angels, may be caused by the limited amount of resources they have available, the public venture capital companies are often limited in their regional focus by administrative or legal constraints.

5. Can spatial proximity be substituted?

Suppliers of VC may adopt two strategies for overcoming the problems of distance related with investments that are not located nearby. These approaches might be particularly important for independent VC companies because their investments are more often located farther away (see chapter 4). The first strategy for substituting spatial proximity is an intensive use of modern measures of telecommunication that may make many of the personal contacts obsolete. The second strategy is the syndication of investments.

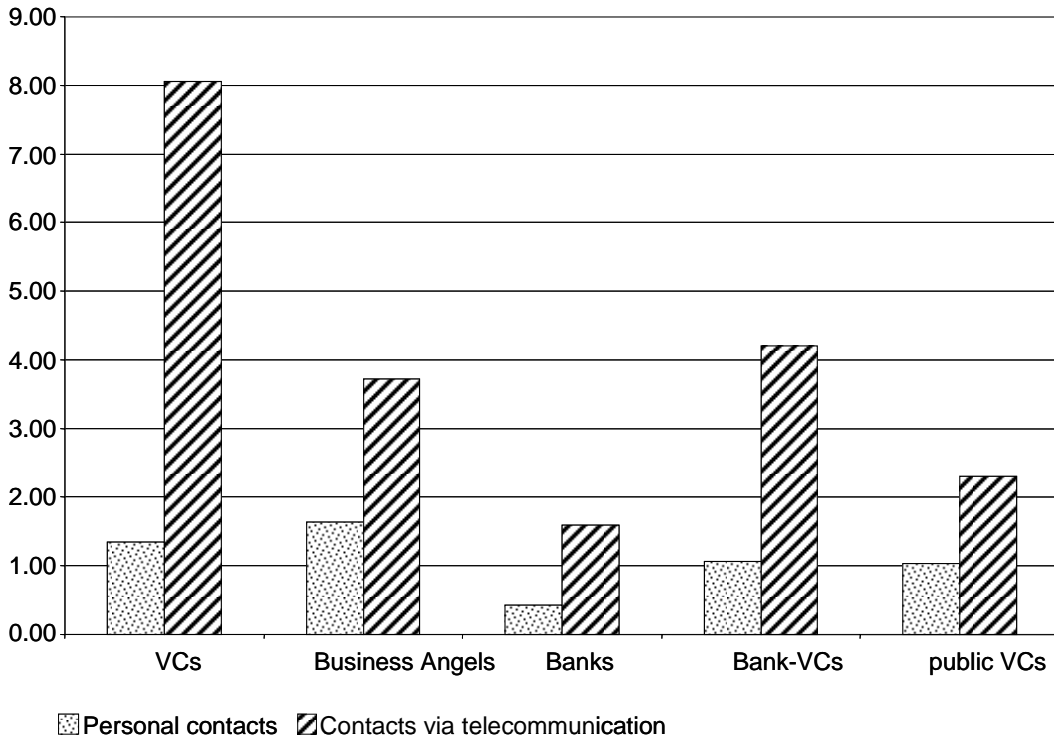


Figure 6: Average number of personal contacts and contacts via telecommunication per month

Figure 6 shows the average frequency of contacts, personal and via telecommunication, between the investor and their portfolio companies per month. On average, the financiers meet their portfolio companies once a month. The highest number of meetings (1.64 personal contacts per month) is found for the Business Angels and the lowest number (0.43 meetings) for banks. The average number of contacts via telecommunication differs much more between the types of financiers. While the VC firms contact their portfolio companies via phone or internet eight times a month, the banks have an average of about 1.5 contacts. The number of telecommunications of the other types of financiers is between 2.3 and 4.2 contacts per month.

The results indicate that those types of financiers which have a relatively large share of investments located further away, particularly the independent VC firms, have more contacts via telecommunication than investors with a pronounced regional focus. If telecommunication works as a substitute for personal contacts then the number of personal contacts should be relatively low for those companies which have frequent contact with their companies by means of telecommunication. We find, however, a rather similar pattern for the number of personal contacts and the number of telecommunications (figure 6). This result suggests that both ways of communication are complementary and do not constitute substitutes.

Table 4: Rank correlation coefficients for the average distance to investments and the number of contacts per month

	Variable:	1	2	3	4	5	6
1	Share of investments at the same site	1.00					
2	Share of investments not at the same site but within 100 km distance	-0.40**	1.00				
3	Share of investments within Germany in more than 100 km distance	-0.62**	-0.04	1.00			
4	Share of investments abroad	-0.46**	-0.17	0.22	1.00		

5	Number of personal contacts per month	-0.18	-0.04	0.07	0.14	1.00	
6	Number of contacts via telecommunication per month	-0.34**	-0.06	0.26*	0.25*	0.72**	1.00

Spearman and Kendall's rank correlation coefficients. ** Statistically significant at the 1%-level; * Statistically significant at the 5%-level. Number of cases: 75.

The complementary relationship between personal contacts and telecommunication is confirmed by rank correlations on the micro-level of financiers reported in table 4. Although, the number of monthly contacts is higher if a large share of portfolio firms is not located on-site; the rank correlation coefficient of 0.72 for the relationship between the number of personal contacts and the number of telecommunications indicate a strong complementary relationship of the two modes of communication.¹¹ We can, therefore, conclude that telecommunication is not a substitute for face-to-face contacts and is not used as a means to overcome disadvantages of spatial distance.

The second possibility to substitute regional proximity is the syndication of investments (Florida and Kenney, 1988; Sorensen and Stuart, 2001). In a syndicated investment, the lead investor conducts most of the monitoring and consulting. For him or her, regional proximity may be more important than for the co-investors who can behave more or less passively. Therefore, if an investment is located in a great spatial distance, syndication with a partner located close to this investment could help to overcome the problems of distance, at least for the co-investor. Therefore, we expect that financiers with a high share of investments in spatial distance will engage more in syndication with other firms than VC providers which have most of their investment located on-site.

The different types of financiers in our sample show distinct syndication behavior. On average, the VC companies and the Business Angels syndicate 77

¹¹ A nearly similar pattern of correlation coefficients can be found if they are calculated for each group of VC providers separately.

percent and 70 percent of their investments, respectively. The public VC firms and the banks' subsidiaries syndicate less than two thirds of their projects. The lowest rate of syndication is found for the banks which have one or more co-investors for about one third of their investments. The average total number of syndication partners over the whole portfolio varies even more. The VC companies cooperate on average with 14.5 syndication partners whereas the Business Angels and the banks on average only syndicate with around five financiers.¹² The banks' VC subsidiaries and the public VC companies lie in between these values with a mean of about ten syndication partners over the whole portfolio.

To find out whether the spatial focus of VC investments corresponds to the syndication strategy, we asked the interviewees for the location of their syndication partners. The possible categories were the same as for the location of investments (on-site, not on-site but within 100 km distance, within Germany but in more than 100 km distance, abroad). If syndication of investments works as a strategy to overcome disadvantages of spatial distance, we expect that the syndication partners are located close to the investment, particularly close to those investments that are located far away. Therefore, the share of syndication partners located far away should be the higher the larger the share of investments in distant portfolio firms.

We find, indeed, that the regional distribution of syndication partners for the different types of VC providers (figure 7) is quite similar to the regional distribution of their investments as given in figure 5. The independent VC companies have on average more investment and more syndication partners in distant locations than the banks, the bank VC subsidiaries, the Business Angels, and the public equity suppliers, which on average have a higher share of investments and syndication partners nearby.

¹² The number of syndication partners within a single investment varies between one and around ten.

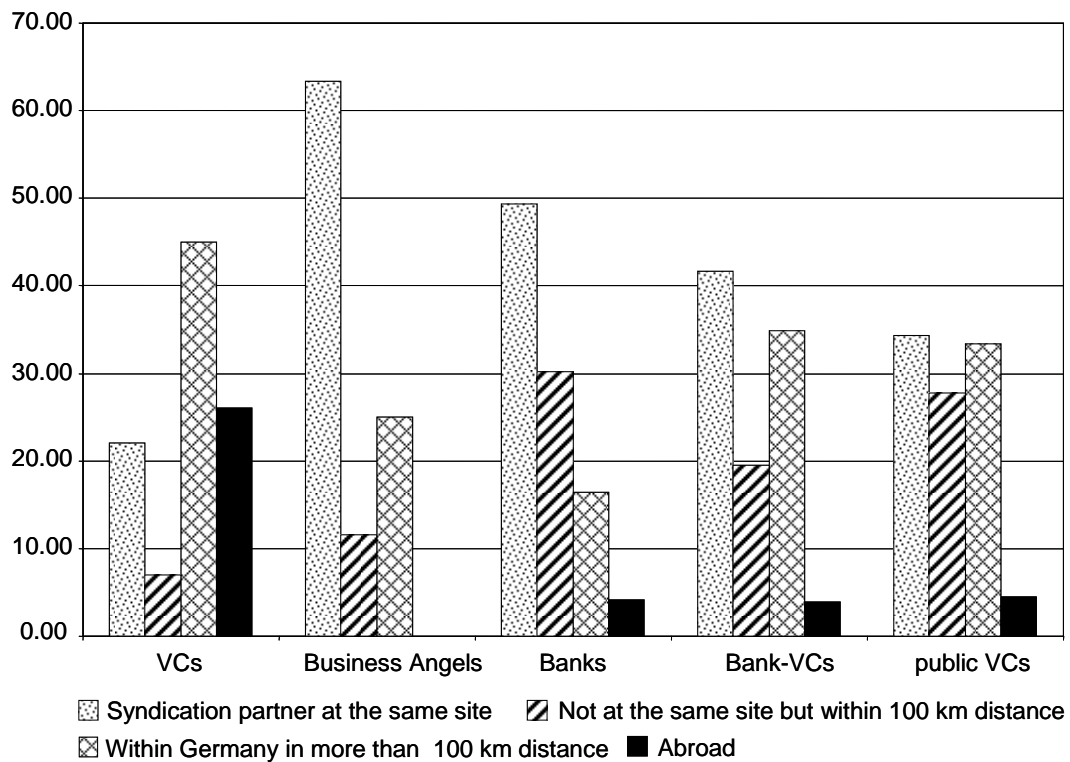


Figure 7: Average share of syndication partner within a certain distance (in percentage)

The correspondence between the share of distant investments and of syndication partners is confirmed by rank correlations on the micro-level of the financiers (table 5). The rank correlation coefficients for the relation between the share of investments and of syndication partners in the same spatial category are between 0.41 and 0.7, all statistically significant at the 1-% level.¹³ This clearly shows that investments in distant locations make cooperation with syndication partners located far away more likely. This suggests that the syndication of VC investments is used to overcome problems of distant location of investments. However, our data does not show on detail whether the syndication partner are located close to the investments.

¹³ The results are quite similar if the correlation coefficients are calculated for the different types of VC providers separately.

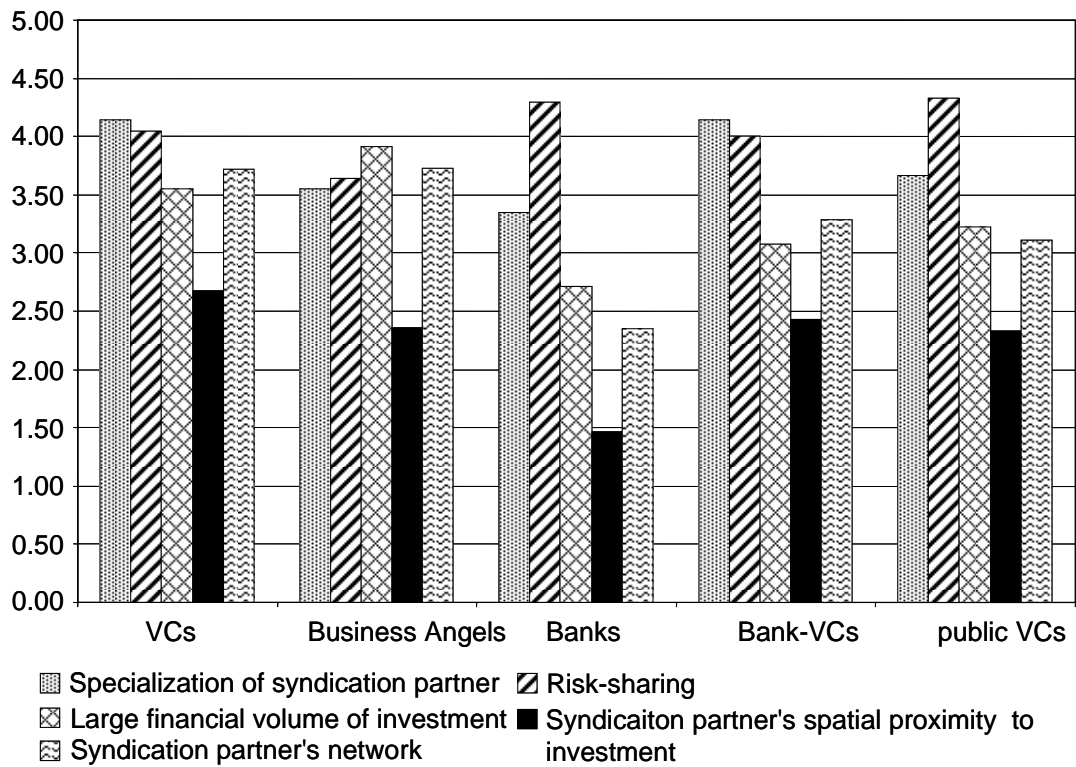
Table 5: Rank correlation coefficients for the relation between the share of investments and of syndication partners in certain spatial categories

	Variable:	1	2	3	4	5	6	7
1	<i>Share of investment</i>							
	• at the same site	1.00						
	2 • not at the same site but within 100 km distance	-0.41**	1.00					
	3 • within Germany in more than 100 km distance	-0.63**	-0.06	1.00				
4	• abroad	-0.44**	-0.17	0.25*	1.00			
5	<i>Share of syndication partners</i>							
	• at the same site	0.41**	-0.05	-0.34**	-0.36**	1.00		
	6 • not at the same site but within 100 km distance	0.01	0.46**	-0.18	-0.17	-0.23	1.00	
	7 • within Germany in more than 100 km distance	-0.28*	0.00	0.61**	0.04	-0.53**	-0.16	1.00
8	• abroad	-0.30*	-0.14	0.20	0.70**	-0.49**	-0.14	0.11

Spearman and Kendall's rank correlation coefficients. ** Statistically significant at the 1%-level; * statistically significant at the 5%-level. Number of observations: 75

The results do not clearly show whether VC providers really mainly have regional proximity to an investment in mind when looking for a syndication partner. Therefore, we have asked the financiers to attach weights between one (meaning unimportant) and five (meaning dominant) to their reasons for the syndication of an investment and for the choice of a certain syndication partner. The answers to this question clearly show that the syndication partner's spatial proximity to the investment is the least important of the determinants (figure 8). According to these figures the most important reasons for syndication are a large

financial volume of investment, risk sharing, the expertise of the syndication partner, and the access to the syndication partner’s network. This holds for all types of financial institutions offering smart capital. We can, therefore, conclude that spatial proximity to the location of investment plays a



role for syndication behavior, but that it is by far not the dominating motive.

Figure 8: What do the financiers look at when choosing a syndication partner

In summarizing the evidence, we can say VC suppliers, especially privately held independent VC firms, do not entirely focus on investments nearby but have also firms in distant locations in their portfolio. This is particularly true in comparison to other providers of smart capital. Modern measures of telecommunication do not seem to work as a substitute for regional proximity. Syndication of investments may be such a substitute. However, we find that spatial proximity of the syndication partner to the investment is the least important motive for a joint investment. We, therefore, have to ask why regional proximity plays such a minor role.

6. Why is regional proximity so unimportant for VC investment?

Although we found an obvious clustering of VC companies and investments in Germany (section 3), our survey indicates that regional proximity between the VC firm and the portfolio company does in no way play a dominant role. All of our interview partners agreed that regional proximity is definitely an advantage for VC investments, mainly due to lower costs and fewer problems of monitoring and advising. Although, none of the interview partners neglected the importance of monitoring and supervision on-site of the portfolio companies; most of them stated that spatial proximity is not a dominant factor in this respect. With the exception of public VC companies, which are mostly restricted to their region, none of the interviewed VC managers would reject a promising investment opportunity that is not located at the same site, at least as a member of a syndicate. The reasons for this are diverse.

First, the spatial structure of Germany is rather balanced and accessibility of any location within Germany is relatively easy – at least if compared to countries such as the UK or the US. Spatial distances are much smaller than in the US and a dense infrastructure for traveling exists almost everywhere. Nearly all locations in Germany can be reached within a day and in most cases there are convenient possibilities to return home on the same day. As in the study of the informal VC market in the UK by Mason and Harrison (2002b) many investment managers interviewed in our survey stated that they do not want to travel longer than two hours to visit a company and that many locations in Europe can be reached by a two hour plane trip. Furthermore, for the monitoring and consulting of companies that are located far away, some managers prefer staying several days on-site, which causes the travel times to be less important.

Second, the majority of the interview partners stated that a limited pool of promising investment opportunities was a main reason for searching outside the region. They would invest in new companies located nearby if there were some. Therefore, if the mountain won't come to Mohammed, then Mohammed has to go to the mountain. Obviously, the main restriction for the German VC companies is the availability of promising investment targets, not time and effort of monitoring

and consulting. One of the VC managers that we interviewed wrote this on his questionnaire: “It is not time to pick and chose in the regional sense as long as you want to earn money.”¹⁴ This indicates that the main bottleneck for occurrence of a VC investment in Germany is not the absence of VC suppliers but the limited number of promising projects.¹⁵ As a consequence of the lack of investment opportunities of a sufficient quality, only about 20 billion € out of the 45 billion € under management by the members of the German Private Equity and Venture Capital Association have been invested in companies as of May 2005.¹⁶

7. Conclusions and implications

In this paper we have examined the role of regional proximity for VC investments. The main part of the empirical analysis was based on a survey of 85 face-to-face interviews made with different types of financiers in Germany. This database not only enabled us to gain insight into the investment behavior of VC companies and their attitude towards the importance of spatial proximity to portfolio companies, but also we could also compare the results of the importance of regional proximity for different types of financiers offering smart capital.

The analyses clearly showed that the importance of regional proximity between the VC firm and its portfolio companies is widely overestimated in the literature. The VC companies in Germany, especially the private and independent VC firms, do not focus mainly on investments located nearby. Although telecommunication and syndication of investments may be employed to overcome disadvantages of distance, none of these measures seemed to play a dominant role. The reasons that we found for the striking unimportance of geographical distance for German VC providers were the balanced spatial structure that leads to good accessibility of most locations in the country as well as a lack of promising investment opportunities on-site.

¹⁴ Translation from German questionnaire.

¹⁵ Harding (2000) draws similar conclusions for the UK.

¹⁶ German Private Equity and Venture Capital Association (2005).

One main conclusion of our analysis is that the absence of VC firms in a region is not likely to be a bottleneck for innovative entrepreneurs in Germany. We cannot confirm that there are equity gaps in certain regions that represent a severe problem for innovative start-ups. At least from the perspective of the VC managers, the main bottleneck is the presence of promising investment opportunities. We can, however, not completely preclude the existence of informational bottlenecks that prevent entrepreneurs and VC suppliers to match.

Our results lead to some important questions for further research. First, the role of syndication as a possible substitute for regional proximity in the VC industry should be more illuminated. Second, it would be rather interesting to compare the performance of investments on-site with investments in considerable spatial distance to find out if proximity really does not play an important role. And third, additional research is desirable to find out if a regional equity gap or an information problem exists especially from the viewpoint of entrepreneurs that search for VC.

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