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Non-financial value-added of venture capital: A comparative study of different venture capital investors

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No. 1067

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NON-FINANCIAL VALUE-ADDED OF VENTURE CAPITAL: A COMPARATIVE STUDY OF DIFFERENT VENTURE CAPITAL INVESTORS*

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ABSTRACT: This study focuses on the non-financial value-added Venture Capital (VC) investors bring to their portfolio companies, especially when these represent early-stage, high-technology and high-growth companies. The study draws attention to the extent and nature of non-financial value-added and analyses whether and in what ways different types of VC investors differ in this respect.

The data were collected via a web-based survey tool in the autumn of 2006. The study takes into consideration the viewpoint of VC investors as it focuses on Finnish VC companies (private sector VCs), public sector VC organisations and informal investors (business angels). An effort was made to collect data from foreign investors active in Finland though they did not respond actively.

Major findings of the study included the observation that private sector VCs were the most and public sector VCs the least active in monitoring their portfolio companies. Informal VCs were less active than expected. The different investor types had distinct profiles in providing management support and advice. Overall, private sector VCs evaluated the non-financial support they provided as the most and public sector VCs the least important for the success of their portfolio companies while informal VCs were between these extremes. These findings differed from those obtained in our study on the value-adding function of VCs in biotechnology, according to which informal VCs were found to have the highest overall value-added and kept closest contacts with their investee firms.

KEYWORDS: Venture Capital

JEL codes: O16, G24, G32

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1 Introduction

This study focuses on the non-financial value-added Venture Capital (VC[1]) investors bring to their portfolio companies, especially when these represent early-stage, high-technology and high-growth companies. The study draws attention to the extent and nature of non-financial value-added and analyses whether and how different types of VC investors differ in this respect. It focuses on three different VC investor types: informal VCs (business angels), private sector VCs and public sector VCs.

The empirical data used in this study were collected via a web-based survey tool from representatives of VC companies in Finland and from foreign VCs investing in Finland. Addressing the VCs themselves and posing questions on their value-added will inevitably bring some bias. In order to provide a degree of critical assessment of the findings, we will compare them with those of our interview study with VC-backed biotechnology firms in Finland. The latter data of course concern a specific field and one which is particularly difficult in terms of venture funding. Nevertheless, it provides the viewpoint of portfolio firms and it was carried out at the end of 2005.

2 Non-financial Value-Added of VC investors

2.1 Previous research on the non-financial value-added of VC investors

In addition to money, venture capital investors provide their portfolio firms with monitoring and management support. According to Maula (2001), non-financial value-added refers to all non-financial benefits the portfolio companies receive from the venture capital investors as a result of the investment relationship.

There are a host of studies examining the overall benefits by venture capitalists on the performance of their portfolio firms, and although the findings of such studies are not uniform, overall there seems to be a positive relationship between the performance of the portfolio firms and their VC backing (see, e.g., a review by Maula, 2001). These studies capture the performance implications of both the financial and non-financial value-added by venture capital.

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[1] We use VC to denote Venture Capital and Venture Capitalist

As early as the 1980s, attention was drawn to the various mechanisms used by venture capital investors to monitor and provide management support to their portfolio firms. These studies have typically been based on survey or interview techniques. In the pioneering studies on the non-financial value-added only venture capitalists were interviewed (e.g. MacMillan et al. 1988, Gorman & Sahlman 1989). Thereafter, there have been studies assessing data collected from representatives of the investee companies (e.g. Harrison & Mason 1992, Erlich et al. 1994, Fried & Hirsich 1995) or from pairs of investors and portfolio firms (e.g. Fredriksen et al. 1992, Sapienza 1992, Timmons & Sapienza 1992, Sapienza et al. 1996).

Recently especially in Europe, a new research interest has emerged focusing on the differences between different types of VC investors. This focus is particularly pertinent in Europe since venture capital investor organisations are not uniform and many European countries have public sector VC organisations in addition to the US model of limited-life, limited partnership types of VCs. Furthermore, there are captive VCs (in affiliation with large corporations or banks) and a considerable amount of business angel activity, which is in most cases elusive and more difficult to study than formal VC activity.

2.1.1 Results from the studies reflecting the VC viewpoint

Studies based on the data provided by VC investors suggest that VC investors assist their portfolio companies in a variety of forms, most commonly through the arrangement of financing, strategic planning, recruiting management, and serving as a sounding board to entrepreneurs (MacMillan et al. 1988, Gorman & Sahlman 1989, Sapienza et al. 1994). The findings by MacMillan et al. (1988) indicate that VC investors prefer involvement in less time-consuming activities (i.e. formulating business strategy or marketing plans), and that they would like to decrease their involvement in more time consuming activities (i.e. developing production techniques, selecting vendors and equipment and soliciting customers or distributors).

Even though the time a VC spends on monitoring investee companies varies a great deal, Gorman & Sahlman (1989) argue that all venture capitalists spend a large percentage of their working hours on monitoring or assisting portfolio companies. Researchers have different opinions, however, on the degree to which the characteristics of the portfolio firms or their management teams explain the different involvement levels of VC investors in their portfolio companies. According to MacMillan et al. (1988), the level of involvement depends

only on the VC investors' preferences, while Sapienza et al. (1994) suggest that it is related to the stage and innovativeness of their portfolio companies. Thus, VCs would devote more attention to highly innovative and early-stage companies.

2.1.2 Results from the studies reflecting the viewpoint of portfolio companies

The majority of the studies on VC value-added carried out in the 1990s (e.g. Fredriksen et al. 1992, Harrison & Mason 1992, Sapienza 1992, Timmons & Sapienza 1992, Erlich et al. 1994, Fried & Hisrich 1995, Sapienza et al. 1996) evaluated data on the perceptions of entrepreneurs or managers of portfolio companies. According to these studies, managers supported the view that VC investors offered more than just financial capital. Like the findings of earlier studies, the functions/activities in which VC investors were most active included the development of business strategies, serving as a sounding board to the management team, obtaining financing, monitoring financial performance, and recruiting management (e.g. Harrison & Mason 1992, Erlich et al. 1994, Fried & Hisrich 1995, Sapienza et al. 1996).

Sapienza et al. (1996) also found that VCs added the most value to companies that were in their early stage and highly innovative. Furthermore, the value-added was strongly related to the extent of time devoted to the portfolio company by the VC.

Some studies paid attention to the differences in the assessments of the value-added by VC-CEO pairs (Timmons & Sapienza 1992, Fredriksen et al. 1992). Interestingly, Fredriksen et al. (1992) found that around two thirds of the VC-CEO pairs were unanimous in their evaluation of the level of VC's involvement in the portfolio company. When the parties disagreed, VCs most often claimed that their involvement was high when the CEOs evaluated it as being low. This finding suggests that in VC-CEO pairs, each party evaluates her/his own contribution as more important/extensive than the other party does.

When comparing the responses of Venture Capital investors and their portfolio companies, Fredriksen et al. (1992) nevertheless found that there was a striking similarity in the responses concerning the influence of Venture Capital investors, though the latter rated their influence on goals and business development of the portfolio company higher than the portfolio companies did. Timmons & Sapienza (1992), in turn, found that VCs usually deemed the importance of their involvement in the venture to be somewhat higher than the CEOs, whereas there were no significant differences in rating the effectiveness of VC's

involvement. Both CEOs and VC investors believed that lead investors made important and effective contributions in a variety of value-added roles beyond merely providing capital (Timmons & Sapienza 1992, Fredriksen et al. 1992.).

2.1.3 Research on differences in the value-added by VC type

Most studies on the value added from the 1980s and 1990s treat the VCs homogeneously arguing that the differing needs of their portfolio companies determine the actions VC investors take with regard to their portfolio companies. We believe that these are of importance, but that other factors also matter in this respect.

To fully appraise the operations of venture capitalists it is important to understand that venture capitalists are actually a heterogeneous group consisting of individuals and entities each having their own missions and objectives. For instance, some of them are searching for financial profits, while others have a mission of creating new jobs or developing new technologies. Harrison & Mason (1992) and Erlich et al. (1994) are rare examples of studies that have compared the involvement of private sector VC firms and informal investors (i.e. business angels). Harrison & Mason (1992) found that the role of informal investors differed somewhat from that of private sector VC investors, as they appeared to play a more active and hands-on role in the investee firms. Ehrlich et al. (1994), in turn, found that informal investors were involved in fairly similar sets of activities as private sector VCs, though the latter were more inclined to establish formal reporting and operating controls and helped in staffing and financial management.

Van Osnabrugge (2000) studied the differences between the operations of business angels and venture capitalists while evaluating their investment criteria and post-investment monitoring. His main finding was that business angels preferred more active involvement in their portfolio companies and used their own skills to provide expertise needed in the business of their portfolio companies while venture capitalists tended to recruit new employees to the portfolio companies for the same purpose. Van Osnabrugge (2000) further argued that business angles were more frequently in contact with their investee companies than the VCs were.

Research on the performance of public sector VC organisations is not abundant, and only recently has a more extensive interest in this topic emerged in Europe (e.g. Schilder, 2006; Schäfer & Schilder; 2006 Tykvova & Walz 2006; Tykvova 2006). As the mission of

governmental venture capitalists is seen to rectify capital market failures (Hyytinen, Väänänen, 2003; Seppä, 2000), one could assume that their involvement in their portfolio companies would differ from the VCs focussing on financial objectives. Furthermore, the employees of public sector VCs in principle have different incentives from those of partners in limited partnerships having more at stake in their portfolio firms and receiving performance-based compensation for their activities. In order to draw conclusions, however, on the incentive systems in different VC organisation types, we would need more empirical studies. Even public VC organisations may utilize performance-based compensation systems.

Gompers and Lerner (2004) were among those to raise the issue of the performance of public VC organisations when referring to the US SBIR programme. Schilder (2006) and Schäfer & Schilder (2006) singled out potential differences in consulting activities between the public and private sector VC companies in Germany. They found that public sector VCs have on average a much larger number of investee companies per manager, which limits their potential for active hands-on activities. Consequently, public sector VCs have fewer face-to-face and telecommunication contacts with their investee firms, and are less active in a range of consulting activities vis-à-vis the firm as compared with private sector VCs or business angels (Schilder, 2006; Schäfer & Schilder, 2006).

When studying the performance of German VC-backed companies around and after an IPO, Tykvova & Walz (2006) further noted that firms backed by independent, foreign and reputable VCs performed better than firms with other VCs, especially public sector VCs. They suggested that corporate governance structures, experience levels and objectives among VC types have a significant impact on the portfolio companies' post-IPO performance. In a related study, Tykvova (2006) found that, as compared with governmental and bank-dependent private equity firms, independent and corporate VC companies had a more pronounced role in corporate governance and monitoring, took larger equity positions, invested at an earlier stage and financed their companies for longer periods of time

2.2 Conclusions for the empirical study

The above discussion highlights that VCs add value to their portfolio firms through a variety of mechanisms and in addition to money, monitoring and management support are important for the success of the portfolio firms. The characteristics of both the investee firms and the

VC organisations are nevertheless important in this respect. In this study, attention will be devoted to the non-financial value-added of different VC types.

In Finland in early-stage financing, three VC types are important; 1) independent private sector VCs that by and large follow the US pattern of independent limited-life, limited partnership VCs[2]; 2) public sector VCs of which there are three major organisations, Sitra, which has invested particularly in biotechnology, Finnish Industry Investment Ltd, and Veraventure Ltd; 3) informal VCs, namely business angels. We have included in the second group a few VC organisations that are formally private, but partially publicly owned and have a regional investment focus and strategy.

Drawing on the previous studies, we assume that public sector VCs are less actively to be involved and have a less hands-on approach to their portfolio firms as compared with private sector VCs or business angels. Drawing on our previous study on biotechnology portfolio firms, we also assume that business angels are more actively involved in their portfolio firms than private sector VCs. We will not make any assumptions, however, on the activity areas or further aspects of the VC-portfolio firm relationship.

When presenting the empirical findings on the non-financial value-added, drawing on Bertoni and Colombo (2005), we will use a classification of value-added divided into three categories: screening investment targets, monitoring portfolio companies, and value-adding services. We will explain these categories in more detail in section 4. Furthermore, VCs can have a fourth form of value-added, namely the so-called signalling effect. It means that a backing by a reputable VC may provide certification that the portfolio firm has hidden value and can shift doubt to confidence and encourage potential partners to co-operate with the start-up firm (Timmons & Sapienza 1992, p. 37). We did not, however, seek to study this aspect because the study focused on VCs whose reputational capital would have been the object of self-assessment.

[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 Data

3.1 Respondents

The data used in the analysis were collected using a semi-structured web-based questionnaire, which was 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 ETLA's study of VC-backed biotechnology firms (Luukkonen & Maunula, 2006a; 2006b; Maunula, 2006). Even though the study was targeted at VC investors active in early-stage investing, the questionnaire was sent to all the identified organisations, and the investors active only in later stages were removed from the study population afterwards. As some of the VC investors, especially business angles and small private sector VC companies preferred operating behind the scenes and on a small scale, their contact information was not found. In addition to Finnish VC investors, the survey questionnaire was sent to a total of 26 foreign VC organisations that had invested in Finland. Table 1 summarises the responses received by VC investor type.

Table 1: Respondents of the survey

	Number of respondents	**Number of companies**
Informal VC	**20**	**12**
Business angel that invests from own pockets	8	-
Business angels that invests via a company	12	12
Public/Semi-Public Sector VC	**10**	**8**
Public sector Venture Capital organisation	6	4
Regional Venture Capital company	4	4
Private Sector VC	**28**	**19**
Finnish private entrepreneurial (partner-led) Venture Capital company	24	15
Foreign Venture Capital company	3	3
Subsidiary of a foreign private Venture Capital company	1	1
Total	**58**	**39**

Survey questionnaire was sent to several representatives of VC organisations in order to ensure a high enough response rate. Because of this procedure, more than one response was received from several organisations. Table 2 summarises the response rate of the survey by VC type.

Table 2: Response rate of Finnish VC investors

	Number of respondents	Total number of identified VCs/BAs*	Response rate
Informal VC	20	40	50 %
Public/Semi-Public Sector VC (organisational level)	8*	8	100 %
Finnish Private Sector VC (organisational level)	15	20	75 %
TOTAL	**43****	**68**	**63 %**

*VC investors whose contact information was available

**In addition, the analyses made by VC type included three foreign VC companies and one subsidiary of a foreign VC company. Furthermore, one public sector VC was included in the analysis twice as it has two different kinds of divisions. Taking these into account, the total number of different organisations and business angels used in the analysis amounts to 48.

In the analysis, when discussing the business model of the VC investors, each VC organisation has been included only once. When analysing, however, the value-added and the involvement of the respondents in their portfolio companies, all the responses have been included.

3.2 Business model of the venture capital companies

It is typical of VC investors to diversify their risks and invest in several stages and technology areas. Thus it is not surprising that in our study most VC investors invested in more than one stage. It is to be noted that the criterion for inclusion in the study was that the VC invested to some extent in the early stage meaning seed, start-up and early expansion stage. A majority of the private sector VC organisations and the informal VC investors were active in start-up and early expansion stages investing (Figure 1). Investors in public sector/semi-public VC organisations were most active in seed stage investing.

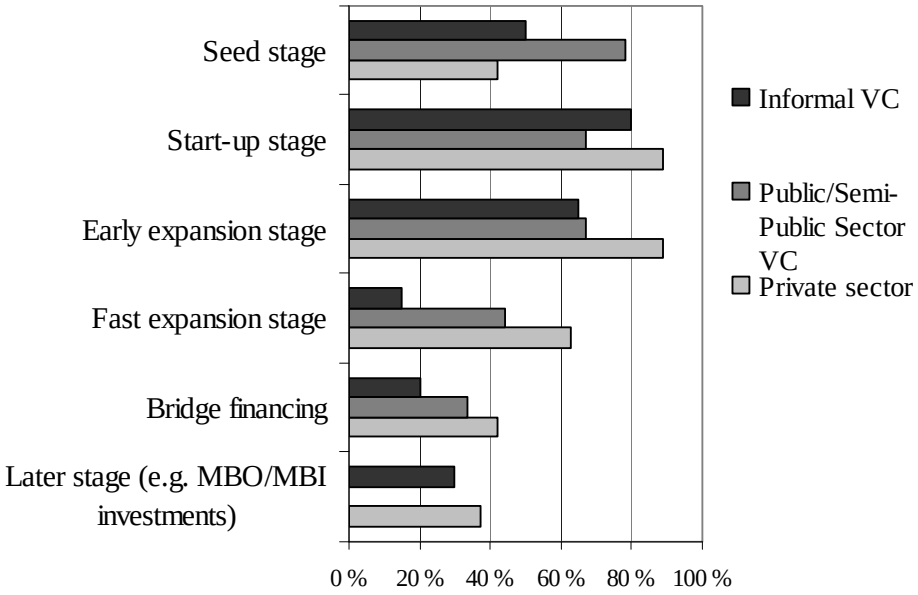

Figure 1: Investment stages by VC type (multiple responses) (each VC organisation included only once)

In a similar vein, most VCs did not concentrate their investments in one technology area. Figure 2 indicates the share of companies which focused on one, two or three industry groups. Industry groups here refer first to the various sub-areas within the ICT and electronics, second to bio-, medical and nanotechnologies, and third to the rest of industries.

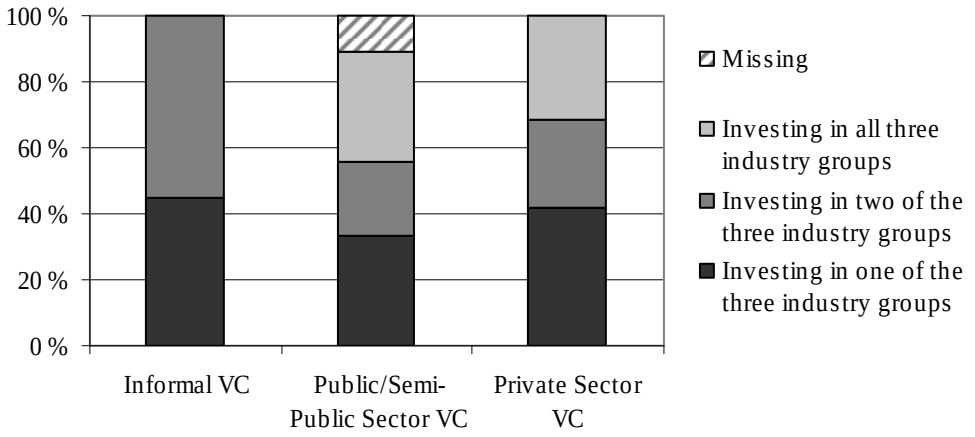

Figure 2: Percentage of VC companies that are investing in one, two or three of the industry groups. Groupings used: 1) Bio-, medical-, and nanotechnology; 2) ICT and other electronics; 3) other. (Each VC organisation included only once)

Around forty percent of all investors concentrated their investments in one, broadly defined industry area. Informal investors more often than others invested at most in two

industry areas, while some public sector VCs and private sector VCs also invested in all areas thus diversifying their investments widely. This can be an advantage (diversifying the risks) or a disadvantage (a probability that VCs do not have sufficient business expertise in all industry areas) depending on the resources of the investor.

Industry sectors in which the VC investors were active varied somewhat by investor type (Table 3). Informal VCs invested most often in information technology and industrial production companies reflecting probably their own experiences and competencies. Nearly two thirds of the private sector VCs were active in telecommunication and electronics, while public sector VCs invested most often in biotechnology, services and industrial production companies.

Table 3: Percentage of VCs active in each industry (i.e. at least one of the portfolio companies is active in the industry) (multiple responses) (each VC organisation included only once)

	Informal VC	**Public/Semi-Public Sector VC**	**Private Sector VC**	**Total**
N	**20**	**9**	**19**	**48**
Biotechnology	10 %	56 %	32 %	27 %
Medical technology	10 %	44 %	32 %	25 %
Nanotechnology	0 %	11 %	21 %	10 %
Consumer goods	15 %	22 %	16 %	17 %
Services	20 %	56 %	21 %	27 %
Industrial production	55 %	56 %	42 %	50 %
Internet-technology	30 %	44 %	47 %	40 %
Telecommunication	20 %	33 %	58 %	38 %
Information technology	45 %	44 %	42 %	44 %
Other electronics	20 %	44 %	58 %	40 %
Other	10 %	22 %	21 %	17 %

Of the three industry groups, ICT and electronics was the most popular specialisation area, as 30 % of the informal investors and 26 % of the private sector VC were investing only in these industries (Figure 3).

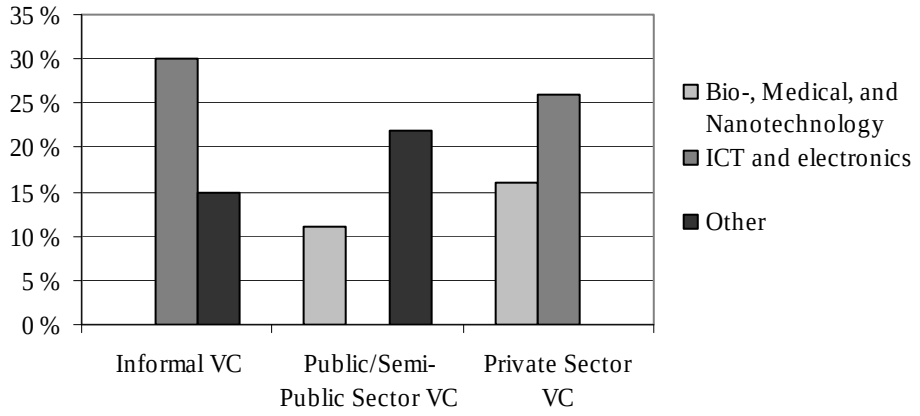

Figure 3: Investment specialisation of VC companies by industry group (each VC organisation included only once)

The VCs that had invested in ICT or biotechnology companies were asked about the average size of their investment in early-stage companies in these industries. Table 4 summarises the findings. As only a few VC investors had invested in biotechnology, we received in total 15 responses to this part of the question.

As could be expected, the average amount invested by informal VCs was substantially smaller than by other VCs. However, the amounts invested, especially by private sector VCs, varied a great deal (Table 4). Investments were on average larger in biotechnology for both the public and private sector VCs, while the reverse was the case for informal VCs.

Table 4: Average size of investment in early-stage biotechnology and ICT companies) (each VC organisation included only once)

(1000 €)	**Informal VC**	**Public/Semi-Public Sector VC**	**Private Sector VC**
N	**20**	**10**	**28**
Biotechnology			
N	2	6	7
Mean	40,0	616,7	2 550,0
Med	40,0	650,0	750,0
St. dev.	14,14	421,50	3 547,18
ICT			
N	10	6	19
Mean	109,0	375,0	1 534,2
Med	100,0	350,0	600,0
St. dev.	108,67	108,40	1 403,18

The majority of the respondents admitted that they preferred syndicating with other investors. In these investor syndicates, private sector VCs held the lead investor's position more often than the other VCs (Figure 4).

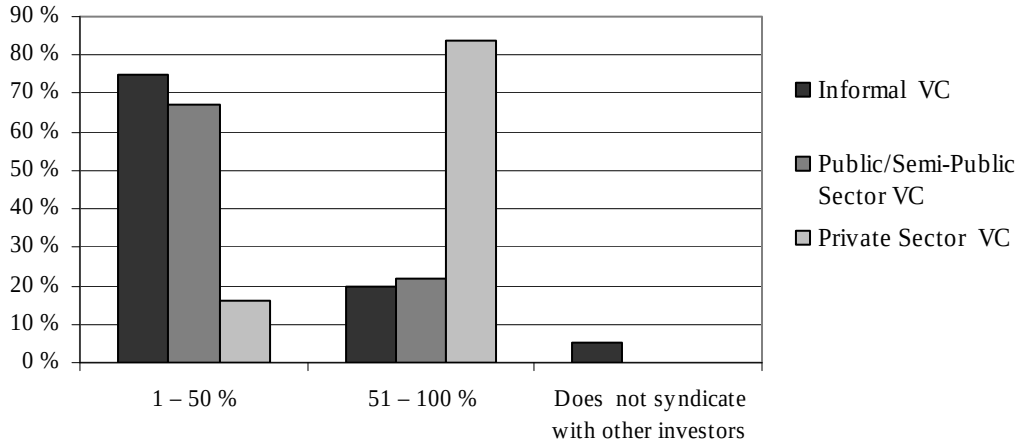

Figure 4: Share of portfolio companies where VC is the lead investor (each VC organisation included only once)

The respondents were asked to name the type of VCs with which they preferred to syndicate. Finnish private sector VCs and public sector VCs were generally considered the most desirable syndicating partners (Figure 5).

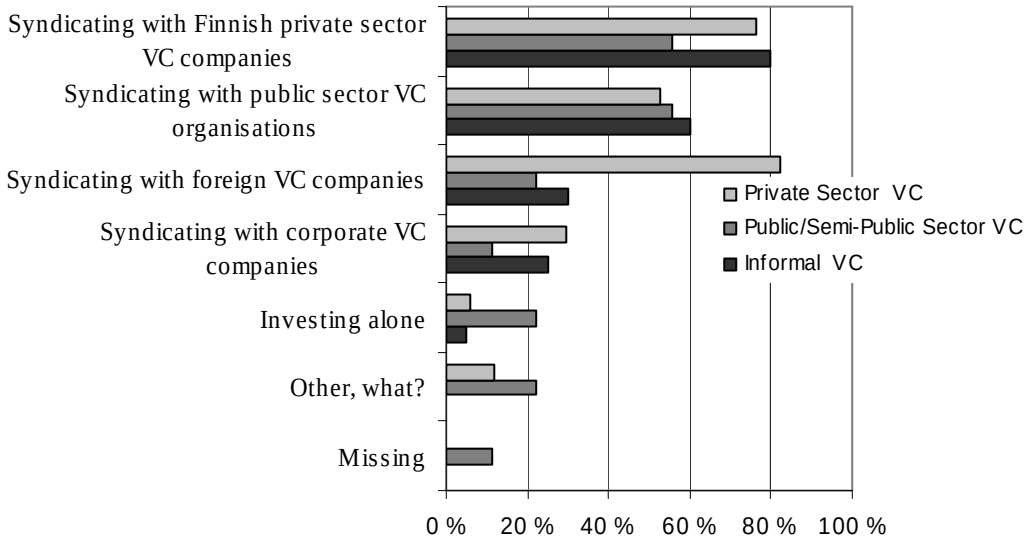

Figure 5: Syndicating preferences by VC type (multiple responses) (each VC organisation included only once)

Private sector VCs preferred investing with foreign VC companies clearly more often than other VCs and this probably reflected their investment practices and networks. Some 88% of the private sector VCs invested abroad, while 55% of the informal ones and none of the semi/public sector VCs did. In contrast, 79% (N=15) of those VCs that invested abroad also preferred syndicating with foreign VCs while only three VCs not investing abroad did so.

Syndication preferences here can refer to both investments in Finland and abroad. Quite obviously, it is easier to syndicate with foreign VCs if the domestic VC has good networks abroad and is investing there.

4 Results of the value-added of VC investors

4.1 Screening investment targets

The screening function of venture capitalists derives from their ability to reduce ex-ante asymmetries in information as the venture capitalists are putting substantial effort in selecting the most promising ventures among a vast number of investment proposals (Bertoni & Colombo 2005). This pre-investment screening process includes the following steps: searching for attractive deals, in-depth analysis of the deals including the due diligence process, selecting deals as potential investments and structuring and negotiating of deals (Nathusius 2002).

Extensive evaluation is valuable for all the companies going through the process. Companies obtaining a positive investment decision receive feedback that they are developing their business in the right direction. By contrast, companies receiving a negative investment decision learn of their deficiencies as an investment target and thereby receive valuable information about the areas needing improvements for them to become more attractive in the eyes of the venture capital investors.

In addition, venture capitalists add value implicitly during the pre-investment screening process. In order to obtain financing from a venture capitalist, a company must fulfil investment criteria, which vary somewhat according to the investment strategy of the venture capitalist. These investment criteria are commonly built on a desirable combination of the following blocks: background and experience of founders, competence of management team, characteristics of markets, and technology and business plan (Lauriala 2004, see also Figure 6). Thus we can argue that if a company develops its operations, business plan or resources in order to make the company more attractive to a venture capitalist, this development can be seen as the value-added of the venture capitalist.

In the studies by Luukkonen & Maunula (2006a, 2006b, Maunula 2006) 68 % of the CEOs of VC-backed Finnish biotechnology firms admitted that they had implemented pre-investment development activities in order to fulfil the investment criteria of the VC

companies. The business areas mentioned most often as objects of development were the business plan or business strategies, R&D function, patenting and marketing.

To obtain VCs' view on the investment criteria, these were asked to rate the importance of different investment criteria when evaluating investment proposals (Figure 6). The responses of different VCs were fairly similar while the background and experience of founders, substantial growth potential, business plan and business strategies, technology and target markets and market penetration were classified as very important investment criteria of a majority of all respondents. However, some differences existed; for example, private sector VCs rated the composition of the management team as very important clearly more often than other VCs. Supporting the findings of van Osnabrugge (2000), informal VCs regarded the entrepreneurs/founders as a more important investment criterion than private sector VCs, who in turn emphasised the market/product of the company to a greater extent.

Furthermore, private sector VCs rated substantial growth potential as important more often than business angels did. This may reflect the finding by van Osnabrugge (2000) according to which private sector VCs usually invest in order to gain financial returns while business angels may also invest in order to become active in the entrepreneurial process or just for fun.

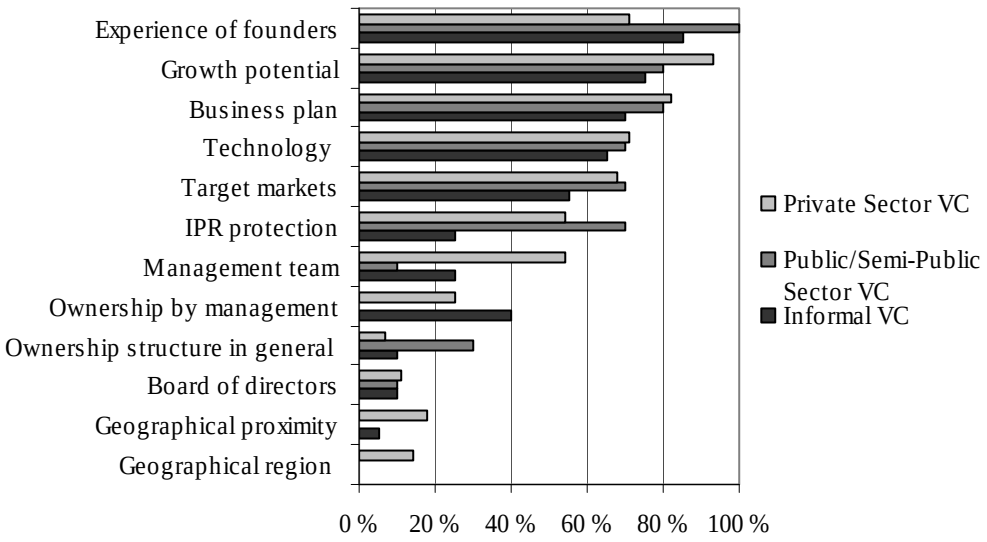

Figure 6: Investment criteria classified as very important when evaluating investment proposals

Other important investment criteria mentioned by the respondents included understanding by management of the role and business logic of the VC investors (N=3),

personal chemistries and trust between the management team and investors (3), suitability to the strategy of the VC fund (3), investor's own experience in the field (2), innovativeness (2), entrepreneurship, and customer references. One private sector VC emphasised the importance of willingness of the management team to undergo changes according to the VC's plans:

> *"A major investment criterion is the willingness of the founders/owners to formulate the business plan together with investors before the investment decision. In addition, a readiness by the founders/managers to make changes in management or employees is a key investment criterion. If the CEO does not agree that he/she can be removed under the ownership of the VC, we will not invest. In addition, it is very important that the owners or managers are ready to increase the critical mass and to make changes in the ownership structure, such as mergers and acquisitions. […] Owners also need to be ready for a VC exit. The exit may come up soon, for example, in the form of licensing the technology. "*

The above comment reflects the need for start-ups to develop an understanding of goals of the venture capitalist and to accept some loss of corporate control for the investment relationship to be possible.

4.2 Monitoring portfolio companies

Once an investment decision has been made, VCs monitor the activities of investee firms closely and invest further rounds of capital in case the firms achieve the milestones set for them formally or informally. Venture capitalists can use mechanisms of corporate governance for monitoring their portfolio firms, i.e., contractual arrangements, financial reporting systems, and having one or more representatives on the Board of Directors (Nathusius, 2002). A seat on the Board of Directors is traditionally regarded as a pivotal means of providing advice to the portfolio company and ensuring that its managers fulfil their obligations and follow the advice. Furthermore, adopting proper systems of corporate governance makes the new firm more transparent to other stakeholders and can enhance its ability to attract financing from new investors.

Since the late 1980s, there have been numerous studies focusing on the governance and monitoring performed by VC investors in their portfolio companies (e.g. Barney et al. 1989, Sahlman 1990, Megginson & Weiss 1991, Sapienza & Gupta 1994, Gompers 1995, Sapienza et al. 1996, Van Osnabrugge 2000, Fredriksen & Klofsten 2001, Gompers & Lerner 2004). A majority of the studies have focused on the mechanisms used in monitoring as well

as on the conditions under which VC investors scrutinize their portfolio companies more intensively (for a review of these studies , see e.g., Maunula 2006).

Venture Capital investors in Finnish biotechnology firms monitored their portfolio companies both through informal means, i.e. being frequently in contact with the management team, and through formal means including contractual arrangements, implementing proper systems of corporate governance, monitoring financial performance and claiming a seat on the investee company's Board (Luukkonen & Maunula 2006a, 2006b, Maunula 2006). We will use this categorisation of formal and informal means of monitoring in the analysis of empirical data. We will first pay attention, however, to the human resources each VC type used for monitoring and assisting their portfolio companies.

4.2.1 Human resources devoted to portfolio companies

Under human resources we pay attention to the work load each partner or other member of personnel has in the monitoring of the portfolio firms. Having only a few firms to monitor means that, in principle, the partner has more time to devote to each individual case or cases in trouble. Table 5 summarises the number of Boards of Directors on which an individual partner/employee serves by VC type. Partners of public sector VCs typically served on 5.5 boards while the same figures were 3 and 3.5 for informal VCs and private sector VCs, respectively.

Table 5: Number of Board seats per person (each VC organisation included only once)

	Informal VC			**Public/Semi-Public Sector VC**			**Private Sector VC**			**Total**		
	N	**Mean**	**Med.**	**N**	**Mean**	**Med.**	**N**	**Mean**	**Med.**	**N**	**Mean**	**Med.**
Partner level	18	2,8	3,0	4	5,5	5,5	19	3,8	3,5	41	3,5	3,0
Non-partner level	5	0,0	0,0	7	3,0	2,0	16	0,3	0,0	28	0,9	0,0

At the partner level, the median of portfolio firms for which an individual partner (or senior official in a public VC) was responsible was the same (Figure 7), while in public/semi-public VCs non-partner or junior level individuals were responsible for a larger number of firms. This is in contrast with the findings by Gorman & Shalman (1989), according to whom non-partners such as junior members of a VC team were responsible for a smaller number of firms.

Overall, public/semi-public VC had less human resources allocated to the monitoring of portfolio firms than in other VC types. This is in line with the findings by Schilder (2006) and Schäfer & Schilder (2006), who found that public sector VCs have a larger number of investee companies per manager, limiting their potential for active hands-on activities.

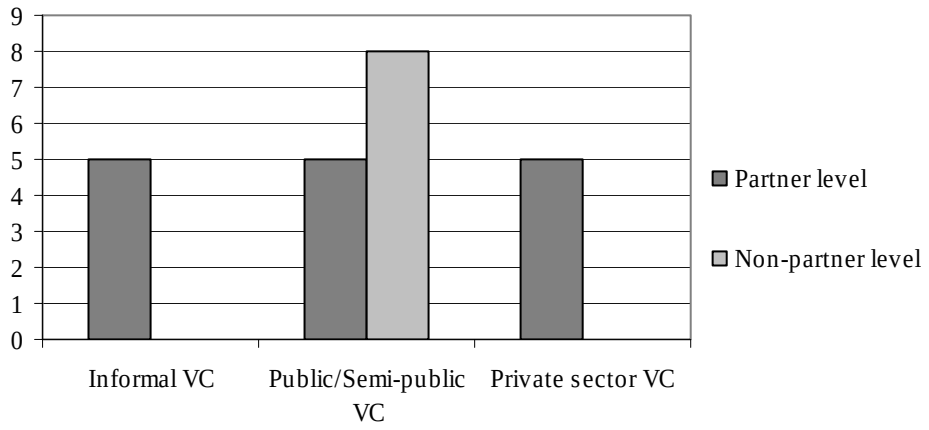

Figure 7: Number of portfolio firms for which an individual is responsible (median) (each VC organisation included only once)

Not only time but competencies matter in monitoring and giving advice to portfolio firms. The working experience of the respondents differed by VC type (Table 6). Informal and private sector VCs often had industrial experience while public sector VCs rarely did and most often had banking or finance experience. Furthermore, informal and private sector VCs had experience as entrepreneurs more often than public sector VCs. We could expect that industry or entrepreneur experiences are helpful in understanding businesses and providing strategic advice and can conclude that public sector VCs had these kinds of competencies to a much lesser extent than the other two groups.

Table 6: Working experience of the respondents by VC type

	Informal VC	**Semi/public Sector VC**	**Private Sector VC**	**Total**
N	**20**	**10**	**28**	**58**
Banking or finance	10%	70%	29%	29%
Industry	70%	40%	64%	62%
Research, consultancy or education	35%	30%	46%	40%
Entrepreneurship	45%	10%	39%	36%

In accord with the above findings, most informal and private sector VCs felt that their partners had necessary industry-specific business and technology knowhow (70% and 89% respectively) while fewer respondents in the public sector VCs thought so (20%). Business angels mainly relied on their own expertise since only 25% of them co-operated with external

experts to acquire more competencies, in line with the finding by van Osnabrugge (2000). Even though private sector VCs thought that the partners had necessary competencies, they very often acquired external expertise to complement their existing knowhow (71%). Public/semi-public sector VCs often did the same (69%), though in their case, it was done clearly to acquire the needed expertise.

4.2.2 Formal means of monitoring

As mentioned above, a seat on the Board of Directors is a traditional means to monitor portfolio firms. Indeed a majority of the VCs in this study demanded one or more seats on the Boards of Directors of their portfolio companies located in Finland (Figure 8). In addition, nearly 80 % of private sector VCs required a Board seat in foreign portfolio companies, while only 40 % of informal VCs did so. Public sector VCs did not invest abroad.

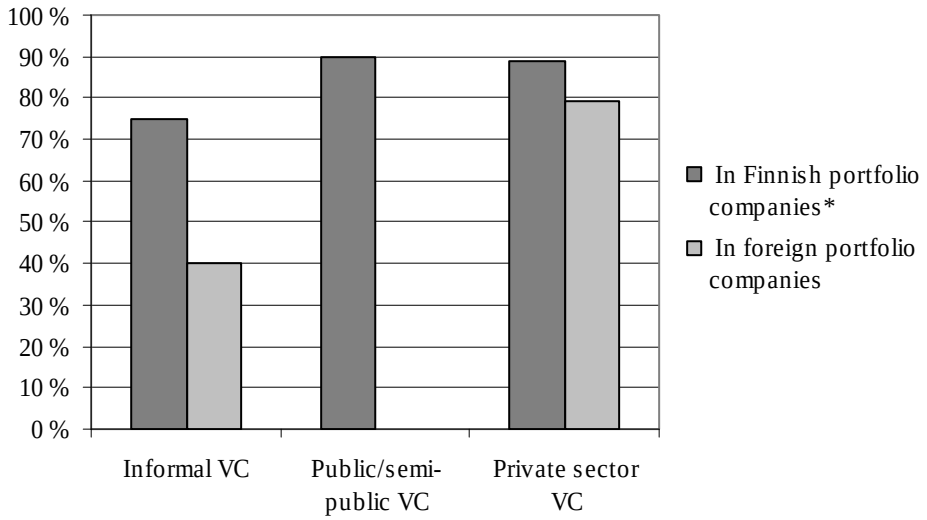

*Figure 8: Percentage of VCs that usually require one or more seats on the Board of Directors of their domestic and foreign portfolio companies (*excluding responses from foreign VCs)*

In addition to claiming a seat for partners/employees, VCs supplemented the Boards of their investee companies with external experts (Figure 9). Especially public sector VCs were active in this manner, as 80 % of them replied that they almost always supplemented the Board. This can be seen as a means to compensate for potentially lacking expertise in the VC organisation or for a lack of time to monitor and advise the portfolio firms as indicated in the previous section.

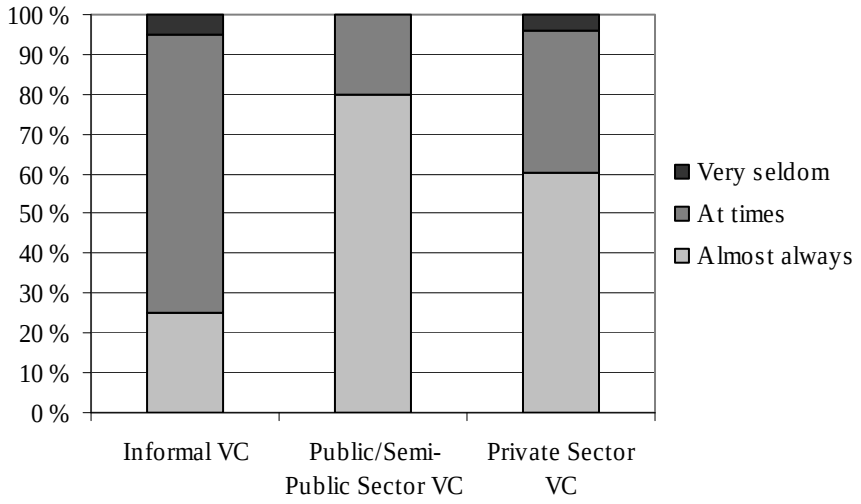

Figure 9: Frequency of VCs supplementing the Board of Directors of your portfolio companies with external experts

A majority of all VCs responded that they had initiated the removal of portfolio company managers (Figure 10), private sector VCs being the most and informal VCs the least active in this respect. This is in accord with the findings by van Osnabrugge (2000), who found that informal VCs were less inclined than private sector VCs to remove portfolio company managers in their investee firms.

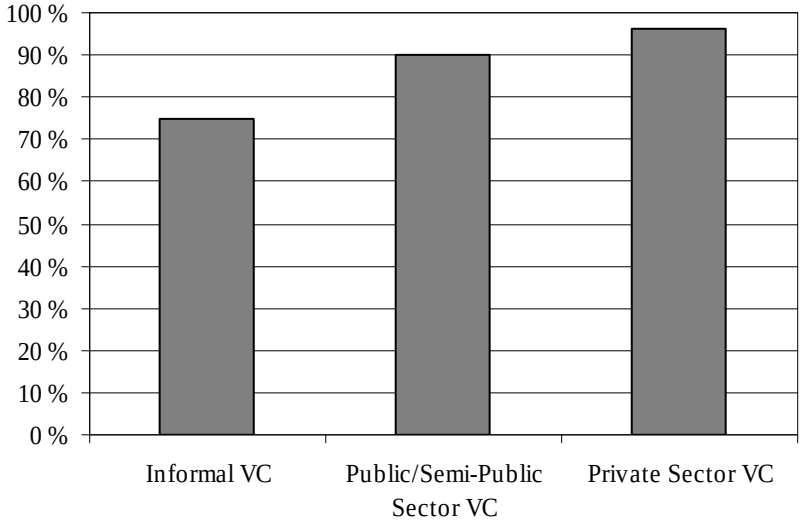

Figure 10: Percentage of VCs that have initiated the removal of portfolio company managers

Overall, the results were also in line with the findings of Gorman & Sahlman (1989), who found that, on average, VCs replaced three CEOs or Presidents. In this data, the removal concerned the CEO nearly as often as the President or other managers (Table 7).

Table 7: Removals concerning each of the following managers

	Informal VC	Public/Semi-Public Sector VC	Private Sector VC	Total
N	**20**	**10**	**28**	**58**
CEO				
0	2	0	0	2
1–5 times	13	7	14	34
Over 5 times	0	2	12	14
Missing	5	1	2	8
President				
0	6	1	4	11
1–5	9	7	16	32
Over 5 times	0	1	6	7
Missing	5	1	2	8
Functional managers (e.g. Marketing)				
0	1	2	3	6
1–5 times	11	6	15	32
Over 5 times	2	0	8	10
Missing	6	2	2	10

It is clear from Table 7 that private sector VCs had initiated more removals of each category than other VC types. This may reflect both their more extensive VC activity and the fact that they used this means fairly often as a way to promote the success of their portfolio firms.

All VCs often used contractual arrangements as a means to control their portfolio companies, with private sector VCs being most active in this respect (Figure 11). The fact that 85 % of the informal VCs responded that they used veto rights was somewhat surprising, as in our earlier study on Finnish biotechnology companies only 18 % of the informal investors had included veto rights in their investment contracts and preferred informal means to formal ones in the monitoring of their portfolio firms (Luukkonen & Maunula 2006a, 2006b; Maunula 2006).

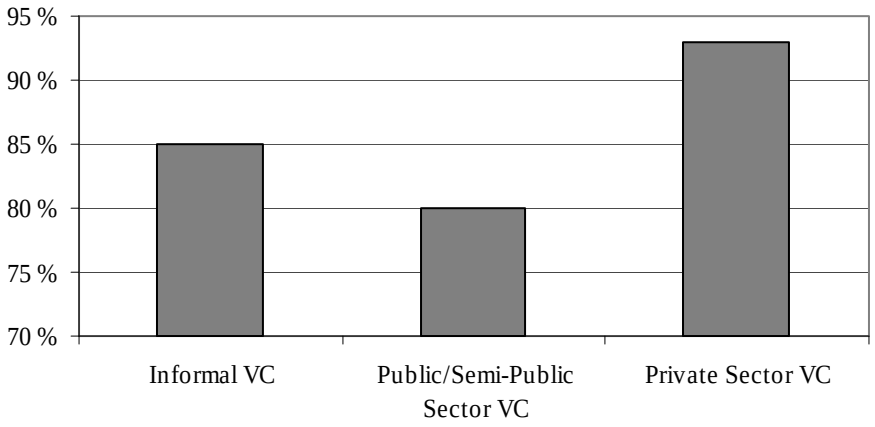

Figure 11: Share of VCs that usually demand veto rights in investment contracts

A majority of all VCs staged their investments into several capital infusions (Table 8). All the public sector VCs used this mechanism in reducing the risks associated in the investment. The VC types did not differ in the number of investment rounds in which they were typically involved, as they all took part in, on average, 2.3–2.7 investment rounds (Table 9).

Table 8: Percentage of VCs that stage investments into several capital infusions

	Informal VC	**Public/Semi-Public Sector VC**	**Private Sector VC**
N	**20**	**10**	**28**
No	30 %	0 %	14 %
Yes	70 %	100 %	86 %
Total	100 %	100 %	100 %

Table 9: Number of rounds in a typical early-stage investment

	Informal VC	**Public/Semi-Public Sector VC**	**Private Sector VC**
N	**12**	**9**	**23**
Mean	2,3	2,6	2,7
Median	2,3	2,5	2,5
St. Dev.	0,58	0,33	0,78

VC types used similar milestones as a pre-requisite for follow-on investments (Figure 12). The most common milestones were related to a successful product launch and reaching R&D and sales objectives. In addition, informal VCs often required the achievement of objectives set for cash flow.

Our previous survey on biotechnology companies identified quite similar milestones in investment contracts, although reaching sales objectives was less emphasised. This finding may become understandable given that in biotechnology the R&D process is quite long (Luukkonen & Maunula 2006a; Maunula 2006).

Other milestones mentioned by the respondents included recruiting key personnel (N=5), receiving proof of value from partners and reference customers (5), performance of the management team (3), and reaching financial objectives (3).

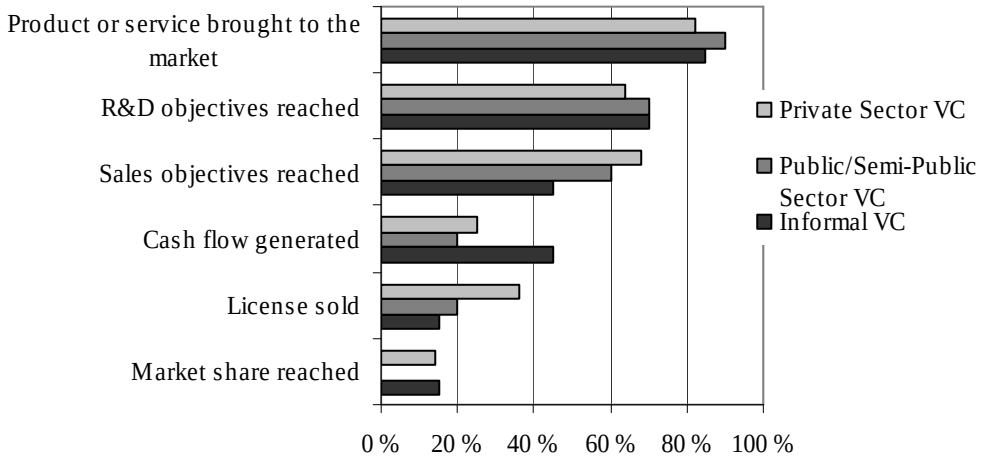

Figure 12: Milestones in follow-on investment decisions classified as very important

4.2.3 Informal means of monitoring

A majority of the respondents argued that they were in contact with their investee companies at least once a week (Figure 13). Contrary to the findings in earlier studies (van Osnabrugge 2000; Luukkonen & Maunula 2006a, 2006b; Maunula 2006), informal VCs met in person less often than other VCs.

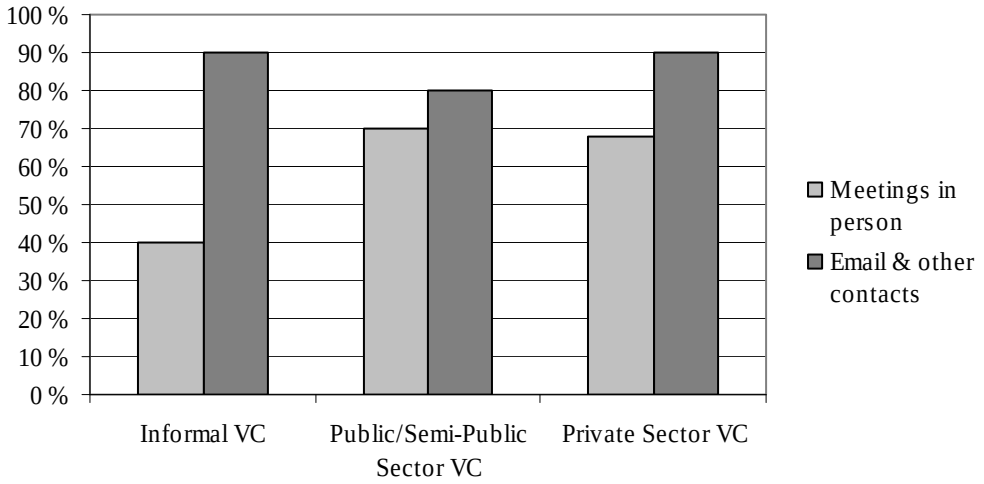

Figure 13: Share of VCs that are in contact with their portfolio companies at least once a week

Both this study and our biotechnology study (Luukkonen & Maunula, 2006a; 2006b; Maunula 2006) found that VCs are nowadays fairly often in contact with their investee companies outside the Board meetings and especially via email and telephone. These findings

suggest that the value-adding of VCs extends outside the Board activities, commonly argued to be the most important value-adding mechanism of the VCs. A smaller share of face-to-face contacts as compared with all contacts further suggests that geographical proximity between a VC and the portfolio company may not be as important as is commonly presumed.

This conclusion was supported by the responses on the importance of geographical distance for investment decisions. Only informal VCs highlighted the distance of 1-2 hours being the maximum between the portfolio company and the investor (Table 10). By contrast, nearly half of private and public sector VCs claimed that the geographical proximity is of no importance and nearly one third of the informal VCs agreed on this point.

Table 10: Maximum distance (in travelling hours) between the portfolio company and the management company

	Informal VC	**Public/Semi-Public Sector VC**	**Private Sector VC**
N	**20**	**10**	**28**
Less than an hour	5 %	10 %	4 %
1-2 hours	40 %	0 %	14 %
3-6 hours	20 %	30 %	29 %
7-10 hours	0 %	10 %	7 %
Geographical proximity is of no importance	30 %	50 %	46 %
Missing	5 %	0 %	0 %
Total	100 %	100 %	100 %

The fact that VCs did not find geographical proximity important probably reflects the fact that Finland is a fairly small market and, therefore, to find a sufficient number of potential investment targets a VC may need to search for them from further off. In addition, the fast development of communications technologies has provided alternative ways to be in contact with the portfolio company thus reducing the need for face-to-face contacts.

4.2.4 Summary of the monitoring profiles of VC types

Table 11 summarises the mechanisms each VC type uses in monitoring their portfolio companies. We emphasise that one or more plus signs does not signify an order of magnitude but rather a ranking in terms of emphasis of the activity by the given VC category. Overall, informal VCs emphasised the monitoring function less than other VCs. As public sector VCs had the least human resources available for each portfolio firm, they often supplemented the Boards of their portfolio firms with external experts and always staged their investments. As

could be expected, private sector VCs monitored their investments most actively and used both formal and informal means.

Table 11: Summary of the monitoring profiles of each VC type

	Informal VC	Public/Semi-Public Sector VC	Private Sector VC
Possibility to monitor effectively			
Small number of portfolio companies per partner/employee	+++	++	+++
Formal means			
Board seat	++	+++	+++
Supplementing Board with external experts	+	+++	++
Removing managers	+	++	+++
Contractual arrangements	++	++	+++
Staging	++	+++	++
Informal means			
Contacts in person	++	+++	+++
Other contacts	+++	++	+++

4.3 Value-adding services

Finally, VC investors provide additional services and management support to their portfolio companies in areas in which technology-based firms typically lack necessary competencies, e.g. strategic management, financial, administrative, and marketing competencies. When dealing with outside service-providers or acquiring customers, investee companies can also benefit from the VC's network of business contacts.

4.3.1 Areas of business in which the VCs are involved

In the following questions, the respondents considered the involvement of the representative of their company in a typical early-stage portfolio company.

The respondents were first asked to name the business areas where the representatives of their VC company served as a sounding board to the management team in a typical early-stage investment. All respondents claimed to be active in a variety of areas and VC types did not differ in this respect significantly (Figure 14). Informal VCs were somewhat less actively involved in obtaining additional financing, while public sector VCs were more often active in

corporate governance. Private sector VCs were the most active group in the internationalisation of the company and/or markets.

These findings differ substantially from those obtained in the study of Finnish biotechnology companies where CEOs assessed the involvement of their lead investors (Luukkonen & Maunula 2006a, 2006b, Maunula 2006). The CEOs responded that all VC investors were most actively involved in strategic planning, monitoring financial performance and obtaining additional financing. In addition, informal VCs were actively engaged in providing business contacts and internationalisation, and private sector VCs were the most active in corporate governance issues.

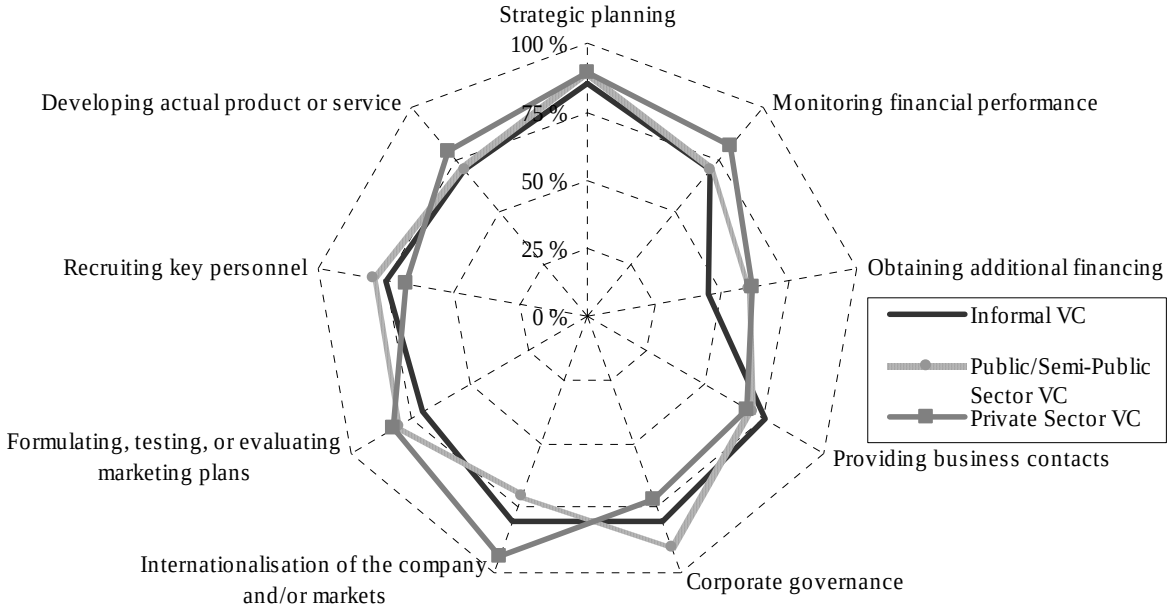

Figure 14: Activity areas where the VC serves as a sounding board (multiple responses)

In both studies, as could be expected, the role of VCs was found to be that of an advisor or sounding board rather than that of a person responsible for implementation (Figure 15). However, all VCs were fairly active in the implementation with regard to additional financing.

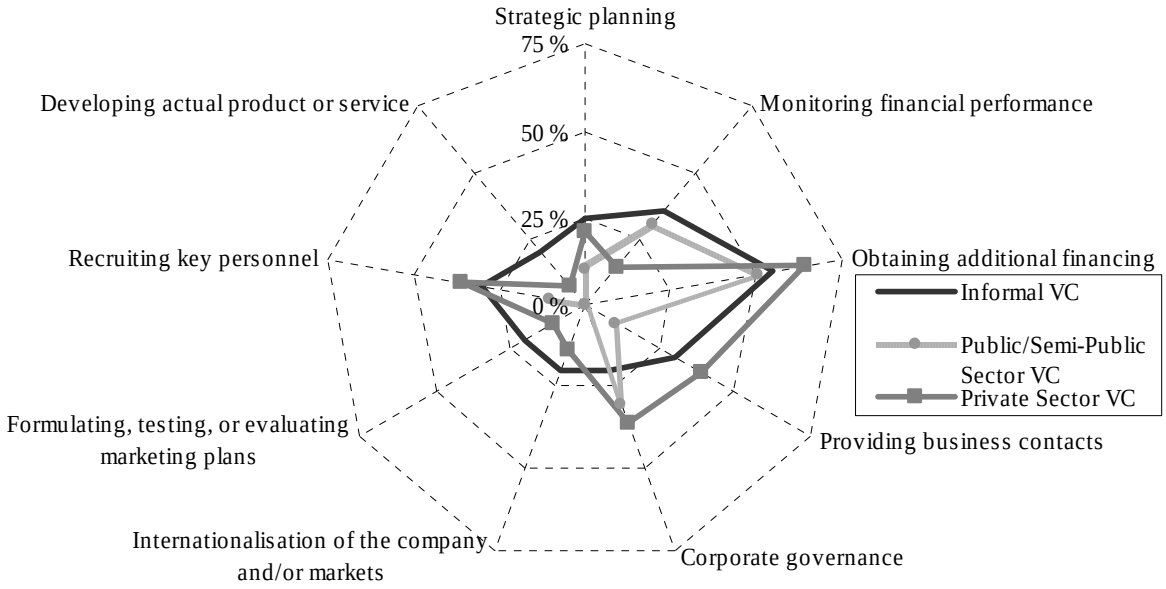

Figure 15: Activity areas where the VC is responsible for implementation (multiple responses)

The respondents were finally asked to assess the business areas in which the involvement of the VCs had typically been most useful to the portfolio companies. In general, the findings were similar to those obtained in the study of Finnish biotechnology companies (Figure 16; cf. Luukkonen & Maunula 2006a, 2006b, Maunula 2006). The most often mentioned areas in both studies were strategic planning and obtaining additional financing. Quite interestingly, public sector VCs often deemed their involvement in corporate governance as being among the top-three most useful areas. However, only 15 % of the CEOs of public sector VC-backed biotechnology companies responded that the involvement of their lead investors in corporate governance had been among the top-three most useful areas. The different findings can reflect the dissimilar viewpoints of the two groups and potentially special circumstances of biotechnology business.

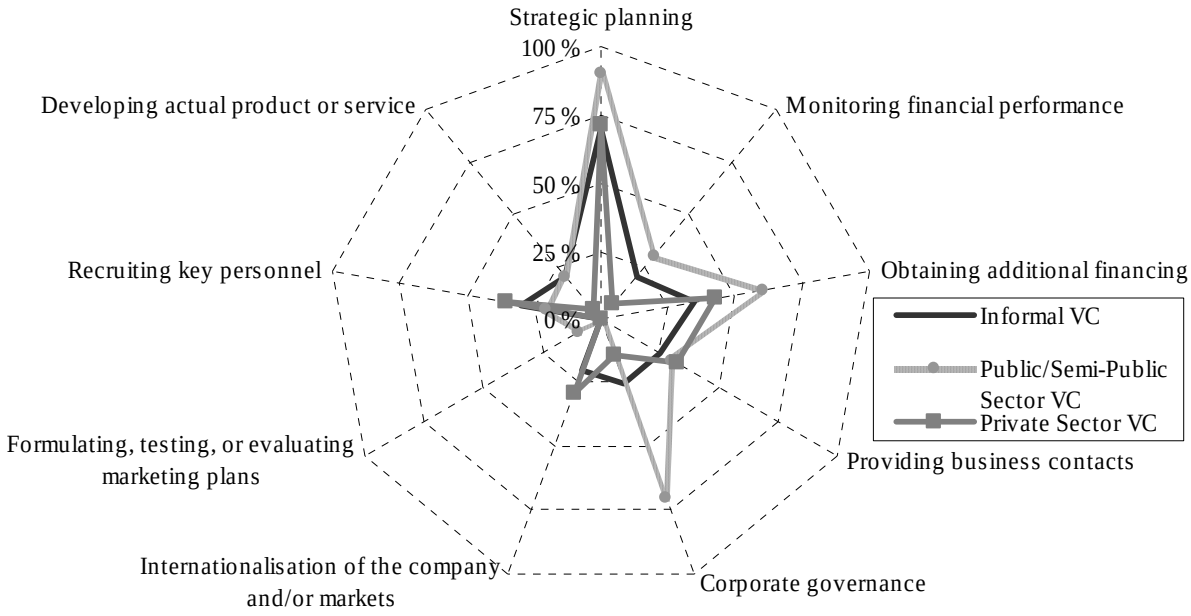

Figure 16: Activity areas where the VC has been most useful to the portfolio company (multiple responses)

4.3.2 Overall involvement by the VC

The respondents were asked to evaluate the distribution of their working hours between different activities. All VCs claimed that they devoted the biggest share, 31–45 %, of their working hours to monitoring and assisting their portfolio companies (Figure 17). Of all VCs, public sector VCs claimed that they used more time than the other groups, namely 31–45 %, for evaluating investment proposals, while private sector VCs and informal VCs devoted 16-30 % and 1–15 % of their working hours to this activity, respectively. Informal VCs used less time in planning and implementing exits than the others, which could be explained by the fact that they were generally involved in their portfolio companies for a longer period of time than other VCs.

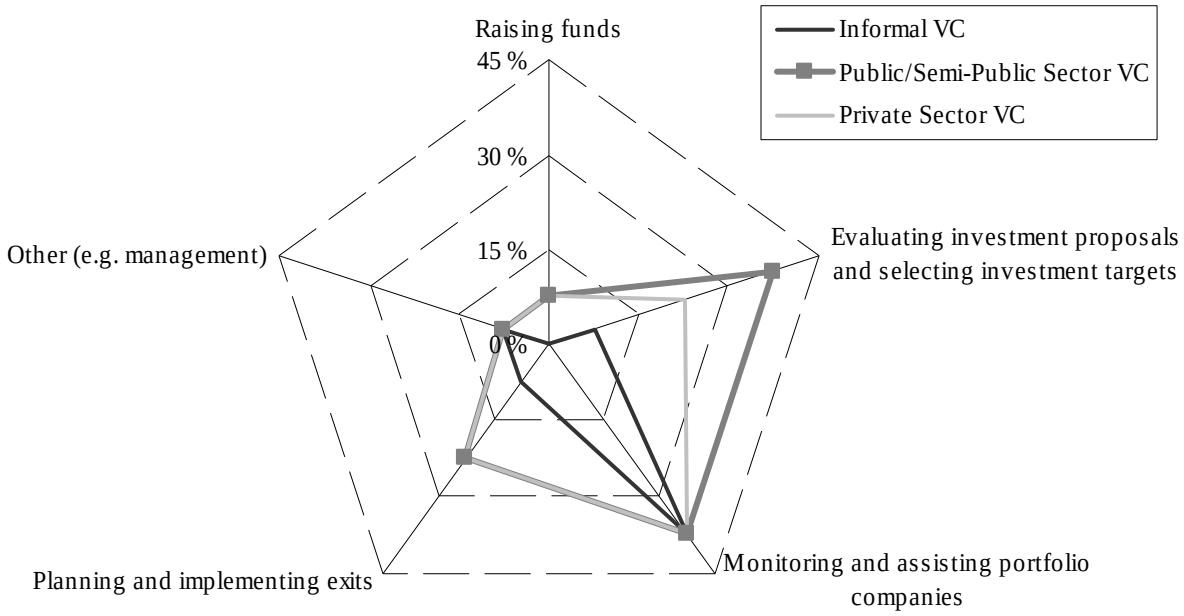

Figure 17: Median percentage of the working hours the representatives of the VC companies typically devote to different activities. (Note: categories used 0%, 1–15 %, 16–30 %, 31–45 %)

As could be expected, none of the informal VCs and private sector VCs said that their role was passive in the majority of their portfolio companies, while 20 % of the public sector VCs did so. In addition, 70 % of the public sector VCs rated their role as passive for some of their portfolio companies (Figure 18).

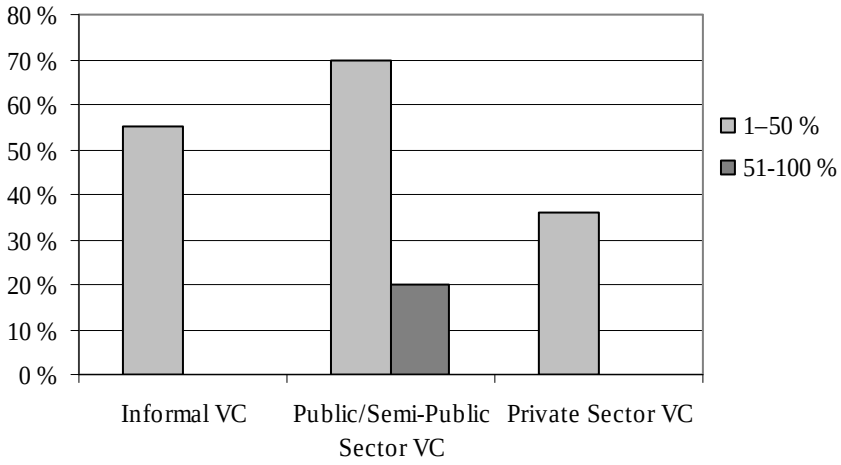

Figure 18: Percentage of portfolio companies where the role of representative of the VC company is passive

Nearly 80 % of the private sector VCs believed that their non-financial support had been very important for the success of their portfolio companies (Figure 19) while only 20 % of the public sector VCs thought the same. This finding is in line with our biotechnology study, according to which CEOs of companies with a public sector VC as a lead investor evaluated the involvement of the latter the most negatively (Luukkonen & Maunula 2006a, 2006b, Maunula 2006). Contrary to the findings of the biotechnology study, however, informal VCs did not turn out the most positively. Whether this is a question of modesty in self-evaluation or some other factor is difficult to judge.

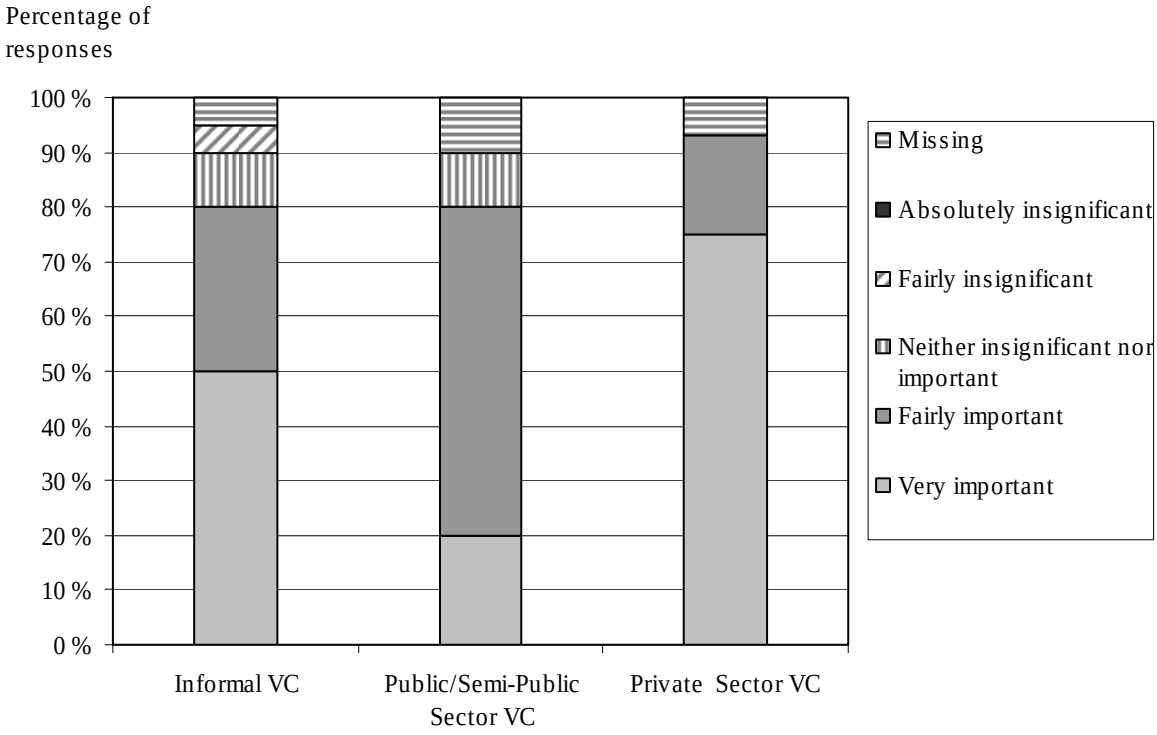

Figure 19: Importance of the non-financial support of the representatives of the VC companies for the success of the portfolio companies

When asked how their involvement differs in portfolio firms when their company is not a lead investor, a majority of the respondents that were not always a lead investor claimed that their involvement did not differ at all and that they were always very active (N=10). Some responded, however, that they devoted somewhat less time to each portfolio company (3) and some claimed that they were very passive when not serving as a lead investor (2). Some VCs argued that not being a lead only meant that they were not responsible for the value creation.

One private sector VC pointed out the importance of the composition of the syndicating partner in conjunction with this issue:

> *"We always aim to attain the lead investor's position in the first investment round. In case, we are able to bring along a high-powered international VC investor in further investment rounds, we let the others continue (take a lead). In this sense, the situation is either (very active) or (quite passive)."*

5 Summary and conclusions

This report pays special attention to the non-financial value-added by different VC investors to their early-stage, high-tech portfolio companies. The study approaches this topic from the viewpoint of the investors and the data were collected from business angels as well as from public and private sector VC companies.

Drawing on previous studies, we assumed that public sector VCs are less actively involved and have a less hands-on approach to their portfolio companies than the other VC types. Furthermore, we assumed that business angels are more actively involved and provide more value-added to their portfolio firms than the private sector VCs.

Our findings partially fulfilled and partially did not fulfil our expectations. The differences between the different VC types were smaller than expected and not in the direction we assumed (Table 12). Especially the informal VC investors were a great deal less active than we expected on the basis of studies carried out elsewhere and by ourselves on Finnish biotechnology companies. Why this was the case is not easy to explain. When we compare the present findings with our previous study on biotechnology (Luukkonen & Maunula, 2006a, 2006b), an obvious explanation may be the fact that the populations of business angels were for the most part different in the two studies. The previous study was carried out in a field that constituted only a small part of the overall VC activity in Finland and one which is difficult and perhaps requires a more active involvement from VCs than on average. Furthermore, we cannot estimate how representative the business angels that responded to this study were of the whole population. All VC types are fairly heterogeneous within the group and it is possible that business angels are even more heterogeneous than the other groups. A further reason why the private sector VCs performed better in this study than in the biotechnology study is perhaps the fact that in biotechnology there is only one bigger,

specialised private sector VC while the other private sector investors are quite small and heterogeneous and probably not specialised in the field.

In one respect, however, our findings were overall in line with our expectations, namely those concerning the relative activity level and role of public/semi-public sector VCs as compared with the other VC groups: they were indeed somewhat less active than private sector VCs and had a larger number of portfolio firms to monitor. Perhaps to compensate for a greater work load and/or to provide expertise, they more often than other VC types supplemented the Boards of portfolio firms with external experts.

Our findings further suggest there are differences in the value-adding profiles of different VC types. While public sector VCs have more portfolio companies per partner than the other VCs, they emphasize their activities on the Board, corporate governance and staging the investments in monitoring their portfolio companies. Public sector VCs also devote more time to evaluating investment proposals than the other groups. Since they do not invest in foreign companies, they are not as active in assisting the internationalization of their portfolio companies as private sector VCs. Public sector VCs claimed, however, to emphasize strategic planning and obtaining additional financing when supporting the management team.

Private sector VCs were found to use somewhat different mechanisms in monitoring their investments than public sector VCs, namely contractual arrangements, removal of management teams, and frequent contacts. Private sector VCs helped their portfolio firms to internationalize more often than other groups and they were seldom passive investors. In addition, the private sector VCs rated the importance of their non-financial support to the success of their portfolio investments as the highest of all VCs.

Table 12: Summary of the value-adding profiles of each VC type

	Informal VC	Public/Semi-Public Sector VC	Private Sector VC
Selection of investment targets			
Time devoted to evaluating investment proposals	+	+++	++
Possibility to monitor effectively			
Small number of portfolio companies per partner/employee	+++	++	+++
Formal means of monitoring			
Board seat	++	+++	+++
Supplementing Board with external experts	+	+++	++
Removing managers	+	++	+++
Contractual arrangements	++	++	+++
Staging	++	+++	++
Informal means of monitoring			
Contacts in person	++	+++	+++
Other contacts	+++	++	+++
Management support			
Strategic planning	++	+++	++
Internationalisation	++	++	+++
Obtaining additional financing	++	+++	++
Providing business contacts	++	++	++
Overall assessment			
Activity level	++	+	+++
Importance of non-financial support	++	++	+++
Time devoted to monitoring and assisting portfolio companies	+++	++	+++

It is possible that VCs in general and some VCs more than others overstate their role. At least when we compared the 'spider net' figures of the activity profiles of different VC types in this study with those in our biotechnology study (Luukkonen & Maunula 2006s; 2006b), in this study the spider net was much more spread out implying that the VCs claimed to be more active in multiple business areas than did the CEOs of biotechnology companies. Since it is difficult to ascertain the actual situation, we only wish to refer to the differences between VC-CEO pair assessments (Timmons & Sapienza, 1992; Fredriksen et al., 1992) and the inclination of each party to over-estimate their own role.

In spite of these reservations, in the light of this study, if we wish to enhance the value added role of venture capital activity in Finland, we need to promote the conditions for private VC activity. On the basis of the biotechnology study, we would be inclined to similarly recommend enhancing business angel activity. The present study, however, highlights the fact that VC categories are heterogeneous, and policy measures should aim at promoting the conditions for VC activity in general, instead of focusing on particular categories. An important point is also the fact that to fulfil their non-financial value-added role properly, we need to promote the competencies and professionalism in venture capital investing. Finland

has never attempted anything similar to the Israeli Yozma programme in the 1990s. Essential features of this programme included public co-financing to funds provided they were able to collect private money, attract professionally competent and reputable investors from abroad and could hire competent and experienced managers for their funds (see e.g. Avnimelech & Teubal, 2008). Another feature of the programme was that it was in force for a brief period of time, and in fact thanks to its great success as a means of public intervention, the programme was discontinued before its planned deadline of five years when the private partners bought out the government's stake (Erlich, 2005).

The role of public sector VCs is somewhat problematic in that its ability to provide value-added is not as good as that of the private sector VC organisations. This begs the following questions: On what grounds and under what circumstances should public sector VC activity be promoted? At least, the need for direct investments by public sector VCs should be critically examined.

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APPENDIX 1: BACKGROUND INFORMATION

Appendix table 1: Respondent information

	Informal VC	Public/Semi-Public Sector VC	Private Sector VC	Total
N	**20**	**10**	**28**	**58**
Years in VC company				
Median	5,5	7	5	5,5
Less than 7 years	25 %	40 %	54 %	41 %
7 years or more	15 %	50 %	36 %	31 %
Missing	60 %	10 %	11 %	28 %
Total	**100 %**	**100 %**	**100 %**	**100 %**
Years in VC business				
Median	5,5	7	7,5	7
Less than 7 years	60 %	40 %	39 %	47 %
7 years or more	40 %	60 %	61 %	53 %
Missing	0 %	0 %	0 %	0 %
Total	**100 %**	**100 %**	**100 %**	**100 %**

Appendix table 2: VC company information

	Informal VC	Public/Semi-Public Sector VC	Private Sector VC	Total
N	**20**	**9**	**19**	**48**
Years in VC business				
Median	7	8	7	7
Less than 7 years	15 %	33 %	37 %	27 %
7 years or more	20 %	44 %	63 %	42 %
Missing	65 %	22 %	0 %	31 %
Total	100 %	100 %	100 %	100 %
Capital under management (M €)				
N	5	6	17	28
Mean	27,5	72,9	239,6	166,2
Median	15,0	19,8	80,0	38,0
St. dev.	40,74	136,44	474,16	381,80
Number of funds under management				
N	4	7	18	29
Mean	0,3	2,1	3,6	2,8
Median	0,0	1,0	2,5	2,0
St. dev.	0,50	2,04	2,94	2,75
Number of employees in Finland				
N	5	7	17	29
Mean	2,0	19,6	7,3	9,3
Median	2,0	6,0	6,0	5,0
St. dev.	0,71	35,93	5,03	18,15

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