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UNDERSTANDING THE STRATEGIES OF VENTURE CAPITAL INVESTORS IN HELPING THEIR PORTFOLIO FIRMS TO BECOME INTERNATIONAL

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ABSTRACT: This paper reports the findings of two empirical studies on the value-added of venture capital with special attention on promoting internationalisation of start-up firms. The first study is based on a survey of Finnish (and a few cross-border) venture capital organisations on the value-adding mechanisms they use with regard to their portfolio firms. The second study is based on interviews with Finnish biotechnology start-ups. Attention is paid specifically to the strategies of three different types of investors in early-stage high growth companies: 1) business angels, which can be regarded as informal venture capitalists, 2) private-sector venture capital firms and 3) public-sector venture capital organisations. Control of agency costs and risks provides a conceptual framework for analysing the strategies of the different investor types. The findings partially corroborate and partially refute the hypotheses made on the basis of theory and the two studies provide somewhat conflicting findings on the role and strategies of the different investor types. According to the venture capital survey, private sector venture capital firms were most actively engaged in *ex post* monitoring and 'coaching' of their portfolio firms in internationalisation, while according to the biotechnology study, business angels turned out to be most actively engaged. The paper discusses potential reasons for these divergent findings.

Keywords: venture capital, internationalisation of start-ups

JEL codes: G24, O16

1. Introduction

Research on venture capital has shown that venture capitalists not only provide their investee companies, innovative entrepreneurial ventures, with finance, but impart knowhow in business areas where the investee firms lack capabilities, such as strategic management, recruitment, marketing, and networking; furthermore, they provide the investee firms with certification and reputation (Hellman, Puri, 2002; Bertoni, Colombo, 2005). Venture capital firms also claim to be a critical ingredient for the rapid international expansion of promising start-up companies.

One explanation for the positive contribution by venture capitalists to their investee firms is that venture capitalists have a stake in the equity of their investee companies and therefore, an important incentive to improve the likelihood of reaping high economic returns and to promote the economic performance of the firms. There are other, more specific explanations that consider the relationship between the venture capitalist and the investee firm as that of a principal and an agent, and examine the ways in which the principal, the venture capitalist, addresses the risks and problems involved in the relationship. Venture capitalists can have different approaches toward mitigating agency risks and these approaches imply variation with regard to how actively venture capitalists are engaged in monitoring and ‘coaching’ their portfolio firms (van Osnabrugge, 2000).

It has been noted that individual venture capitalists adopt different approaches depending on the investee firm and its characteristics (Sapienza, 1992; Sapienza and Gupta, 1994; Sapienza et al., 1996; Fredriksen, Klofsten, 2001). We may assume, however, that different types of venture capitalists adopt different strategies in this respect. Thus, for example, van Osnabrugge has compared informal venture capitalists, that is business angels, with formal venture capitalists and found that the former have a more hands-on approach to their investee firms (van Osnabrugge, 2000).

This paper pays special attention to one dimension in the activities of a high-technology startup, namely its international expansion, and considers whether different types of venture capitalists have adopted distinct approaches vis-à-vis their investee firms in this respect. The paper draws on recent studies on the non-financial value-added by venture capitalists, conducted at the Research Institute of the Finnish Economy.

2. Value-added as a result from efforts to control agency risks

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). Venture capitalists as outside equity investors are principals who delegate work and responsibilities to their agents, the management of the firm. In small entrepreneurial firms, this distinction is not clear-cut because the firm management usually owns part of the firm. In agency theory, attention has been devoted to the consequences of different ownership shares by the management with claims that a smaller ownership share poses smaller agency risks (Sapienza, Gupta, 1994). Nonetheless, irrespective of the ownership shares, the relationship between the outside investor and firm management is essentially that of a principal and an agent. The principal's prime goal is to ensure that the agent runs the firm in the principal's own interests.

There are two major approaches to analysing efforts to control agency risks: the classical principal-agent approach and the incomplete contracts approach. In the classical principal-agent approach, the principal attempts to formulate an optimal contract which takes all potential problems into account in advance in order to minimise agency problems and limit the potential effects of moral hazard and adverse selection (van Osnabrugge, 2000, 95). To reduce information asymmetries and facilitate a better contract, the principal carries out pre-investment screening and due diligence enquiries regarding the portfolio firm. The contracts attempt to influence the post-investment performance of the agent either by stipulating what is expected from the behaviour of the agent or in terms of outcomes. Both approaches incur costs through measuring behaviours and/or outcomes.

The second approach, the incomplete contracts approach, recognises that contracts are always incomplete and therefore highlights *ex post* control as a more effective means of reducing agency risks and problems (Hart, 1995a, b; van Osnabrugge 2000). In spite of this difference in emphasis, each approach promotes risk reduction at all stages of the investment cycle.

The incomplete contracts approach assumes that the contract is always incomplete and all potential contingencies cannot be predicted in advance for a variety of reasons, such as contracting costs, bounded rationality or information asymmetries (van Osnabrugge 2000). The incomplete contracts approach emphasises *ex post* control over the investment, and requires that the principal, the investor, be actively involved in the investment, have a hands-on approach and actively monitor the behaviour of the investee firm and its management.

Even the principal-agent contract approach can require active monitoring, namely when the contract is behaviour-based and requires observation of the agent's behaviour.

These two approaches have an underlying assumption that the small entrepreneurial venture has the relevant strategic competencies and capabilities it needs to pursue its business. In small early-stage technology-based firms, this assumption is not, however, valid and the extant research literature emphasises the fact that startup firms especially in science-based areas lack these strategic competencies (see e.g., Sapienza, Gupta,1994; Carlsson, 2002). This lack suggests that to exert *ex post* influence on the behaviour of the investee firm the venture capitalist needs to use not just monitoring, but 'coaching', that is, providing management support to the company in areas in which technology-based firms typically lack the necessary competencies, e.g. strategic management, financial, administrative, and marketing competencies (Sapienza, Gupta, 1994). This assertion is supported by empirical research into the involvement of venture capital in their portfolio firms (e.g., Gorman, Sahlman, 1989; Harrison, Mason, 1992). Thus we need to modify the above assumptions on the incomplete contracts approach to control agency risks by including 'coaching' as well as monitoring in the repertoire of the investor. Though they are different functions in principle, in practice, they may merge in the activities of the venture capitalist: when monitoring the activities of the agent, he may easily shift to a role of advisor. A seat on the Board of the venture is a typical means of monitoring the company, but since the Board takes stands concerning strategic issues, it is difficult to separate monitoring and 'coaching'. We may further assume that the different ways to solve agency risks and costs are not exclusive and that a venture capitalist can use all of them, though in different degrees.

3. Venture capitalist as an intermediary

This paper will pay special attention to the different types of venture capital organisations in the internationalisation of small startups: 1) independent private-sector venture capitalists; 2) public sector venture capitalists' and 3) informal venture capitalists, namely business angels. We include business angels 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.

Our study will add to previous studies by paying attention to public-sector venture capitalists (see later on what type of organisations these include). This is done because of their importance in early-stage investments in Finland and in many other European countries.

Van Osnabrugge (2000) analysed the differences between business angels and formal venture capitalists in their monitoring and control of portfolio firms and compared these to their different structural and agency pressures. The basic difference between the two is the fact that in their relationship with their fund providers, formal venture capitalists are agents while, with regard to their portfolio firms, they are principals. They are effectively intermediaries between these two groups. By contrast, business angels have no principals, since they invest their own funds. In order to satisfy their fund providers, van Osnabrugge (2000) suggested and found evidence that formal venture capitalists aimed to behave competently and professionally, and consequently resorted to formal operating procedures spending more effort on the control of agency pressures *ex ante*. 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).

If we include public venture capital organisations in our analysis, we will have another type of intermediary investor in the principal-agent relationship (see Table 1). However, the position of a public venture capital organisation as an intermediary between their principal and agent is not as clear as that of the private sector venture capitalist firm. First, who is the principal of a public venture capital organisation? We may think that all taxpayers are the ultimate principals. However, they can be represented by a ministry, a public venture capital organisation (a fund of funds) or a municipality (regional funds). Regional funds in the study country Finland have partially private owners consisting of local businesses and partially public owners, for example, a public venture capital organisation and/or municipalities. Thus they have several kinds of principals. The regional venture capital organisations have, besides targets related to profitability, objectives related to the promotion of local businesses, which from the profitability point of view is not necessarily the best investment target. The performance criteria of such funds and organisations are thus more heterogeneous than those of purely private venture capital firms and we may presume that their agency pressures are different from the latter. The diversity of the goals can lead to weaker agency pressures from the principal since the goals can be contradictory (profitability vs. promotion of local businesses) and therefore more difficult to measure and control (see Table 2).

Table 1. Three categories of venture capital investors and their agency position

	Principal	Intermediary
Private venture capital firms		x
Public sector venture capital organisations		x
Business angels	x	

Table 2. Agency pressures and strategies by investor type

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

Based on van Osnabrugge (2000) and other studies, we can thus hypothesise that strong agency pressures will lead to strong *ex ante* control and the use of the classical principal-agent approach, as depicted in Table 2. By contrast, the absence of agency pressures from the principal will lead to the incomplete contracts approach and more attention to *ex post* monitoring and 'coaching'. What would be the consequences of weak agency pressures, as in the case of public sector venture capital organisations?

Schilder (2006) and Schäfer and Schilder (2006) found that public sector venture capital organisations had less resources available for monitoring and/or 'coaching' investee companies and consequently fewer contacts with them. Not surprisingly, they were much less active in a range of 'coaching' activities vis-à-vis the firm as compared with private venture capitalist organisations or business angels (*ibid*.). Their findings did not probe into the *ex ante* control or the use of formal procedures by public venture capital organisations with regard to monitoring their investee firms. We can, however, suggest that scant opportunities to monitor and engage with the investee firm might lead to the use of more formal means of control, use of contractual mechanisms and *ex ante* control, and closer to the classical principal-agent approach. Strong *ex ante* control could thus be the result of agency pressures for two different reasons: first, because of strong agency pressures, and secondly, indirectly, because weak pressures provide the intermediary with weak tools to perform its task *ex post*. Thus we would suggest that the public venture capital organisations would be inclined to exert strong *ex ante* control (Table 2). Table 2 encapsulates the basic hypothesis of this study.

4. Internationalisation of the investee firm and venture capitalists

This paper focuses on the role of the venture capitalist in the internationalisation of its investee firms and potential differences between the approaches adopted by different types of venture capital organisations in this regard. Internationalisation is just one, but possibly a highly important dimension of the performance of a startup firm. International expansion and acquisition of export markets can be vitally important for high-growth firms originally established in small countries, because their home markets do not provide sufficient possibilities for their growth prospects, meaning they have to go international right at the start of their operations. Internationalisation is thus one of the dimensions in which the venture capitalist can be expected to monitor its investee firm. It is also a dimension where both the agent and the principal are likely to have insufficient ability if they are new to the business.

The venture capitalist can include clear targets for the internationalisation of the portfolio firm in contracts and include these as a prerequisite for further instalments of money. In the classical principal-agent approach, the venture capitalist would stipulate these targets contractually and would pay attention to the achievement of these targets without interference in the process or activities related to the internationalisation of the firm. In the incomplete contracts approach, the venture capitalist would monitor closely what firm management does to meet these goals. If the hands-on approach becomes more active, the venture capitalist would not only monitor the performance of its portfolio in its internationalisation process, but he would also actively contribute to it by opening doors, acquiring contacts, recruiting local personnel in an export market etc., having an active hands-on approach towards the investee firm. In practice, the choices are not that clear-cut and venture capitalists can adopt mixed approaches. This study pays attention to the behaviour of the venture capitalists and the extent of their active involvement. The fundamental question is whether the different venture capitalist types differ in this respect, and if so, whether the differences concerning the dimension of internationalisation follow the hypothesised general patterns of behaviour.

This paper will draw attention only to domestic venture capitalists in the internationalisation process of small new ventures in technology-intensive industries. It does not cover cross-border venture capitalists. This is because this paper draws on two studies on the value-added of venture capital, conducted at The Research Institute of the Finnish Economy (ETLA), which were focused on the value-added role of the leading venture capitalists. The studies were carried out with the assumption 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). Since only a couple of the lead investors were cross-border venture capitalists, there were too few cases from this group for a quantitative analysis, even a simple one.

While cross-border venture capital investments, syndication of local and cross-border investors, and value-added of venture capitalists in general (see e.g., Mäkelä, Maula, 2004; Gorman, Sahlman, 1989; Harrison, Mason, 1992; Hellman, T. and M. Puri. 2002; Bertoni, Colombo, 2005) have attracted quite a lot of attention from scholars in research on venture capital, less attention has been drawn to the support in internationalisation which venture capitalists provide to their portfolio firms. Mäkelä and Maula (2005) have studied the effects of cross-border venture capital investors on the internationalisation of their portfolio companies. Ideally, we can assume that cross-border venture capitalists can be an important vehicle for improving the capabilities of the portfolio firms to expand their markets and to gain access to new markets in foreign countries. Mäkelä and Maula (2005) found both positive and negative effects by foreign investors on the investee firm. The positive effects included a certification or signalling effect, that is, a well-known venture capitalist can endorse the credibility of its investee firm, an unknown business startup, in a new market. The cross-border venture capitalist can also introduce the new venture to its own network of business contacts, such as helping to recruit personnel in the new market, scanning potential customers, and opening doors to technology partners and potential new financiers. It can also provide important legal knowledge of the market. Hursti and Mäkelä (2006) furthermore noted that pre-IPO ownership by foreign investors is positively related to foreign initial public offerings. Mäkelä and Maula (2005) pointed out that cross-border venture capitalists can have negative effects and cause additional costs. A venture capitalist who is active and does not operate from a geographical area which is an optimal target market for the investee firm can put pressure on it to internationalise to its home location. This can be regarded as a cost to the investee firm. Another negative effect includes transaction costs that are high because of increased costs of communication, meetings and decision-making (*ibid*.).

Mäkelä and Maula (2003) have further studied the role of local investors in attracting cross-border venture capital, but not the way in which domestic venture capitalists directly influence the internationalisation of their portfolio firms.

With regard to the mechanisms or effects through which a venture capitalist can contribute to the internationalisation of the investee firm, we can, drawing on the above-mentioned study by Mäkelä and Maula (2005) and other sources on the value-added of venture capital in general (e.g., Bertoni, Colombo, 2005; Luukkonen, Maunula, 2007a, 2007b), outline the following mechanisms:

- If the venture capitalist is from the domestic country of the investee firm, it can syndicate with foreign venture capitalists and through them indirectly, open doors in the target market
- Certification or signalling effect
- Encouraging, advising and providing a sounding board for the portfolio firm in the internationalisation process
- Providing knowledge of the legal and socio-economic system of the new market
- Providing training in the issues that are important for internationalisation
- Drawing on the venture capitalist’s network of contacts in the target market:
- recruiting personnel,
- scanning potential customers
- opening doors to technology partners
- acquiring potential new financiers

In this study, we do not have any data on the certification effect, but will note this matter as an important dimension. With regard to the other mechanisms, we do have data as far as the respondents to the studies have spontaneously mentioned the issues.

At the behavioural level, a venture capitalist can act more or less actively. Active behaviour could imply that the venture capitalist proactively promotes the investee firm by introducing it to its contacts, goes with the venture to meetings with potential partners, introduces the management to other potential financiers, etc. A more passive way to promote the venture would involve, e.g., providing knowledge of the potential partners, providing knowledge of the new markets, and encouraging and training the venture’s key personnel but not making contacts personally or visiting potential partners and/or attending meetings together. A passive way would also involve that the investee firm could use the name of the venture capitalist in its attempt to assert its credibility (certification effect), but the latter would not make any special effort in this process.

The only hypothesis this study has concerns the role different venture capitalist organisations play with regard to their portfolio firms in internationalisation. It is assumed that the private venture capital firms and public sector venture capital organisations are active especially *ex ante* and try to influence the behaviour of the portfolio firm through contracts, while business angels are active in *ex post* monitoring and 'coaching' as indicated at a general level in Table 2. Most of the data on internationalisation is, however, on *ex post* activities, and thus the hypothesis would be that business angels are more active that the two other groups in *ex post* attention to internationalisation.

5. Data

The data used in the analysis are based on two separate studies: 1) a survey with venture capital organisations, and 2) a survey and interviews with the total population of small and medium-sized, specialised biotech companies, established in Finland since 1985.

The first survey, hereafter called the venture capitalist (VC) study, was conducted in the autumn of 2006 while the second study, the biotechnology CEO study, was carried out in the autumn of 2005.

The VC study data were collected 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 ETLA study of VC-backed biotechnology firms (Luukkonen, Maunula, 2007a).

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 capitalists[1]; almost all of these are privately owned companies and only one is publicly listed; 2) public sector venture capitalists[2] 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. We include business angels under the broad category of venture capital, though they are private individuals and normally are treated as a separate

[1] 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.

[2] 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.

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 finally 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

The study was targeted to VC 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).[3] The reason for the technology focus is the fact that both studies were motivated by a research interest in gaining 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.

As some of the venture capital investors, especially business angels 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 3 summarises the responses received by VC investor type.

Table 3. Response rate of Finnish venture capital investors in the VC study

	Number of respondents	Total number of identified VCs/BAs*	Response rate
Business angel (BA)	20	40	50 %
Public Sector Venture Capital Organisations	8	8	100 %
Finnish Private Sector Venture Capital Firms	15	20	75 %
Subsidiary of a foreign Venture Capital Company	1	1	100%
Cross-border venture capital investors	3	26	11%
TOTAL	**48**	**68**	**51 %**

*with address data

[3] 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”.

The biotechnology CEO study was based on interviews, conducted in the autumn of 2005, with the total population of small and medium-sized, specialised biotech companies, established in Finland since 1985, which had venture capital funding (including business angels) (Luukkonen, Maunula, 2007b). Biotechnology was defined to broadly encompass firms both developing and applying biotechnology processes in different application segments (including those outside pharmaceuticals or human and animal health-related application segments). Basically the definition followed the OECD definition as "The application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services".[4] Information on the population of small and medium-sized biotechnology companies was obtained through an accumulation of several databases and earlier survey data collected by The Research Institute of the Finnish Economy and its daughter company, Etlatieto Ltd. This earlier data was complemented by checking through public registrars, firms' websites, and telephone calls to technology/bio centres where many of the firms were situated to enquire whether the firms were still active or whether new firms had been founded by the time of the survey and interviews, the autumn of 2005.

The total study population of active small and medium-sized biotech firms was 85 and the number of respondents was 81 (95%). Some 38 of these had currently a venture capital investor. This group of 38 firms formed the study population for this analysis. In most firms, the respondent was the CEO of the company[5]. When studying the value-added of the investors, each CEO was asked to assess the activities of the lead investor in the potential syndicate. Nearly half of the firms had more than one investor.

6. Findings

6.1. General observations

Before turning to the specific question of internationalisation of the portfolio firm, this paper draws attention to the basic approaches adopted by the different venture capital organisations vis-à-vis their portfolio firms. As reported earlier in the study on venture capitalists

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4 This definition was adopted at the Third OECD ad hoc meeting on biotechnology statistics, held in Espoo, Finland, 13-14 May, 2002.

5 In three companies the CEO had recently changed, and the ex-CEO was interviewed. In a few cases, the interviewee was another manager or founder. However, in all companies, the person with the longest experience of co-operation with their venture capitalists was interviewed.

(Luukkonen, Maunula, 2007a), the three investor types had fairly clear, distinct approaches: as might be predicted by the above agency theory approach, business angels used far more often informal means, such as frequent contacts, to control and monitor their investee companies as compared with private or public sector venture capitalists. By contrast, the latter two more often used contracting and other formal procedures (Luukkonen, Maunula, 2007a, p 18-24). The public and private sector venture capital organisations used a larger share of their time than business angels for *ex ante* evaluation of investment proposals and for the selection of investment targets (Luukkonen, Maunula, 2007a, p. 28), as we could predict on the basis of analysing their agency pressures. Public sector venture capitalists nevertheless devoted an even larger share of their time to this task than private sector venture capitalists. This was offset by their more passive role in the investee firm *ex post* (Luukkonen, Maunula, 2007a, p. 28). Observe, however, that we are speaking of time-use in relative terms, not in absolute terms. It is also to be taken into account that employees in public-sector venture capital organisations had on average a larger number of portfolio firms under their responsibility (Luukkonen, Maunula, 2007a, p. 17), and thus the average time per portfolio firm would not be great.

By their own assessment, private sector venture capitalists seemed, by and large, to pursue a relatively or quite active *ex post* role in their investee firms, in addition to paying attention to the *ex ante* screening process. Thus in their relations with their investee firms they pursued a double strategy: paying attention to *ex ante* contract formulation and *ex post* monitoring and involvement or ‘coaching’. By contrast, in relative terms, public sector venture capitalists paid more attention to *ex ante* screening and less attention to *ex post* monitoring and ‘coaching’. This is the general pattern, though the findings were not always very clear-cut or distinct.

The study with biotechnology CEOs by and large confirmed the finding that different venture capital types had distinct patterns of involvement: public sector venture capital organisations paid more attention than other groups to *ex post* monitoring through formal means and private sector venture capital firms attached importance to corporate governance systems and used formal monitoring means *ex post*. Furthermore, business angels used frequent contacts and informal means for monitoring. However, the two studies differed in that in the biotechnology study, business angels were most actively engaged in ‘coaching’ the portfolio firms. Their overall value-added was perceived to be the highest among the three investor types.

Biotechnology is obviously a special and very difficult target industry for venture capital activity, and it is possible that venture capital investors in this industry are in many ways different from venture capital investors in general. It was noteworthy that the private sector venture capitalists in the biotechnology industry mostly consisted of fairly small and heterogeneous investors, with only one major venture capital firm specialised in this industry. By contrast, the private sector venture capital firms in the venture capitalist study were larger and some of them had considerable venture capital activity. Thus we could interpret that the private sector venture capital investors in biotechnology on average were not as professional and therefore acted more passively than private sector venture capital firms in general. This would be reflected in the findings of the two studies.

6.2. Internationalisation: findings of the VC study

6.2.1. Indirect impact

As already pointed out, when measuring the role of venture capitalists in their portfolio firms, all questions pertained to the role of the venture capitalist as lead investor if there is syndication.

Attention will first be paid to the extent to which the different venture capital organisations contributed to internationalisation indirectly. Syndication with foreign venture capital investors is regarded as a means to contribute indirectly, even though positive effects do not automatically follow. We can namely assume that the resources, such as networks and connections as well as reputation of the syndicate partner influence its positive contribution. Here we cannot differentiate the qualities of the syndicate partners and can only pay attention to the extent of syndication in general.

While more than 90% per cent of all the investors syndicated with other investors, only 30% of the business angels and 22% of the public sector venture capitalists syndicated with foreign, cross-border venture capitalists. However, as much as 82 % of the private sector venture capitalists did so. The difference between the private sector venture capitalists and the other two groups is a case in point. Private sector venture capitalists are obviously better connected with cross-border investor networks and presumably have more reputational capital and thus are better equipped to make syndication deals. These connections can provide them with valuable resources in helping the investee firms to expand abroad. According to the investors' self-assessment, 28% of those that syndicated with foreign investors thought that internationalisation was among the three activity areas in which their contribution had been most useful to their investee firms - according to their self-assessment - while only 15% of those who did not syndicate with foreign investors did. Even though we may deduce that investors may exaggerate their own importance, this applies to all respondents and the difference between the two groups matters here.

6.2.2. *Ex ante* attention to internationalisation

Internationalisation of their portfolio firms was not originally among the specific focuses in the design of the two studies. Thus when investment criteria and the role of contracts were measured, internationalisation was not specifically included in the battery of questions probing into these areas. With regard to the investment criteria, the questions coming closest to internationalisation concerned the role of 'target markets and market penetration' and 'substantial growth potential' among the selection criteria. Table 4 gives the proportion of respondents in the three categories for whom these questions were very important as investment criteria.

Table 4. Target markets and growth potential as investment criteria

	Business angel	Public sector venture capital organisation	Private sector venture capital firm
	N=20	N=10	N=28
Target markets and market penetration	55%	70%	68%
Substantial growth potential	75%	80%	93%

Among the investment criteria, those related to the experience of founders, growth potential, business plan, and technology were generally the four most important criteria in this order. When we compared the importance attached to target markets and growth potential, especially private but also public sector venture capitalists paid more attention to these matters, which are closely related to export market penetration by the investee firm.

By contrast, business angels emphasised these factors much less and instead highlighted the importance of the experience of the founders, a matter related to human and intellectual capital. This would be in line with their greater emphasis on informal means of monitoring and more frequent contact and interaction with their investee firms.

6.2.3. *Ex post* engagement

As pointed out, these questions pertain to the role of the venture capitalist organisations as a lead partner in a syndicate (over 90% did syndicate with other investors) or as the only partner. A general feature of venture capitalist involvement in the portfolio firms is that few venture capitalists go so far in their involvement as to become responsible for implementation. Thus while the majority of all venture capitalists said that they had acted as a sounding board for firm management in internationalisation of the company and its markets, only a few claimed to be responsible for implementation. Differences among the three groups indicated that while all private sector venture capital firms responded that they had been a sounding board for their portfolio firms in internationalisation, 75% of the public sector venture capitalist organisations and 80% of the business angels said so. None of the public sector venture capitalist organisations were responsible for implementation in the internationalisation of the business and its markets, but one fifth of the other two groups were. Furthermore, when the respondents assessed whether internationalisation was among the three most useful contributions by the venture capitalist to the firm, none of the public sector organisations claimed this. By contrast, 20% of the business angels and 40% of the private sector venture capital firms indicated that this had been the case.

Table 5. Promotion of internationalisation of the portfolio company and its markets by type of investor (one respondent per organisation)

	Business angel	Public sector VC	Private sector VC
N	20	8	20
Sounding board	80 %	75 %	100 %
Responsible for implementation	20 %	0 %	20 %
Has been most useful to the portfolio firm	20 %	0 %	40 %

Even though these answers were based on self-assessment and need to be interpreted with caution, this applies to all respondents and all groups. By and large, the findings indicate that private sector venture capitalists paid more attention to internationalisation and deemed their contribution to be more useful than the other groups did. The differences between the groups were systematic, thought not large.

What did the venture capital organisations in practice do to promote internationalisation of their portfolio firms or their export markets? Table 6 lists different types of means the venture capital organisations used. This table is based on a classification of answers to an open question. First, the proportion of those without any mention can by and large be interpreted to indicate scant involvement in internationalisation. Especially public sector venture capital organisations but also nearly half of the business angels did not respond at all to this question. We might deduce that they were less involved in this activity than the private sector venture capitalists were.

When we look at those who responded to this open question, the most often mentioned activity was the use of the investor's own networks and connections to further the internationalisation of the portfolio company. Some of the respondents elaborated how they went about this and said that they gave their contacts' names to their portfolio firms or recommended these to their own contacts. These contacts included customers, suppliers, marketing people, or other financiers.

Table 6. Different means to promote internationalisation (one respondent per organisation)

	Business angel	Public sector VC	Private sector VC
N	20	8	19
No mention	45 %	60 %	16 %
Using VC's network of contacts	35 %	40 %	84 %
Providing knowledge	5 %		
Providing training		10 %	
Encouraging/sounding board	10 %		
Using syndication partners			5 %
Referring to other networks	5 %	10 %	5 %

Only one private sector venture capitalist (5%) specifically mentioned that they used the syndication partners in promoting internationalisation. Nevertheless, we can assume that the networks of the venture capitalist included syndication partners if they had them.

While none of the public sector venture capital organisations indicated that they were proactive in promoting internationalisation, some 5% of the business angels and 35% of the private sector venture capitalist firms did so when they responded to the open question. They mentioned that they travelled with the portfolio firm representatives to visit customers or to promote marketing in general, or they sought new contacts if they lacked these, and were especially active when looking for new financiers. Most of the venture capital firm representatives, however, were less active and only provided names or contacts.

Table 6 includes activities such as the provision of knowledge, training or encouragement to the portfolio firm management in their efforts to internationalise. All these activities demand less input from the investor as compared with tapping their contacts and networks.

The way in which venture capital organisations developed their capabilities in internationalisation was explored by an open question. Aside from very short answers about networking, some answers referred to existing good connections and networks between the top players in the investment target areas in the world. However, many respondents elaborated on their answers by mentioning high tech conferences and fairs, contacts with key companies in the target business areas, contacts with other investors, and participation in investor meetings.

The findings did not support the major hypothesis of this study that business angels would be more active than the other two groups in *ex post* attention to internationalisation. The findings indicated that the private venture capital firms were the most actively engaged in their portfolio firms, more actively than business angels, while public sector venture capital organisations were the least actively engaged in their portfolio firms.

6.3. Internationalisation: findings of the Biotechnology study

For the biotechnology industry, we do not have information on the investment criteria. We will therefore pay attention to *ex post* activities and those particularly related to internationalisation. It is noteworthy that surveys and studies with biotechnology firms, carried out at ETLA, have highlighted that 80 % of the turnover of the dedicated biotechnology firms was acquired from exports and practically all of them intended to export if they already did not do so (Luukkonen et al., 2004, 20). This is because the domestic markets in Finland are small and the markets of biotechnology products are global. The product development costs are very high and they cannot be expected to be covered by domestic sales. Therefore, ever since their establishment, small biotechnology firms have aimed at international markets (*ibid*., 20). Their export markets are in most cases in the European Union, but also quite often in the United States or Canada, even Asia (*ibid*., 23).

As in the venture capitalist study, this study explored the investors' involvement in the internationalisation of the firm and its markets. Table 7 summarises these findings. It is first to be noted that generally, as compared with the venture capitalist study, CEOs of biotechnology firms much less often perceived that their investors were acting as a sounding board to the set of questions, not only those related to internationalisation, but to all aspects. This can be interpreted to reflect first the tendency for each actor to emphasise their own role, as found by Timmons and Sapienza (1992) and Fredriksen et al. (1992) (compare the Appendix Figures 1-2). We nevertheless have to remember that biotechnology may be a special case and that the investors in this industry differ from venture capital investors in general.

Table 7. VC involvement in internationalisation

	Informal VC	**Public Sector VC**	**Private Sector VC**
N	**11**	**14**	**12**
Sounding board	64 %	29 %	33 %
Responsible for implementation	0 %	0 %	8 %
Among dimensions where VC has been most useful	27 %	7 %	8 %

When we compare the three investor groups with each other in Table 7, in contrast to those in Table 5, private sector venture capital firms did not turn out to be the most active or most engaged. Instead, business angels most often served as a sounding board in questions related to internationalisation and their contribution was considered to be useful more often than that of the other two groups. This is in line with the general findings of the biotechnology VC study where business angels turned out to be the most engaged in informal contacts and 'coaching' their portfolio firms (section 6.1 above). Business angels were perceived to be more active than other investors in providing business contacts and developing the product or service, too (Luukkonen, Maunula, 2007b). Public and private sector venture capital organisations appeared to be equally active. However, only a few private sector venture capital organisations reported that they would have been responsible for implementation.

The findings of the biotechnology study thus supported our major hypothesis in that business angels would be most active in *ex post* monitoring and 'coaching' of their investee firms.

7. Conclusions

Drawing on previous theoretical and empirical research, this study hypothesised that private sector venture capital firms and public sector venture capital organisations are active especially in *ex ante* contracting, while business angels are active in *ex post* monitoring and ‘coaching’ activities with regard to promoting the internationalisation of their portfolio firms. The findings of the study did not, however, fully corroborate these hypotheses. First, different investor types had distinct patterns of behaviour that differed somewhat from the hypotheses, as reported in section 6.1, namely that private sector venture capital firms followed a double strategy by being active in both *ex ante* contracting and *ex post* monitoring and ‘coaching’, while public sector venture capital organisations were active in relative terms in *ex ante* contracting and business angels in *ex post* monitoring and ‘coaching’. Since this study was not able to obtain much information about the promotion of the internationalisation of the portfolio firms through *ex ante* activities, our observations are mostly based on information of the *ex post* patterns of behaviour of the different venture capital organisations.

It turned out that according to the venture capitalist (VC) survey findings, private sector venture capital firms were systematically most active in internationalisation *ex post* by ‘coaching’ their portfolio firms quite proactively. Furthermore, they assessed their usefulness in this respect to be higher than the other groups (Table 5). They also syndicated most often with cross-border venture capitalists thus adding to their resources through expanding their networks of experts. The little we could find out about their strategy *ex ante*, both private and public sector venture capitalist firms were relatively speaking more active than business angels, as the theory would predict. Public sector venture capitalist organisations were systematically the least active group in *ex post* monitoring and ‘coaching’.

All the above observations concerned the survey data on venture capital organisations investing in all industries. According to the biotechnology CEO study, business angels were much more active than the other groups by supporting and ‘coaching’ their portfolio firms in internationalisation, as was predicted by theory, and the contribution by business angels was deemed to be useful much more often than that by the other investor groups. Private sector venture capitalists were only somewhat more active than public sector venture capital organisations, and both groups were well behind business angels both in their activity levels and usefulness.

The reasons for the divergent findings for biotechnology could be traced to a few factors. Of course, first, we need to remember that it was a question of gathering assessments from diametrically opposite groups, both of which would be inclined to overemphasise their own contribution (cf. Timmons and Sapienza, 1992; Fredriksen et al., 1992; see appendix figures 1-2 for the dramatic difference in the overall estimation of active input). This, however, applies to all groups. We have further to take into account that in biotechnology venture capital activity, private sector venture capital firms were heterogeneous and the majority of them were quite small. Only one major venture capital company, specialised in this industry, was active in investing in biotechnology. Nonetheless, the majority of the private-sector venture capital companies were members of the Finnish Venture Capital Association and could thus in principle be expected to be professional in venture capital activities in general. However, the public sector venture capital investors had one major organisation, Sitra, which has acquired quite a lot of expertise in the area, and probably was performing better than the more heterogeneous group of public sector investors in the venture capital investor study.

Even though the two studies produced somewhat conflicting findings, both are broadly speaking within the predictions of theory: business angels concentrate their efforts on *ex post* monitoring and ‘coaching’, while the two other groups devote relatively more attention to *ex ante* contracting. According to the VC study, the private sector venture capitalists performed over the expectations as predicted by the model, since they paid attention to both *ex ante* contracting and *ex post* monitoring and ‘coaching’. They also had better networks and were involved in cross-border venture capitalist syndication networks more often than the other two groups. Therefore, we may tentatively conclude that given that private sector venture capitalist firms are big enough and have sufficient activities, they will probably provide more value-added to their portfolio firms in internationalisation than other investor groups.

There is an important caveat in this study. It is based on the assumption that the position of the venture capitalist in the principal-agent relationship is decisive for the type of involvement in the portfolio firm. With regard to internationalisation, the competencies and abilities of the venture capitalist to ‘coach’ may play an equally or even more important role in the choice of strategy. Given the relatively young age of the venture capital industry in Finland (about ten years), many organisations active in venture capital may not have gained enough experience in this function. Furthermore, if they are not well networked, they may lack fundamental knowledge of the target markets, which can be vital for the achievement of some of the targets of the investee firm in becoming international. For instance, as Hursti and Maula (2006) have noted, foreign equity investors seem to be more able to bring about cross-country targets, such as initial public offerings in a foreign stock market, reflecting the fact that acquaintance with the target market is vitally important for this kind of operations. It is furthermore reasonable to assume that different types of venture capital organisations may have varying abilities in promoting the internationalisation of an investee firm.

Another question concerns the kind of work experience that managers of funds need in order to be able to act competently to promote the internationalisation of their portfolio firms. This study has drawn attention to partially different findings in the biotechnology study as compared with the more general VC study. These differences can be related to the nature of the datasets and the differences among the backgrounds of the investors in each dataset. Nevertheless, they can also reflect differences in the behaviour and needs of target industries. Too little is known about these factors. The competencies and abilities of investors as well as the influence of the target industry constitute important avenues for future research in the role of venture capital in internationalisation of their portfolio companies.

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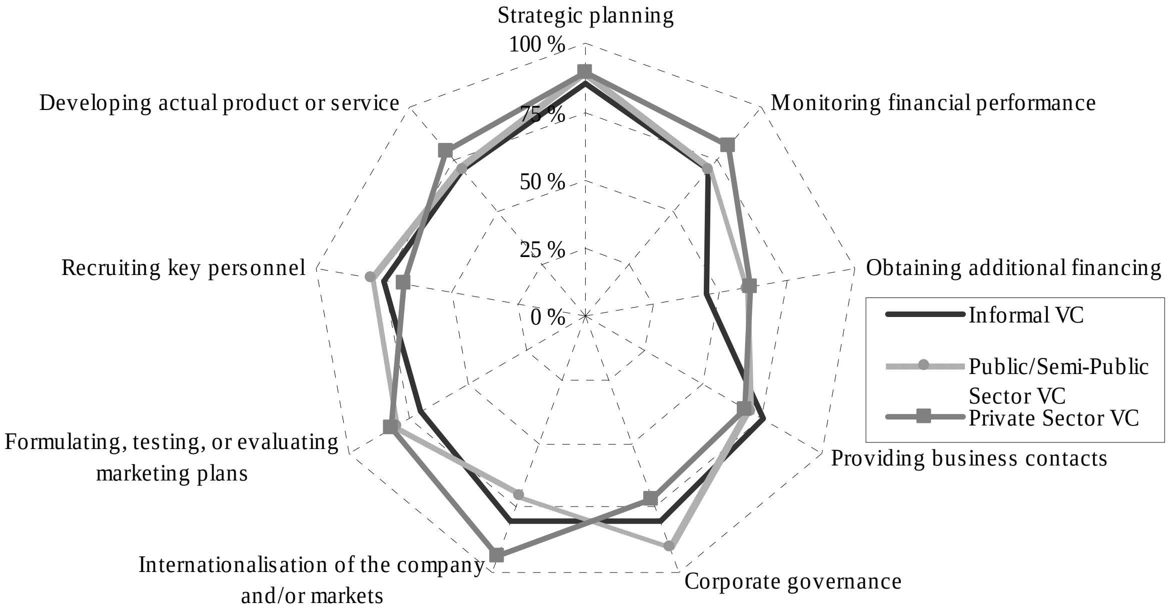
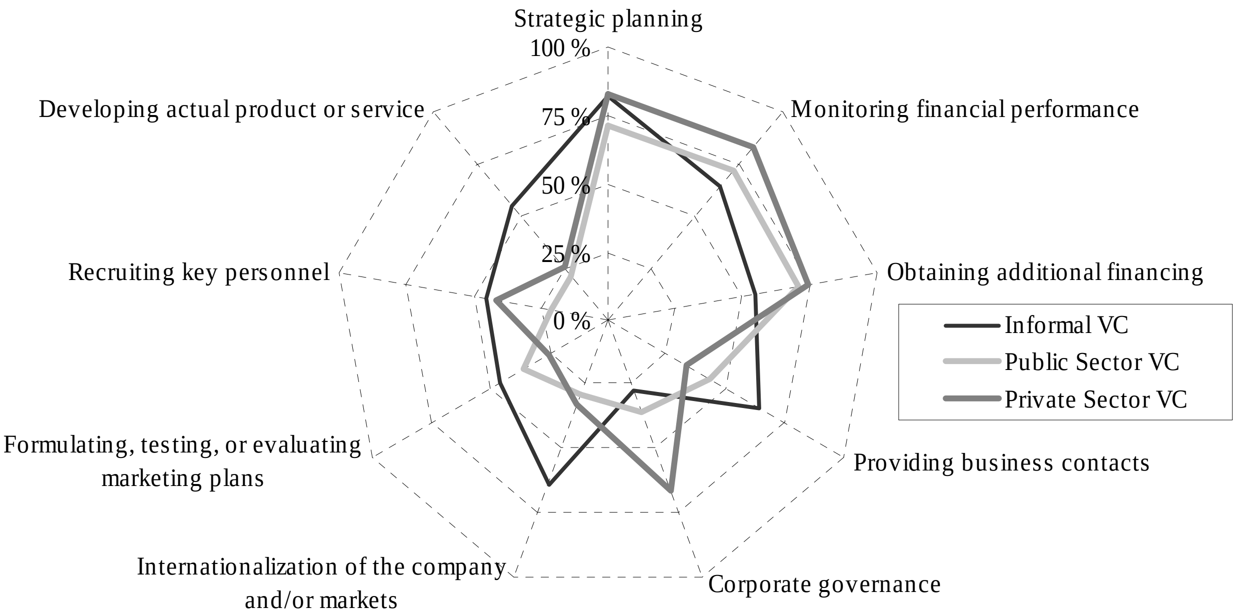
Appendix figures



Appendix Figure 1. Activity areas where the VC serves as a sounding board (multiple responses)



Appendix Figure 2. Areas of activity where the lead investor serves as a sounding board to management team. Percentages are based on the number of companies in each VC category that responded that their lead was serving as a sounding board in one or more area of business.

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