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Support Strategies in Venture Capital Financing

Nurturing or Selection

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ABSTRACT

Venture capitalist are intermediaries with strong advantages in financing risky investments (Leland/Pyle 1977, Chan 1983, Diamond 1984; Bygrave 1988). Being specialized in one industry, venture capitalists can control risk at lower cost compared to other players in the market (e.g. banking houses) because they have accumulated specific know-how, experience, as well as access to networks and information. Norton and Tenenbaum (1993a) found evidence that controlling portfolio risk through specialization in certain industries and in certain financing stages seems to be a superior strategy for venture capitalists.

Their results seem quite plausible. However, practical evidence shows that we not only find “specialists” in the market but also other venture capitalists that are not specialized either in industries nor in finance stages. We call them “all-rounders”. We are puzzled by the existence of all-rounders because it seems to be unclear what sort of advantages they could realize in the market.

In attempting to answer that question we try to find out in how far all-rounders differ from specialists. We assume that main differences are caused by the sort of knowledge that all-rounders and specialists own. Whereas specialists have knowledge or know-how concerning a certain field (e.g. biotech) plus important know-how in founding and financing activities, all-rounders only have know-how in founding and financing activities. In consequence all-rounders are likely to choose a different sort of enterprise for their portfolio as well as a different sort of strategy to support their portfolio enterprises. Based

on an agency theory rationale we estimate the information cost for specialists and all-rounders to choose a certain type of enterprise and to embark on a certain support strategy. We assume that all-rounders will support their portfolio enterprise very intensely (nurturing strategy) whereas specialists will focus on careful selection. With regard to support they will rather control than nurture (selection strategy). The rationale is the following: Compared to venture capitalists, entrepreneurs pursuing highly specialised tasks like bio or gene technology possess systematically superior know-how regarding the project. Nevertheless, the venture capitalist's specific knowledge provides effectual 'absorptive capacity' (in terms of 'enough knowledge to understand the business processes') to control the founder. Furthermore, it enables him to assess the market adequately. Consequently it is more efficient for him to allocate his specific knowledge on selection (and controlling) processes rather than on nurturing processes. Altogether, compared to other investors (private investors or banks), a specialist who chooses the selection strategy can handle investment risk in a superior way. In contrast, a venture capitalist possessing general knowledge like 'how-to-manage-an-enterprise' can offer nurturing as a complementary asset to the founder if the founding project is not too complex and easy enough to understand.

We have tested our theoretical results empirically with our own dataset, which was collected from venture capitalists associated in the German Venture Capital Association e.V. (BVK), the Swiss Private Equity and Corporate Finance Association (SECA), and the Austrian Private Equity and Venture Capital Organisation (AVCO) in February, March, and May 2003. Our first empirical analysis has yielded evidence that our hypotheses could be sustainable.

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1 Introduction

Venture capitalists are intermediaries with strong advantages in financing risky investments (Leland/Pyle 1977, Chan 1983, Diamond 1984; Bygrave 1988). Being specialized in one industry, venture capitalists control risk at lower cost compared to other players in the market (e.g. banking houses) because they have accumulated specific know-how, experience, as well as access to networks and information. Norton and Tenenbaum (1993a) found evidence that controlling portfolio risk through specialization in certain industries and in certain financing stages seems to be a superior strategy for venture capitalists.

Their results seem quite plausible. However, practical experience shows¹ that we not only find “specialists” in the market but also **other** venture capitalists that are not specialized either in industries nor in finance stages. We call them “all-rounders”. We are puzzled by the existence of all-rounders because it seems unclear what sort of advantages they could have in the market. Explaining the existence of all-rounders is the gap we want to fill with our research.

The literature in this area is not extensive. In fact we did not find any work with that focus. So the literature we refer to is more generally linked to venture capitalists’ portfolio strategies: In a seminal and often cited work William Sahlmann (1990) made an institutional analysis concerning the structure and governance of venture capitalists. Edgar Norton and Bernhard Tenenbaum (1992, 1993a, b) analysed whether venture capitalists try to control risk through competing portfolio strategies, namely a diversification strategy (investments in several industries) on the one hand, and a specialization strategy (investments focused on one industry) on the other hand. They found strong evidence that venture capitalists control portfolio risks through specialization in industries as well as in certain financing stages. These findings support Bygrave’s (1987, 1988) hypothesis that venture capitalists **have to** specialize in order to realize accumulative learning effects and benefits from networking and reputation. However, these papers do not take a stand with regard to the questions why we do find both “specialists” and “all-rounders” within the population of venture capitalists. What enterprises do they choose and what strategies do they embark on? And finally, what sort of advantages do all-rounders realize?

In attempting to answer that question we try to find out in how far all-rounders differ from specialists (chapter 2). For that target we build up an agency theory framework (Jensen/Meckling 1995) concerning the information costs that are incurred in attending a portfolio enterprise. We assume that dif-

¹ See Norton and Tenenbaum (1992 a,b, 1993). Our own data also strongly supports that phenomenon.

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ferent sorts of knowledge all-rounders and specialists have incur different levels of information costs. Deriving our hypotheses in chapter 3 we assume that all-rounders will support their portfolio enterprise very intensely (we call this ‘nurturing strategy’) whereas specialists will focus on careful selection. With regard to support they will rather control than nurture (we call this ‘selection strategy’). In chapter 4 we present our data, method and results. Our data was collected from venture capitalists associated in the German Venture Capital Association e.V. (BVK), the Swiss Private Equity and Corporate Finance Association (SECA), and the Austrian Private Equity and Venture Capital Organisation (AVCO) in February, March, and May 2003. A first empirical analysis has yielded evidence that our hypotheses could be sustainable.

2. Framework

With the help of this framework we try to develop a verbal model that allows us to compare all-rounders and specialists concerning their portfolio decisions (choice of portfolio enterprises and choice of strategy). Therefore, we make two steps. Firstly, we refer to the Jensen and Meckling (1995) categorization of information cost. We need this categorization to estimate which decision will incur which cost to which venture capitalist. Secondly, we define extreme or ideal types of venture capitalists, portfolio enterprises, and strategies. Even if we know that these opposed ideal types are blurred in practice and a placement on a continuum would match reality somewhat better, we decided to choose the ideal types for two reasons: the definition of ideal types does a good job in clarifying what we are talking about. We fear that our rationale becomes too vague if we talk about venture capitalists with a “certain” degree of specialisation, refer to portfolio enterprises with a business idea as “mezzo hard to comprehend”, and to a strategy containing “a bit” selection and “more” nurturing. The other point is that we are told by practitioners that this sort of classification is usual in practise and even our categories are used the way we use it. So we appreciate the clearness the simplification offers more than the exactness that continuous variables would offer.

Information cost incurred attending a portfolio enterprise

Jensen and Meckling (1995) analyse the effect of different kinds of knowledge, namely general and specific knowledge, on the allocation of decision rights within an organizational structure². Specific knowledge is characterised by being costly to transfer among agents whereas general knowledge is rela-

² They refer to companies, but also to franchise organizations.

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tively inexpensive to transmit. Defining general knowledge Jensen and Meckling (1995, pp.7-8) refer to prizes or management ratios and defining specific knowledge they refer to idiosyncratic and scientific knowledge as well as knowledge produced by assembling and analysing knowledge of particular circumstances (through time and/or across circumstances such as location, income, education, age). In our framework specific knowledge is defined as special know-how concerning a certain industry or financing stage, which means that the venture capitalist enjoyed an education and collected practical experience in a certain field. General knowledge on the other hand is defined as the standard venture capitalists' basic know-how in founding and financing new enterprises. Defined that way, general knowledge is not inexpensive to transmit, but it is common knowledge in the market where new enterprises are financed.

The Jensen/Meckling-analysis focuses on a conflict the principal is confronted with whenever he has to decide whether to delegate a decision right to an agent or to fulfil a task himself: If he delegates a decision to an agent he has to take **agency costs** into account because different interests between principals and agents make it probable that the agent pursues her interests on behalf of the principal. To protect himself against the agent's moral hazard, the principal has to monitor the agent and to bear the damages caused by different interests. Agency costs are assumed to be high if the agent possesses the relevant specific knowledge to decide on a certain issue but the principal does not.

On the other hand, if the principal decides not to delegate but to fulfil a task himself he has to take **knowledge transfer costs** into account. They arise because the principal - in case he does not own - has to acquire information about time and place (idiosyncratic knowledge), specific skills and know-how, experience and so on to be able to decide in the right way. We define these knowledge transfer costs explicitly as the costs of deciding to perform a task himself. They are low if the principal possesses the relevant specific knowledge or if "only" general knowledge is needed to decide. In any case, the principal has to choose between making decisions himself and bearing knowledge transfer costs in acquiring the relevant knowledge, or delegating decisions to an agent and bearing the agency costs.

Given the information asymmetries that exist between venture capitalists and portfolio enterprises, the venture capitalist's knowledge directly influences the costs of attending a certain enterprise as well as the costs of embarking on a certain strategy.

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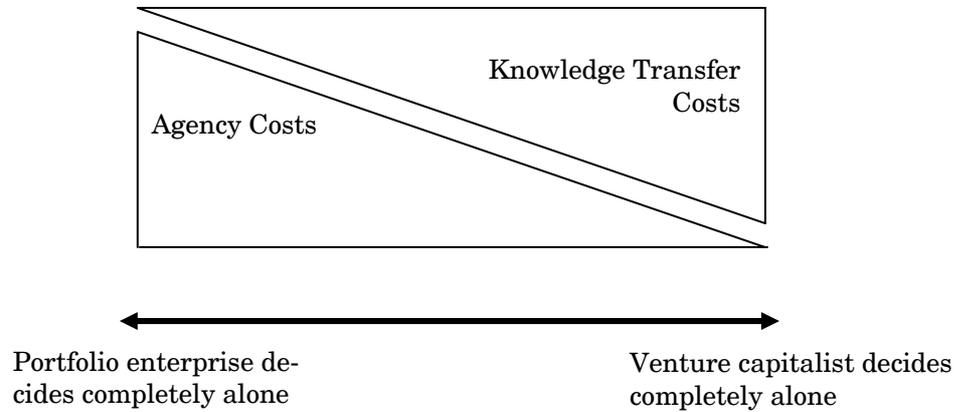


Figure 1: Relationship between knowledge transfer and agency costs

Defining ideal types

As we outlined above we try to structure the heterogeneity of the venture capital market (regarding the venture capitalists and the portfolio enterprises) as well as the multitude of strategies that the venture capitalists can embark on by building ideal types of venture capitalists, portfolio enterprises and support strategies. This type-building allows us to search selectively for informative correlations between types of venture capitalists, chosen portfolio enterprises, and support strategies.

Firstly, we differentiate between two types of venture capitalists. One type is the “**all-rounder**”. The all-rounder has know-how concerning the process of founding and financing a new enterprise, which is constitutive for his role as an intermediary between outside investors and portfolio enterprises. However, he does not own deeper insights in one special industry. Trying to succeed in a specific industry would incur nearly prohibitive knowledge transfer and agency costs to the all-rounder because he has neither the knowledge to decide himself nor the knowledge to assess how an agent performs. Referring to the Jensen/Meckling-framework we can say that the all-rounder owns general (founding and financing) knowledge. At first glance we cannot see the all-rounder’s advantages compared to the other players in the market. His existence seems surprising. The other type is the “**specialist**”. The specialist also owns founding and financing skills but in addition he has special knowledge concerning special industries, processes and products, such as special knowledge in biotechnology. The specialist is that type of venture capitalist which is claimed by theory to be the “normal” venture capitalist (Leland/Pyle 1977, Chan 1983, Diamond 1984; Bygrave 1988). Compared to other competitors his specialization at large lowers knowledge transfer and agency costs.

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Secondly, we differentiate between two types of business ideas (portfolio enterprise-to-be) that can be selected into the venture capitalist's portfolio. We talk about "**smartideas**" if the founding project is not too complex and easy to understand. One might think about a certain innovative delivery procedure for a pizza that allows differentiating from competitors, or a technical solution concerning bathroom fittings, for example. Smartideas are characterized by low knowledge transfer costs that are incurred to understand them. On the other side we talk about "**hightechs**" if the business idea is hard to understand because years of scientific education or specific experience are needed to become familiar with that kind of problem. Business ideas in bio or gene technology are typical examples for "hightechs".

Finally, we differentiate between two strategies a venture capitalist can choose: The nurturing and the selection strategy. **Nurturing** means that the venture capitalist is deeply involved in the business process of his portfolio enterprise and supports it intensively. He delivers help on an operative level and makes strategically important decisions himself. That way he reduces moral hazard but has to acquire specific knowledge. Overall, he takes knowledge transfer costs into account to mitigate agency problems. Bringing it to an extreme point we could define nurturing as deciding himself. So in a pure form nurturing just incurs knowledge transfer cost and no agency cost. However, we stick to reality and say nurturing means that the venture capitalist decides a lot in the portfolio enterprise but agency problems still exist. If a venture capitalist chooses the "**selection**" strategy, he focus his time and energy on the selection of enterprises that he controls afterwards on the basis of aggregated data. He does so because fishing the best business ideas and management teams out of the pool of enterprises-to-be increases his probability to succeed, too. In case the idea as well as the founding teams are really good, support is no longer the critical factor. It is enough to monitor hands-off to avoid damages caused by moral hazard. Overall, in embarking on a selection strategy the venture capitalist minimizes knowledge transfer costs but accepts higher agency costs. In a pure form he only has to bear agency costs but no knowledge transfer costs.

We repeat here explicitly that the alternatives described above are extreme positions on a continuum of actions the venture capitalist can engage in with regard to his portfolio enterprise. Actually he will neither decide completely alone on an issue concerning a portfolio enterprise nor will the enterprise's management act completely autonomously. Nevertheless, in searching for new investments a venture capitalist is confronted with a certain trade-off. Choosing the better enterprises might reduce the level of support he has to offer later on. And in making a contract with the enterprises, different levels of support have to be chosen as well as different levels of control. In any case, we assume that the strategy a venture capitalist will choose is directly influenced by the

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knowledge transfer and agency costs, which depend again on his state of knowledge.

3. Hypotheses

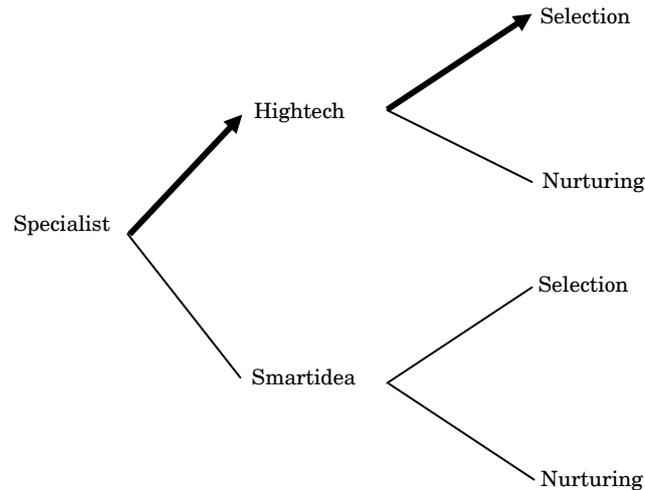
Considering which kind of venture capitalist will choose which kind of portfolio enterprise we expect that “all-rounders” will match with “smartideas” and “specialists” will match with “hightechs”. The all-rounder’s rationale is the following one: Because the all-rounder misses the relevant knowledge he is neither able to decide among “hightechs” nor he is able to assess the business idea as well as the hightechs’ management. Therefore, to nurture a “hightech” causes prohibitive knowledge transfer costs, and selecting causes prohibitive agency costs. The specialist on the other hand would give away important competitive advantages in supporting a “smartidea” because he does not exploit his additional specific skills. On the market for “smartideas” there are many more serious competitors than in the market for “hightechs”, so that his expected profits per investment are lower than if he selected the “hightechs”.

The next question is what kind of support strategy is used by each of the two “couples” specialists and hightechs and all-rounders and smartideas. At first glance the specialist seems to have advantages in embarking on the nurturing strategy, because owning the relevant knowledge allows him to minimize agency costs without taking into account high knowledge transfer costs when nurturing the portfolio enterprise. However, there are two serious problems in accepting this argument: First - having special knowledge about an industry does not necessarily mean that each business idea in this field is easily understandable for a specialist. Though his costs might be lower compared to an all-rounder or any other investor even the specialist has to bear considerable additional knowledge transfer costs if he wants to be able to make decisions within the hightech portfolio enterprise. Let us consider an example: Often the newly founded enterprises are spin-offs out of universities where researchers worked for years on a business idea they want to bring to the market now, so even for specialists there remain considerable information asymmetries. Second - the researcher acting as manager of the portfolio enterprise has a crucial interest to hold this information asymmetry. Otherwise another management could replace her easily before she can extract full returns from her idea. In consequence there exist between specialists (venture capitalist) and hightechs (portfolio enterprise) not only considerable information asymmetries, but there is also a strong interest of the portfolio enterprise’s side to retain these information asymmetries. Finally nurturing seems to be too expensive because high knowledge transfer and agency costs are expected to arise.

On the other side being a specialist who pursues the selection strategy will be profitable. The specialist has information advantages compared to other competitors (e.g. private investors or banks). His special knowledge allows him

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to assess the business idea as well as the market situation. He is also able to judge whether additional investments are necessary or not, etc. Overall, his specific knowledge allows a superior assessment of whether an innovative project will be promising and successful or not and enables him to monitor the



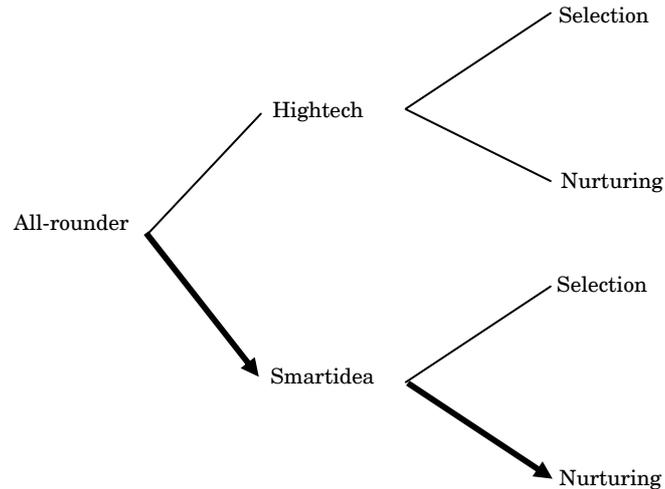
project efficiently. In fact, no other competitor is able to nurture a hightech efficiently whereas the specialist has considerable advantages in selecting it, because he can do it at lower agency costs. Therefore, we assume that selection is the superior strategy for a specialist.

Figure 2: The specialist's support strategy

What can we say about all-rounders and their support strategy? Here one could argue that an all-rounder could realize profits in “specializing” on the selection process. However, the market situation is different for him. Providing a good business idea with money is not only attractive for venture capitalists but also for commercial banks or other private investors. In the case of “easy to understand business ideas” the comparative advantages of a venture capitalist are thus eroded because all other players in the market can provide the same service (provision of capital) at the same cost. However, whereas he is expected to gain return rates of 25% to 30% to his investors (Zider 1998, p. 136), the commercial bank can settle for 8% to 10%. That condition allows the bank to pick out the “peaches” and brings the all-rounder comparative disadvantages. On the other hand, pursuing a nurturing strategy in this case is equivalent to providing an additional service, namely management consulting. Compared to commercial banks and other private investors, the venture capitalist has ad-

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vantages because he can provide professional support in establishing an enterprise as a complement to an innovative business idea. Owning equity, he can



offer his consulting activities at lower costs than a management consultancy because his profits are the result of an increase in value of the enterprise. Finally, he can embark on a nurturing strategy to lower knowledge transfer costs, which allows him to minimize agency problems. That is his core advantage compared to the other competitors in the market.

Figure 3: The all-rounder's support strategy

For these reasons our hypotheses read as follows:

1. *Specialists choose to invest more in high-tech ideas; all-rounders choose to invest more in smart ideas.*
2. *Specialists choose the selection strategy; all-rounders choose the nurturing strategy.*

4. Database, methodology, and operationalisation

The data

To test our hypotheses which venture capitalist will choose which type of enterprise and embark on which strategy, we generated a dataset based on addresses from the German Venture Capital Association (BVK), the Austrian Private Equity and Venture Capital Organisation (AVCO), and the Swiss Pri-

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vate Equity and Corporate Finance Association (SECA). All three organisations have full and associated members: The BVK counts 201 full and 61 associated members, the AVCO 22 regular and 23 associated members and the SECA 53 full members and 36 associates. We focused our survey on the data of the full members and excluded the associated members because these individuals or companies have relationships to venture capitalists but do not offer venture capital themselves. Altogether we have a basic number of venture capitalists in Austria, Germany, and Switzerland comprised of 276 companies.

To get information concerning the selection and nurturing strategies of venture capitalists, we developed a standardised questionnaire collecting data for 120 variables delivering information about (1) firm structure, (2) the knowledge the venture capital firm has access to, and (3) the behaviour of venture capitalists towards their portfolio enterprises and the types of enterprises they finance. Concerning the firm structure we asked for data that reflect the size of the company (measured in numbers of employees, number of portfolio companies and the volume of the portfolio), the spatial focus of the company (acting regional, nationwide or international) and the governance structure (being an independent business or not). Concerning the knowledge of the venture capitalist we asked to what degree the venture capitalist is specialized in an industry or in stages of financing. Referring to the behaviour of venture capitalists towards their portfolio enterprises we asked for the time spent by the venture capitalists in generating and selecting new businesses and in advising their portfolio enterprises. Furthermore, we asked the venture capitalists how they work with their portfolio companies (hands-off or hands-on) and in which fields they provide support to their companies (management, marketing, personnel, etc.). Based on this information we differentiated between the nurturing and the selection strategy.

To boost the return of questionnaires in February 2003 we phoned all venture capitalists to ask for a direct contact person and sent her or him the questionnaire by e-mail as word-document or PDF-file. This way people could choose to answer via e-mail, fax or regular mail. After ten days, we sent a second e-mail to the same people as a reminder to answer the questionnaire. After another week we called the companies again and offered to send the questionnaire a second time, which we did afterwards. The same procedure took place one week later for the Austrian and the Swiss Venture Capitalists companies. We finished the first survey period at the end of March 2003.

We sent out a second wave of questions in April 2003 to get information that refers to the education and experiences of the employees and founders of the venture capital companies. So we asked them which kind of study subject they had chosen, which kind of master they got, etc. Moreover we tried to get information from the venture capitalists on which kind of portfolio enterprises they financed: are they more like high-tech ideas or more like smart ideas? For companies which did not answer this second post-questionnaire, we looked at all

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web pages of the venture capitalist companies and could so generate meaningful answers and data as well. Overall most of the companies answered by e-mail. Finally we generated 103 well-answered cases³. This equals a return rate of 47.5 %.

	Sent Outs	Returns	Return Rate
Germany	167	79	47.30%
Austria	20	13	65.00%
Switzerland	30	11	36.70%
Σ	217	103	47.47%

Own data, 2003.

Table 1: Dataset and Returns

The returns are representative of the population of venture capitalists in Austria, Germany and Switzerland as a first comparison of our data and the data of BVK (<http://www.bvk-ev.de/index.php/aid/50>, 9.4.2003) on average data concerning the portfolio volume and the number of portfolio investments, the industry or investment stage orientation and the geographical activities shows.

Methodology

Our first hypothesis will explain the relationship between the degree of specific knowledge that a venture capitalist possesses and the investments that he makes in high-tech or smart ideas.

$$f(\text{invest}) = \alpha + \beta (\text{knowledge}) + \gamma (\text{control})$$

Even if there might be a continuum of investments from smart ideas to high-tech ideas investments in a venture capitalists portfolio, venture capitalists are highly focused to invest in one kind of ideas⁴. Therefore we decided to

³ Some venture capitalists told us at the first or second call that they did not work in the business anymore or that they had a company policy not to answer these kinds of questionnaires. We checked whether there was a discernable pattern of non-response, but we could not identify any. Moreover, some companies did not exist anymore. Therefore we sent the questionnaire only to a population of 217 venture companies.

⁴ Expert interviews with different venture capitalist confirmed that observation (i.e. Genes Ventures, May 2003. Vision Capital, February 2003).

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test only the impact of the degree of specificity of knowledge on the percentage of investments in high-tech ideas. Based on these results we can also draw conclusions regarding the relationship of the degree of specialisation and investments in smart ideas. Our data on investments are employed in an ordinary least square analysis (OLS regression) because observations on the dependent variable (investments in high tech ideas) are metric units.

Our second hypothesis explores the link between the degree of specificity of knowledge a venture capitalist holds and his chosen 'support' strategy: nurturing or selection.

$$f(\text{support}) = \alpha + \beta(\text{knowledge}) + \gamma(\text{control})$$

However, a venture capitalist never only nurtures or selects⁵ so the strategy is measured as a proportion of selection to nurturing. If this relation is bigger than 1 the venture capitalist selects more than nurtures. The variable is metric. To test the influences, all control variables c.p an OLS regression is used also in that case.

Operationalisation

The next step was to operationalise our dependent, independent, and control variables.

Dependent variables:

To test our first hypothesis concerning the investment in high-tech or smart ideas we measure the strategy of choosing high-tech or smart idea investments by creating the variable HIGHSMART, which measures the percentage of investments in high-tech ideas. To test our hypothesis concerning the relationship between knowledge and strategy we need variables that allow identifying a selection or nurturing strategy. Because venture capitalist never only nurture or select we decided to create a relative variable that measures the ratio of time spent in selecting and nurturing portfolio enterprises (SELENURT).

Independent variable

As the key explaining variable we refer to the venture capitalist's knowledge. Knowledge of the venture capitalists is categorized based on the gathered information about the education and experience of the employees and the foun-

⁵ Expert interviews with different venture capitalist confirmed this observation (i.e. Genes Ventures, May 2003. Vision Capital, February 2003).

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ders of the firm. If they have a degree and/or experience in business administration or law they are categorized as ‘general knowledge’. If they have degrees or experience in science or technology they are labelled ‘specific knowledge’. In fact, most of the companies have a knowledge mix, so every venture capital company finally got a percentage grading of specific and general knowledge. Therefore, we created the variable HCSPEZALL that measures the ratio of specialized and general knowledge that is found in the venture capital firm⁶. This is our main independent variable. We assume that it determines the strategic position of a certain venture capitalist within the broader market for seed capital.

Control variables

In addition to the independent variable that has been specified above several control variables are included. To investigate whether the classical specialisation argument has an impact on the degree of high-tech investments or the degree of selection we control for the number of industries a venture capitalist is working in (Bygrave 1988, Norton/Tenenbaum1993a). Working in a lot of industries means a low degree of specialisation (SPEZIND) and vice versa. We can transform this variable in the measurement category of a “super specialist” who is working in one or two industries and others who are determined as non-specialists. We do expect a negative relation: if the venture capitalist is not acting as industry specialist he will invest less in high-tech or less nurture. However, we expect this relationship to be less strong compared to the knowledge variable.

A second control variable is added that is working the same way: The amount of stages a venture capitalist is active in (SPEZSTAG) is another measure of specialisation. Here we expect the same: A venture capitalist who is not specified in a stage of financing will invest less in high-tech ideas and the selection activity will decrease.

Third, we use the dummy variable VCSTATUS to get information about the governance status of venture capitalists into our model. The governance status of a venture capitalist could cause different strategy choices. It appears in being independent or dependent (like a corporate venture capitalists). We expect independent venture capitalists to be more specific because gathering specific knowledge and experience in one industry and thus gaining competitive advantages in dealing with risky investments is the market niche a venture capitalist is designed for. Corporate venture capitalists or institutions allocating public

⁶ We use the percentage of specific knowledge in a venture capitalist company divided by the percentage of general knowledge to create the proportion of knowledge in the venture capitalist firm.

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venture capital are backed by corporate or public capital and therefore they are not forced to provide as high returns on investment as independent venture capitalists. Therefore, we expect an independent venture capitalist to have a higher ratio of high-tech investments and to select more intensively.

To control whether the structure of the venture company might have an influence on the two dependent variables we control for the number of portfolio enterprises as well as for the volume of investments and the number of employees. We also control for the cooperation strategy a venture capitalist is pursuing. The more a venture capitalist works in risky investments the more he might to be willing to exchange resources like the opportunity to invest in a promising portfolio enterprise, to spread financial risks and to share information (Bygrave 1988). So we expect that investing in hightechs and choosing a selection strategy also could come along with co-investing. We furthermore expect a moderating effect of this variable on the volume of investments. We do not test it in this study but will analyse it in a follow-up study. To control for geographical aspects we put in the regression whether a venture capitalist does invest more regionally or nationwide. In this case international investments stands as the reference category for these dummies.

Table 2 reports the descriptive statistics as well as the meaning and measurement for the dependent, the independent and the control variables.

Variable	Meaning/Measurement	Mean
Dependent Variables		
SELENURT	Relation of time spent on selecting or nurturing portfolio enterprises (metric)	0.84
HIGHSMART	Percent of investments in high-tech ideas (metric)	43.9
Independent variables		
HCSPEZALL	Relation of specialized and general human capital in the venture capital firm (metric)	0.89
Control variables		
SPEZIND	Industry specialisation, specialist or all-rounder (bivariate 0/1)	0.56
SPESTAGE	Stage specialisation, specialized in a phase or not (bivariate 0/1)	0.18
VCSTATUS	Venture capitalist is dependent or not (bivari-	0.51

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	ate 0/1)	
PE No	Number of portfolio enterprises (metric)	12
PFVOLUME	Volume of portfolio investments in Mio. € (metric)	25
EMPLOY No	Number of employees in the venture capitalist firm (metric)	8
CoINVEST	Cooperation with other venture capitalist in financing portfolio enterprises (bivariate 0/1)	0.87
REGIONAL	Venture capitalist acting with a regional focus (bivariate 0/1)	0.32
NATIONAL	Venture capitalist acting with a national focus (bivariate 0/1)	0.33
INTERNAT	Venture capitalist acting with an international focus (bivariate 0/1)	0.35

Own data, 2003.

Table 2: Definition of variables and descriptive statistics (n = 103)

5 Results

Descriptive results:

First we tested differences in the mean-values (t-test) of the interesting variables:

HC specialized	n	Mean	Std.-dev.	Levene-Test		T-Test		
				F	Sig.	T	Df	Sig. (2-s.)
HIGHSMART				30.585	.000		96	
Smart HC	53	2.2017	13.55525			- 3.076		.003
Specialized HC	45	18.326	35.24277			- 2.893		.005
SELENUR				21.187	.000		96	
Smart HC	53	0.6381	0.29786			- 5.677		.000
Specialized HC	45	2.0708	1.81026			- 5.249		.000

Own data, 2003.

Table 3: T-Test

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With our descriptive results we can show that venture capitalists specialised in knowledge on average put almost 18% of their investments in high-tech ideas, all-rounders only 2%. Moreover we can show that venture capitalist with a high level of specific knowledge invest more time (in percent of all working time) in selecting new investments than all-rounders do. On average, specialists spend significantly more than double of their working time on selecting new investments than all-rounders.

Hypothesis testing results:

Results testing the first hypothesis are presented in table 4, regression 1. Results presenting relations testing the second hypothesis can be found in table 5, regression 2. The first column provides the results concerning the Beta-coefficients, the second column the T-value.

Our findings are broadly consistent if we look at the two dependent variables. Overall we can show that venture capitalists obtaining a high level of specific knowledge focus their strategy more on selecting than nurturing and focus their investments more on high-tech ideas than smart ideas. The independent variable always has the predicted signs and is always highly significant.

Regression 1: Testing our first hypothesis we can show that venture capitalists obtaining a high level of specific knowledge do focus their strategy on high-tech ideas. If a venture capitalist obtains one more unit specific knowledge in relation to general knowledge, the investments in high-tech portfolio enterprises will increase on a highly significant level about 22%, all other variables c.p.. So support is found for the first hypothesis, as the estimated coefficient on knowledge is positive as predicted and significant in this model. Analysing our results concerning the control variables we observe a strong relationship between a venture capitalist being an industry specialist or not and the investment strategy. The more the venture capitalist concentrates on special industries, the more he is investing in high-tech ideas. Or the other way around: if a venture capitalist is not an industry specialist the investments in hightechs decrease about 35%.⁷ Finally, we can observe a strong relation between knowledge and strategy. Being a venture capitalist with highly specific knowledge and investing in high-tech ideas again seems to be a competitive advantage.

⁷ If a venture capitalist is working independently the high-tech investments raise about 2.5 %.

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Variable	B-Coef.	(T-value)
Independent variables		
HCSPEZALL	22.077	(3.037)**
Control variables		
SPEZIND	- 35.330	(- 4.512)**
SPEZSTAGE	3.961	(- 0.497)
VCSTATUS	2.447	(1.965)*
PE No	0.017	(1.459)
PFVOLUME	- 0.008	(- 1.250)
EMPLOY No	- 0.024	(- 0.667)
CoINVEST	4.653	(0.587)
REGIONAL	0.330	(0.044)
NATIONAL	0.363	(0.052)
N = 93; R ² (corr.) = 62.0; F = 11.266***		

Own data, 2003. ***- significant on a 0% level, **-significant on a 1 % level, *- significant on a 5 % level, + significant on a 10 % level.

Table 4: Regression 1 – High-tech or smart idea?

Regression 2: If a venture capitalist obtains one more unit specific knowledge in relation to general knowledge the relation of selecting to nurturing will increase at a highly significant level about 0.859, which means that a “specialist” does invest 8.5-fold more time in selecting than nurturing, all other variables c.p. So the estimated coefficient of the knowledge variable is positive and highly significant. This finding provides support for our second hypothesis, showing that the greater the proportion of specific knowledge a venture capitalist occupies the more the venture capitalist follows the selection strategy. Looking at the control variables we observe as well a strong relationship between a

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venture capitalist being an industry specialist or not and the selecting strategy. The more the venture capitalist concentrates on special industries the more (6.7-fold) the time to select portfolio enterprises and ideas increases. So there is a positive relation but it is less strong than for knowledge. Furthermore, the venture capitalist status, whether he acts independently or not, significantly influences the choice between selecting or nurturing strategy: if a venture capitalist is not working independently the time invested in selection in relation to nurturing decreases significantly to 0.267. Also interesting is the fact that the more a venture capitalist collaborates with other venture capitalists the more he acts as a specialist. Overall we can show that venture capitalists with more specific knowledge select more than all-rounders. Reminding the calculus of the “specialists” (chapter 3) who has advantages in assessing risks compared to his competitors our result actually makes sense.

Variable	B-Coef.	(T-Value)
Independent Variable		
HCSportfolio enterpriseZALL	0.859	(3.088)**
Control Variables		
SPEZIND	- 0.676	(-2.257)**
SPEZSTAGE	- 0.00004	(-0.166)
VCSTATUS	0.267	(1.310)+
PE No	0.00003	(0.070)
PFVOLUME	- 0.00049	(-1.669)*
EMPLOY No	0.0015	(1.049)
CoINVEST	0.473	(1.677)*
REGIONAL	- 0.0959	(-0.334)
NATIONAL	- 0.0044	(-0.167)
N = 97; R ² (corr.) = 45.0; F = 6.150***		

Own data, 2003. *** p = 0,000, ** p < 0,001, * p < 0,05, + p < 0,1.

Table 5: Regression I – Selecting or nurturing?

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6. Conclusion

First of all our first empirical analysis has yielded evidence that our hypotheses could be sustainable. Even the key policy conclusions and recommendations of our research are quite plain: For a better understanding of the venture capital market we investigated what venture capitalists do who are not specialized either in industry or in finance stages. This is a necessary part of an explanation as to why they do exist at all and therefore fills a theoretical gap. The theoretical tool we provide could be helpful for venture capitalists who ask if their chosen strategy fits their capabilities **compared to the other players in the market**. An analysis like this could lead to the decision to acquire additional human capital or to choose another type of portfolio enterprises. Even entrepreneurs asking for venture capital could be willing to check if a certain venture capitalist really is a “good match” for them. Analysing the know-how of venture capitalists allows them to form expectations as to whether a venture capitalist can cover their needs concerning the intensity and quality of support. Overall, our analysis contributes to the understanding of a market that has been growing surprisingly fast during the last years in the German-speaking area (Fiedler/Hellmann 2001, Gebhardt/Schmidt 2002) but where the line between venture capitalists, banking houses and consultancies seems to be rather blurred.

However, much work remains to be done. Working out the relationship between knowledge and strategy is just one aspect of explaining the existence of all-rounders. We will keep investigating their governance status, their network strategies, and differences in criteria to select portfolio enterprises. We already own valuable data to answer these questions but we also have to supplement the data by asking managers working at the interface between consultancies, banking houses and venture capital firms.

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