

Keskusteluaiheita – Discussion papers

No. 1149

Terttu Luukkonen

DIFFERENT TYPES OF VENTURE CAPITAL INVESTORS AND VALUE-ADDED TO HIGH-TECH PORTFOLIO FIRMS

Correspondence: terttu.luukkonen@etla.fi

The paper draws on a study financed by the PRIME network of Excellence and the Ministry of Trade and Industry, Finland. Mari Maunula participated in this study and contributed to its formulation. The paper was presented at the workshop entitled "Venture Capital and European High-tech Startups: A new rationale for policy-making?", organised and funded by PRIME project Venture Fun, 28-29 May, 2008, Milan. I thank Federico Munari from Università di Bologna for useful comments on the paper.

LUUKKONEN, Terttu, DIFFERENT TYPES OF VENTURE CAPITAL INVESTORS AND VALUE-ADDED TO HIGH-TECH PORTFOLIO FIRMS. Helsinki: ETLA, Elinkeinoelämän Tutkimuslaitos; The Research Institute of the Finnish Economy, 2008, 24 p. (Keskusteluaiheita, Discussion papers (ISSN 0781-6847; No. 1149).

ABSTRACT: This paper examines the knowhow in strategic business areas that venture capital companies and organizations impart to their portfolio firms in early-stage high-tech enterprises and the mechanisms they use to impart this knowledge.

The paper considers three types of investors, independent, private-sector venture capital firms, public-sector venture capital organizations, and business angels, who can be regarded as informal venture capital investors. The study draws on a limited data set to illustrate their activities.

The paper draws attention to different theoretical approaches that might explain the observed behaviour. It examines whether the differences are related to the intermediary position of each investor type and subsequent incentives they have in doing their jobs - especially expounded by contract-based approaches - or the competencies in doing their jobs - based on competence-based view of the firms.

It turns out that neither approach alone can account for the observed behaviour. It is claimed that the two different types of rationales have interactive relations thus reinforcing the observed patterns of behaviour. Thus an active involvement both *ex ante* and *ex post* by the private sector venture capital firms might be the result of both factors at work. Another important finding relates to the role of public sector venture capital organizations as the most passive among the investor types. This leads the paper to suggest a reconsideration of the role of the public sector organisations in venture capital activity.

Key words: venture capital, high tech startups, non-financial value-added

JEL codes: G24, O16

1. Introduction

Extant research literature has drawn attention to the fact that, in addition to being a financial intermediary geared to the funding needs of innovative early-stage firms, venture capital investors provide their investee companies with knowledge and experience in business areas where these lack capabilities, such as strategic management, recruitment, corporate governance, marketing, etc. (Hellman, Puri, 2002; Bertoni, Colombo, 2005). This knowledge is expected to contribute to the economic success of new ventures, though the findings of studies are somewhat conflicting (cf., Fredriksen et al., 1992; Barney et al., 1996; MacMillan et al., 1988; Tykvova, and Walz, 2006). The way in which this knowledge is imparted has attracted research interest especially in the 1990s (see, e.g., Timmons, Sapienza, 1992; Harrison, Mason, 1992; Sapienza et al., 1996) and again recently (Schilder, 2006; Schäfer, Schilder, 2006; Bottazzi et al., 2007; Luukkonen, Maunula, 2007a).

The dominant mode of venture capital, as it developed in the USA, is an independent, limited-life, limited partnership (Avnimelech, Kenney, Teubal, 2005). In addition, business angels, private individuals investing informally, are active in the early stage. Captive venture capital firms, owned by banks or incumbent firms, can be active in this area, however, with a somewhat different investment motivation and value-added profile than that of independent venture capital firms (see e.g., Maula et al., 2005). Bottazzi et al. (2007) and Knockaert et al. (2006) regarded public sector venture capital organizations as captive entities comparable to bank- or corporate-owned firms, though presumably with different kinds of incentives and pressures. In Europe, in particular, there is a mixture of public-private organizations engaged in venture capital activities and these are typically active in the early stage.

The research question of this paper pertains to the question of whether there are systematic differences among types of venture capital investors in their activities in imparting non-financial value-added to their portfolio firms. The study views venture capital as an emerging industry (see, e.g., Avnimelech, Kenney, Teubal, 2005) and different institutional forms of venture capital as competing – perhaps also complementing – organizational variants. Therefore, the central question is about the relative performance of the different investor types in this key function.

If we can observe differences among investor types, our next question relates to the ways we can interpret these findings. For example, are potential differences related to their abilities and/or incentives to provide value-added or to the characteristics of the portfolio firms? In this study, attention will be paid only to three types of venture capital investors,

namely, independent limited-life venture capital investors (i.e., private-sector venture capital investors), public-sector venture capital investors (which can have a combined public-private ownership), and business angels for reasons of their particular importance in early-stage venture funding in the studied country. From a research policy point of view, we may ask whether potential differences among the types of investors imply that policy-makers should promote specific types of venture capital if they wish to foster development of high tech businesses.

This paper will be exploratory since it draws on a limited empirical study, largely to highlight the issues, and aims at clarifying future research tasks on the matter.

This paper will first relate some of the previous findings concerning the value-adding activities of different investor types. It will then report the empirical findings obtained from a survey of venture capital investors in Finland. The paper will then consider different ways to interpret the observed empirical findings and discusses potential future research needs. Finally, it will draw some policy-relevant conclusions.

2. Behaviour of different investor types vis-à-vis their portfolio firms

Most research on the value-added of venture capital focuses on the dominant mode, independent, limited-life, and limited partnership type of venture capital organization (i.e. private-sector venture capital). There is also research that compares the behaviour and strategies of the private-sector venture capital with that of informal venture capital, that is, business angels. Several authors have noted that business angels are involved in fairly similar sets of activities as private sector venture capitalists with regard to their portfolio firms, though the private-sector venture capitalists are more inclined to control risks *ex ante* by stipulating performance requirements through contracts (Ehrlich et al., 1994, van Osnabrugge, 2000), presumably because of their agency position as an intermediary between the portfolio firms and potential outside investors in the funds (van Osnabrugge, 2000). Because business angels invest their own money, they are not under pressure to prove their competence to outside investors. They use less formal means to control agency risks. This leads to *ex post* monitoring and more hands-on involvement in the investee companies. This observation has been supported by several empirical studies (Harrison, Mason, 1992; Ehrlich et al., 1994; Schäfer, Schilder, 2006; Schilder, 2006).

Research on the performance of public sector venture capital organizations has attracted interest recently, especially in Europe (e.g. Schilder 2006; Schäfer and Schilder 2006 Tykvova and Walz 2006; Tykvova 2006). As the mission of governmental venture capitalists focuses on rectifying capital market failures or achieving socio-economic objectives such as employment and economic growth in particular regions, one can assume that the involvement in portfolio companies by public venture capitalists would differ from other venture capitalists investors (Hyytinen and Väänänen, 2003, 351; Seppä, 2000, 150). Schilder (2006) and Schäfer and Schilder (2006) paid attention to potential differences in the consulting and coaching¹ activities between the public and private sector venture capital companies in Germany and found that public sector venture capital organisations have on average a much larger number of investee companies per manager, which limits their potential for active hands-on participation in activities. Consequently, public sector venture capital organisations have fewer face-to-face and telecommunication contacts with their investee firms, and they are much less active in a range of consulting activities vis-à-vis the firm as compared with private-sector venture capitalists or business angels (Schilder, 2006; Schäfer and Schilder, 2006). Knockaert et al. (2006) found that captive investor, which in their case included both public and corporate venture capitalists, were less involved than non-captive venture capitalists in value-adding activities in their portfolio firms.

Drawing on the above findings, this paper focuses on the different strategies venture capitalists have adopted vis-à-vis their portfolio firms and potential ways to understand and explain these strategies. Attention will be paid to both *ex ante* control as well as *ex post* monitoring ‘coaching’ of the portfolio firms and the degree of hands-on approaches the investors have adopted. No specific hypotheses were formulated *ex ante*.

3. Data

The data are based on a survey of venture capital organisations. The survey was conducted in the autumn of 2006 using a semi-structured web-based questionnaire sent to business angels and one or more managers of venture capital organisations identified from the membership list of the Finnish Venture Capital Association and from the ETLA study of VC-backed biotechnology firms (Luukkonen, Maunula, 2007a).

¹ For the use of the term ‘coach’, see, e.g., Baum, Silverman, 2004.

The study population includes 1) independent private-sector venture capitalists that by and large, but not fully, follow the US pattern of independent limited-life, limited partnership venture capitalists²; almost all of these are privately owned companies and only one is publicly listed; 2) public sector venture capitalists³ include three major organisations: Sitra, which has particularly invested in biotechnology, Finnish Industry Investment Ltd, and Veraventure Ltd; the last of these is a fund of funds and therefore not included in the analysis of how actively venture capitalists are engaged in their investee firms, and 3) informal venture capitalists, namely business angels. Business angels are included under the broad category of venture capital, though they are private individuals and normally are treated as a separate category. This is done for brevity. The public sector venture capital group includes a few venture capital organisations that are formally private, but partially publicly owned and have a regional investment focus and strategy. Additionally, the category of public sector venture capitalists includes a (public) university fund where the rector ultimately decides on the investments. The three venture capital groups, business angels and private and public sector venture capitalists, will be used subsequently in the analysis of this study. Corporate venture capitalists are not active in early stage financing in Finland and therefore are not included in the study.

The study was targeted to venture capital investors active in the early phase and in high-technology areas in all technology fields. The early phase was defined as seed, start-up, or early expansion stage. The definition of venture capital in this study was thus more restricted than in, e.g., Gompers and Lerner (1999).⁴ The reason for the technology focus was the fact that the study was motivated by the research interest in gaining an understanding of the factors promoting the commercialisation of new technology. In the first phase of the study the questionnaire was sent to all the identified equity investors, and the investors active only in later stages were removed from the study population afterwards. The questions were addressed to concern the practices of the venture capital organisation towards a typical early-stage investee firm.

² An important difference from the limited partnership model is reflected in our survey finding that 46% of the private sector VCs reported that their limited partners participated in investments decisions, while the model assumes that they refrain from it.

³ The term 'public sector venture capitalist' organisation is used instead of public venture capital in order to avoid a confusion of this term with publicly listed venture capital firms.

⁴ According to Gompers and Lerner (1999, p. 349), Venture capital consists of "independently managed dedicated pools of capital that focus on equity or equity-linked investments in privately held, high growth companies".

As some of the venture capital investors, especially business angels⁵ and small private sector venture capital companies preferred operating behind the scenes and on a small scale, their contact information was not found. In addition to Finnish venture capital investors, the survey questionnaire was sent to some foreign venture capital organisations that had invested in Finland. Table 1 summarises the responses received by investor type.

Table 1. Response rate of Finnish venture capital investors in the study

	Number of respondent organisations (in parenthesis no. of responses)	Total number of identified VCs/BAs*	Response rate per organisation
Business angel (BA)	20	40	50 %
Public sector venture capital organisations	8 (10)	8	100 %
Finnish private sector venture capital firms	15 (23)	20	75 %
Subsidiary of a foreign venture capital company	1	1	100%
Cross-border venture capital investors	3	26	11%
TOTAL	48 (58)⁶	68	51 %

* With address data

Aside from a few questions about the background of the respondents, most of the questions concerned the practices of the venture capital organisation and the role of the venture capital organisation as a lead investor in the case of syndications. It was assumed that minority partners in investor syndicates are less actively engaged in their investee firms. However, many of the comments by different venture capitalists negated this assumption and said that they were equally active (or passive). It is to be noted that more than 90% per cent of all the investors syndicated with other investors. Syndication with foreign investors was less frequent: 30% of the business angels, 22% of the public sector venture capitalists and 82% of the private sector venture capitalists syndicated with foreign, cross-border venture capitalists. Private sector venture capitalists were much more often than the other two groups the lead partner in syndicates.

⁵ The original list of names of business angels was obtained from another project funded by the Ministry of Trade and Industry. The great help of Tom Lahti is acknowledged in this respect.

⁶ The survey was sent to two to four senior partners or managers in several venture capital firms or organisations, and consequently, for some of these firms or organisations, more than one person responded. In most tables and figures, the total number of respondents has been taken into account (N=58), while in Table 6, each firm or organisation is counted only once (N=48). It is to be noted that if two persons responded from one organisation, their responses concerning the general practices of the organisation were not identical, and thus, for example, Table 6 is based on an average responses for each divergent case.

The respondents included persons in leading or senior positions, such as managing directors, chairs of the Board, and partners or senior partners (in private sector venture capital firms), and among the business angels, private investors. Sometimes in the latter group, for tax reasons, people invested through a company, but regarded themselves as business angels.

4. Findings

4.1. Overall time-use

In order to capture the relative weight of each phase of the venture capital cycle in the overall activities of the venture capitalists, the survey enquired about the average time they used for the different activities (Figure 1). First, it is evident that only private-sector venture capitalists use a considerable share (over 30%) of their time for raising funds. Business angels invest their own funds, and thus do not have to seek them, and the public-sector venture capital funds can have different arrangements in this respect (investing from their own reserves, or obtaining funds from public funds of funds etc), and overall, need to use only a negligible amount of time for this purpose: three out of ten public sector respondents said that they used no time at all for the activity and seven out of ten said that used 1-15% of their time for the activity.

Public-sector respondents used considerable time, a larger share than the other groups, for evaluating proposals and selecting targets for investments. This finding may go against some of the conventional wisdom according to which public-sector schemes do not use much time for the screening of investment targets.

Private sector venture capitalists used considerable time for the selection of investment targets, while only one of the business angels in the sample did so. Business angels have the smallest capital to invest and typically are one-person organisations, though a few of them reported that another person worked for them. Nonetheless, business angels run smaller-scale activities and do not seek new investment targets regularly as the other investor types do.

All three investor groups reported that they used considerable time for monitoring portfolio firms, and the private-sector venture capitalists did so somewhat more often than the other two groups. However, it was unexpected that the public-sector venture capital respondents reported considerable time-use for *ex post* monitoring and assisting their portfolio companies, almost as frequently as the private-sector venture capitalists did. Furthermore, business angels reported such time-use less often, again an unexpected finding (though in this respect the differences between the three investor groups were not statistically significant).

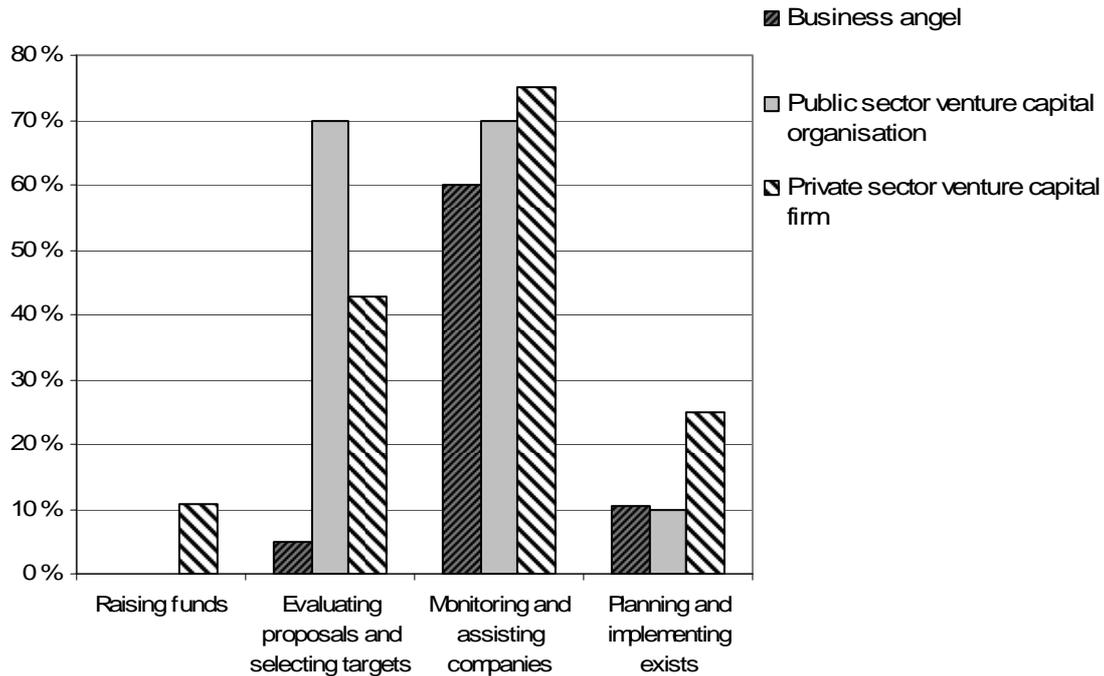


Figure1. Share of respondents who use on average more than 30% of their time for the activity.

According to nonparametric chi-square (calculated using the Kruskal-Wallis Test), the differences between the three investor types were significant as follows: in terms of raising funds, the differences were significant with $p=0,008$, evaluating proposals with $p=0,001$, and planning and implementing exits with $p=0,017$, while in terms of monitoring and assisting portfolio companies, the differences were not significant.

4.2. Formal means of controlling the portfolio firm

The questions concerning the use of formal means of controlling and monitoring the portfolio firm have been grouped in Table 2.

Table 2. Use of formal means to control the portfolio firm

	Business angel N=20	Public sector venture capital organisation N=10	Private sector venture capital firm N=28	Chi-square p values
Usually require one or more seats on the Board of Directors				
- In Finnish portfolio firms	75%	90%	89%	0,100
- In foreign portfolio firms	40%	10%	79%	0,05
Usually demand veto rights in investment contracts	85%	80%	93%	0,504
Has initiated the removal of firm managers	75%	90%	96%	0,08
Stage investments into several capital infusions	70%	100%	86%	0,108

All three groups differed surprisingly little in their practices, and aside from Board seats in foreign portfolio firms, the use of formal means turned out to be quite frequent in all groups. Business angels, however, tended to use formal means of monitoring somewhat less often than the other two groups. If we compare the profiles of the three groups (appendix figure 1) business angels had a profile opposite to that of public sector venture capitalists.

The answers concerning Board seats in foreign portfolio companies reflected the frequency of making cross-border investments: only 40% of the business angels and 50% of the public sector venture capital respondents but as many as 86% of the private sector venture capital organisations made cross-border investments.

4.3. Informal means of monitoring

The differences between venture capital investors in their use of informal monitoring means are not clear-cut either (Table 3). The three investor groups differed much less from each other than was expected. A major difference was the fact that public sector venture capitalists were quite often passive in their portfolio firms, while the reverse was the case for the business angels and private sector venture capitalists.

While half of the business angels and two-thirds of the private sector venture capitalists claimed that they were active (not essentially passive) in all of their investment targets, public sector venture capital organisations admitted that they were passive in some of their portfolio firms: 70% of the respondents said that their organisation was passive in 1-50% of the portfolio firms and 20% said that the proportion was over 50%⁷. However, in other respects public sector venture capital organisations did not differ decisively from business angels or private sector venture capitalists, contrary to earlier findings by Schilder (2006) and Schäfer and Schilder (2006). All three groups kept frequent contact through email or other electronic communication (telephone) suggesting that modern communications means may have changed the requirements concerning geographical distance between the portfolio firm and the venture capitalist (Luukkonen and Maunula, 2007a, 2007b).

Fewer respondents than expected also thought that the geographical proximity of the investment target was of importance. Business angels differed from the other two groups to some extent in this respect, perhaps because of their fewer resources and smaller staffs (Table 3) (though the differences were not statistically significant).

⁷ According to nonparametric chi-square, the differences between the groups were significant with $p=0,004$.

Table 3. Use of informal means to monitor the portfolio firm

	Business angel N=20	Public sector venture capital organisation N=10	Private sector venture capital firm N=28	Chi-square p values
Share of investors active in all of their portfolio firms	55%	10%	64%	<u>0,006</u>
Share of investors in contact with portfolio firm at least once a week				
- Meetings in person	40%	70%	68%	0,087
- Email & other	90%	80%	90%	<u>0,02</u>
Max. 2 hours in travelling time to portfolio firm	45%	10%	18%	0,036
Geographical proximity is of no importance	30%	50%	46%	0,519

4.4. Areas of *ex post* involvement

As a further measure of the involvement by the venture capitalist in the portfolio firm *ex post*, figures 2 and 3 provide the answers to questions concerning the role of the venture capitalist as a sounding board or being responsible for implementation in a number of activity areas.

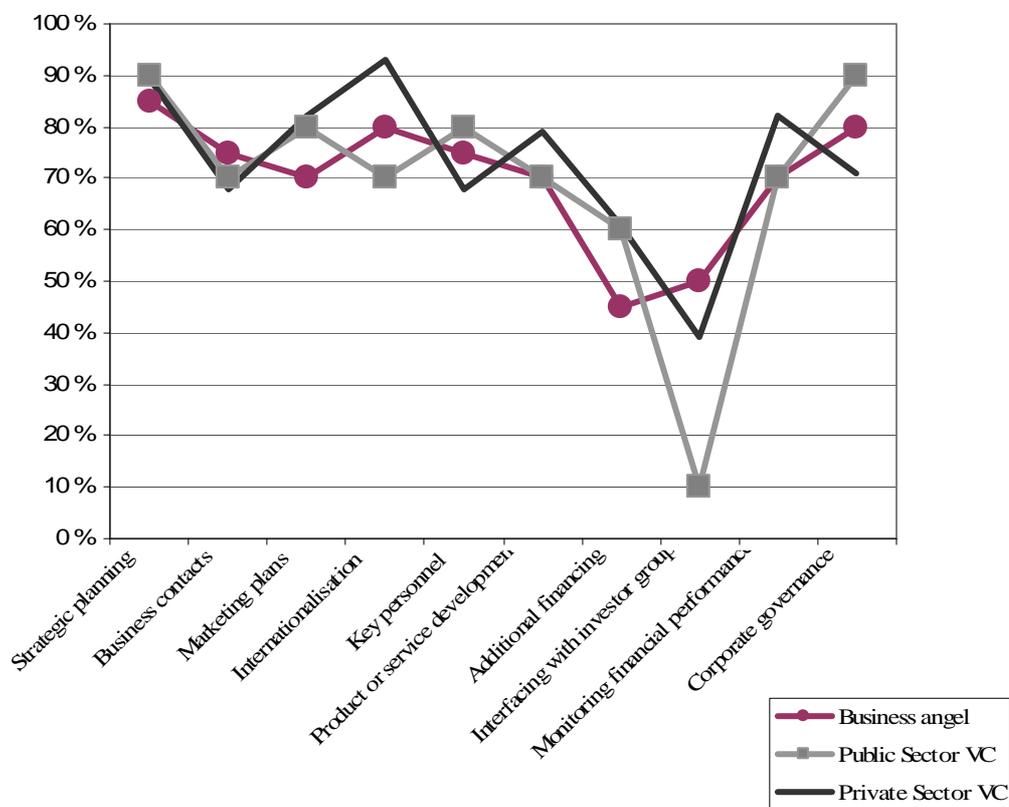


Figure 2. Activity areas where the venture capitalist serves as a sounding board (multiple responses)

First, with regard to serving as a sounding board, the answers again did not differ decisively by type of venture capitalist. They evidenced somewhat different patterns of involvement, though none of the differences were statistically significant.

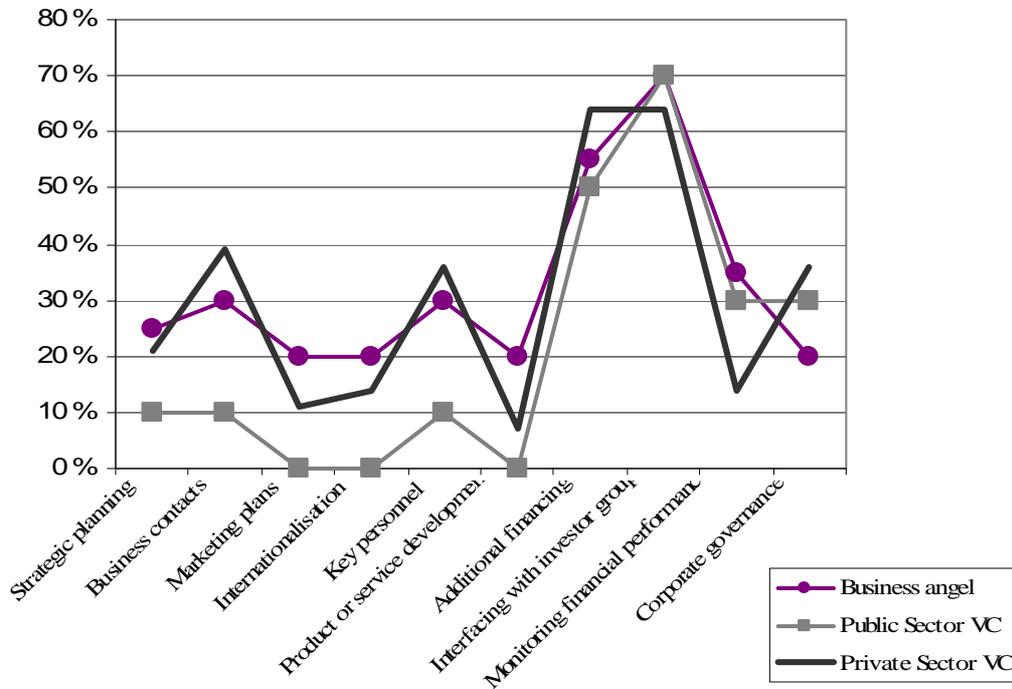


Figure 3. Activity areas where the venture capitalist is responsible for implementation (multiple responses)

Venture capitalists are not typically responsible for implementation of activities in their portfolio firms. There were, however, a few areas where the venture capitalists claimed such responsibilities. These included obtaining additional financing and interfacing with investor groups, that is, helping portfolio firms actively in obtaining further investments and interacting with other financiers in this matter. The respondents reported on their behaviour as a lead investor, and thus the active involvement is rendered understandable.

Both business angels and private sector venture capitalists were involved in implementation in strategic business areas somewhat more actively than public sector venture capital organisations (strategic planning, acquiring business contacts, internationalisation of the company and its markets, and recruitment of key personnel), but overall, the differences were not large enough to be statistically significant.

5. Understanding the findings

To summarise the empirical findings, first, even though business angels and public and private sector venture capitalists did not differ a great deal in their practices, some of these differences were similar to those found in previous studies: business angels used formal monitoring somewhat less often than the other groups did. In their use of formal means, business angels had a profile which was opposite to that of the public sector venture capitalists. Second, public sector venture capital organisations devoted proportionally the most time to the *ex ante* evaluation of proposals and selecting targets.

When informal means of monitoring were considered, a major difference was the fact that public sector venture capitalists were quite often passive in their portfolio firms, while the reverse was the case for business angels and private sector venture capitalists. Furthermore, business angels and private sector venture capitalists evidenced active involvement by being responsible for implementation to some extent in important business activities, while the public sector venture capitalists only took responsibility for the acquisition of further finance.

Thus business angels had a tendency to use informal means and to be actively involved in *ex post* ‘coaching’ of the portfolio firms. By contrast, public sector venture capital organisations were least involved in their portfolio firms and least active in ‘coaching’ activities. Furthermore, they paid the most attention to the *ex ante* phase. Private sector venture capitalists had behaviour patterns that evidenced attention to the use of formal mechanisms to control and monitor their portfolio firms. At the same time, they were actively involved in *ex post* coaching of the portfolio firms. Thus they would be active both in *ex ante* and *ex post* monitoring and coaching.

In order to understand these findings, two major explanations can be considered: theories which concentrate on agency relations between firms (investors, their investee firms, and fund-providers) and resulting incentives venture capitalists have to be engaged in their portfolio firms on the one hand, and resource/competence-based view of the firm on the other hand. The former explanations are traditionally used in the financial literature to explain the strategies of venture capital investors vis-à-vis their portfolio firms. An essential part of these approaches is the principal-agent relationship between the portfolio firm and the venture capitalist or between the venture capitalist and the investors whose money the venture capitalist is investing.

An alternative view is a competence (resource)-based view of the firm and the heterogeneity of firms in this respect (Freiling, 2004). Thus, in order to function successfully,

the venture capitalists need to obtain the resources and competencies which are strategic in their business.

5.1. Agency risks and pressures: incentives for monitoring and control

The incentives to monitor and provide resources for the firm are related to the agency position of the venture capitalist. As extensively investigated in financial studies, within the agency theory framework, the reason why venture capitalists use time and effort to monitor their portfolio firms is related to the separation of ownership and control in small and medium-sized firms with outside equity (Jensen, Meckling, 1976; van Osnabrugge, 2000). However, the venture capitalist enters into a relation, not only with the portfolio firm, but also with the fund providers. Hence they are intermediaries (agents with regard to their fund providers, but principals in their relationship with their investee firms). In order to satisfy their fund providers and convince them of their proper behaviour, formal venture capitalists have an incentive to behave competently and professionally, and consequently, to use formal operating procedures spending more effort on the control of agency pressures *ex ante* (van Osnabrugge, 2000). By contrast, business angels invest money from their own pockets and are thus not agents but only principals. As direct owners of the portfolio firms they have strong incentives to monitor the firm and to provide it with resources. However, they need not prove their behaviour to any principals and can use less formal means to control the risks involved. This leads to *ex post* monitoring and more hands-on involvement in the investee companies.

Public sector venture capital organizations are also intermediaries, like private-sector venture capitalists, but who their principal is, is less clear. Within the contract-based theories/agency approaches, the position and incentives of public sector venture capitalists have not been tackled. We may consider that all taxpayers are the ultimate principals of a public venture capital organisation. In practice, the principals are represented by a ministry, a public venture capital organisation (a fund of funds) or a municipality (regional funds). Since public-sector venture capital organisations have several kinds of principals and often heterogeneous targets (such as regional growth), their incentives and pressures resulting from their agency position can be presumed to be weaker than those of either business angels or private-sector venture capitalists. An important difference between the groups is also the fact that managers in public sector venture capital organisations do not take risks personally by investing their own money and that their incentives are not based on profits. Weak agency pressures and weaker profit-generation incentives will lead to the use of more formal means

of control, use of contractual mechanisms and *ex ante* control, closer to the classical principal-agent approach, which requires less manpower than labour-intensive *ex post* monitoring (Schilder, 2006; Schäfer and Schilder, 2006).

These conclusions are illustrated in Table 4, which summarises the relationships between agency pressures and strategies by investor type.

Table 4. Agency pressures and strategies by investor type

Position in the principal-agent dimension	Agency pressures vis-à-vis principal		
	Strong	Weak	Absent
Principal			<i>Business angels:</i> Emphasis on <i>ex post</i> monitoring
Intermediary	<i>Private sector venture capital firms:</i> Strong <i>ex ante</i> control	<i>Public sector venture capital organisations:</i> Strong <i>ex ante</i> control	

Our findings were not, however, fully in accord with this explanation. The private-sector venture capitalists were active both *ex ante* and *ex post*. Our data are limited and the way in which the different investor types operate may differ under the local circumstances (e.g., the limited partnership model is not fully implemented). We may also suggest that the above explanation does not fully or sufficiently account for the observations.

The agency approach, in particular, has the underlying assumption that both the investee firm and the investor know their business, and the question is just to guarantee that the agent fulfils the expectations of the principal. In practice, however, both are working under uncertainty and with bounded rationality. In emerging high-tech areas, in particular, there are true technological and economic uncertainties concerning the utilisation of the technology and the prospective business opportunities. Furthermore, there is ample evidence that small early-stage, technology-based firms lack strategic business competencies (see e.g., Sapienza, Gupta, 1994; Carlsson, 2002). Thus we come to the question of resources and competencies.

5.2. Competence-based view of the firm

Competence-based view of the firm suggests that “firm A can only be more successful than B if A is in a position to make use of the available resources more effectively and/or efficiently than B” (Freiling, 2004).⁸ Thus, not only the resources but also the competencies matter for success. The competencies typically include a tacit element and cannot therefore be easily imitated or quickly substituted by rivals (Teece et al., 1997).

A basic assumption of this approach is the fact that firms are heterogeneous in their resources and competencies and these differences influence their success rates and outcomes in economic activity. Furthermore, resources and competencies themselves are heterogeneous (Freiling, 2004). When applied to venture capitalists and their relationships with their investee firms, attention is paid to the resources and competencies of venture capitalists that have value-adding impacts in the portfolio firms.

Gompers and Lerner (2001, p. 243) point out that traditionally venture capital has been a craft industry. The roles of fund managers have been multiple from fund-raising and selecting investment targets to overseeing companies and providing informal advice to portfolio firms (*ibid.*, p. 243). The way these roles have been combined and the quality of the activities have varied across venture capital organisations and individual investors. There is thus a difficulty in defining what precisely are the resources and competencies a venture capitalist would need for successful action.

In order to ensure the quality of the various services of the venture capitalist, Gompers and Lerner (2001) emphasise the importance of enlisting the help of outside professionals (cf. also Florida, Kenney, 1988; Hochberg et al., 2007). These professionals can help venture fund managers in providing their portfolio companies with financial, human-resource, marketing, accounting, regulatory services etc., all areas in which the venture capitalist ‘coach’ the portfolio firms. If the venture capitalist wishes to help the portfolio firm to become international, many of these professionals need to be located in the intended target countries. In sum, these outside professionals form *a network of professional contacts* the venture capitalist has in the domestic country or abroad and which is an important resource to draw upon.

⁸ It is very close to the resource-based view, which suggests that “firm A is more successful than firm B if firm A controls more effective and/or efficient resources than B”. In management research resource provision is formulated within ‘resource dependence theory’, according to which firms “lacking in essential resources will seek to establish relationships with (i.e., be dependent upon) others in order to obtain needed resources” (Your University: Theories Used in Research).

In order for venture capitalists to perform their roles appropriately, their *professional background as well as experience in the venture capital business* can be expected to be of importance. A successful venture capital company needs to have many types of training and experiences, which can be complementary to each other ranging from industrial and entrepreneurial experience to experience in banking and finance or research and consultancy. However, for the venture capitalist to advise an innovative high tech portfolio firm in its commercialisation activities, it is helpful if s/he has work experience from industry or as an entrepreneur. Bottazzi et al. (2007) and Knockaert et al. (2006) have found that previous business and entrepreneurial experience of the partners of a venture capital firm was related to active engagement with the investee firm. Knockaert et al. (2006) also found that consulting experience had a significant positive effect on the value-adding (coaching) involvement in the portfolio firms.

Professional experience as measured by the length of time a venture capital organisation has been in the business can be a relevant marker of potential competencies helpful in enhancing the success of the portfolio firm. Here it is a question of tacit knowledge which can provide the venture capitalist with an important advantage as compared with a less experienced investor (see e.g., Sapienza, 1992; Sapienza et al., 1996). However, how it is translated into action in the practice of venture capital business is not clear. For example, Bottazzi et al. (2007) found that the experience of partners in the venture capital business was not related to active engagement of investors in their portfolio firms. However, longer survival in business enables venture capitalists to invest in firms farther away than newcomers do and presumably are better able to fulfil their functions even without a daily contact (Powell et al., 2002). With regard to public-sector organisations, years in business is not necessarily an indication of their ability to raise new funds on the market (and prove their ability to bring economic returns) since they may obtain new capital from the public purse.

It can be assumed that, if venture capitalists have significant resources and competencies, as exemplified above, they can better provide various value-adding services to their portfolio firms, and there might be an interrelationship between the competencies and extent of involvement in the portfolio firm: the venture capitalist is likely to pay more attention to the portfolio firms and devote more effort to *ex post* monitoring and coaching if its competencies are adequate. The major question for this study is whether different investor types exhibit systematic differences in their competencies, and whether such differences influence their engagement patterns with regard to their portfolio firms. Since the data are

limited, we cannot cross-tabulate the investor type findings by the background factors of individual respondents.

5.3. Competencies/Resources in the data

Considering the business experience of the respondents, the private sector venture capital firms fared somewhat better than the other groups: the median experience of their respondents was 7,5 years, while it was 7 and 5,5 years for the public sector respondents and business angels respectively (the difference was nevertheless not significant statistically). The public sector organisations had, however, been the longest in business: a median of 9,5 years while the median for the other two organisation types was 7 years (again not a statistically significant difference). However, as already pointed out, public sector organisations are presumably less exposed to competition on the market and thus years in business is presumably less relevant in this context. Manigart et al. (2002) found that Belgium companies backed by the oldest governmental venture capitalists had higher survival rates than other firms, but noted that this could be related to a different investment strategy, not just experience and subsequent higher value-added.

Table 5. Working experience of the respondents by venture capital organisation

	Business angels	Public sector venture capital organisations	Private sector venture capital firms	Chi-square p values
N	20	10	28	
Banking or finance	10 %	<u>70 %</u>	29 %	<u>0,003</u>
Industry	<u>70 %</u>	40 %	<u>64 %</u>	0,270
Entrepreneurship	45 %	10 %	39 %	0,158
Research, consultancy or education	35 %	30 %	46 %	0,580

(multiple responses)

In terms of type of working experience, respondents from the public sector venture capital organisations most often had a banking or finance background, while both business angels and private sector venture capital respondents had an industrial background⁹. Business angels also had considerable entrepreneurial experience. Private sector respondents had fairly often research, consultancy or educational experience. We have to be cautious in our

⁹ Only differences in banking were statistically significant.

conclusions about adequate work experience, since these answers do not indicate the average relevant background of the partners or senior partners of the studied organisations, but that of the respondents.

Table 6. Number of firms under responsibility (one answer per venture capital firm or organisation)

	Business angels	Public sector venture capital organisations		Private sector venture capital firms	
N	20	9		19	
	No differentiation by level	Senior managers	Junior managers	Partner level	Non-partner level
Number of firms under responsibility (mean)	4,4	3,7	8,2	5,4	1,1
Number of Board seats per individual (mean)	2,8	5,5	3,0	3,8	0,3

Since business angels, typically one-man operations, did not make a difference between the levels, their responses were regarded as that of partner or senior management level. The differences among the three investor types in terms of the number of firms under responsibility or number of Board seats, at this level, were not significant. By contrast, differences between public and private sector venture capital organisations at the junior level were significant at least at the level of 0,001 (p value for chi square) for both number of firms under responsibility and number of Board seats.

There were clear differences among the investor types in the way they allocated responsibilities (Table 6). It is evident that the public sector organisations allocated more responsibility to more junior members of their teams and overall had more portfolio firms to monitor than the other two groups. By contrast, private sector venture capital firms allocated the most responsibility over the portfolio firms to the partners, and overall, like business angels, had fewer firms per person than the public sector venture capital organisations. Thus we can assume that they had more time and resources to devote to a single investee firm.

Especially in high technology areas, investors may need to use external expertise to complement their own capabilities if they are going to address the problems of startup firms. Business angels and private sector venture capital respondents often claimed that the partners (business angel) had the necessary competencies. The disparity with respect to the public sector organisations is dramatic and the differences are statistically significant (Table 7).

Table 7. Ways to acquire industry-specific business and technology know-how

	Business angels	Public sector venture capital organisations	Private sector venture capital firms	Chi-square p values
N	20	10	28	
Partners have necessary competencies	70 %	20 %	89 %	<u>0,001</u>
Company recruits professionals with necessary competencies	25 %	20 %	21 %	0,940
Company co-operates with external professionals	25 %	60 %	71 %	<u>0,006</u>

(multiple responses)

In spite of having the necessary competencies themselves, private sector venture capital firms also used external professionals, even somewhat more often than in the public sector venture capital organisations (the differences were again statistically significant). For the latter, because of their narrower competencies, external expertise played an important role, too. Furthermore, private sector venture capital firms obviously had the best networks of contacts and were most willing to use them to promote the internationalisation of their portfolio firms (71% of private sector venture capital firms as compared with 40% for the public sector organisations and 30% for the business angels¹⁰).

Quite obviously, private sector venture capital firms had more resources and competencies as compared with the other two groups. This might be one of the reasons why they were active, not only in *ex ante*, but also in *ex post* monitoring and coaching. By contrast, business angels were largely self-reliant. Even though the conclusions of relevant previous work experience were very tentative, the differences being only partially significant, it is possible that business angels in our sample had more relevant backgrounds than, e.g., the public-sector venture capitalists. The public-sector venture capital organisations could devote much less time and effort per portfolio firm, as evidenced by the larger number of portfolio firms under responsibility of their junior managers. This is in line with earlier research findings, according to which the personnel of public sector venture capitalist organisations have more portfolio firms to monitor per person than their private counterparts (Schilder, 2006; Schäfer, Schilder, 2006). Furthermore, the fact that independent private venture capitalists were most active in their engagement with their portfolio firms was previously noted by Bottazzi et al. (2007).

¹⁰ The differences were statistically significant with a p-value of 0,014.

6. Discussion

6.1. Complementary or alternative explanations?

The previous section has highlighted that neither the agency or incentives-based approach nor the competence-based view can fully account for the findings obtained. As indicated before, it is possible that the samples are too small to generate the expected systematic differences. It may also be the case that the strategies chosen by or the resources and competencies available for the venture capitalists are not systematically distributed but idiosyncratic features, and the differences among the groups are therefore not that clear-cut. Furthermore, the nature of the data did not allow for a direct analysis of the resources versus engagement, since the survey was geared toward the practices of venture capital firms and some of the resource questions concerned the respondents, some the whole venture capital firm. Thus, our conclusions are in many instances indirect and point to further and hopefully more systematic studies of these questions.

We may presume that the two explanations discussed are not alternatives, but complement each other. Hillman and Dalziel (2003) combined the two approaches in their analysis of the functions of boards of directors and the relationship these functions have for firm performance. We might assume that the two different types of rationales for venture capital engagement in the portfolio firm may have interactive relations thus reinforcing each other. A venture capitalist may combine *ex ante* with *ex post* measures to ensure better performance provided it has the required resources and competencies, but importantly, also the incentives, to be actively engaged in the investee firm.

We have not been able to examine factors related to the characteristics of the portfolio firm affecting venture capital engagement. We may presume that the earlier the stage of the portfolio firm, the more effort and time it will require from the investor. In any case, the development stage of the company matters for the relative importance of different strategic roles of a venture capitalist (Timmons and, Sapienza, 1992, 39).

The survey was focussed on the behaviour of the venture capitalist towards an average early-stage investee firm, and this was presumed to be a control for the different venture stages. Since there are some differences in the relative importance of the early stages in the investment profiles of the respondents (Appendix table), their behaviour patterns need to be reconsidered in this light. The public sector venture capital organisations invested proportionally most often in the seed stage ventures, clearly more often than the business angels, while the latter invested most often in startup and early expansion stages. The private

sector venture capitalists had a larger share of later stages. This would lead us to expect that the public sector venture capitalist organisations would have been more engaged in their portfolio firms after the investment than the other groups, while the reverse was the case. Thus the public sector venture capital organisations were even more ‘under-performing’ and invested, relatively speaking, even less time and effort in coaching their portfolio compared with the other two investor groups.

6.2. Future research needs

The study data were too limited to allow for a proper testing of hypotheses derived from different theoretical perspectives. Thus the major future research need would be to have larger and more systematically collected datasets. These should preferably be collected across cultural settings. Wright et al. (2005) have noted that many of the US origin venture capital theories hold true in the cultural setting where they were created, highlighting the nature of institutional and cultural boundedness of theorising and the phenomena which underlie the theories. Furthermore, the general framework conditions, such as the regulatory system and taxation, can be expected to influence the way in which incentives function across countries and socio-cultural settings. This study was limited to three investor types, while a more systematic study would have to include other investor types, especially corporate venture capital organisations. The concept of the public sector venture capital organisations and the way in which we can reasonably define them (or not) as a separate investor class would also need further illumination.

6.3. Policy implications

Even though the above findings are tentative, we might pose the question of whether policy-makers wishing to enhance venture capital activity in the promotion of high tech industries should reconsider the role of the public sector venture capital organisations. As implied, the public sector venture capital organisations can be heterogeneous and have different functions. Nevertheless, as a group of investors they fare less well than the other investor types in the provision of value added to their portfolio firms. We may also question whether their incentives to provide value-added are sufficient taking into account the fact that they do not take personal risks or that their remuneration is not based on the success of their portfolio firms. What would be their best role: helping the formation of syndicates for further investment rounds or functioning as funds of funds? The conditions would nevertheless have to be specified. Thus a reconsideration of their role and functions would be needed.

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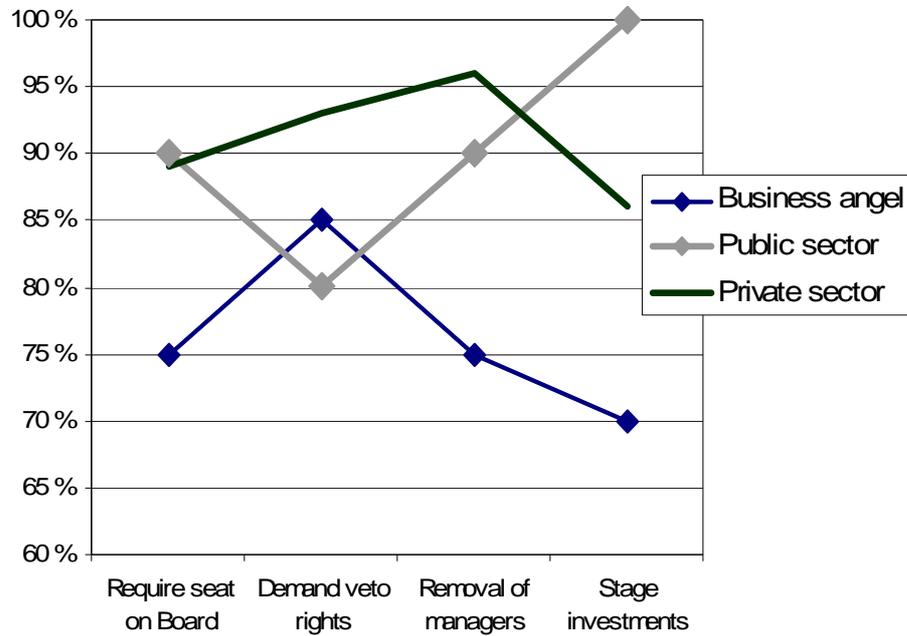
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Appendix figure



Appendix table

Share investing in the respective stage

	Business angel (N=20)	Public sector venture capital organisation (N=9)	Private sector venture capitalist (N=28)	Chi-square p values
Seed stage	50%	89%	39%	<u>0,037</u>
Startup stage	80%	78%	86%	0,87
Early expansion	65%	78%	86%	0,247
Quick expansion	15%	56%	54%	<u>0,017</u>

ELINKEINOELÄMÄN TUTKIMUSLAITOS (ETLA)
THE RESEARCH INSTITUTE OF THE FINNISH ECONOMY
LÖNNROTINKATU 4 B, FIN-00120 HELSINKI

Puh./Tel. (09) 609 900

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