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**Finnish Industry Investment Ltd:
An International Evaluation**

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Abstract <p>The Finnish Industry Investment Ltd. (FII) is a government owned investment company, which started its operations in 1995. Its core purpose is to stimulate the development of the Finnish venture capital industry particularly in those areas where market failure has constrained the supply of equity finance to high potential, small and medium sized Finnish enterprises. FII invests in young firms 'indirectly' via participating as a cornerstone investor in the new funds of venture capital firms, as well as investing 'directly' into Finnish firms.</p> <p>In common with other European venture capital industries, the Finnish industry grew very rapidly between 1995–2000. However, the Finnish market is still very small and under-developed by international standards, particularly, if the high knowledge intensity of the Finnish economy is taken into consideration.</p> <p>The limited availability of early stage (seed and start-up) venture capital to attractive young firms is the most urgent and persistent failure in the Finnish venture capital market. The primary policy goal of FII has been to address this problem by helping to set up, develop, and provide finance to venture capital funds investing in seed and start-up firms. However, FII has also had a requirement imposed by government to operate profitably. This has led the organisation to seek later stage investments in order to meet the profitability target. FII's focus on profitability goal and its practice of investing on equal terms with private investors has led to a reduction in its effectiveness in resolving the market failure in early stage venture capital. FII's reduced impact has occurred at a time of worsening market conditions when the need for effective government intervention is highest.</p> <p>The main conclusion of the evaluation is that FII should focus its operations more directly on resolving remaining market failures in the supply of early stage venture capital. The evaluation also argues strongly that FII should concentrate on an indirect operating mode whereby it finances, and incentivizes by asymmetric profit sharing, private investment professionals to set up venture capital funds targeted at seed and startup stages. The same indirect approach should also continue to be used to resolve market failures in the provision of regional venture capital. Additionally, FII has a valuable role in helping channel foreign capital, including finance from EU, to Finnish early stage venture capital funds. Direct investments by FII to target companies should be avoided as an operating mode.</p> <p>Given the FII's responsibility for addressing market failures, its performance measurement and governance systems should fully reflect this primary goal. The evaluation also finds that FII's communication and collaboration with other actors in the Finnish innovation system should be improved. In addition to the need for improved coordination between the government special financing agencies, there is also a need for more effective direction and coordination of policy at the highest executive level, for example in ensuring the integration of enterprise policy and general financial policy to enable significant improvements in the environment for growth-oriented entrepreneurship in Finland.</p> <p>MTI contacts: Industries Department/Pertti Valtonen, tel. +358 9 1606 3614</p>		
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Foreword

The Ministry of Trade and Industry commissions regularly an independent evaluation on the institutions under its administrative branch. This evaluation aims to objectively assess the importance, efficiency and effectiveness of the Finnish Industry Investment Ltd (FII).

The Ministry of Trade and Industry invited Dr. Markku Maula from the Helsinki University of Technology and Professor Gordon Murray from the London Business School to carry out the evaluation of the FII.

The objective of the evaluation was to find answers to the following questions:

What kinds of conclusions could be made on the relevance of FII's activities in respect of the market needs?

Has FII reached its objectives set by the law, the Government and the Ministry?

Has the direct supply of State capital been the right way to achieve the objectives set, compared to other alternative instruments?

The quality of management – has it been efficient and effective?

Has the company utilised well external resources both in Finland and internationally?

Are the practices of the company equal to those used in the private sector with regard to possible market distortions?

Has the corporate governance been arranged in a proper way and have the objectives set by the Ministry been relevant?

To support the evaluation, the Ministry set up a steering group representing the Venture Capital markets, investors and industries. The group was chaired by Mr. Matti Pietarinen from the Ministry of Trade and Industry and composed of Mr. Raine Vairimaa, Ministry of Finance, Mr. Ari Tolppanen, Capman Ltd., Mr. Martti Porkka, Sampo Ltd., Mr. Elmar Paananen, Eimo Ltd. and Mr. Jouni Keronen, Fortum Corporation. The group was supported by Mr. Pertti Valtonen and Mrs. Ritva Hainari from the Ministry of Trade and Industry and Mr. Juha

Marjosola from the FII. However, the evaluation report represents the opinions of the evaluators only.

The Ministry of Trade and Industry wishes to thank the evaluators for their report. As a result of the evaluation, the Ministry of Trade and Industry believes that the FII receives valuable information and feedback for further development of its activities and the Ministry obtains an outside expert's view of the institution's utility, outcomes and relevance. Also, the evaluation most certainly adds value to the annual result-oriented supervisory process between the Ministry and the FII.

Helsinki, 17 January 2003

Erkki Virtanen
Permanent Secretary
Ministry of Trade and Industry

Acknowledgements

In this evaluation, we have received valuable support from many individuals and organizations.

First, we want to thank Mikko Jääskeläinen who has worked part of the time in our team as an analyst providing valuable support in the numerous analyses carried out in this evaluation. We would also like to thank Riikka Korvenoja and the Finnish Venture Capital Association for providing us with valuable aggregate data on the Finnish Venture Capital market and investments by FII-backed funds. We are also thankful for Dr. Ari Hyytinen of Etlatieto Oy for useful comments and discussions and for providing us with insightful results from his research on the challenges of the Finnish financial system. Professor Erkki Autio and Professor Bill Bygrave have provided us with unique and valuable information from the 2002 Global Entrepreneurship Monitor (GEM). Finnvera and the Finnish Federation of Enterprises have kindly shared their data on bi-annual surveys of Finnish SMEs. Katja Mikkonen of Taloustutkimus Oy provided us with valuable information from the annual market research survey on the Finnish venture capital industry.

A large number of key individuals in the Finnish innovation system have been generous with their time in answering our myriad enquiries. We also want to thank all the Finnish respondents for their rapid and invaluable responses to our survey. The questionnaire was sent to Finnish venture capital firms, science parks, a large number of academics, consultants, institutional investors, direct investees of FII, and the management of other key players within the Finnish innovation system including Tekes, Sitra, Finnvera and all the T&E Centres. The response rate to the survey was exceptionally high at 57%. We want to thank all respondents for their valuable support.

The FII evaluation steering group provided us with helpful advice and both the support and the freedom to ask whatever questions we felt were important for the evaluation. Senior Finnish government officials made themselves available for interview and unreservedly answered questions with candor and honesty. For this sterling support, we are extremely grateful.

The management of FII has supported our evaluation and provided us with all the internal documentation we have asked for. We are indebted to Juha Marjosola and his senior management team for the time and attention they gave in order to answer fully our detailed questions on the operations of FII.

Finally, we would wish to thank the Ministry of Trade and Industry for giving us this interesting and challenging task. In particular, we would like to thank Pertti Valtonen and Matti Pietarinen, who as our contact persons in the evaluation gave us considerable encouragement and support in the project.

Any errors of fact, interpretation, or omission remain the sole responsibility of the two academic evaluators. The two evaluators are solely responsible for the contents and findings of the report.

Markku Maula

Gordon Murray

Table of contents

Foreword	5
Acknowledgements	7
Table of contents	9
Executive Summary.....	11
1 Introduction.....	15
1.1 Finnish Industry Investment Ltd. (FII)	15
1.2 Logic and Objectives of the Evaluation.....	15
1.3 A Comment on the Nature of External Evaluations	16
1.4 Methods.....	17
2 Finnish Venture Capital Market.....	19
2.1 Finnish Innovation System and Financial System	21
2.2 Finnish Venture Capital Market in International Comparison	26
2.3 Market Failures in the Finnish Venture Capital Market	29
2.4 Conclusions	44
3 Finnish Industry Investment Ltd.....	45
3.1 The Development of FII's Objectives.....	46
3.2 Financial Resources	50
3.3 Organization.....	52
3.4 Investments	53
3.5 Impact.....	61
3.6 Collaboration.....	71
3.7 Conclusions	74

4	Government Intervention in Venture Capital	76
4.1	Market Failure.....	76
4.2	New Technology Based Firms.....	77
4.3	Forms of Government Intervention	79
4.4	Enterprise and Competition Policy of the European Commission ...	102
4.5	International Comparison of Government Interventions in Venture Capital.....	109
4.6	The Views of Non-Finnish Policy Makers Regarding the Optimal Modes of Government Intervention to Address Market Failures in Venture Capital.....	111
4.7	Conclusions.....	114
5	Conclusions and Recommendations	121
5.1	Finnish Venture Capital Market.....	121
5.2	The <i>Raison d'Être</i> of FII.....	122
5.3	Performance Measurement	123
5.4	Organization and Rewards	126
5.5	Early Stage Investments.....	127
5.6	Regional Investments.....	128
5.7	Direct Investments	129
5.8	Other objectives	131
5.9	Roles and Collaboration.....	131
	References.....	135
	Appendix 1 Glossary of Terms.....	146
	Appendix 2 Summary of the European Commission's Communication on State Aid and Risk Capital	150
	Appendix 3 Country Summaries	152
	Appendix 4 Stakeholder Survey Questionnaire	170
	Appendix 5 Short Biographies of the Two Evaluators.....	172

Executive Summary

Although the Finnish venture capital market grew rapidly over the last half of the 1990s, it is still very small by international comparisons. The immaturity of the Finnish venture capital market is particularly marked if the high level of knowledge intensity, which characterizes the Finnish industry structure, is taken into consideration.

In terms of market failures, the limited availability of seed and startup stage venture capital is the most persistent and urgent market failure in the Finnish venture capital market. Finnish industry observers almost universally share this opinion. The lack of early stage venture capital has also been the most common and permanent area of market failure in most of the other countries. In some more advanced venture capital markets, the market failure in early-stage venture capital has been recognized already for decades. The severely constrained supply of seed funding in Finland is particularly worrying given that its absence will over time likely limit the supply of high-quality deal flow to later stage investors. Accordingly, market failure in this one critical area can have the potential to hamper the long-term development of a substantial part of the Finnish venture capital and private equity markets. Accordingly, there is an argument for government intervention specifically in the areas of seed and startup stage venture capital.

The primary focus of FII, given in the current legislation and in the decision of the Government, is to stimulate the Finnish venture capital market by addressing market failures particularly in early stage venture capital. However, FII has been burdened with a range of additional and frequently incompatible objectives. As a result, the management of FII has not been able to tackle successfully the worsening market failure in early stage investments. The recent emphasis of FII on direct investments and late stage fund investments does not suggest that the goal of resolving the early stage market failure is currently its key priority. Further, the present operating mode of FII by which it invests in venture capital funds on equal terms (*pari passu*) with private investors does not appear to be effective in resolving this market failure in seed and start-up stage venture capital. Consequently, FII has been losing its focus and effectiveness as a policy tool over the last two years. Given that the *raison d'être* of FII is to help resolve market failures in the Finnish venture capital market system, helping to resolve the market failure in early stage venture capital should remain the highest priority for FII.

FII's operations in developing regional venture capital have been valuable. In comparing the various alternatives for reducing overlap between State agencies supplying regional venture capital, the evaluation of FII suggests that it is in a good position to operate as a regional fund of funds investor transferring best practices from other areas to regional venture capital management companies. FII has also good working relationships with EIF and institutional investors. There is a natural role for FII in continuing operating as a fund of funds investor focusing on market failure areas including regional venture capital funds. However, because of the lack of geographical presence outside Helsinki, the role of FII is better focused on providing centralized, effective financial management via fund of funds operation rather than operating locally in regions. In aspects requiring local presence, FII should collaborate closely with Finnvera's regional network.

Research and international experiences suggest that the government's intervention in the venture capital market on the supply side has the most effective and least distorting impact if it is based on *indirect* rather than *direct* investing. The best practice is based on incentivizing experienced and capable investment professionals to manage State-assisted venture capital funds, which should be financed primarily by private investors. Incentives can best be engineered through asymmetric profit sharing. The incentives should focus on upside leverage (i.e. rewarding for success) rather than downside protection (i.e. underwriting losses in the case of failure). Such an indirect, upside incentive-based approach helps to leverage both private money and provide critical value-added services for the young portfolio firms in the fund.

FII should not get involved in direct investing in client companies. There may be exceptional circumstances when this prohibition should be reappraised. These rare occasions should only be decided by MTI in the light of FII's primary remit. FII's core role should remain as a fund of funds investor. The management of FII should continue to build expertise in this area. If circumstances arise where national importance can be demonstrated, FII should contain its role to that of temporarily coordinating the management of the external skills and expertise needed to complete the necessary transactions. FII should not build a new direct investment organization for one-off contingencies. Indeed, there is a danger that given the scarce resources of the organization, contingent, one-off operations will serve to weaken the more important and longer-term objectives of the organization.

Supporting the development of new technologies of national strategic importance is a key responsibility for a government. FII may well have a role here directing State resources into focused venture capital funds, which invest in these novel

and desired areas. However, the determination of the technologies of strategic importance to Finland should not be the responsibility of FII. Rather, decision-making on such technology strategies should be made at the highest policy level. Such decisions must necessarily leverage available knowledge from other key actors in the innovation system including Tekes and Sitra. Once an agreement on areas of future strategic technology interest is determined, government can decide whether or not FII has an appropriate investment role via a fund of funds model.

One valuable role of FII has been its support in helping channel EU funding to Finnish venture capital funds. Given the limited supply of domestic risk capital, immature venture capital market, and the challenges of young Finnish firms in internationalizing, an important part of the development of the venture capital market for FII in the future could be supporting the Finnish venture capital funds in attracting capital from foreign investors.

The performance measurement of FII should be improved to enable a better assessment of the organization's ability to address and resolve policy goals consistent with its purpose. Such an evaluation system cannot be put in place until the objectives and priorities of FII are both clear and agreed among its stakeholders. Once these goals are clear, the performance of FII investments in industry policy terms can be measured more accurately. This should include monitoring the investments by FII-backed venture capital funds in the identified market failure areas. An improved performance measurement of the policy effects would be of benefit to both FII management and MTI as the responsible ministry.

If meeting a specific financial return target continues to be a key requirement placed on FII, it should be measured over a sufficiently long period of time in order to reflect more fully the cyclical changes in an economy. Longer-term perspective would enable FII to focus on its remit of resolving market failures particularly when the economic conditions are poor and FII's intervention is most needed. It should be noted that, at the present time, the annually monitored, financial performance criterion placed on FII is inimical with the organization pursuing its early stage investment remit. The imposition of this single performance criterion has in large part contributed to the confusion of objectives, which appears endemic in this organization.

At present the governance system overseeing FII appears somewhat weak and often of questionable effectiveness. This, in turn, has the consequence that senior management of FII are offered little guidance in the pursuit of their

responsibilities. This lacunae has enabled management to prioritize goals which have increasingly diverged from the primary objectives placed on FII by the decision of the Government in February 2000. In extremis, this agency of government has started to develop policies, which arguably reflect individual personalities and interests rather than the highest priorities of the stated government policy.

The coordination between the key players of the Finnish innovation system should be improved. At the margin, there is real confusion expressed by industry observers as to the proper authority, roles and relationships of the main actors including FII, Sitra, and Finnvera. Top-level coordination between the players is needed to improve the effectiveness of the innovation system and to help resolve emerging problems at the boundary areas of the State agencies. This coordination needs to be monitored at the highest level of government given the different reporting structures (MTI and Parliament) of these organizations. The recently instituted meetings between the key executives of Sitra, Tekes, Finnvera, FII, T&E Centres, Finpro and the Finnish Foundation of Innovations have started this process, but it is as yet too early to judge the outcomes of this sensible (although overly delayed) initiative.

Further, effective enterprise policy requires coordinated actions not only between several government special financing agencies but also in more fundamental functions such as taxation, regulation, and education given their importance as preconditions for entrepreneurial activity. Without sufficient measures taken to improve the incentives and other enabling infrastructure for high-growth entrepreneurship, government supply of venture capital can have only a limited impact on growth-oriented entrepreneurship. Effective enterprise policy requires a clearly identifiable and responsible champion at the highest level of the government capable of influencing and driving the development of the environment for entrepreneurship in all key areas.

1 Introduction

1.1 Finnish Industry Investment Ltd. (FII)

Finnish Industry Investment Ltd (FII) was established in 1995 to invest the proceeds from the privatization of the state-owned companies in order to accelerate the availability of risk capital for small and medium-sized companies (SMEs). Finnish Industry Investment Ltd is a wholly government-owned investment company. It is engaged in equity investments and invests in venture capital funds, private equity funds and directly in selected target companies. FII's central role is to assist in the formation and growth of innovative young firms in Finland via support measures directed towards stimulating a greater supply of equity finance. The organization is administered by the Ministry of Trade and Industry.

1.2 Logic and Objectives of the Evaluation

This report documents the analyses and findings of an international institutional evaluation of Finnish Industry Investment Ltd carried out by Dr. Markku Maula, Helsinki University of Technology (HUT) and Professor Gordon Murray, London Business School (LBS). This evaluation was carried out over the last six months of 2002.

The purpose of this evaluation is to objectively assess the importance and effectiveness of Finnish Industry Investment Ltd as an agent of Finnish public innovation policy given its *evolving* mandate by government over the period 1995–2002. In so doing, the evaluation has two overall objectives: i) to provide the senior management of Finnish Industry Investment Ltd and its sponsors in the Ministry of Trade and Industry (MTI) with independent analysis, information and feedback for the future direction and development of its present activities; and ii) to give the sponsoring Ministry an outside, expert view on the institution's operational goals, effectiveness and relevance. The evaluation has therefore aimed to complement and provide the additional rigor of an external, independent assessment to the annual supervisory process of the Finnish Industry Investment Ltd.

The focus of the evaluation addresses one central task, namely, a rigorous and objective assessment of the degree to which the company has fulfilled its

economic and societal functions as presently envisaged by the FII's sponsors, the Finnish Government. In addition, it is expected by the evaluation's government sponsors in MTI that the external evaluators will suggest possible changes to the objectives and operation of FII in the event of finding any major problematic issues with the current systems.

1.3 A Comment on the Nature of External Evaluations

The task of any evaluation fundamentally depends on the quality and accuracy of the information available to the evaluators. Responses are elicited from a range of actors involved directly or indirectly with the organization under examination. Remits of organizations evolve over time often as a response to circumstances outside the knowledge or comprehension of those involved at the time of initially setting up the organization. Often, as additional tasks are added or existing objectives changed and amended, the organization develops a set of working practices sometimes quite distinct from that originally envisaged. An appropriate and objective evaluation has to fully understand both the reasoning and the consequences of the myriad pressures and environmental changes to which any organization is subjected. Further, in any evaluation exercise, it is very likely that inconsistencies between the organization's declared remit and its actual operation are found. The nature and implications of such discontinuities can only be properly understood with the direct assistance and candid participation of those senior personnel in the organization(s) who have executive responsibility. It would be very easy, and often more comfortable, for such persons if certain issues were not revealed. Evaluations have to address both the strengths and the weaknesses of the organization under scrutiny. *Therefore, it is critically important to state very clearly that the external evaluators have no intention or interest in negative criticisms of individual organizations or persons. The purpose of the assessment is to rigorously and fairly describe and analyze the circumstances of the Finnish Industry Investment Ltd., as it presently exists.* From this analysis, a series of recommendations will be provided on which FII and its governmental sponsors may choose to act. The value of the analysis and the recommendations can only be fully effective if the exercise is conducted solely with the legitimate and pragmatic purpose of improving existing policy actions.

1.4 Methods

The evaluation is based on a number of information sources. We started by collecting and reviewing the internal documentation of FII and the Ministry of Trade and Industry and the Ministry of Finance as well as Finnish and international literature and other documentation on government venture capital and innovation and enterprise policy. In our evaluation, we interviewed 42 experts with the average interview lasting approximately one hour. Some of the experts as well as FII management were interviewed on several occasions. The respondents included major stakeholders of FII as well as a number of internationally renowned experts in the area of designing effective government special financing programs to resolve market failures in venture capital provision. In addition to interviews, we conducted a survey, which was sent to 134 Finnish stakeholders of FII including all Finnish venture capital firms, a large number of consultants and institutional investors, government agencies such as Sitra, Tekes, Finnvera, all regional T&E Centres, all Finnish science parks, and a large number of Finnish academic experts in entrepreneurship and corporate finance. The response rate of the survey was exceptionally high, at 57%. The FII stakeholder survey respondents are described in Table 1.

Table 1. FII stakeholder survey respondents

Number of survey questionnaire recipients	134
Returned survey questionnaires	
FVCA members (typically managing partners of Finnish VCs, excluding Sitra and FII)	22
Industry experts (institutional investors, consultants, FII direct investees etc.)	12
Government agencies (top management of Sitra, Tekes, Finnvera, T&E Centres, etc., excluding FII)	20
Academic experts (Entrepreneurship & corporate finance professors etc.)	14
Science parks (CEOs)	8
Total number of returned survey questionnaires	76
Share of survey questionnaires returned	57%

The survey questionnaire is enclosed in as an appendix 4. In addition to our own survey data, we were able to benefit from several other earlier survey studies carried out in Finland by both academics and practitioners.

1.5 Key Definitions

Table 2 defines the key terms used in the report. Other definitions are introduced in a glossary of terms in the appendix 1.

Table 2. Key definitions

Term	Definition
SME – Small and Medium Sized Enterprises ¹	The category of small and medium-sized enterprises (SMEs) is made up of enterprises which have fewer than 250 occupied persons and which have either an annual turnover not exceeding 50 million euro, or an annual balance total not exceeding 43 million euro.
Venture capital	Professionally managed monies co-invested with the entrepreneur to fund an early stage (seed start-up) or expansion venture. Offsetting the high risk the investor takes, is the promise of high return on the investment. (EVCA)
Early-stage (seed and start-up)	Seed and start-up stages of a business. (EVCA definitions) <ul style="list-style-type: none"> • Seed: Financing provided to research, assess and develop an initial concept before a business has reached the start-up phase. (EVCA) • Start-up: Financing provided to companies for product development and initial marketing. Companies may be in the process of being set up or may have been in business for a short time, but have not sold their product commercially.
Private equity	Private equity provides equity capital to enterprises not quoted on a stock market. Private equity can be used to develop new products and technologies, to expand working capital, to make acquisitions, or to strengthen a company's balance sheet. It can also resolve ownership and management issues. A succession in family-owned companies, or the buy-out and buy-in of a business by experienced managers may be achieved using private equity funding. Venture capital is, strictly speaking, a subset of private equity and refers to equity investments made for the launch, early development, or expansion of a business. (EVCA) In this report, we use 'private equity' to refer to later stage investments meaning other than seed-stage, start-up-stage, and expansion-stage investments.
Regional investment	Investments undertaken in regions outside the main metropolitan and capital centers with commonly both an economic and a social objective
Risk capital	The European Commission defined (in SEC (1998) 552 final of 31 March 1998)) risk capital as equity financing provided to companies in their start-up and development phases.

1 European Commission, 2002d, *Definition of small and medium-sized enterprises (SMEs)*, The Commission of the European Communities, Accessed: 1.12.2002, <http://europa.eu.int/comm/enterprise/consultations/sme_definition/consultation2/index_en.htm>.

2 Finnish Venture Capital Market

According to the statistics of the Finnish Venture Capital Association, the venture capital market developed rapidly in the second half of the 1990s (Figure 1). In the four-year period between 1996 and 2000, the industry's value and number of investment grew annually by 47% and 32%, respectively. Even the drop in investment recorded between 2000–2001 has been small in comparison to most other developed economies. In fact, the number of companies receiving investments actually increased between 2000–2001, which is quite remarkable given international comparisons. Looking at these figures gives a largely encouraging picture of the recent development and the current strength of the Finnish venture capital market.

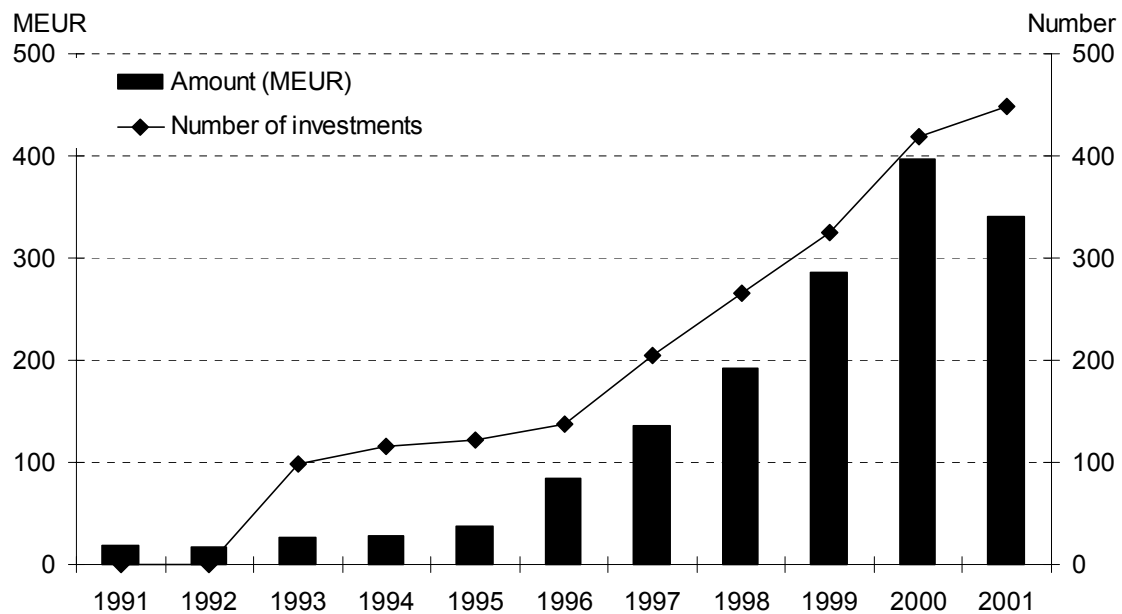


Figure 1. Annual venture capital and private equity investments in Finland 1991–2001

However, despite the Finnish venture capital market experiencing strong growth to the end of 1990s, the size of the venture capital market in relation to GDP was

still very small even at the peak year of 2000.^{2 3} This low (i.e. below European average) GDP share of venture capital financing is worrying particularly because Finland is considered a high-technology country. This status would suggest that the venture capital share of GDP in Finland should be above, rather than below, the European average. (Figure 2).

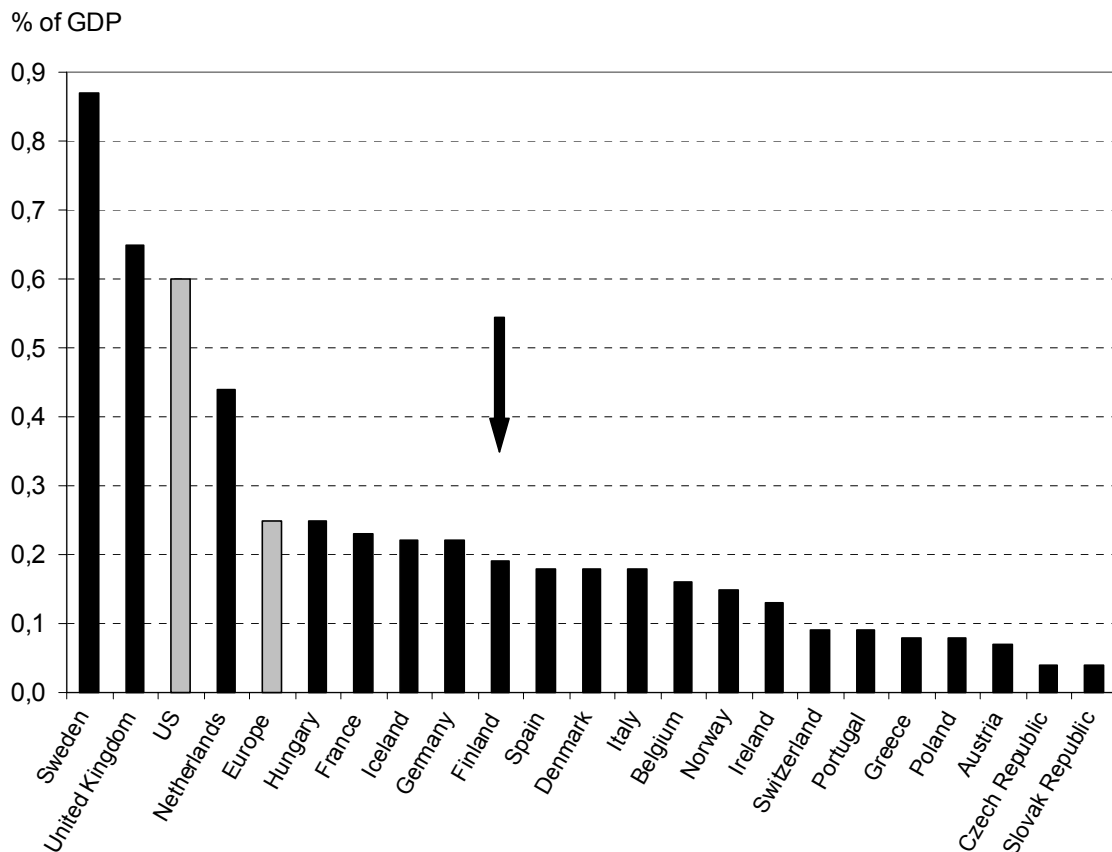


Figure 2. Venture capital and private equity investments as a percentage of GDP in Europe and United States in 2001⁴

2 Hyytinen A. and Pajarinen M., 2001, *Financial Systems and Venture Capital in Nordic Countries: A comparative Study*, Etla Discussion Papers No. 774, The Research Institute of the Finnish Economy, Helsinki.

3 Arenius P., Autio E., Kovalainen A., and Reynolds P. D., 2001, *Global Entrepreneurship Monitor 2001 Finnish Executive Report*, Center for Technology Management Research Reports 1-2001, Helsinki University of Technology, Espoo.

4 Source: EVCA statistics 2002

In a deeper analysis of the Finnish venture capital market, it appears that the availability of expansion-stage venture capital is relatively sufficient for the amount of good quality deals coming to expansion-stage venture capital investors. The problem, however, is that the amount of high-quality expansion-stage deals is relatively low. The scarcity of early stage (seed stage and start-up-stage) financing might be one reason for the lack of high quality expansion stage deals. Because there is very little competitive early-stage financing available, many potential entrepreneurs will not start a new company, which they might do if the availability of seed and start-up funding were better. There was nearly unanimous agreement among the respondents of our survey and interviews that there is an important market failure in seed-stage venture capital in Finland. 83% of the survey respondents considered that government should increase its involvement in seed stage financing. The market failures in the Finnish venture capital market will be discussed in more detail in later chapters.

2.1 Finnish Innovation System and Financial System

Figure 3 gives a graphic presentation of the Finnish innovation system. While it is certainly difficult to position various organizations accurately, this mapping by Tekes gives an illustration of the range and relative size of actors in the Finnish innovation system and the multiple public/private linkages that exist. The graph also incidentally emphasizes the need for communication and co-ordination if effort is not to be wasted.

Innovation system - resources and funding in 2000

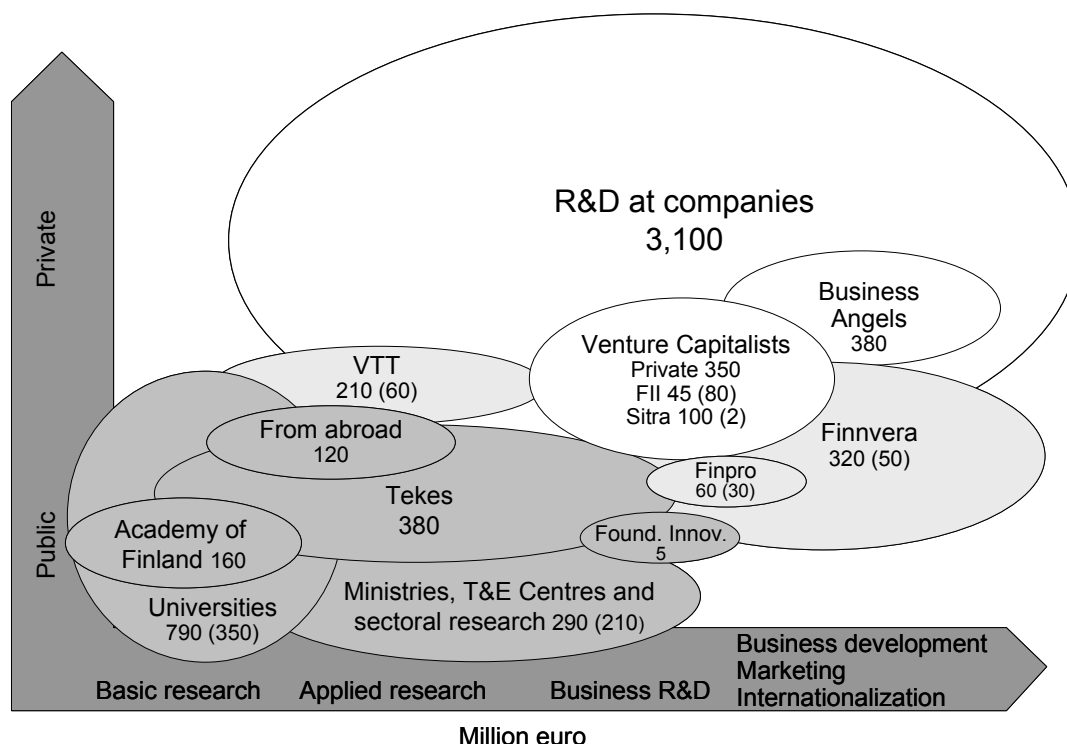


Figure 3. Positioning, resources, and funding of key players in the Finnish innovation system, 2000^{5 6}

2.1.1 Government Institutions

The State agencies with their enterprise support roles closest to FII are Sitra, Finnvera, and Tekes. Each of these organizations are involved in the financing of SMEs.^{7 8} It is interesting to note the overlapping roles of Sitra and FII in the mapping in Figure 3, which also reflects the views of our interviewees. Both organizations have played a dual role as funders of VC funds and as direct investors in young companies.

5 The figures describe the total resources of the mentioned organizations in 2000. The figures in parentheses describe the funding from State budget. The funding of Tekes, the Academy of Finland and the Foundation for Finnish Inventions is provided nearly totally from the State budget.

6 Tekes, 2002, *Tekes Annual Review 2001*, Tekes, National Technology Agency.

7 Hyytinen A. and Väänänen L., 2002, *Government Funding of SMEs in Finland*, The Research Institute of the Finnish Economy, Helsinki.

8 Centre for Economic and Business Research, 2001, *Seed Capital in the Nordic Countries: Best Practice*, Nordic Industrial Fund, Copenhagen, Denmark.

As a government agency in the venture capital sector, FII has acted predominantly as a fund of funds investor since 1995. However, it has recently increased its involvement and interest in direct investments. The decision to invest and the related valuation and negotiation issues have been undertaken by FII's small management team. Sitra has been involved in both fund of funds investments and direct investments, with the emphasis being increasingly in direct investments. Sitra has developed specialist investment teams in both the information technology sector and the life sciences sector.^{9 10} Both Sitra and FII include early stage investments as one focus of their activities. However, both of them also share a similar imperative to remain profitable. In Sitra's case, its investment activity is constrained by the present reduction in financial returns on its endowment resources. The recent severe declines in stock market valuations have had significant and adverse consequences on the ability of Sitra to continue or expand its active involvement in venture capital operations. In FII's case, its governmental mandate requires that it conducts its investment activities profitably. The current interpretation of this requirement means yielding annual returns above the inflation rate. However, the short-term evaluation of financial performance throughout a period of decreasing firm valuations has also obliged FII to move to later stage investments in order to satisfy the profitability goal.

Consequently, the two most important Finnish public investment organizations that share an objective of resolving market failures in venture capital have each been forced to move away from early-stage investments. Their actions have come at the time when environmental conditions have made access to early stage finance extremely difficult for young technology-based firms. In consequence, the incidence of market failure has accelerated for young firms.

The roles of several State agencies, particularly FII and Sitra, and their relationship in the innovation financing process are not very clear. The recent change with FII focusing more on direct investments has made its role increasingly unclear. Neither FII nor Sitra have managed to effectively act as a counterbalance to the near disappearance of private funds specializing in seed, start-up and other early stage investments. The consequence is a major reduction in

9 Sitra, 2002, *Annual Report 2001*, Sitra, Finnish National Fund for Research and Development, Helsinki.

10 Vihko R., Castells M., Georghiou L., Jalkanen S., Meyer-Krahmer F., Vuokko P., and Gröhn M., 2002, *Evaluation of Sitra 2002*, Sitra, Helsinki.

sources of finance available to early-stage Finnish high-tech companies.

2.1.2 Venture Capital Investors

In Finland, there are currently around 40 active venture capital management companies. The oldest of these fund managers have migrated to a clear focus on later stage deals. A number of new fund managers entered the market in 1999–2000 with a specialist focus on the rapidly growing earlier stage market. Recently, as a result of universal and downward market corrections, particularly in technology-related stocks, most of these players have dramatically reduced their early stage investments. Some of these early stage investors have shut down their investment activities completely. Some others have tried to move their focus to later stage deals. The reason for new entrants to move to later stage investments is that they need to be able to make profitable exits in order to build a track record. Without an attractive track record, they cannot raise a subsequent new fund from demanding institutional investors. These trends are not unique to Finland. The rapid commitment to early stage technology investments was followed almost universally in the period 1995–2002 as young and often inexperienced fund managers in Europe, America and beyond entered and then exited the venture capital market. Also the tendency of successful venture capital management companies to grow substantially as they accumulate larger and larger funds is common to most national venture capital industries.

Thus, for early-stage investments, the exit horizon is perceived as being too distant under current market conditions. For all practicable purposes, the initial public offerings (IPO) market is virtually closed to young technology companies for the foreseeable future. But time has a direct and severe cost to a fund whose performance is measured by an annualized internal rate of return (IRR). Later stage, private equity managers have already been able to raise new and larger funds in part as a result of the problems evident in the early stage technology sectors. Large funds have found the execution of small early-stage investments less attractive for both cost and return reasons. Overall, as is nearly universally shown, early-stage investments are difficult and less profitable when compared to

later stage deals¹¹. The greater time spent in completing and monitoring early stage deals, the small amounts of money able to be employed, and very high risk of project failure have each contributed to a general disillusionment with this investment activity. This has led to an acute contraction in the supply of early stage finance and particularly seed capital. This response can be seen as a ‘market failure’ given that private investors do not and cannot value the important societal implications of their actions. Specific peculiarities of the early stage market for technology investments have exacerbated the supply problem, particularly difficulties of information asymmetries. Accordingly, both incumbent venture capital investors and new market entrants have each moved towards later stage investments preferring to ignore the early stage market completely. Given the present and future reliance of the Finnish economy on entrepreneurial young companies in key areas of new technology, the correction of this situation is an urgent priority, as it is for several other European nations.

Many private early stage funds entered the market in 1999–2000, but since then private investors’ activity in the early stage area has nearly disappeared in Finland.

Concerning the Finnish financial system and challenges for the venture capital, several challenges have been documented. One important problem is the illiquid domestic exit market.¹² Liquid exit markets are a requirement for the sustained development of the venture capital market.¹³ ¹⁴Another problem is the small home market for companies. Both of these challenges increase the need for rapid internationalization. The limits of domestic markets and domestic supply of capital increase the importance of foreign venture capitalists and global capital markets. Foreign venture capital investors and cross-border flows of capital have

11 Reference to the annual performance surveys of the European Venture Capital Association or any of its European country members will give ample evidence of this assertion. Also see Burgel O., 2000, *UK Venture Capital and Private Equity as an Asset Class for Institutional Investors*, London Business School and British Venture Capital Association, London.

12 Ali-Yrkkö J., Hyytinen A., and Liukkonen J., 2001, *Exiting Venture Capital Investments in Finland: Lessons from Finland*, Etna Discussion Papers No. 781, The Research Institute of the Finnish Economy, Helsinki.

13 Black B. S. and Gilson R. J., 1999, Does Venture Capital Require an Active Stock Market?, *Journal of Applied Corporate Finance*, 36–48.

14 Jeng L. A. and Wells P. C., 2000, The determinants of venture capital funding: evidence across countries, *Journal of Corporate Finance*, 6, 241–289.

been seen to ease many of the constraints of small economies.^{15 16 17} A recent OECD report notes that: “While such cross-border flows can improve the efficiency of the global venture capital market, they can also reduce the relative importance of domestic supply factors in favor of domestic demand factors, such as creativity, innovation, risk-taking and entrepreneurship.¹⁸ Although Finnish information and communication technology ventures have been able to attract some foreign venture capital investors to invest in them, Finland has not been very welcoming towards foreign venture capital.¹⁹ In many other countries, fiscal and legislative barriers such as double taxation of international institutional investors in domestic venture capital funds have been recognized and removed.

2.2 Finnish Venture Capital Market in International Comparison

Despite the growth of the Finnish venture capital market at the end of the 1990s, the share of domestic venture capital as a percentage of gross domestic product remains very low. According to the latest statistics by the European Venture Capital Association, the relative size of the Finnish venture capital and private equity industry was 0.19% of GDP in 2001, which is less than the European average of 0.25% of GDP.

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- 15 Baygan G. and Freudenberg M., 2000, *The internationalization of venture capital activity in OECD countries: implications for measurement and policy*, STI Working Papers – 2000/7, Organization for Economic Co-operation and Development, Paris.
- 16 Hursti J. and Maula M. V. J., 2002, *Acquiring Financial Resources from Foreign Equity Capital Markets: Examination of the Factors Influencing Foreign Initial Public Offerings*, Paper presented at the 22nd Annual International Conference of the Strategic Management Society, Paris, 22–25.9.2002.
- 17 Maula M. and Mäkelä M. Forthcoming. Cross-Border Venture Capital. In A. Hyytinen, M. Pajarinen (Eds.), *Financial Systems and Firm Performance: Theoretical and Empirical Perspectives*. The Research Institute of the Finnish Economy, Helsinki.
- 18 Baygan G. and Freudenberg M., 2000, *The internationalization of venture capital activity in OECD countries: implications for measurement and policy*, STI Working Papers – 2000/7, Organization for Economic Co-operation and Development, Paris.
- 19 Timgren M., 2001, Ulkomainen pääomasijoittaja suomalaisessa pääomarahastossa - utopiaako?, *Venture-tiedote*, 1/2001, 10–11.

In the recent 2002 *Global Entrepreneurship Monitor*²⁰, a cross-country comparison of venture capital availability in the 39 participating countries placed Finland 13th, when ranking countries according to the volume of classic (seed, start-up, and expansion stage) venture capital investments (Figure 4).

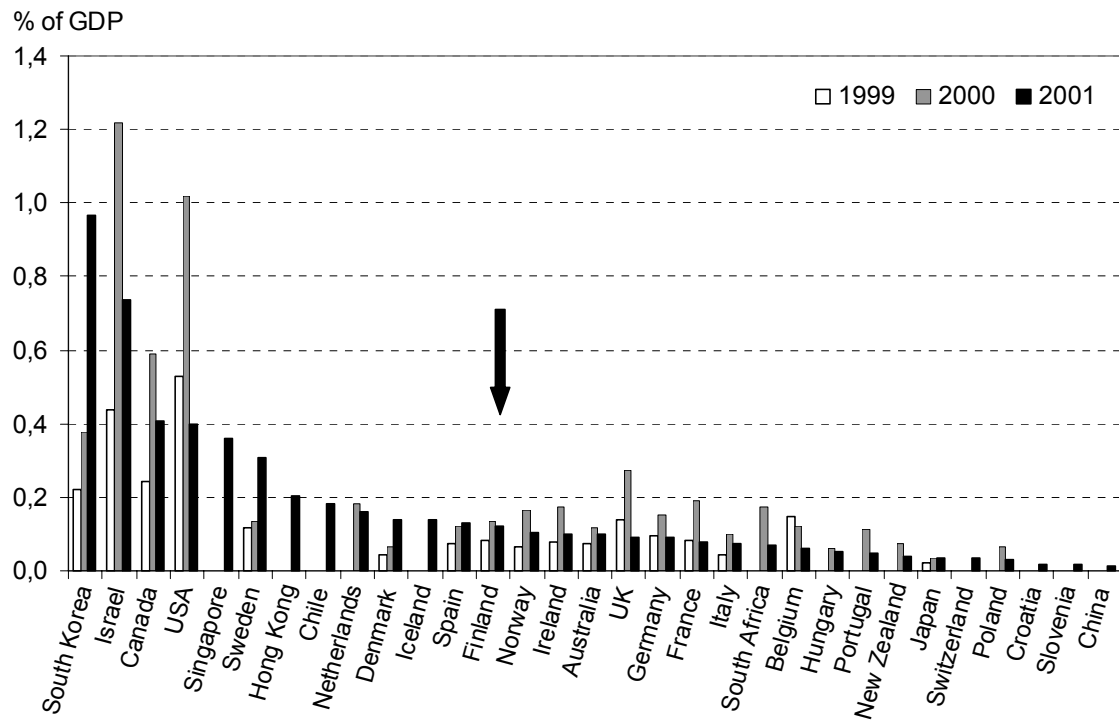


Figure 4. Domestic classic venture capital investments as percentage of GDP in 1999–2001²¹

In the same Global Entrepreneurship Monitor 2002 study, Finland was placed *last*, when ranking the countries according to the share of combined informal and classic venture capital investments as a percentage of GDP in 2001 (Figure 5).

20 Global Entrepreneurship Monitor (GEM) is a longitudinal academic study of the drivers of entrepreneurial activity currently undertaken annually in 39 countries. Venture capital provision is one of several subjects of interest in the overall program of study.

21 Reynolds P. D., Bygrave W. D., Autio E., and Hay M., 2002b, *Global Entrepreneurship Monitor 2002 Summary Report*, Babson College, Ewing Marion Kauffman Foundation & London Business School.

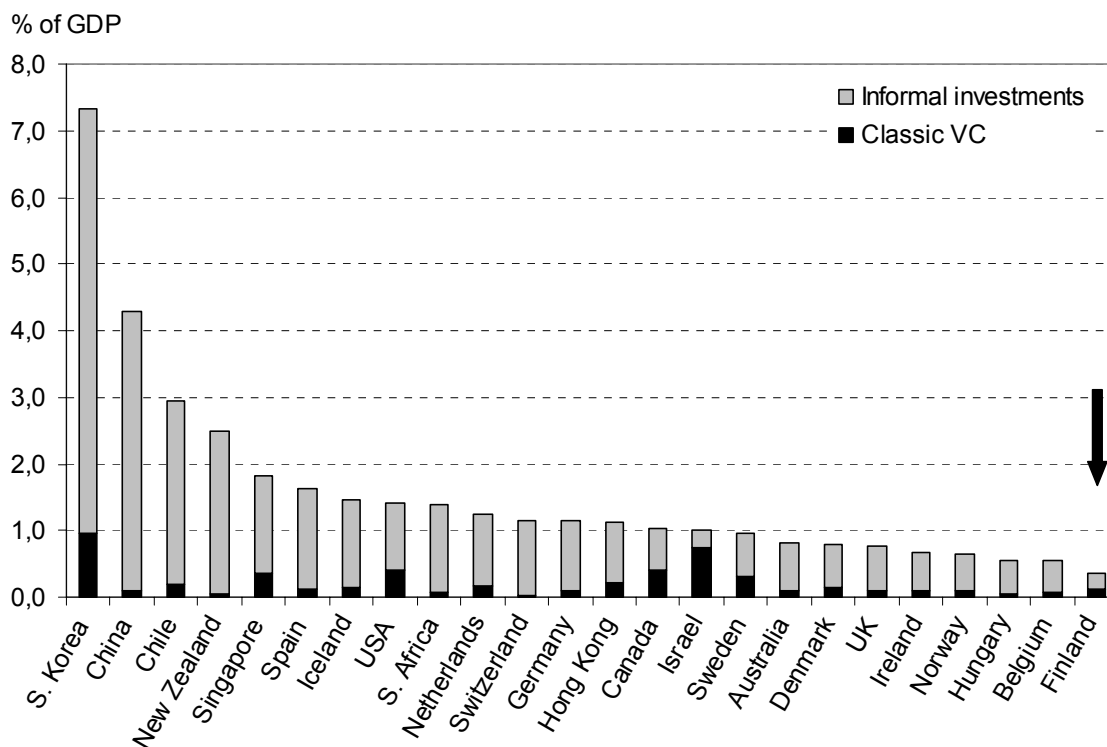


Figure 5. Domestic classic venture capital investments and informal investments as a percentage of GDP in 2001²²

In the 2001 GEM Finnish Executive Summary, the authors recommended, on the basis of expert interviews, that a target level of classic venture capital of GDP in Finland should be 0.5% of GDP.²³ This means that the size of the present venture capital industry should be more than doubled. The recommended 0.5% target percentage of venture capital of GDP would not even be very high in comparison to some other leading high-technology countries. The share of venture capital as a percentage of GDP is an important benchmark concerning the access to early-stage *growth* capital by high-technology companies. It has been identified as a useful benchmark figure in the entrepreneurship policy of the European Commission. Using this benchmark, Ireland, which can reasonably be compared

22 Reynolds P. D., Bygrave W. D., Autio E., and Hay M., 2002b, *Global Entrepreneurship Monitor 2002 Summary Report*, Babson College, Ewing Marion Kauffman Foundation & London Business School.

23 Arenius P., Autio E., Kovalainen A., and Reynolds P. D., 2001, *Global Entrepreneurship Monitor 2001 Finnish Executive Report*, Center for Technology Management Research Reports 1–2001, Helsinki University of Technology, Espoo.

to Finland, has set the target for the size of its venture capital market as 0.8% of GDP by 2006.²⁴

The share of venture capital as a percentage of GDP in Finland is comparatively low and should be increased.

2.3 Market Failures in the Finnish Venture Capital Market

For most Finnish small and medium-sized enterprises (SMEs), the availability of external finance is not a major problem.²⁵ This is not a surprise, because most of the Finnish SMEs are small businesses with no expectation of growing rapidly.²⁶ External financing, particularly venture capital, is mainly relevant for a minority of companies with exceptionally high growth intentions. However, it is just these high-growth ventures that have the highest impact on the growth of the economy and employment. Therefore, the fact that SMEs in general do not have major problems with financing should not lead to a false feeling of comfort that there are no problems in the availability of finance. There are some universal, well known areas of finance for SMEs where market failures are likely to occur. In this chapter we explore some of these segments in more detail.

Since 1995, only a small fraction of Finnish SMEs have reported the lack of financing as *the most serious obstacle* to the growth of the company according to the bi-annual survey of Finnvera and the Federation of Finnish Enterprises. The overall picture for SMEs has not changed significantly during the last couple of years.²⁷ Interestingly, the results of the above research were initially presented to the evaluators as evidence that there is not a financing concern in the Finnish

24 European Commission, 2002g, *Quantitative Targets in Enterprise Policy: Steps towards the Lisbon Objectives*, Commission Staff Working Paper SEC(2002) 1214, The Commission of European Communities, Brussels.

25 Finnvera and the Federation of Finnish Enterprises, 2002, *PK-yritysbarometri, 2/2002*, Finnvera and the Federation of Finnish Enterprises, Helsinki.

26 According to the recent survey of Finnvera and the Federation of Finnish Enterprises, the share of highly growth-oriented firms of the SME population had decreased during the last six months from the normal very low range of 7–9% to an alarmingly low percentage of 5%.

27 Finnvera and the Federation of Finnish Enterprises, 2002, *PK-yritysbarometri, 2/2002*, Finnvera and the Federation of Finnish Enterprises, Helsinki.

economy. It is worth remembering Storey's²⁸ UK finding that in a sample of any 100 new firms over half the total value created by year ten will be produced by approximately four firms. Thus, the status of innovation financing should not be judged by circumstances pertaining to the average firm but by what resources are forthcoming to a nation's most interesting and highest potential young firms.

A closer look at the data is revealing. The situation for SMEs on aggregate level was still relatively positive in August 2002. However, it was noted for the first time in the Fall 2002 survey that growth-oriented SMEs have a strong and significant overrepresentation among SMEs reporting the availability of financing as their most serious obstacle to growth.²⁹ Whereas only 8% of all SMEs reported the lack of financing being *the worst* obstacle to developing the companies, 21% of highly growth-oriented companies reported the availability of finance as their worst problem (Figure 6). While these figures reflect the single worst obstacle to growth, Finnvera and the Federation of Finnish Enterprises found in their analysis that almost half (47%) of the strongly growth-oriented SMEs experienced problems in accessing external finance.³⁰ Also other recent survey research suggests market failures in the financing of technology-based new firms.^{31 32} In short, it is those companies with the highest propensity and potential to grow rapidly that are being most constrained by the present limited availability of finance in Finland.

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- 28 Storey D., Watson R., and Wynarczyk P., 1987, *Fast Growth Small Businesses. Case Studies Of 40 Small Firms In North East England*, Research Paper 67, DTI, London.
- 29 Finnvera, 2002, *Riskirahoitukselle ja uusille rahoitusmuodoille kysyntää - Kasvuhakuisilla pk-yrityksillä ongelmia kasvun rahoittamisessa*, Press release 3.10.2002, Finnvera and the Federation of Finnish Enterprises, Accessed: 1.12.2002, <<http://www.finnvera.fi/index2.cfm?dynamic=uutinen.cfm&lang=1&id=1545>>.
- 30 Finnvera and the Federation of Finnish Enterprises, 2002, *PK-yritysbarometri, 2/2002*, Finnvera and the Federation of Finnish Enterprises, Helsinki.
- 31 Hyytinen A. and Toivanen O., 2002, *Do Financial Constraints Hold Back Innovation and Growth? Evidence on the Role of Public Policy*, The Research Institute of Finnish Economy (ETLA), Helsinki.
- 32 Hyytinen A. and Pajarinen M., 2002a, *Financing of Technology-Intensive Small Businesses: Some Evidence on the Uniqueness of the ICT Industry*, ETLA Discussion Papers No. 813, The Research Institute of the Finnish Economy, Helsinki.

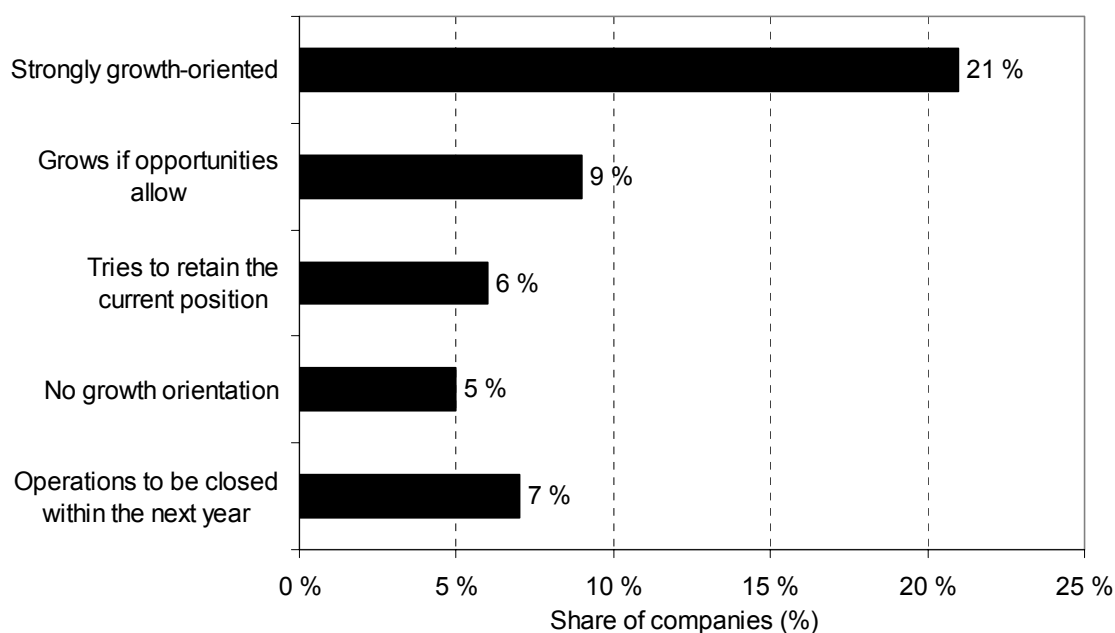


Figure 6. The share of SMEs reporting the lack of finance as the most serious obstacle to developing their company³³

The key point regarding the disproportional problems faced by growth-oriented ventures in getting finance is that these firms do have significantly greater needs for external finance in comparison to SMEs in general. Most small firms do not have strong growth ambitions and can normally finance their operations from cash flow. In contrast, the small percentage of SMEs with strong growth ambitions cannot achieve these goals without access to significant amounts of external risk capital.

In our evaluation, we conducted a survey of stakeholders of FII to get a better view of the market needs. The results concerning the adequacy of access to external finance are presented in Figure 7. According to the survey, the financing situation in any sector is not particularly good. Regional SMEs have a slightly lower rating as regards the adequacy of available finance compared to SMEs in general. However, the measure for *growth-oriented* technology-based new firms

33 Based on information collected in the bi-annual barometer of Finnvera and the Federation of Finnish Enterprises, August 2002. Information kindly provided by Finnvera and the Federation of Finnish Enterprises.

is lower than for any other groups. These results are in line with the results of other surveys in Finland.³⁴

In a closer examination of the availability of venture capital finance for technology-based new firms, it is interesting to note the dramatic differences in the availability of different stages of venture capital. According to the results, and in line with the interviews, the unmet demand is worst for seed stage venture capital. There seems to be market failure also in start-up stage venture capital. However, as expected, the responses indicate a relatively sufficient availability of expansion stage venture capital.

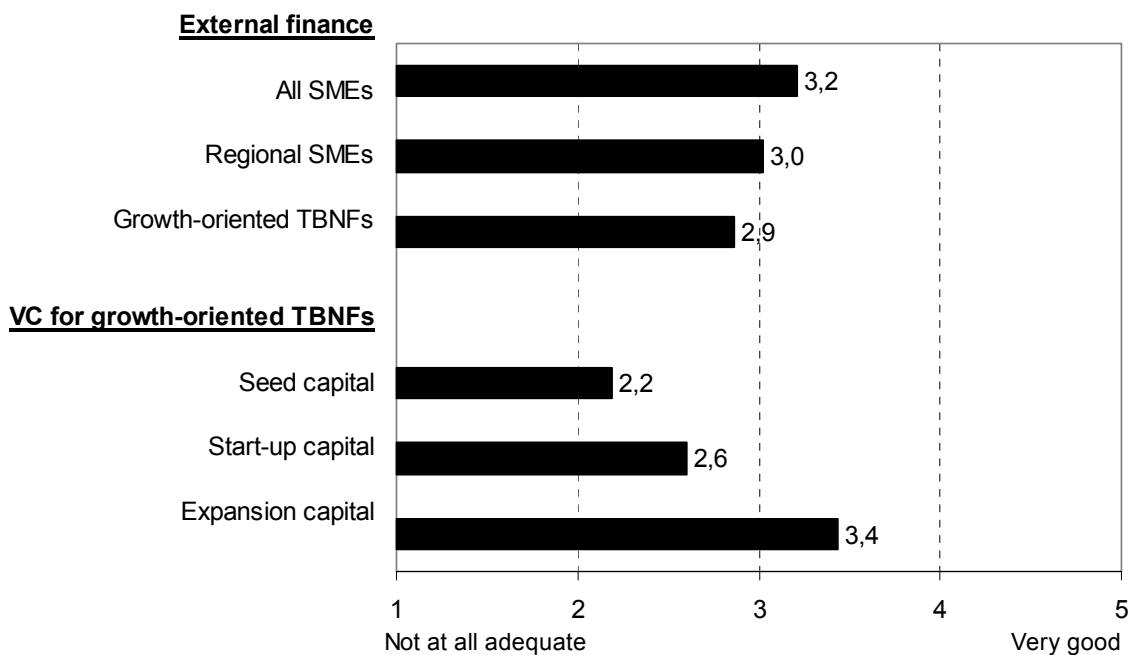


Figure 7. FII's stakeholders' views on the adequacy of the availability of external finance

34 Finnvera and the Federation of Finnish Enterprises, 2002, *PK-yrittysbarometri*, 2/2002, Finnvera and the Federation of Finnish Enterprises, Helsinki.

2.3.1 Early-stage Venture Capital

Of the various segments in venture capital, the supply of early-stage venture capital has universally been found to be particularly prone to market failure.^{35 36}

³⁷The difficulty of early-stage venture capital was also recognized in the mandate of FII.^{38 39} Although private investors tend to move to later stages even during good times, the market downturn accelerates this development creating clearly a market failure in early-stage (seed and start-up) venture capital. The importance of public policy to secure the supply of early stage venture capital to technology companies in declining market conditions.^{40 41}

In regard to early-stage venture capital in Finland, the amount of funds invested in seed stage dropped in 2001 compared to 2000. The share of private investors in all seed investments also dropped from 45% in 2000 to 10% in 2001. Most of the public seed-stage investments have been arguably made by Sitra (Figure 8).

35 Macmillan H. P., 1931, *Report of the Committee on Finance and Industry*, HMSO, London.

36 Storey D. J. and Tether B., 1996, New technology-based firms in the European Union: an Introduction, *Research Policy*, 26, 933-946.

37 Bannock Consulting Ltd, 2001, *Innovative instruments for raising equity for SMEs in Europe*, Final report prepared for DG Enterprise of the European Commission by Bannock Consulting.

38 Government Proposal to Parliament for an Action Finnish Industry Investment Ltd, (132/1999) (Hallituksen esitys Eduskunnalle laiksi Suomen Teollisuussijoitus Oy -nimisestä valtionyhtiöstä, HE 132/1999).

39 Government Decision on the General Outlines for Finnish Industry Investment Ltd's Investment Activities (184/2000) (Valtioneuvoston päätös Suomen Teollisuussijoitus Oy:n sijoitustoiminnan yleisistä suuntaviivoista, N:o 184/2000).

40 Hyytinen A. and Pajarinen M., 2002a, *Financing of Technology-Intensive Small Businesses: Some Evidence on the Uniqueness of the ICT Industry*, Etna Discussion Papers No. 813, The Research Institute of the Finnish Economy, Helsinki.

41 Hyytinen A. and Pajarinen M., 2002b, *Small Business Finance in Finland: A Descriptive Study*, Etna Discussion Papers No. 812, The Research Institute of the Finnish Economy, Helsinki.

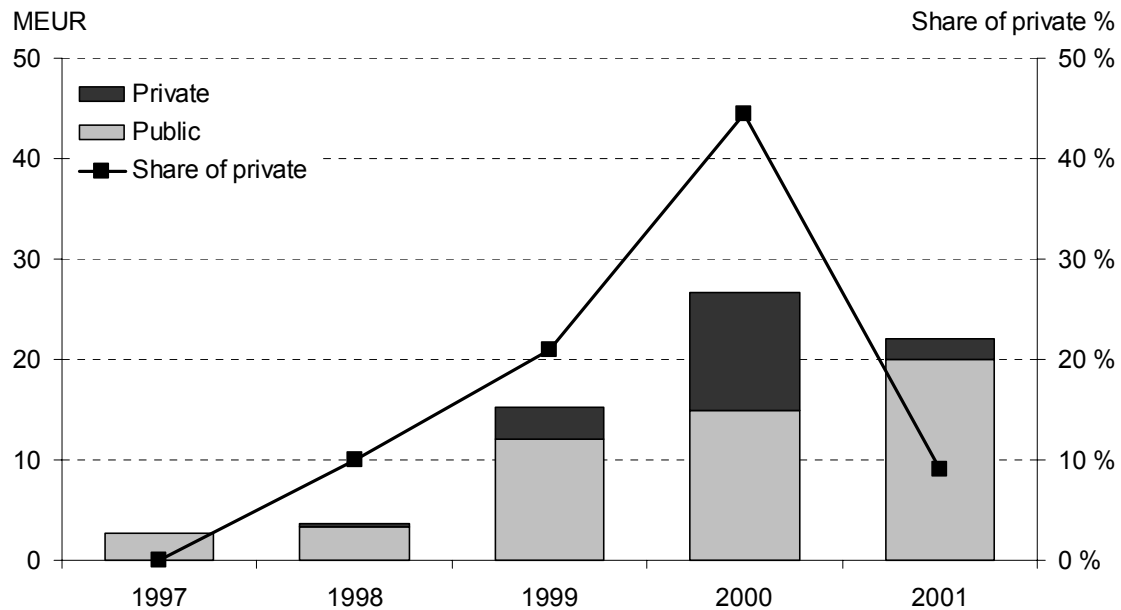


Figure 8. Seed-stage venture capital investments by private and public investors⁴²

There is a lot of very recent anecdotal evidence that the situation in early-stage venture capital has become increasingly difficult in Finland in 2002.^{43 44} Although the latest FVCA statistics cover only the year 2001, our interviews and some other studies suggest significant and continued decline in early-stage investments in Finland in 2002.^{45 46} For instance, a recent study of Source Code Finland concluded that the lack of seed finance is seriously hampering the emergence and growth of new companies in the software product industry.⁴⁷

In addition to investment stages, another measure of start-up financing activity is the share of initial investments as a proportion of all investments. The share of

42 FVCA and Sitra statistics and estimates

43 Helsingin Sanomat, 2002, Aloitteleville it-yrityksille ei liikene yksityistä riskirahaa, *Helsingin Sanomat*, D1.

44 Talouselämä, 2002, Rohkene kasvaa, riskisijoittaja!, *Talouselämä*, 38 (8.11.2002), 28–35.

45 Ernst & Young and VentureOne, 2002, *Riskisijoitukset Euroopassa vähentyivät merkittävästi*, Press release 26.8.2002, Accessed: 20.11.2002, <http://www.ey.com/global/content.nsf/Finland/Tiedote_260802_VentureOne>.

46 Nikulainen K., 2002, *Riskisijoittajien määrä Suomessa romahti*, digitoday.fi, Accessed: 7.11.2002, <http://www.digitoday.fi/digi98fi.nsf/pub/finanssi20021107111929_kni_56772259>.

47 Viitasaari J., 2002, Siemenraha kortilla - Lupaava ohjelmistoyritys joka kuukausi Suomessa, digitoday.fi, Accessed: 4.12.2002, <http://www.digitoday.fi/digi98fi.nsf/pub/dd20021204145557_jvi_67247882>.

initial investments compared to follow-on investments decreased significantly in 2001.⁴⁸ According to interviews and anecdotal evidence, it is currently very difficult for young companies to attract initial venture capital investment. This is because venture capitalists have been limiting their scarce investment resources to the most promising of their existing portfolio companies since 2001. With little immediate prospect of new fund raisings, venture capital firms that are managing mature and fully invested funds have become severely cash constrained. What finances are available are being retained to nurture existing investments until the eventual re-emergence of a healthy exit market. Figure 9 illustrates the development of initial and follow-on venture capital investments. As can be observed from the graph, initial investments dropped both in number and in value in 2001. Based on estimates, the development in 2002 has been towards a still smaller share for initial investments. This trend has also been commonly observed in other countries.

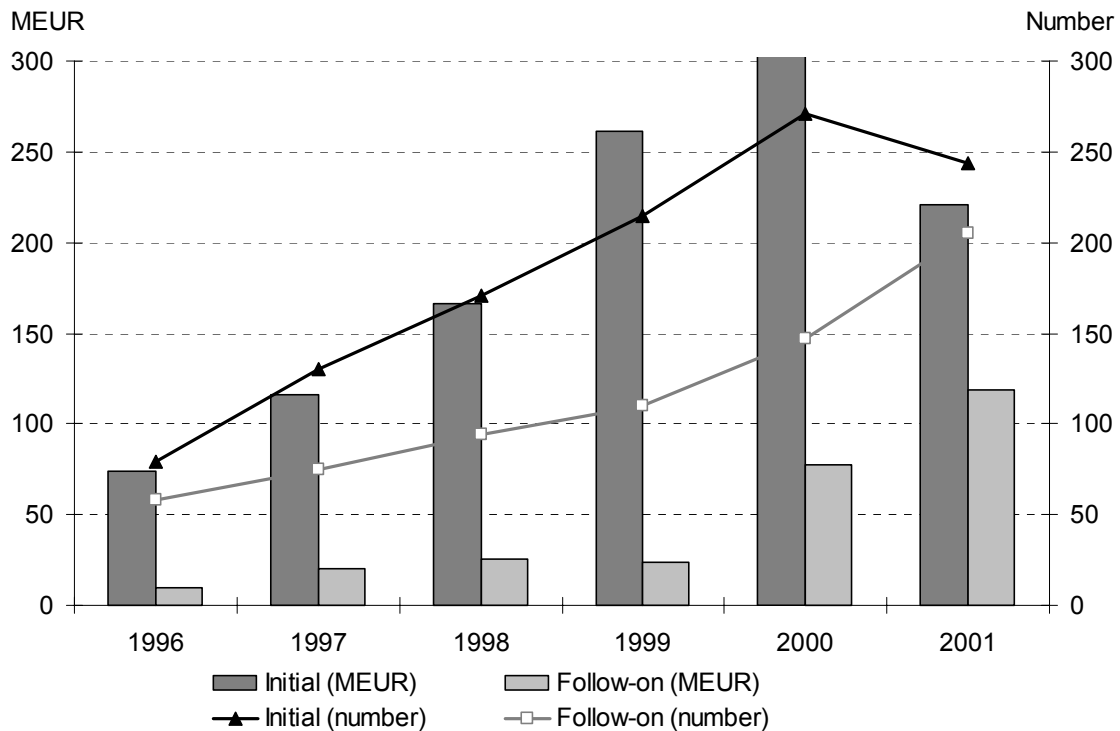


Figure 9. Initial and follow-on investments in Finland 1996–2001⁴⁹

48 Finnish Venture Capital Association, 2002, *Pääomasijoittaminen Suomessa 2001*, Finnish Venture Capital Association.

49 Finnish Venture Capital Association, 2002, *Pääomasijoittaminen Suomessa 2001*, Finnish Venture Capital Association.

Data from a 2002 survey of the Finnish software product companies indicate that small software product companies with revenues less than three million euros find the availability of financing services more difficult than larger software companies.⁵⁰ Also the data from the SME barometer of Finnvera and the Federation of the Finnish Entrepreneurs suggest that the financing challenges are worse the smaller the company.⁵¹

In our survey of the stakeholders of FII, the lack of financing was clearly identified to be worst for the earliest stage investments (Figure 7). Concerning seed capital, the opinions of the stakeholders of FII were very clear and unanimous regarding the lack of seed capital. 70% of the respondents gave a rating 1 or 2 (i.e. poor or very poor) in a scale of 1–5 for the adequacy of the availability of seed capital (Figure 10).

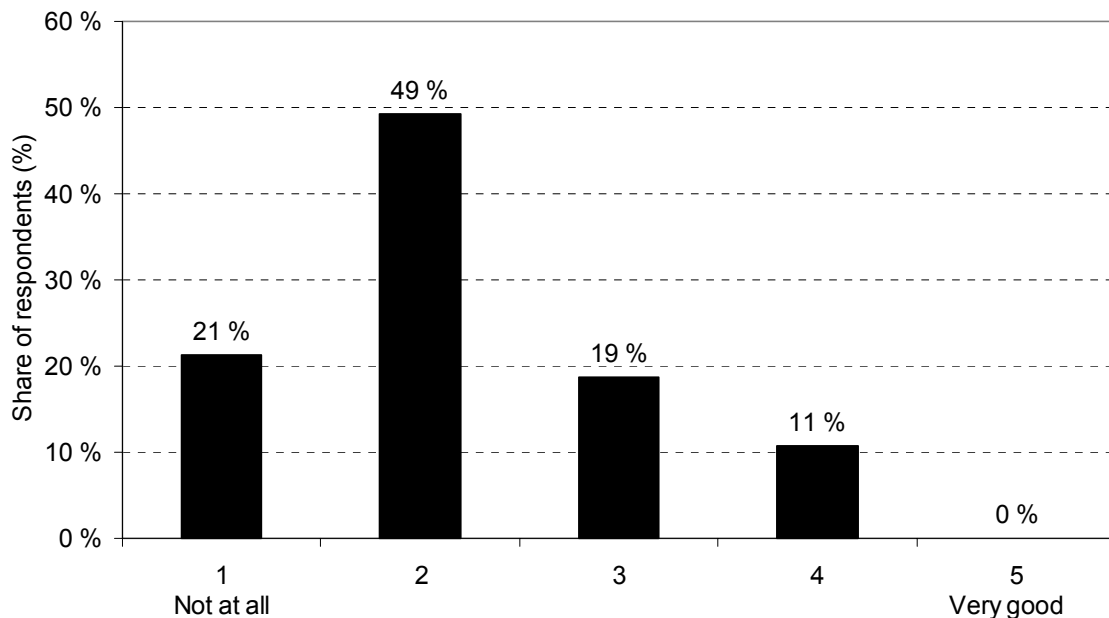


Figure 10. FII's stakeholders' views on the adequacy of the availability of seed capital in Finland

50 Hietala J., Maula M. V. J., Autere J., Lassenius C., and Autio E., 2002, *Finnish Software Product Business: Results from the National Software Industry Survey 2002*, Centre of Expertise for Software Product Business and Helsinki University of Technology.

51 Data from the bi-annual SME barometer of Finnvera and the Federation of Finnish Entreprises, August 2002

There was also a nearly universal agreement that the government should increase its involvement in the supply of seed stage venture capital. This is in line with the general perception that seed capital, in normal conditions, is not as commercially attractive an activity as later stage investments. Government intervention is needed to resolve the market failure, preferably by incentivizing private investors. As illustrated in Figure 11, 83% of the stakeholders of FII saw a need for the government to *increase* its involvement in the supply of seed capital. Early-stage venture capital is seen as the highest priority activity of FII (Figure 25, page 67).

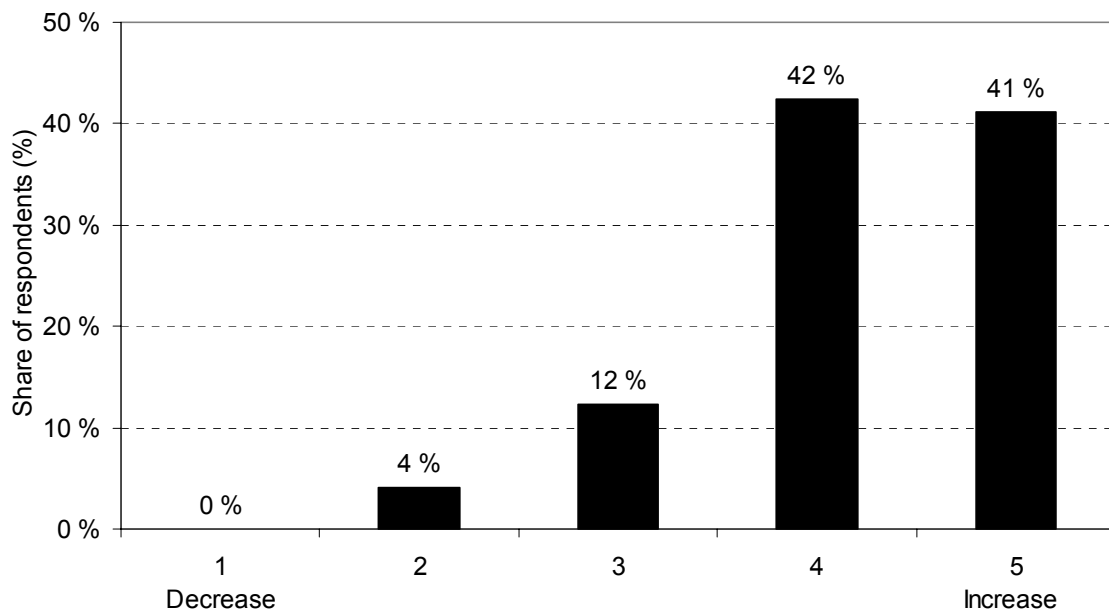


Figure 11. FII's stakeholders' views on the need for the government to change its involvement in the supply of seed stage venture capital

The lack of early-stage (seed and start-up) venture capital is a serious problem for the whole venture capital industry. According to our interviews, this situation is seen as hampering the consequent development of high-quality deal flow to expansion stage deals. This leads to a problem where expansion stage venture capitalists cannot find good enough deals for the funds available. The very low level of Finnish venture capital as a percentage of GDP and the problems of venture capitalists in finding good enough deals suggest that this problem is serious and needs to be addressed. It is presently hampering the development of the venture capital market. This situation, in turn, has direct and negative implications for the Finnish economy at large.

There is a significant equity gap in Finland in early-stage (seed and start-up) venture capital for technology-based new firms. This dearth of supply not only affects the young firms denied capital for growth. Similarly it is hampering the development of significant elements of the venture capital market because of the negative impact of a lack of early-stage venture capital on the subsequent generation of high-quality deal flow for expansion and later stage finance.

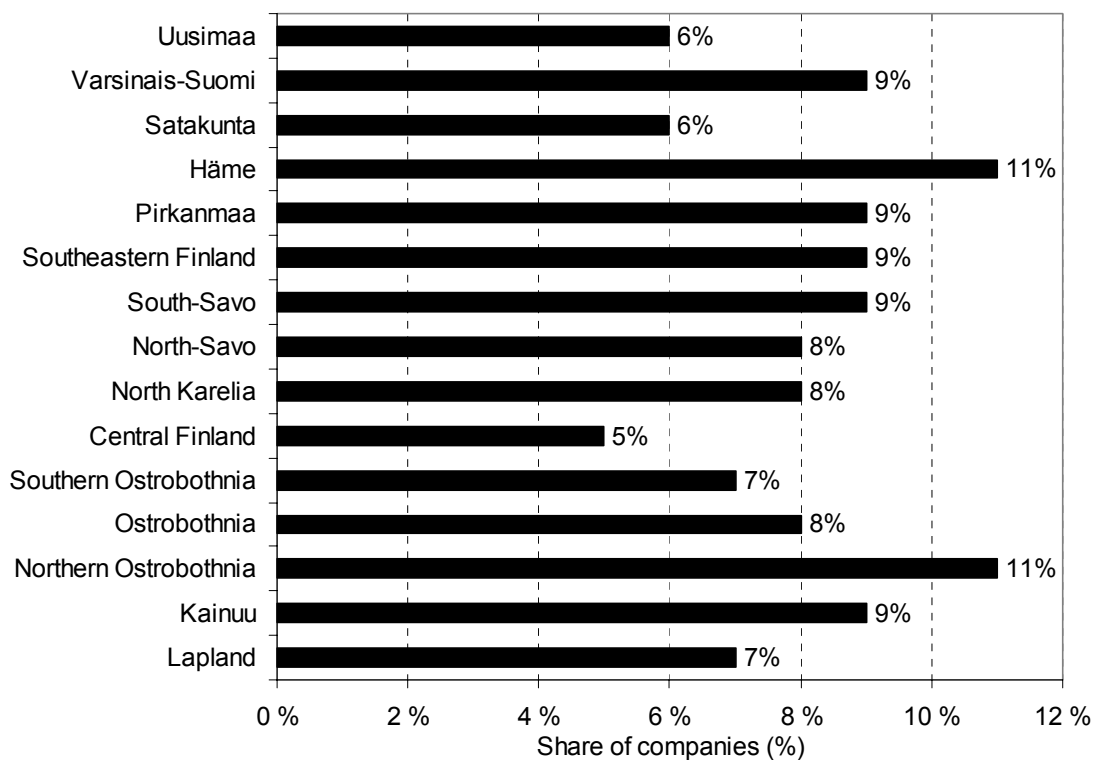
2.3.2 Regional Investments

In addition to early-stage venture capital, market failures have often been argued to reside in venture capital markets located outside the main concentrations of existing venture capital activity.⁵² The limited and insufficient provision of finance to SMEs (and indeed larger firms) in less developed or more peripheral regions of an economy represents a specific development problem that is faced by many countries. Essentially, the underlying conditions in more remote regions from the major urban and metropolitan centers represent a series of major hurdles to the effective development of a robust economic environment. Remote regions are often burdened by their distance from both major supplier and customer markets, the limitations of local labor markets especially for knowledge and other skilled workers, and the lack of appropriate technical and commercial infrastructures including the absence of major research-based universities, research laboratories and other key nodes of a dynamic information network. For understandable reasons of social equity, local and central governments (and several major EC programs) feel obliged to offer a range of support measures for firms in such disadvantaged regions. While the burden is usually assumed by central government ministries having a regional and social remit, State organizations supporting technology and innovation are frequently involved when the regional firms in question are technology focused. The problem centers on whether or not State-originated funds and support are being provided for purely commercial reasons. All too often firms that would not be supported if an analysis was made solely on their technical or commercial merits receive assistance because of their location in a remote city or town, or because they are the largest employer in an area, or because they represent the only example of technology X in Region Y. Officials running technology programs often will have their 'arms bent' by their political masters to ensure that they provide

52 Centre for Strategy & Evaluation Services, 2002, *Guide to Risk Capital Financing in Regional Policy*, European Commission, Directorate General for Regional Policy, Brussels.

support alongside regional agencies to address these development issues. The problem is compounded if government program managers are obliged to provide a regional firm with a socially valuable service, but the said program is subsequently assessed on purely technical or commercial evaluation criteria. This is a very common dilemma for many governments and their agencies.

In an analysis of the access to finance in the Helsinki metropolitan area and in other areas, some small differences can be found. In the bi-annual survey of Finnish SMEs by Finnvera and the Federation of Finnish Enterprises, on average 8% of all SMEs stated the access to finance being the worst obstacle to developing the company. Figure 12 compares this obstacle in various regions in Finland. It can be noted that the problem is slightly lower in Uusimaa (6%), whereas there are regions where the percentage reaches 11%. However, based on these figures, it seems that the geographic location is a less important determinant of the financing difficulties when compared to the growth intentions of the firms. The comparable figure for highly growth-oriented SMEs was 21% (Figure 6, page 31).



*Figure 12. Lack of financing as the worst problem for the development of the company classified by region*⁵³

In our own survey of the stakeholders of FII, the adequacy of financing was perceived being somewhat poorer in regional areas compared to SMEs in general (3.0 compared to 3.2 in scale from 1 (not at all adequate) to 5 (very good), Figure 7). Figure 13 gives the views of different stakeholder groups of FII concerning the adequacy of availability of external finance for SMEs located outside the Helsinki area.

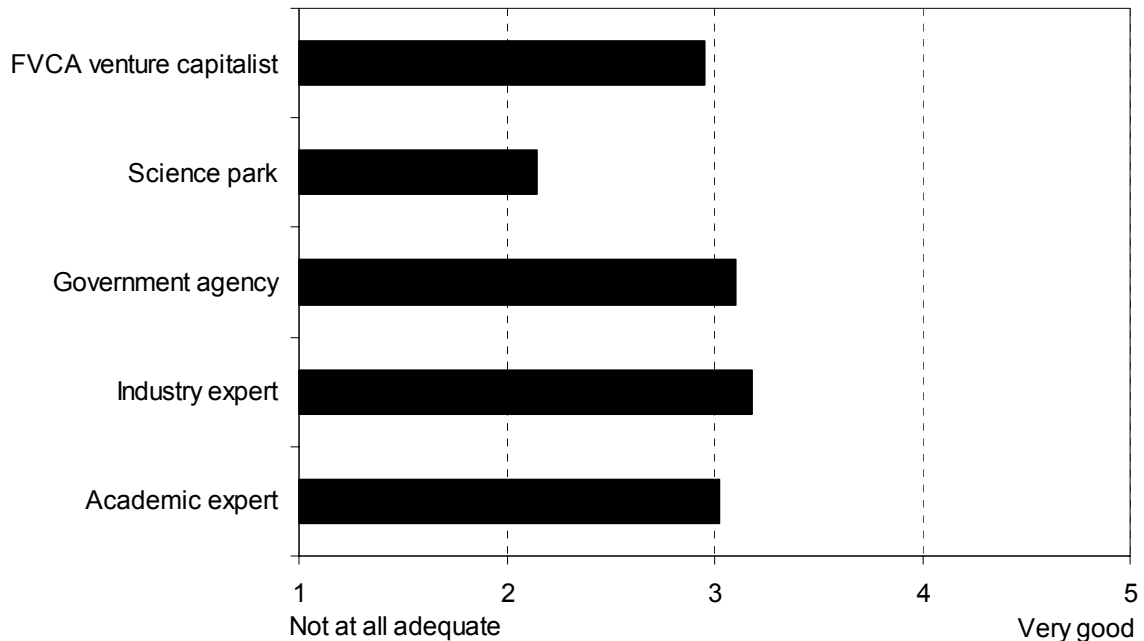


Figure 13. FII's stakeholder's views on the adequacy of the availability of external finance for SMEs located outside the Helsinki region classified by respondent type

Taken together, the availability of regional venture capital in Finland does not appear to be particularly good. However, in the regions, as in the economy at large, the difficulties are more related to a lack of early-stage venture capital rather than a lack of venture capital in general.

2.3.3 Specific Technology Sectors

In our evaluation, the biotechnology and life sciences cluster emerged as a sector with distinct problems. In Finland, there were approximately 120 biotechnology and life sciences companies at the time of the evaluation in Fall 2002.^{54 55} The Finnish government has invested heavily in biotechnology. The biotechnology sector is estimated to represent investments of 110 million euros. This is equivalent to 9% of all public R&D in 2002.⁵⁶

Presently, the Finnish biotech industry is very immature. Accordingly, Finnish biotechnology companies, although small, still require substantial future investments. The availability of additional capital from domestic investors is limited. These new enterprises will often take several years to develop attractive new products and services. Profitability is an even more distant and uncertain prospect. Several observers view the present situation as critical. They argue that, because of the lack of capital, the results from intensive R&D will be lost as a result of unnecessary bankruptcies.⁵⁷ Even if these fledgling firms survive, some of our interviewees feared that many will have their intellectual capital purchased by foreign investors at a fraction of its true worth. This is because of the dangerous combination of poor negotiation power against large foreign investors and a desperate immediate need for cash.

A strong point made by several informants is that Finnish life sciences/biotechnology companies are too small to be viable as independent firms. In order to create viable businesses out of State-financed R&D projects, stronger multi-project companies need to be created in order to gain the strength necessary to act and survive as independent players. One potential idea stated by informants would be to consolidate several R&D-focused, small biotechnology/life sciences companies together – possibly in combination with relevant corporate spin-offs. Collectively, these firms would have the resources and experience to create the necessary economies of scale. This would allow them to

54 Hermans R. and Luukkonen T., 2002, *Findings of the ETLA Survey on Finnish Biotechnology Firms*, Discussion Papers No. 819, The Research Institute of the Finnish Economy, Helsinki.

55 Lähteenmäki R., 2002, Finnish Biotech - Built on Solid Foundations, *Nature Biotechnology*, 20.

56 Puustinen T., 2002, Jyvät kuivuvat biolaaksoissa, *Talouselämä*, 28.10.2002.

57 Tekniikka & Talous, 2002, Saarnivaara povaa bioyrityksille konkurssiaaltoa, *Tekniikka & Talous*, 4.

exploit, for example, the international marketing and sales channels required for their operation as viable independent companies.⁵⁸

The emergent view is that the Finnish biotechnology/life sciences sector is at a critical stage at the time of compiling this report (November 2002). As confirmed by the players and respondents from all areas of the Finnish innovation system, this sector is at a stage where an immediate, direct government intervention could help gain significant results from the substantial investments already made in the sector.

The evaluators were aware that some of these comments were made by respondents with significant personal interest in the commercial success of portfolio firms. In practice, it is important that the proposed interventions should not be seen as merely an additional one-off source of funding with little purpose beyond delaying the demise of vulnerable or non-viable firms. Instead, FII should help consolidate uneconomically small companies with the purpose of building players that are strong enough to attract international private capital in subsequent rounds, for instance, when funds are needed in order to fully internationalize the business.

Therefore, the implications and opportunity costs of this proposed role for FII should be properly reviewed by FII management in conjunction with MTI. The logic, means and likely effect of FII intervention in these immature markets need to be objectively and rigorously appraised. Any intervention by the State should be rigorously justified. If such an intervention can be objectively justified, FII should only be involved in such an industry restructuring in collaboration with other key agencies in the appropriate technology sectors. Specialist technical evaluations should generally be contracted out in order to implement these transactions. FII's acknowledged skills are financial and commercial – and should remain so.

58 The need to consolidate the unviable small biotechnology firms has also been expressed in a recent evaluation of the sector. Academy of Finland, 2002, *Biotechnology in Finland - Impact of Public Research Funding and Strategies for the Future - Evaluation Report*, Publications of the Academy of Finland 11/02, Academy of Finland, Helsinki.

2.3.4 Government intervention

In line with the general recognition of the dearth of seed and start-up stage venture capital, there was a strong respondent consensus for the government to become more involved in the supply of seed and start-up stage venture capital. Particularly, seed capital was seen as requiring a major increase of government intervention. In contrast to early-stage investments, the aggregate view regarding the expansion stage was for less government involvement in this area (Figure 14).

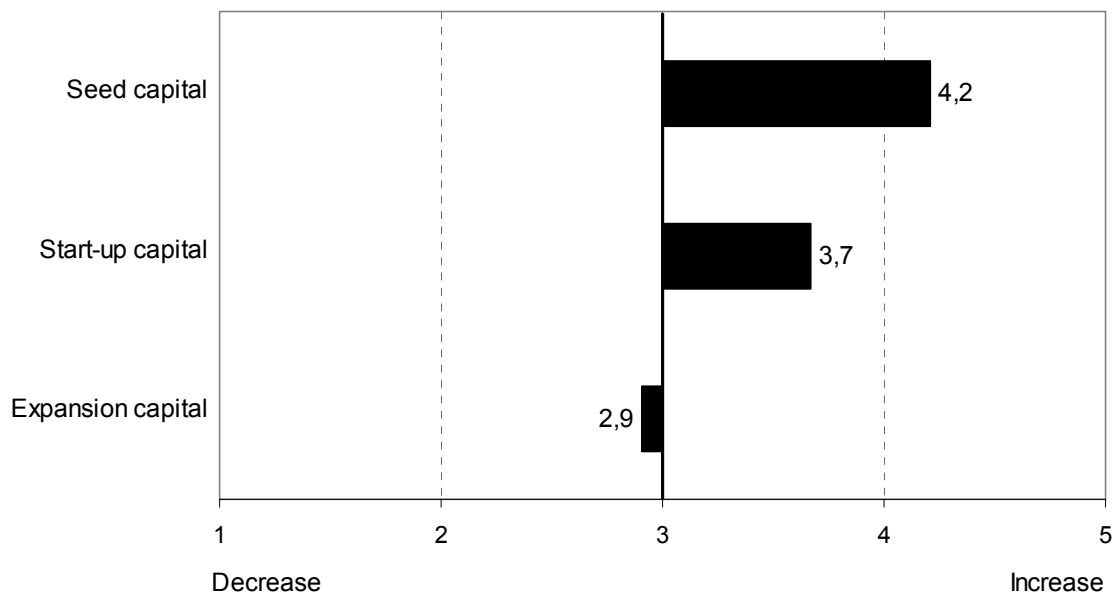


Figure 14. Finnish respondents' views on the needs for changes in government involvement in the supply of venture capital classified by stage

Figure 15 describes the views of each of the FII's stakeholder groups concerning the need to change the government supply of seed, start-up, and expansion stage venture capital. There is a clear consensus among these groups concerning the need to increase the supply of seed capital. The need to increase start-up capital was perceived by other groups except for academic experts. Concerning the need to increase or decrease the supply of expansion stage capital, there was more disagreement between the groups.

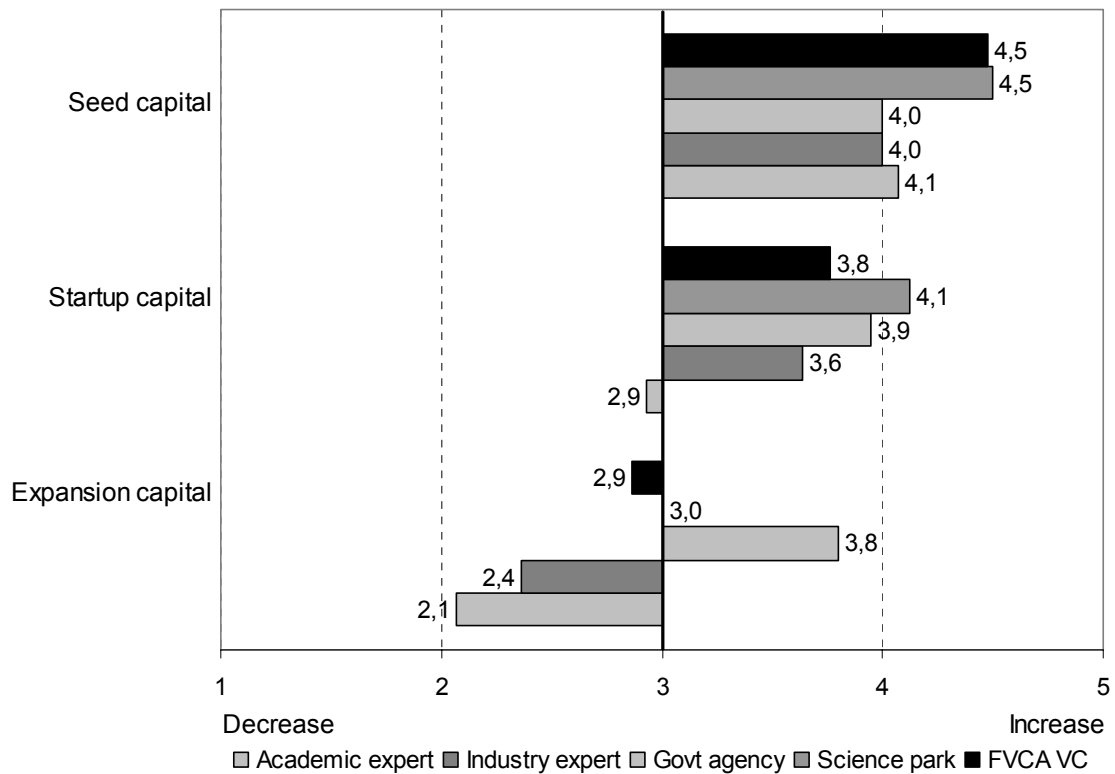


Figure 15. Finnish respondents' views on the needs for changes in government involvement in the supply of venture capital classified by stage and respondent type

2.4 Conclusions

As a conclusion, it can be noted that there is evidence of a severe market failure particularly in early stage (seed and start-up) venture capital. Partly because of the lack of early-stage venture capital, there is also a poor deal flow of expansion and later stage deals. Consequently, Finnish venture capitalists have difficulties in finding attractive expansion and later stage deals despite the small size of the Finnish venture capital market by international standard. Given the high level of public and private R&D investments, this situation can be seen as alarming in its potential consequences for the effective future commercialization of Finnish intellectual property. A strong and urgent need for the State's increased intervention in the supply of early-stage venture capital was expressed by the majority of respondents in both our survey and interviews.

3 Finnish Industry Investment Ltd

FII is a state-owned equity investment company, administered by the Ministry of Trade and Industry. The Act on Finnish Industry Investment Ltd. (1352/1999) sets the objective for FII:⁵⁹

“The purpose of the state-owned company Finnish Industry Investment Ltd. is to improve the conditions particularly for small and medium-sized firms by making equity investments in venture capital organizations.

The company may make equity investments directly into target companies particularly when long-term risk taking is required.”

The Act also states:

“The operations of the company must be profitable.

In individual investment decisions, a lower return expectation and higher risk can be accepted in exceptional cases.”

The Government decision (184/2000) sets the general guidelines for FII’s investment activities. Section 1 of the decision specifies that FII should focus on resolving market failures:⁶⁰

“Investments are directed to targets, where the market does not channel sufficient funds”

Furthermore, this section also sets out the focus areas of FII’s activities:

“The primary focus of the company is the improvement of equity funding to starting companies. Particularly important in this regard is

59 Act on Finnish Industry Investment Ltd (1352/1999) of 30 December 1999 (Laki Suomen Teollisuussijoitus Oy -nimisestä valtionyhtiöstä N:o 1352/1999, 30.12.1999).

60 Government Decision on the General Outlines for Finnish Industry Investment Ltd’s Investment Activities (184/2000) (Valtioneuvoston päätös Suomen Teollisuussijoitus Oy:n sijoitustoiminnan yleisistä suuntaviivoista, N:o 184/2000).

the setting up, development, and financing of venture capital funds investing in seed and start-up stage firms, the development and financing of a regional network of funds, and the channeling of EU finance.”

“Another area of focus is equity investments into large business ventures requiring long-term risk-taking.”

“In addition to the industry, the investment activities of the company cover also the service sector, particularly knowledge-intensive service companies.”

In the next chapter, we examine in more detail the development of the objectives of FII over the seven years of its existence.

3.1 The Development of FII’s Objectives

The objectives of Finnish Industry Investment Ltd are defined on three hierarchical levels – firstly in the legislation, secondly in the Government decisions, and thirdly in the guidelines given by the Ministry of Trade and Industry. The purpose of Finnish Industry Investment Ltd. is defined in the Act on Finnish Industry Investment Ltd. The original 1994 Act was repealed in 1999. The starting point for the amendment of the Act in 1999 was the recognition of the rapid development of the Finnish venture capital market between 1994 and 1999. Because the venture capital market had developed significantly, it was seen that the government intervention should be refocused more directly towards the remaining market failures particularly in early-stage venture capital. Regarding the new primary focus of the operations, the proposal of the new Act stated the following:⁶¹

“Because the markets for growth and expansion stage venture capital are efficient, the primary focus of the company should be the improvement of the supply of early stage venture capital. Areas of particular emphasis should be development and capitalization of seed

61 Translated from: Government Proposal to Parliament for an Act on Finnish Industry Investment Ltd (132/1999) (Hallituksen esitys Eduskunnalle laiksi Suomen Teollisuussijoitus Oy -nimisestä valtionyhtiöstä, HE 132/1999).

and start-up stage venture capital funds, capitalization of a regional venture capital fund network, and channelling of EU funding.”

Table 3 details the development of the definition of the purpose of Finnish Industry Investment Ltd. in the Act on Finnish Industry Investment Ltd. in December 1994⁶² and December 1999.⁶³

Table 3. The objectives of FII as defined in the Act on Finnish Industry Investment Ltd.

Objectives set in the Act on Finnish Industry Investment Ltd.	
1531/1994 (December 1994)	1352/1999 (December 1999)
The objective of Finnish Industry Investment Ltd is to enhance the conditions of industry and the related entrepreneurship by...	The purpose of the state-owned company Finnish Industry Investment Ltd. is to improve the conditions particularly for small and medium-sized firms by....
... financing investments primarily in small and medium-sized firms	... making equity investments in venture capital organizations.
FII makes primarily equity investments in venture capital organizations. The company may also make direct investments to the above-mentioned firms.	The company may make equity investments directly into target companies particularly when long-term risk taking is required.
The company makes investments on an economic basis.	The operations of the company must be profitable.
The company has to set return expectations for its investments.	In individual investment decisions, a lower return expectation and higher risk can be accepted in exceptional cases.

Although the amendments to the Act do not appear dramatic, the underlying intent of the revision of the Act was to focus the operations of FII more accurately to the remaining market failures following the rapid development of the Finnish venture capital market in 1994–1999. In the motivation for the new

62 Act on a State-owned Company Pursuing Capital Investment Activities (1531/1994) of 29 December 1994 (Laki pääomasijoitustoimintaa harjoittavasta valtionyhtiöstä, N:o 1531/1994, 29.12.1994).

63 Act on Finnish Industry Investment Ltd (1352/1999) of 30 December 1999 (Laki Suomen Teollisuussijoitus Oy -nimisestä valtionyhtiöstä, N:o 1352/1999, 30.12.1999).

Act, the lack of the supply of early-stage venture capital was emphasized as a remaining key market failure. Recognizing the higher risk and lower return expectations in this area, the profitability goal was revised so that FII can accept lower than usual return expectations and higher risks on individual investments. In justifying a case for such an intervention, particular reference was made to investments in technology-focused early-stage venture capital funds.⁶⁴

As stated at the end of the Act on FII, more precise operating guidelines for the enforcement of the laws are given as Government decisions. One of the major amendments in the new Government decision in February 2000 replacing the previous one from September 1996 was the amendment to the definition of the purpose and focus areas of FII. Whereas the prior focus was in general on support of the financing of SME companies, the new primary focus areas were defined to target the remaining market failure areas. As discussed above, the new primary focus area of the company was defined to be in the improvement of the supply of seed and start-up stage venture capital. The objectives of FII are presented in Table 4.

64 Government Proposal to Parliament for an Act on Finnish Industry Investment Ltd (132/1999) (Hallituksen esitys Eduskunnalle laiksi Suomen Teollisuussijoitus Oy -nimisestä valtionyhtiöstä, HE 132/1999).

Table 4. *The objectives of FII as defined in the Government decisions*⁶⁵

Objectives set in the Government decisions	
September 1996	February 2000
<ul style="list-style-type: none"> • to promote the functioning of the venture capital market • to enhance the possibilities for companies to grow, internationalize, and go public by improving their financing • to promote the channeling of private funds into venture capital market and to advance entrepreneurship in the industry • to promote the structural change of industries and commercialization of R&D investments • to develop the secondary markets and to promote the cooperation of venture capitalists • to promote the equity financing of innovative start-ups, and with this aim, the development of technology-focused venture capital funds as well as a regionally located venture capital network • to develop the organizational structure of funds and to increase entrepreneurship and know-how within the venture capital industry 	<ul style="list-style-type: none"> • to promote equity investments in innovative companies at the seed or start-up stage by promoting the founding of new funds focused on seed and start-up • to promote the channeling of private funds to venture capital funds focusing on start-ups • to accelerate the commercialization and internationalization of the results of R&D investments • to promote the structural change of industries by direct investments targeted along the lines of the industry policy • to promote the functioning of the venture capital market to the level of the most developed venture capital markets • to enhance the possibilities for companies to grow, internationalize, and go public by leveraging the opportunities stemming from international fund collaboration • to promote the channeling of equity financing from EU sources to Finland

The responsibilities placed on FII have evolved and changed in line with the development of the Finnish and international venture capital markets. When FII was established, the local market was underdeveloped and the key emphasis was to stimulate the creation of a private venture capital market. By 1999, the venture capital market had developed rapidly over the intervening five years, and the

65 Translated from: Valtioneuvoston päätös Suomen Teollisuussijoitus Oy:n sijoitustoiminnan yleisistä suuntaviivoista, N:o 184/2000, and Valtioneuvoston päätös Suomen Teollisuussijoitus Oy:n pääomasijoitustoiminnan yleisistä periaatteista, N:o 702/ 1996, 19.9.1996.

objectives set for FII were then targeted more towards resolving the remaining market failures. Particular emphasis was placed on promoting early stage (seed and start-up) venture capital and regional venture capital through the fund of funds structure. The development of these priority areas has been a rational and informed set of decisions.

3.2 Financial Resources

FII is 100% owned by the government. At the end of 2001, the State investments in FII totaled 227.9 million euros. Table 5 presents the government investments in FII, the profits of FII, the dividends of FII, and the cumulated profit in the balance sheet.

Table 5. Government investment in FII 1995–2001⁶⁶

Year	Government investment in FII (MEUR)	FII Profit (MEUR)	FII Dividends (MEUR)	FII Cumulated profit in the balance sheet (MEUR)
1995	53.8	1.9	0.0	1.9
1996	0.0	1.0	0.0	2.9
1997	13.5	0.7	0.0	3.6
1998	34.5	2.9	1.0	5.5
1999	0.0	4.4	1.3	8.6
2000	84.1	26.9	7.3	28.2
2001	42.0	-0.9	1.4	25.9
Total	227.9	36.9	11.0	25.9

Figure 16 describes FII's own equity, investments, investment commitments, and its own equity available to be invested at the end of June 2002.

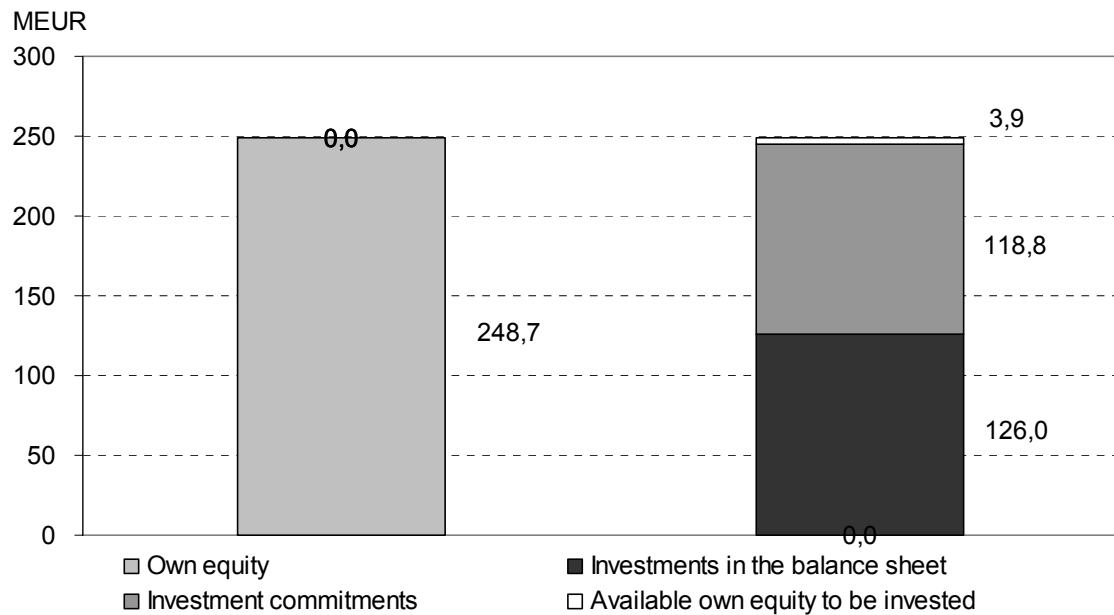


Figure 16. FII's own equity, investments, investment commitments, and own equity available to be invested at the end of June 2002⁶⁷

Figure 17 details the group profit of FII group in 1995–2001. FII was able to remain profitable from its inception to 2000. However, in 2001, the global market downturn, which produced severe decreases in valuations in both stock market and venture capital investments, had a significant and inevitable impact on the profitability of FII. For the first time in its history, FII made net losses in 2001. The management has predicted a worsening financial situation by the end of 2002.

67 Information from FII

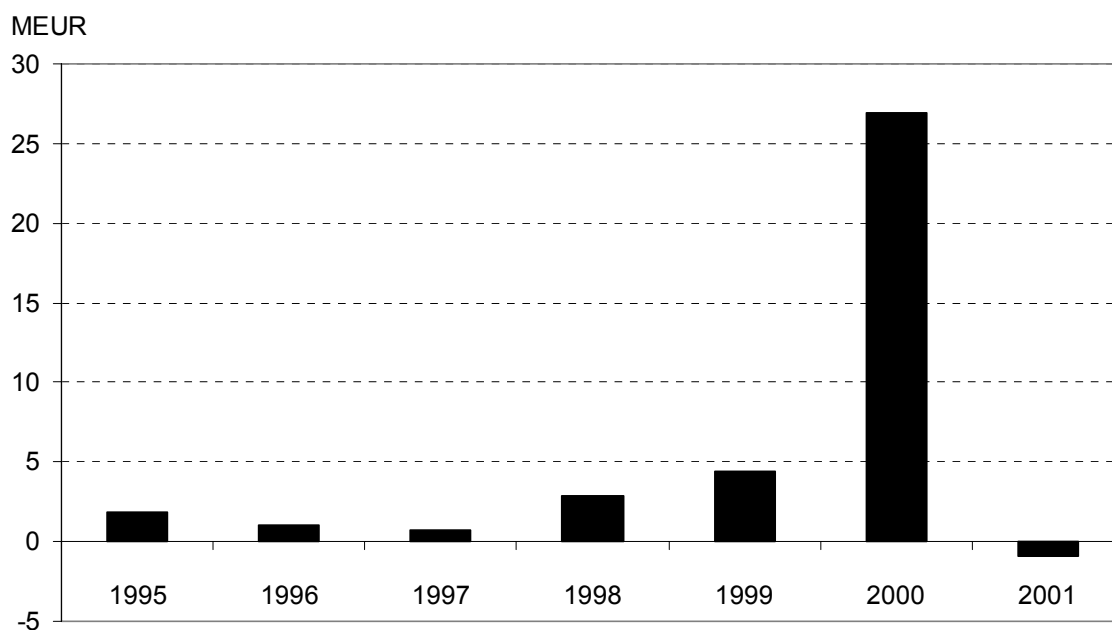


Figure 17. FII Group profit and loss in 1995–2001⁶⁸

3.3 Organization

The current organization of FII consists of a CEO, three investment directors, and three other employees. The impression from the respondent interviews is that the team is considered commercially very competent. It is seen as well suited for a fund of funds mode of operations. Particularly the financial skills of the team have been described as excellent. However, the size, experience, and geographical coverage of FII are not sufficient for the effective management of direct investments. In regard to early-stage investments, there is an impression given by the survey respondents and interviewees that FII is not particularly enthusiastic or proactive in growing this activity.

The better fit of the organization for fund of funds investments rather than direct investments gets further support from the market research of Taloustutkimus Oy concerning the Finnish venture capital industry.⁶⁹ In the annual research study, Taloustutkimus Oy surveys the management of venture capital backed private enterprises as well as listed companies. In the 2002 study, FII was placed 17th in the ranking of 50 venture capital organizations on the question of how well the

68 Annual reports of Finnish Industry Investment Ltd. 1996–2001

69 Taloustutkimus Oy, 2002, *Suomalaiset pääomasijoittajat ja corporate finance -yritykset*.

organization was known among the survey's respondents. In comparison, Sitra was the best-known investor. Regarding the major strengths or weaknesses of FII, there were four key areas where the pluses given by the respondents outweighed the minuses by more than 10%. Unfortunately, all of these were weaknesses. According to the study, the perceived key weaknesses of FII were the designing of complete financing solutions, risk-taking capability and appetite for risk, contact networks, and support for internationalization. The results certainly reflect the fact that FII has not been very visible in direct investments. However, they also do not give any strong reason to expand FII's direct investment activities.

3.4 Investments

Figure 18 describes the allocation of the actual investments and investment commitments of FII at the level used in its reporting. The portfolio allocation as of June 2002 included 13% investments in funds with regional focus and 38% in venture capital funds. The share of direct investments (10%) and investments in private equity funds (32%) have increased slightly. The target allocation set by the Board of FII for the year 2002 is to increase the proportional weight of private equity investments (40% of new investments in 2002) and direct investments (30% of new investments in 2002). *This development cannot be seen as supporting the policy goals of FII.*⁷⁰ The Ministry of Trade and Industry has in the supervisory process emphasized the role of FII acting in contrary fashion to the public market for venture capital by focusing on early-stage investments. FII has been requested on two separate occasions to reconsider its intention to continue to increase allocations toward private equity and direct investment classes by the Ministry of Trade and Industry during the years 2001–2002.

70 “The primary focus area of the company is enhancing the equity financing of start-up companies. In this respect, particularly important are founding, development and capitalization of seed and start-up venture capital funds, development and capitalization of a regional fund network, and channeling of EU funding.” Government Decision of 17 February 2000.

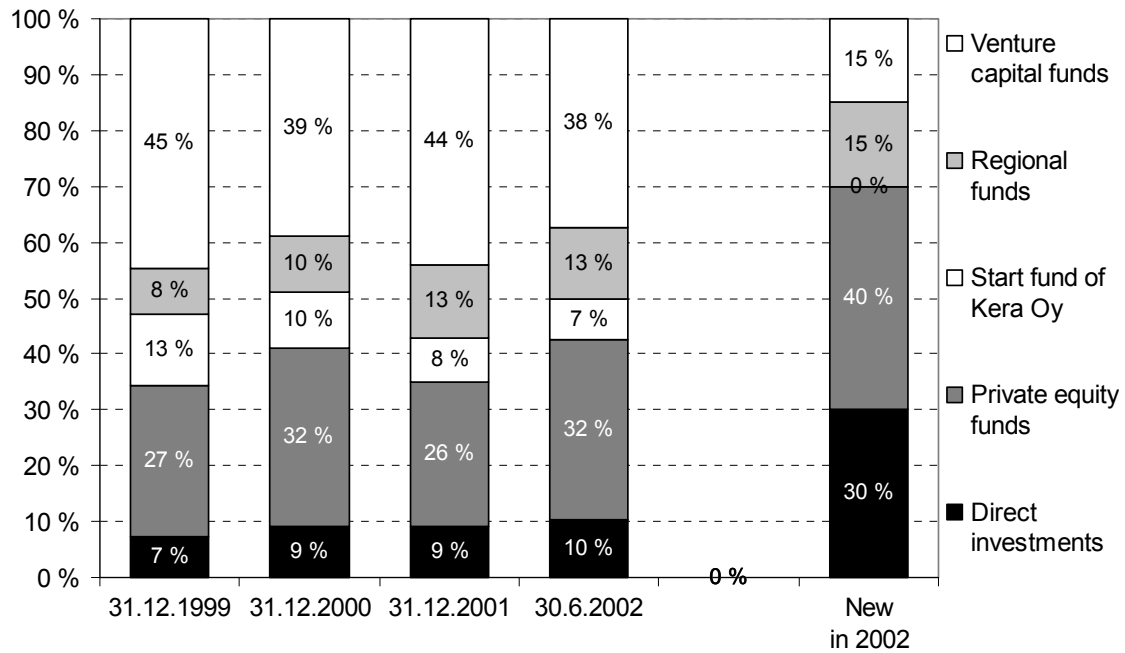


Figure 18. Portfolio allocations 12/1999–6/2002 and the planned allocation of investments in 2002

3.4.1 Fund Investments

The primary mode of operation of FII is to invest in individual venture capital funds as a limited partner. Both in this evaluation and in prior research, this fund of funds operating mode has been found to be a good mode of government intervention. This activity creates little distortion to the capital markets, has the benefit of stimulating other investors, and in consequence, creates a positive leverage effect by the attraction of additional private money to the funds so supported by FII.⁷¹

By the end of year 2001 FII had committed 178 million euros to 39 Finnish venture capital funds. These funds were managed by 21 management firms. Annual commitments have been on average 30 million euros. These investments have been directed to 4–8 new funds annually (Figure 19).

71 Bouix J., Dodge C., Huttunen J., Pirinen P., Suominen R., and Viertola K., 2000, *Comparison of public special financing programs for SMEs: Canada, Finland, France, Germany and Norway*, Ministry of Trade and Industry, Helsinki.

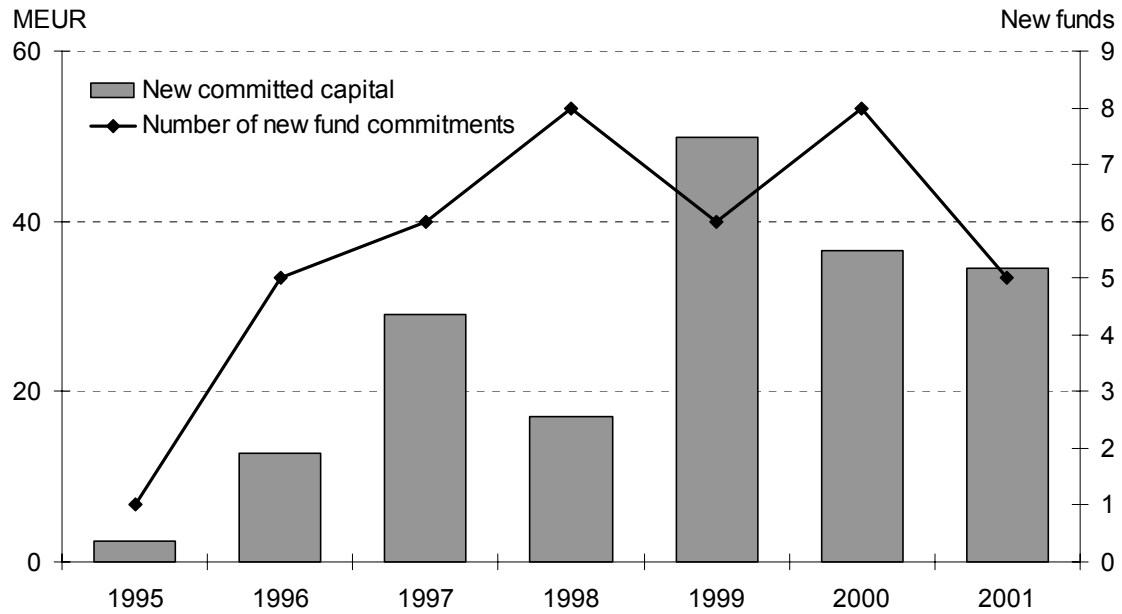


Figure 19. Annual new fund commitments by FII

FII has had an important role as a fund investor in the Finnish venture capital market. Its funds and their management firms are a representative part of the market. At the end of 2001, FII had an investment relationship with 21 firms, which represents half of the venture capital firms based in Finland. Figure 20 presents the number of management firms FII is involved in, and their share as a percentage of the total value of all Finnish venture capital firms on an annual basis.

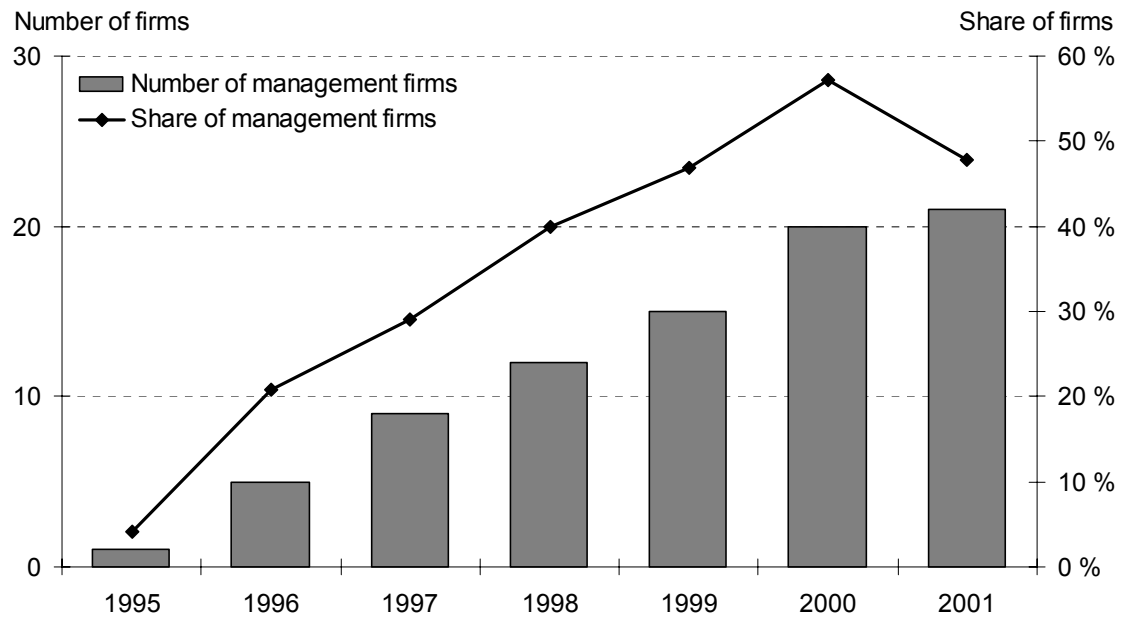


Figure 20. Extent of FII's involvement in Finnish VC firms

Venture capital funds

Investments in early-stage venture capital are the key focus area of FII as stated in the 2000 Government decision. FII reports the fund investments classified as venture capital, regional and private equity funds. The venture capital funds are supposed to represent investments made to fulfill the key policy goal of starting early-stage (seed and start-up) venture capital funds. Table 6 details the investments by FII in funds labeled as 'venture capital' funds. There were in total 14 funds falling in this category by the end of 2001 where FII has been an investor. FII's commitments in this category have been on average 6.7 million euros representing 18% of an average fund of 46.8 million euros. No new investments had been made in this category in 2002 at the time of the report (November 2002).

Table 6. *FII investments in venture capital funds*

Fund	Year	Fund size (MEUR)	FII commitment (MEUR)	FII share	Called as of 31.12.2001
Forenvia Venture I Ky	1996	10.7	1.7	15.7%	88.0%
Profita Fund I Ky	1996	14.0	2.5	18.1%	92.0%
Telecomia Venture I Ky	1996	9.9	1.7	17.0%	82.0%
EQVITEC Teknologiarahasto I Ky	1997	68.2	12.4	18.3%	81.0%
Aura Capital Rahasto V Ky	1998	5.0	0.7	13.3%	86.0%
Bio Fund Ventures II Ky	1999	67.3	3.4	5.0%	74.0%
EQVITEC Technology Mezzanine Fund I A Ky	1999	40.2	17.0	42.3%	29.0%
Finnventure Rahasto V ET Ky	1999	34.0	16.8	49.5%	60.0%
SFK 99-Rahasto Ky	1999	59.8	3.0	5.0%	77.0%
Nexit Infocom 2000 Fund LP	2000	81.7	5.0	6.1%	32.0%
Slottsbacken Fund II L.P.	2000	27.4	5.0	18.2%	16.0%
Bio Fund Ventures III Ky	2001	81.6	10.0	12.3%	9.0%
CIM Venture Fund for Creative Industries Ky	2001	22.2	5.0	22.6%	6.0%
EQVITEC Technology Fund II Ky	2001	133.8	10.0	7.5%	7.0%

Investments in early-stage (seed and start-up) venture capital funds were given as the primary focus of operations in the 2000 Government decision. The categorization of funds in venture capital, regional, and private equity classes does not allow accurate measurement of FII's fulfillment of this goal, because the category 'venture capital' does not necessarily mean that the fund would make early-stage investments (seed and start-up). Many of the funds FII has invested in are not presently active in making early stage investments. Most of the funds in this venture capital category now focus on expansion/ development stage investments. A closer analysis of the investments by FII-backed funds is provided in chapter 3.4.

Regional funds

The development and financing of a regional network of funds is among the top priorities given for FII in the Government decision. FII has been actively involved in setting up a network of 'Ky type' limited partnership structured regional venture capital funds.

Table 7 details the investments by FII in funds labeled as venture capital funds. There were in total 15 funds falling in this category at the end of 2001 in which FII is an investor. FII's commitments in this category have been on average 1.8

million euros representing 24% of the average size of funds of 8 million euros. Table 7 details the investments by FII in funds labeled as venture capital funds. Only one new fund investment has been made in this category in 2002 at the time of the report (November 2002).

Table 7. FII investments in regional funds

Fund	Mgmt Co City	Year	Fund size (MEUR)	FII commitment (MEUR)	FII share	Called as of 31.12.2001
Tampereen Seudun Kasvurahasto Tasku Ky	Tampere	1996	10.4	3.4	32.2%	68.0%
Karhu Pääomarahasto Ky	Pori	1997	3.1	0.7	21.5%	86.0%
Lahden Alueen Pääomarahasto Ky	Lahti	1997	2.4	0.7	28.4%	57.0%
Etelä-Pohjanmaan Rahasto Ky	Seinäjäki	1998	5.0	1.7	33.3%	35.0%
Etelä-Savon Pääomarahasto Ky	Mikkeli	1998	5.1	0.8	14.9%	100.0%
Kareliaventure Rahasto Ky	Joensuu	1998	3.3	1.1	33.3%	55.0%
Metal Fund Ky	Vaasa	1998	5.0	1.7	33.3%	35.0%
Savon Kasvurahasto I Ky	Kuopio	1998	7.8	1.0	12.9%	70.0%
Aboa Venture II Ky	Turku	1999	9.6	1.3	14.0%	77.0%
Jokilaaksojen Rahasto I Ky	Oulu/Raahe	2000	5.4	1.9	34.2%	21.0%
Lapin Rahasto I Ky	Oulu	2000	3.2	0.8	26.0%	13.0%
Midinvest Fund I Ky	Jyväskylä	2000	13.4	3.4	25.2%	12.0%
Seedcap Ky	Lahti/Espoo	2000	13.5	3.4	25.0%	24.0%
Aboa Venture III Ky	Turku	2001	11.1	2.0	18.0%	0.0%
GrowHow Rahasto I Ky	Kuopio	2001	21.0	3.0	14.3%	3.0%
<i>Teknoventure Rahasto II Ky</i>	<i>Oulu</i>	<i>2002</i>	<i>15.1</i>	<i>4.0</i>	<i>26.5%</i>	<i>N/A</i>

Support for the creation of a network of regional venture capital funds is well in line with the goals set for FII. The overall impression of the evaluators is that FII has played an important instrumental role in this area.

Private equity funds

The Government decision in 2000 allows FII to make investments also in later stage private equity funds in order to balance the overall returns of FII's portfolio. FII has used this opportunity with 32% of the invested and committed capital allocated to this category. In the current market downturn, FII has seen a need to increase allocations to this category in order to remain profitable. FII has set a target allocation of 40% of investments in this category in 2002.

Table 8 details the investments by FII in funds labeled as venture capital funds. There were in total 10 funds falling in this category at the end of 2001 in which FII has been an investor. FII's commitments in this category have been on average 5.7 million euros representing 8% of the average size of funds of 86.6 million euros. Four new investments equaling to 40 million euros have been made in this sector in 2002 by the time of the report (November 2002).

Table 8. FII Investments in private equity funds

Fund	Year	Fund size (MEUR)	FII commitment (MEUR)	FII share	Called as of 31.12.2001
MB Equity Fund Ky	1995	14.5	2.5	17.4%	100.0%
Finnventure Rahasto III Ky	1996	24.6	3.4	13.7%	100.0%
Fenno Rahasto Ky	1997	42.5	3.4	7.9%	100.0%
MB Equity Fund II Ky	1997	42.1	4.2	10.0%	71.0%
Sponsor Fund I Ky	1997	100.9	3.4	3.3%	68.0%
Finnventure Rahasto IV Ky	1998	59.5	3.4	5.7%	94.0%
MB Mezzanine Fund II Ky	1998	168.2	8.4	5.0%	29.0%
EQT Finland Fund C.V.	1999	138.3	8.4	6.1%	15.0%
Finnmezzanine Rahasto III A Ky	2000	101.4	10.0	9.9%	17.0%
Industri Kapital 2000 Fund LP VII	2000	174.0	10.0	5.7%	68.0%
<i>MB Equity Fund III Ky</i>	<i>2002</i>	<i>96.1</i>	<i>10.0</i>	<i>10.4%</i>	<i>N/A</i>
<i>Procuritas Capital Investors III L.P.</i>	<i>2002</i>	<i>184.9</i>	<i>10.0</i>	<i>5.4%</i>	<i>N/A</i>
<i>Sponsor Fund II Ky</i>	<i>2002</i>	<i>107.1</i>	<i>10.0</i>	<i>9.3%</i>	<i>N/A</i>
<i>Capman Equity VII A Ky</i>	<i>2002</i>	<i>166.0</i>	<i>10.0</i>	<i>6.0%</i>	<i>N/A</i>

Given the remit of remaining profitable, its structure as a limited company (Oy), the measurement of profitability based on annual net income, and the unpredictability of future capitalization of FII, it is quite natural for the management of FII to focus on profitability in a market downturn. However, it is precisely at such difficult economic times (since Spring 2000) when a public investor can have its most critical impact on a depressed market. When private investors are forced to retreat from difficult areas, a government agency should be able to balance this trend and help attenuate new and emerging market failures. In FII's current mode, the stakeholders feel that it has not been able to focus on resolving market failures as much as it should in its role as a State agency. Investments in financially attractive, later stage private equity funds were given a low priority by all stakeholder groups in the survey in comparison to early-stage and regional fund investments. 78% of the experts surveyed stated that FII should choose to focus on policy goals if it were impossible to both resolve effectively market failures and simultaneously remain profitable.

3.4.2 Direct investments

While the clear primary focus of FII in the current legislation is making fund of funds investments in early stage venture capital funds, the legislation also allows FII to make direct investments in ventures requiring large investments and long-term risk taking. The starting point in the Government decision for FII making direct investments is the identification of a clear a market failure and the requirement for FII to co-invest with private investors.

In the evaluation, the authors were surprised about the weight and the attention given to the direct investment activity by the FII management despite the clear secondary role of this activity in the mandate of FII: The management envisioned a significant growth in FII's direct investment activity. This is already indicated in the target investment allocation for 2002. FII management also noted a pressing need to hire new personnel to support the growth of this activity.

So far, FII has made ten direct investments, which it reports as belonging to this category of activity. Table 9 details the direct investments by FII up to November 2002.

Table 9. FII direct investments in companies

Investments	Year	Website	Exit year	Investment (MEUR)
Okmetic Oyj	1996	www.okmetic.com		3.6
Elcoteq Network Oyj	1996	www.elcoteq.fi	2000	
High Speed Tech Oy Ltd	1996	www.highspeedtech.fi	2000	
Setec Oy	1998	www.setec.fi		3.4
Jutron Oy	2000	www.jutron.fi		1.7
Turun TV-tehdas Oy	2000	www.turkutv.com		5.4
Forchem Oy	2000	www.fchem.com		3.4
Finreila Oy	2001	www.finreila.fi		3.4
<i>Finnish Furniture Holding Oy</i>	<i>2002</i>	<i>www.incapfurniture.fi</i>		<i>3.0</i>
<i>Konepaja Ceiko Oy</i>	<i>2002</i>			<i>2.4</i>

In this increased allocation of direct investments, the return requirement has been one of the main arguments supporting the logic of this activity. This is surprising

given the mandate of FII to help resolve market failures.⁷² The evaluators feel that demonstrating a market failure logic in large direct investments is particularly challenging. Direct investments, particularly if made in order to increase FII's financial returns, are clearly prone to cause a 'crowding out effect'.⁷³ It is remarkable that the international experts we interviewed categorically stated that government agencies should not participate in the venture level decision-making. The Finnish respondents similarly also gave a very low priority to direct investments (see Figure 27, page 70).

3.5 Impact

3.5.1 Development of the Finnish VC Market

The size of the Finnish venture capital industry started to expand rapidly in 1996 in line with other European countries and the US venture capital market. Previously growth had been steady but modest, but in 1996 the industry changed to a new growth track. Finnish Industry Investment Ltd was established in 1995 to promote the development of Finnish venture capital industry.

The capital commitments of Finnish Industry Investment Ltd have played an important role in the Finnish venture capital industry. During the recent years, FII has supplied each year 6%–8% of the total committed capital. The commitments of FII by the end of 2001 amount to 6% of the total of capital under management in the Finnish venture capital industry (Figure 21).

72 Hyytinen A. and Väänänen L., 2002, *Government Funding of SMEs in Finland*, The Research Institute of the Finnish Economy, Helsinki.

73 'crowding out effect' occurs when the actions of the State work to frustrate the efficient working of the market. Funds provided by the State (which may be offered at cheaper rates of interest) reduce the opportunities of willing private investors to identify and invest in attractive projects or firms. State funds unnecessarily substitute for private sources of finance.

The 'crowding out effect' problem of direct investments is well documented in the academic literature as well as in the evaluations of various government programs. See e.g.

Bouix J., Dodge C., Huttunen J., Pirinen P., Suominen R., and Viertola K., 2000, *Comparison of public special financing programs for SMEs: Canada, Finland, France, Germany and Norway*, Ministry of Trade and Industry, Helsinki.

Gilson R. J., 2002, *Engineering a Venture Capital Market: Lessons from the American Experience*, Paper presented at the Global Markets, Domestic Institutions: Corporate Law and Governance in a New Era of Cross-Border Deals.

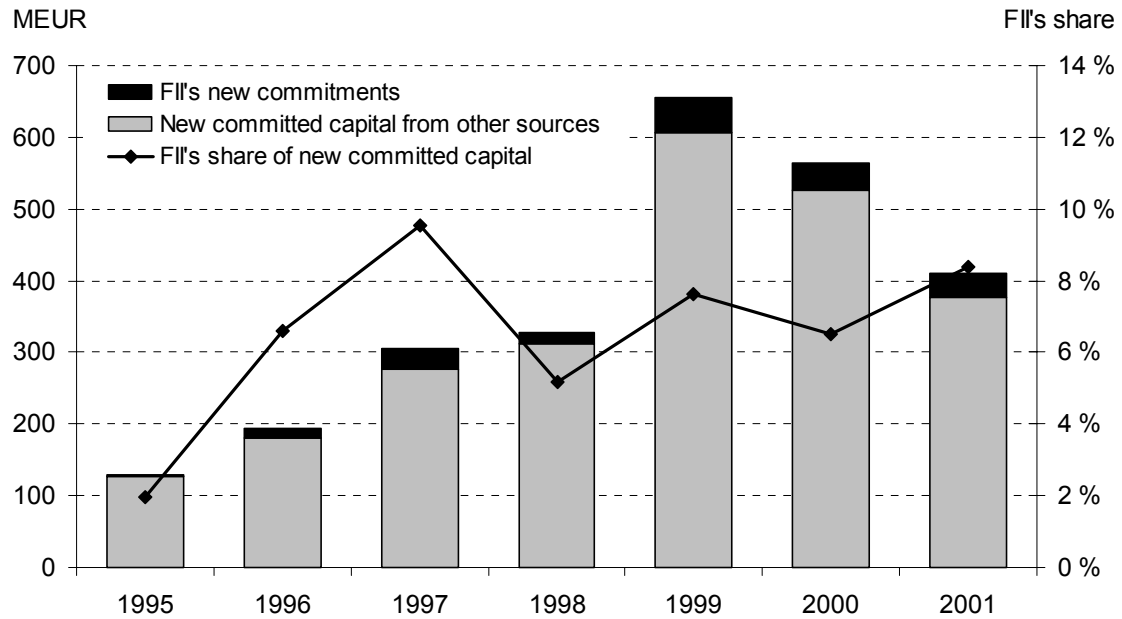


Figure 21. Capital commitments to the Finnish venture capital industry 1995–2001

Figure 22 compares the number and volume of investments by FII-backed investments compared to funds without FII-backing. It appears that FII-backed funds have taken a higher share in the total value of investments made compared to the total number of investments made. The statistics also indicate that FII-backed funds have reacted more strongly to the declining market conditions after 2000 compared to funds without FII-backing.

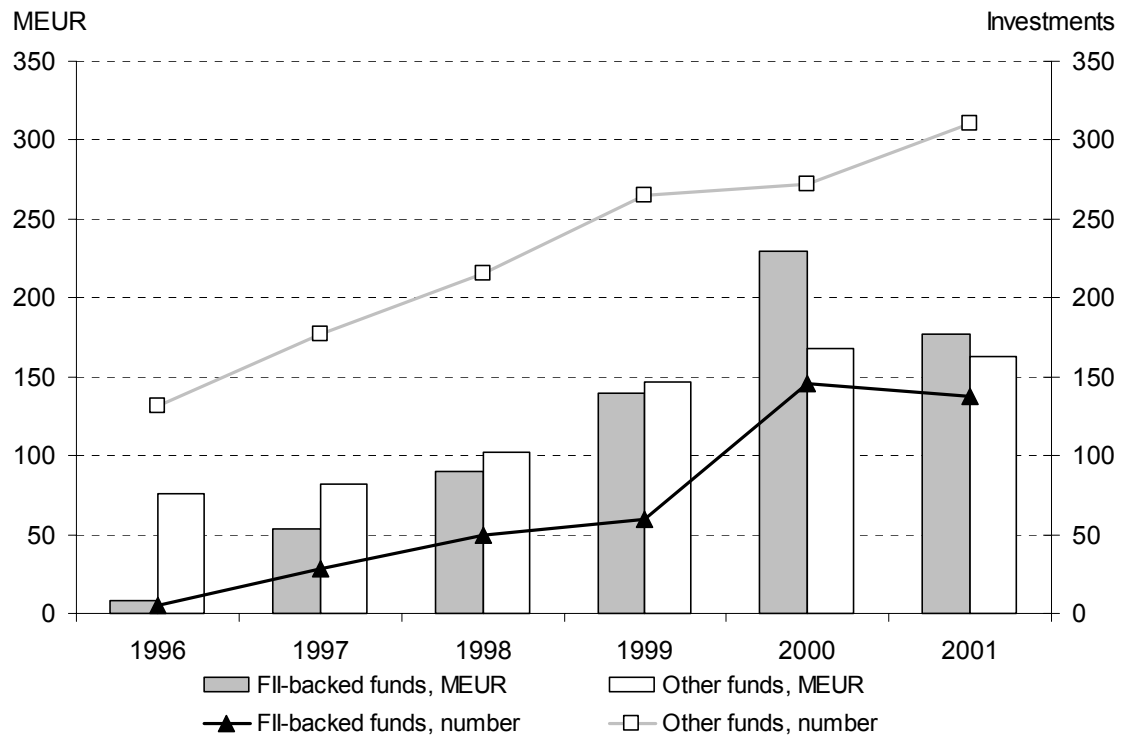


Figure 22. Annual investments of FII-backed funds and other funds

Comparison of Figure 21 and Figure 22 points out an important benefit of the original fund of funds operating model of FII. While FII has committed only about 6% of the total annual capital committed to venture capital funds, the funds in which it has invested have contributed about half of the total amount of annual investments. In comparison to a direct investment model where the committed capital and investments are the same, the fund of funds model of FII has significant advantages. The presence of the State as a co-investor through a fund of funds vehicle catalyzes institutional investors to invest in new venture capital funds. These enlarged and primarily private funds consequently syndicate with other venture capital funds thereby increasing the overall level of finance available. It was exactly this leverage effect of the fund of funds approach of FII which lead the authors of a prior comparison of public special finance programs for SMEs to conclude that FII was among the top performers in the sample.⁷⁴

74 Bouix J., Dodge C., Huttunen J., Pirinen P., Suominen R., and Viertola K., 2000, *Comparison of public special financing programs for SMEs: Canada, Finland, France, Germany and Norway*, Ministry of Trade and Industry, Helsinki.

3.5.2 Early-Stage Investments

At the end of 1990s, it could be noted that the Finnish venture capital market had developed rapidly. In the Government decision in 2000, the focus of FII was redirected from a general stimulation of the venture capital market towards resolving market failures. Early-stage venture capital investments were given as a key priority.

Figure 23 compares the allocations of investments by FII-backed and other funds in early stage (seed and start-up) investments. On aggregate level, only 17% of the money invested by FII-backed funds went to seed and start-up stage ventures. In comparison, funds without FII-backing targeted 33% of the invested money in seed and start-up companies in 2001. These figures demonstrate that the allocation of FII-backed funds to seed and start-up stage investments has been lower than the allocation of seed and start-up stage investments by funds without FII-backing. Given the primary focus area of FII to help resolve market failure in early-stage venture capital, the lesser focus in this area compared to other funds is alarming. Given the share of roughly 9% of the FII portfolio allocated in direct investments (primarily later stage), in effect, only about 15% of the total investments by FII were invested in early-stage companies.

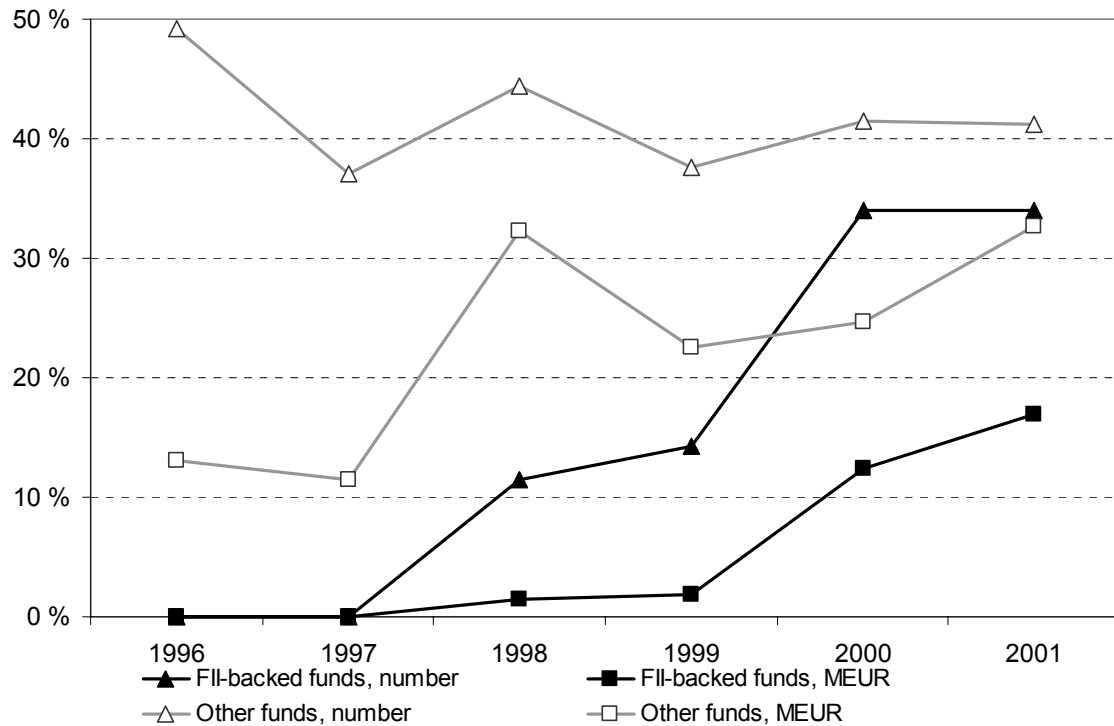


Figure 23. The share of seed and start-up stage investments by FII-backed and other Finnish venture capital funds

Another measure of importance in relation to the policy goal of FII to invest in starting companies is the relative share of initial investments versus ‘follow-on’⁷⁵ investments. In a comparison of initial investments versus follow-on investments by FII-backed and non-FII backed funds, it is surprising to find that the significant drop in the share of initial investments in 2001 is strongly explained by the change in investment behavior by FII-backed funds (Figure 24). The currently lower value-based share of new investments of all investments by FII-backed investments compared to the ratio of other funds without FII-backing is puzzling given the remit of FII to focus its investments in funds investing in early-stage companies. This indicates the recently decreased effectiveness of FII to respond to this market need.

75 A follow-on investment is an investment by the fund in a portfolio company or fund which has already received an initial round of finance. Follow-on funds necessarily reduce the amount of finance available to the invested in new companies in the short run.

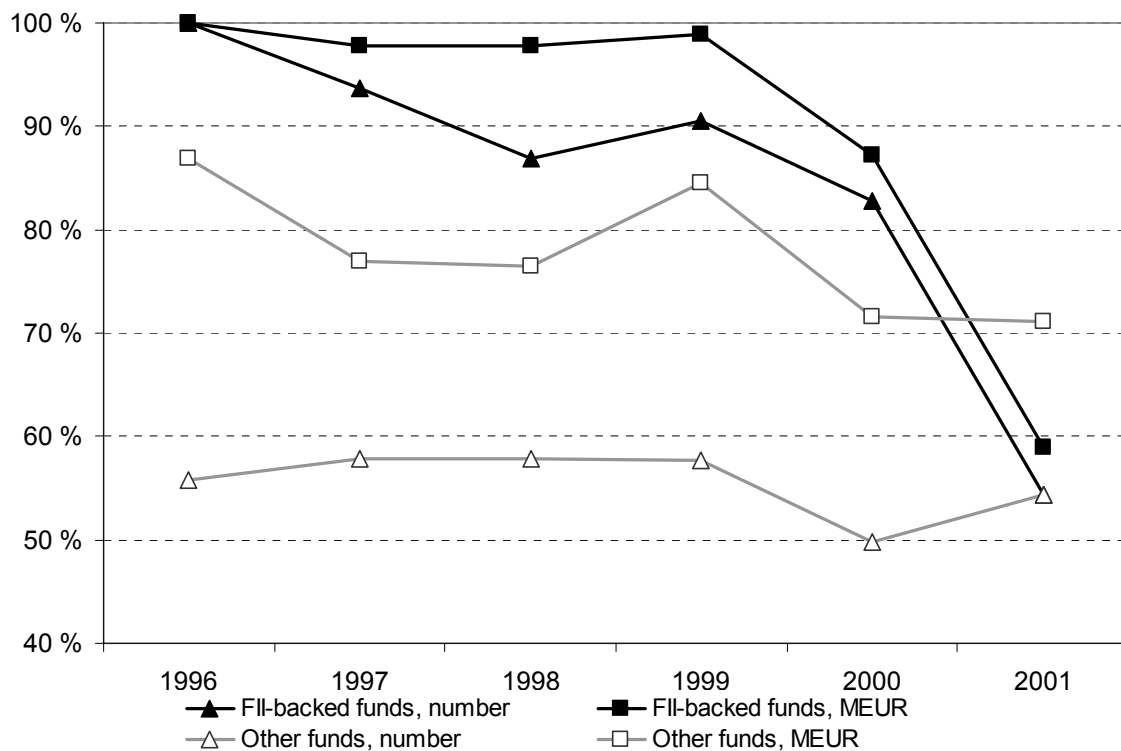


Figure 24. The share of initial investments of all investments (initial + follow-on investments) by FII-backed and other Finnish venture capital funds

3.5.3 Regional Investments

FII has been actively involved in the creation of the regional network of venture capital funds. FII has been an investor in all 'Ky-type' limited partnership venture capital funds. Setting up a network of regional venture capital funds is an area in which FII has generally been considered as having done a good job. It is the area where FII has been most effective according to our survey respondents (see Figure 26 on page 68).

Figure 25 compares the share of investments made in companies located outside southern Finland by FII-backed funds and other funds. The FII-backed funds have made roughly half of their investments in companies located outside southern Finland during recent years. This share is broadly similar to those venture capital funds not backed by FII.

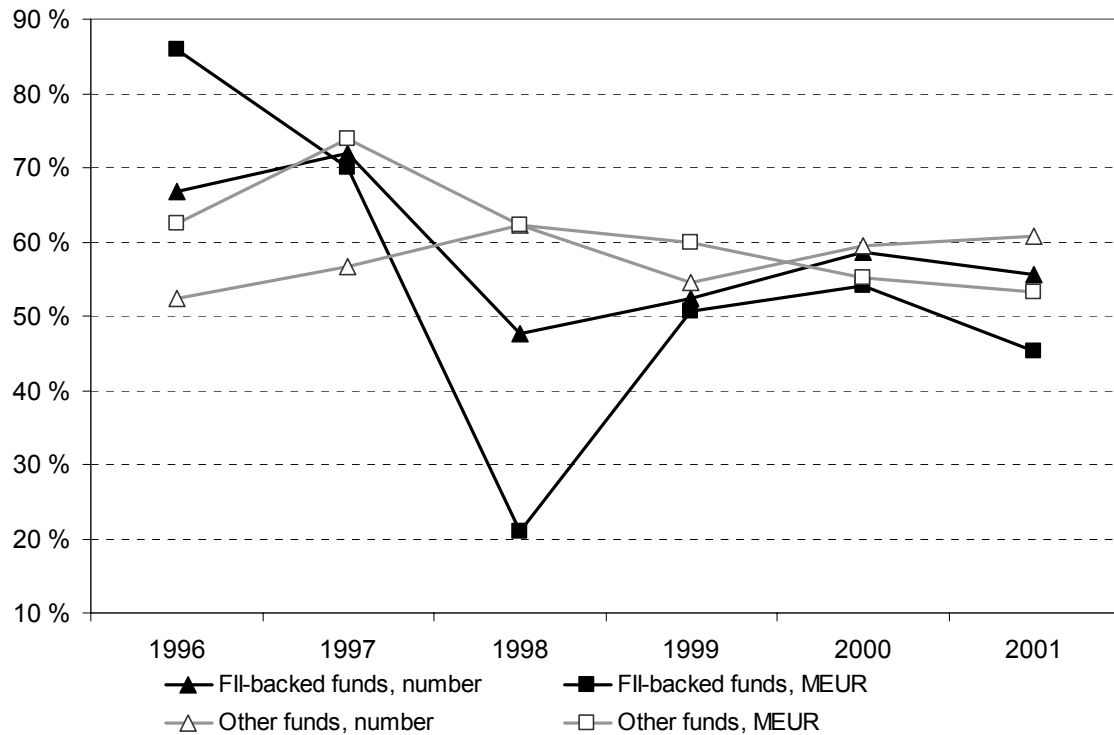


Figure 25. The share of investments outside Southern Finland by FII-backed and other Finnish venture capital funds

FII's stakeholders' evaluation of FII's activities

In a survey of stakeholders of FII, the respondents were asked to rate separately the importance and the effectiveness of FII's main activities on a scale of 1 (not at all important) to 5 (very important). This information allowed FII's activities to be 'mapped' in relation to each other. The positioning of FII activities is presented in Figure 26.

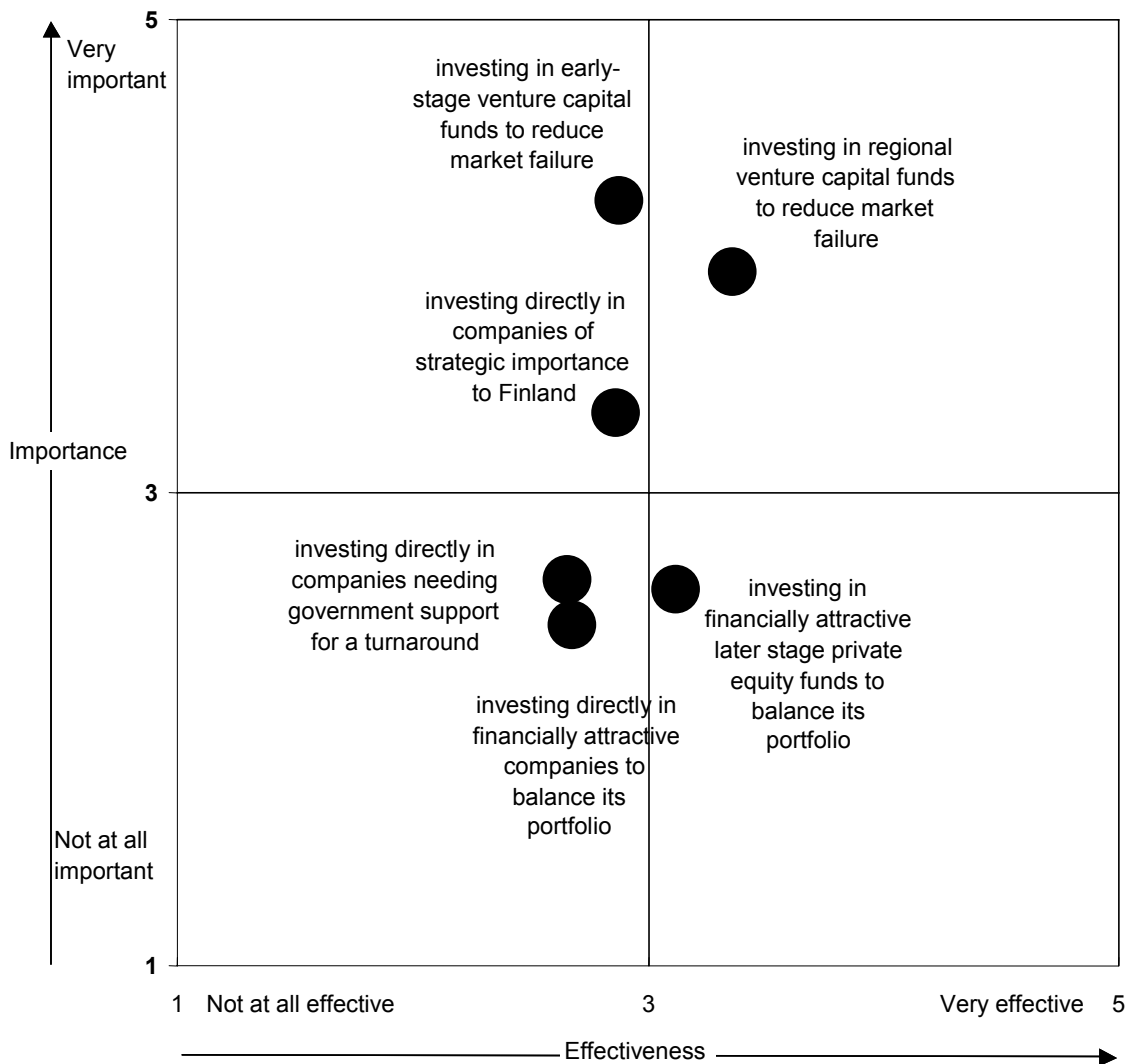


Figure 26. FII's stakeholders' views on the importance and effectiveness of the operations of FII

The positioning of the importance of FII activities is well in line with the picture of the market needs coming from the other analyses. Indirect early-stage investments (seed and start-up) are observed as the highest priority market failure. FII is expected to help resolve that market failure by catalyzing new funds to invest in these stages. The second highest priority given to FII by the stakeholders is for regional investing through existing fund investments. These two areas are generally seen as having a significantly higher priority than FII's other activities.

Concerning these other activities, the next highest priority is given to direct investments in companies of strategic importance to Finland. A closer

examination of this issue reveals a split in the opinions concerning this activity. Many respondents do not consider this activity at all important, whereas others see it as a priority. Those considering this activity important commonly referred to the current problematic status of the biotechnology sector in Finland in their answers to the open-ended questions.

Direct investments in turnaround/rescue operations are given a low priority. A low priority is also given to investing in financially attractive, later stage private equity funds for portfolio returns. The lowest priority is given to direct investments in financially attractive companies exclusively in order to increase FII's portfolio returns. The open-ended questions suggested a relatively hostile attitude towards a public investor making direct investments. This was seen as crowding out private money. Further, FII was not believed to be good at this type of investment activity. FII was considered most effective in regional fund investments as well as in investing in attractive later stage investments.

Regarding the organization's effectiveness, it is somewhat worrying that FII was not seen as very effective at the moment in the highest priority activity of fund investments in early stage companies. This is also the highest priority objective given in the current government mandate for FII.

Figure 27 illustrates the views of the stakeholders concerning the importance of the current activities of FII. It is noteworthy that there is a very strong consensus about the priorities of FII activities among all stakeholder groups. They gave a significantly higher priority for the fund of funds investments in early-stage and regional venture capital funds compared to the rest of FII's activities. It is worrying that the importance given by stakeholders to these two activities is not fully reflected in FII's own priorities. (See Figure 18 "Portfolio allocations 12/1999–6/2002 and the planned allocation of investments in 2002" on page 54).

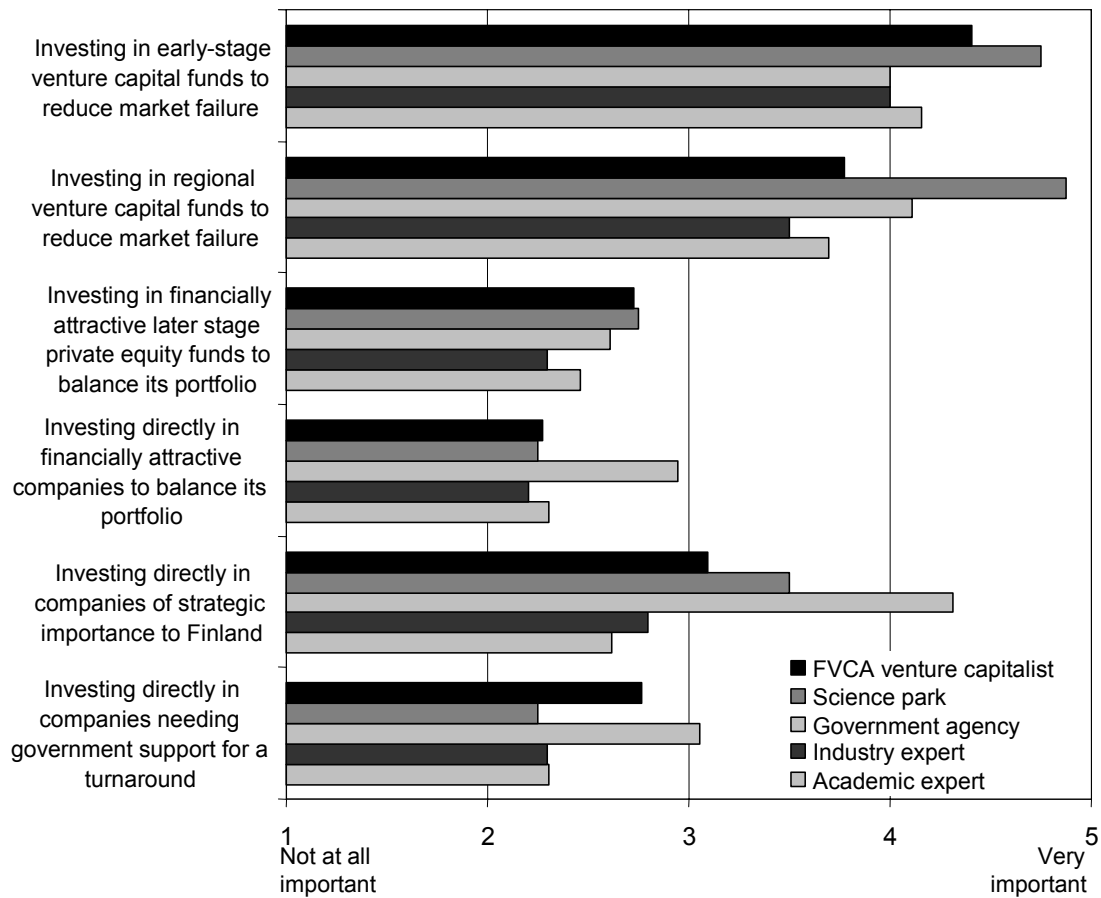


Figure 27. FII's stakeholders' views on the importance of FII's activities

Figure 28 presents the prioritization of the stakeholder groups of FII when asked to make a choice regarding “if it were impossible to effectively reduce market failures (e.g. in the supply of early stage venture capital) and be profitable at the same time”. 78% of the respondents prioritized focusing on “reducing market failures and increasing the allocation of investments in important but financially less attractive segments ignored by private investors even if it meant that FII could make net losses on its portfolio”. Only 22% of the respondents prioritized focusing on “keeping the FII’s investment portfolio profitable and increasing the allocation to financially attractive investments, even if it meant FII reducing commitment and effort to alleviating market failures.”

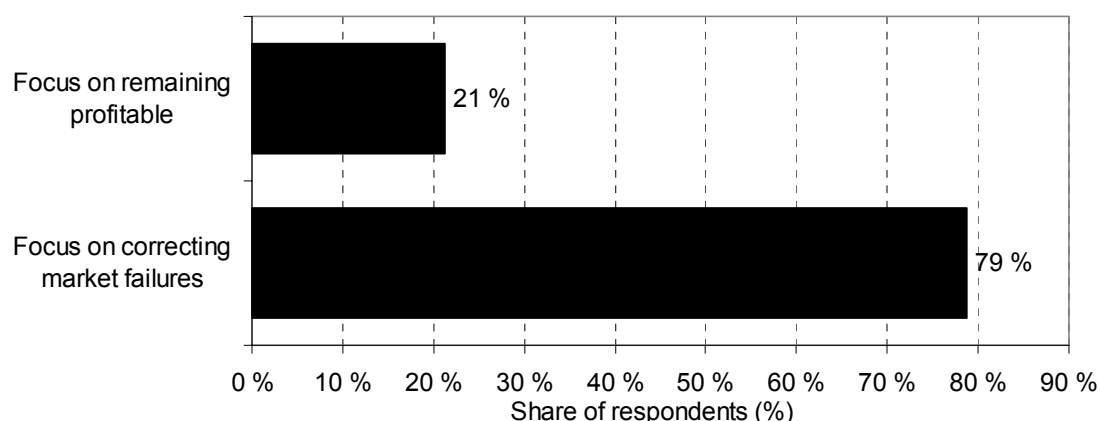


Figure 28. FII's stakeholders' views on the needed prioritization of FII goals

Table 10 presents the cross tabulation of prioritization by stakeholder group. The prioritization of policy objective over profitability goal was shared among *all stakeholder groups* included in the survey.

Table 10. FII's stakeholders' views on the needed prioritization of FII goals classified by stakeholder group

	Priority on resolving market failures over profitability	Priority on profitability over resolving market failure	N
FVCA members	73%	27%	22
Science park	88%	13%	8
Industry expert	73%	27%	11
Government agency	90%	10%	20
Academic expert	71%	29%	14
Total	79%	21%	75

3.6 Collaboration

In our survey, we also asked the respondents to rank the clarity and distinctiveness of the role of FII among the other development agencies of the Finnish Government (i.e. Sitra, Tekes, Finnvera etc.) that provide finance to high-growth young firms. 53% of the respondents considered FII's role unclear and gave the grade 1 or 2 in a scale of 1–5 from not at all clear to very clear

(Figure 29). The result is in line with the picture given by interviewees that FII is seen as having several incompatible objectives and activities. FII was also perceived as being relatively ‘distant’ from other related State agencies’ such as Sitra, Tekes, and Finnvera.

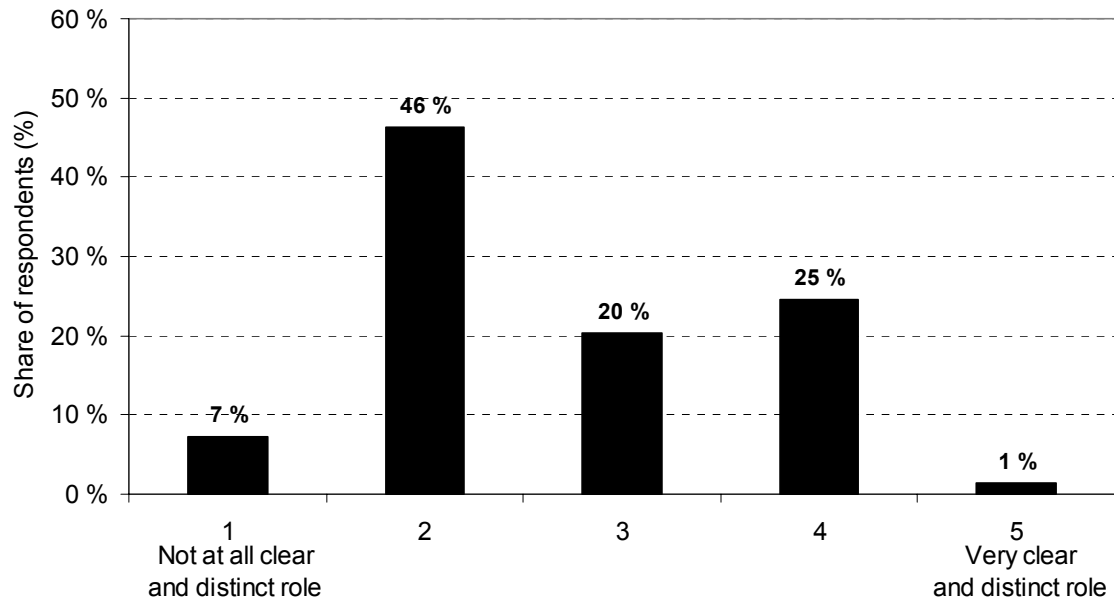


Figure 29. FII's stakeholders' views on the clarity and distinctiveness of the role of FII

One of the areas of some confusion in collaboration is the responsibility of the regional venture capital operations of the government. To date, FII, Sitra, and Finnvera have all been active in this area. Finnvera has not been making new investments in regional funds, but has remained a co-owner in a large number of regional venture capital funds. As the main activity of Finnvera is debt provision, involvement in the supply of equity has been seen as potentially causing conflicts of interest. However, Finnvera has a comprehensive regional network with a large number of business analysts knowledgeable about local businesses. FII has been actively involved in setting up all new ‘Ky type’ limited partnership structured, regional venture capital funds. However, the small management team of FII is centralized in Helsinki and therefore has limited direct contact with regional businesses. Sitra has had an important role both as an investor and developer of the management companies. However, according to informants, the role of Sitra in regional investments is coming to an end.

The question of dividing roles between various government agencies cannot be answered by an evaluation of a single player in the system. According to the information collected in the present evaluation, each agency involved in the regional venture capital has made clear contributions in the field. It seems that the question regarding regional investment boils down to whether there is a need to centralize all regional venture capital investments within the ambit of a single fund of funds, or whether there is a need to separate the management of 'Ky type' venture capital partnerships from the 'Oy type' evergreen funds. The logic of this separation is that the former would focus on high-growth ventures being a part of normal venture capital market, whereas the latter evergreen funds would be more associated with regional (and social) policy. In the model where the roles are split, FII is seen as investing in the limited partnership type funds in a similar fashion to their role in investing in funds in other market failure areas. Finnvera is seen to have a continuing role in funding the evergreen funds.

In this evaluation focusing on the role of FII, there can be seen to be strong synergies and economies of scale in FII taking care of investments in all limited partnership type funds where the market failure is based on the stage or the location. There are a lot of skills in monitoring, structuring of funds, orchestrating other limited partners, setting up effective monitoring systems, and many other activities where centralized operation is likely to be an effective operating mode. Contact networks to EIF and other institutional investors are a key asset in a fund of funds operation. FII is strong in these regards. However, the geographical reach of FII is limited. Therefore, a close collaboration with Finnvera's regional network is considered essential to maximize the value of State resources.

Overall, the coordination between the key players of the Finnish innovation system should be improved. At the margin, there is real confusion expressed by industry observers as to the proper authority, roles and relationships of the main industry players, including FII, Sitra, and Finnvera. Top-level coordination between the players is needed to improve the effectiveness of the innovation system and to help resolve emerging problems in the boundary areas of the State agencies. This coordination needs to be monitored at the highest level of government given the different reporting structures (MTI and Parliament) of these organizations. The recently instituted 'six pack' meetings between key executives of Sitra, Tekes, FII, T&E Centres, Finnish Foundation of Innovations, and Finpro have started this process, but it is as yet too early to judge the outcomes of this sensible (although overly delayed) initiative.

Further, effective enterprise policy requires coordinated actions not only between several government special financing agencies but also in more fundamental functions such as taxation, regulation, and education given their importance as preconditions for entrepreneurial activity.⁷⁶ Without sufficient measures taken to improve the incentives and other preconditions for high-growth entrepreneurship, government supply of venture capital can have only a limited impact on growth-oriented entrepreneurship.^{77 78 79} Effective enterprise policy requires a clearly identifiable and responsible champion at the highest level of the government capable of influencing and driving the development of the environment for entrepreneurship in all key areas.

3.7 Conclusions

From the beginning, FII has had many goals imposed on it, some of which are not fully compatible with each other. This conflict is particularly evident in a market downturn when the need for effective government intervention is greatest. Because of the history of FII, there has not been a very clear set of investment priorities. The problem has grown worse during the last year or two.

FII is organized as a small, competent team of investment professionals and is particularly suitable for the management of fund of funds investments. However, the organization itself has a strong will to grow and increase its direct investment operations. The governance of FII appears not to be very strong. The guidance from the Ministry of Trade and Industry and the Ministry of Finance, for example, regarding the increased need for FII and its management to focus on the market failure on early-stage venture capital has not led to a measurable change of operations towards that focus. Rather, the organization itself has increasingly

76 Ministry of Trade and Industry, 2001, *Business Environment Policy in the New Economy*, Ministry of Trade and Industry, Helsinki.

77 Arenius P. and Autio E., 1999, *Kansakuntien yrittäjyyspotentiaali – kymmenen maan välinen vertaileva tutkimus – Suomen osaraportti*, Teknillinen korkeakoulu, Yritysstrategian ja kansainvälisen liiketoiminnan laboratorio, Espoo.

78 Arenius P. and Autio E., 2000, *Global Entrepreneurship Monitor – 2000 Finnish Executive Report*, Research Reports / Center for Technology Management 1–2000, Helsinki University of Technology, Espoo.

79 Arenius P., Autio E., Kovalainen A., and Reynolds P. D., 2001, *Global Entrepreneurship Monitor 2001 Finnish Executive Report*, Center for Technology Management Research Reports 1-2001, Helsinki University of Technology, Espoo.

pursued growth intentions in later stage fund of funds investments and direct investments.

One conclusion from our evaluation is that FII can be assessed having been successful during the early years of its operations between 1996–2000 in meeting governmental policy goals. FII initially helped stimulate the supply of venture capital in general and later successfully supported the development of regional venture capital funds.

However, FII has not been able or prepared to follow effectively the new policy emphasis given in the February 2000 guidelines. Nor has the organization followed the instructions of the Ministry of Trade and Industry in regard to increasing its focus on early-stage investments and thereby reducing allocations to later stage private equity funds and direct investments.

In the current market downturn, the profitability goal set for FII has become a major barrier to FII fulfilling its early-stage investment policy goals. According to the information gathered in the evaluation, the management of FII has not presented a particularly enthusiastic and active image in regard to finding ways to stimulate activity in the early stage market. Instead, the management has exhibited a stronger and determined interest in expanding its involvement in later stage operations and direct investments.

The present situation regarding the remit and actions of FII appears strikingly as though “the tail is wagging the dog”. Namely, the secondary goal of being profitable has been used as a reason for not targeting the difficult area of early-stage market failure (the primary purpose of FII). Rather than address this issue of contradictory evaluation criteria directly, FII has decided to pursue an alternative strategy of organizational growth in later stage investment activity. In consequence, other players in the Finnish innovation system have seriously questioned the purpose and the role of FII as a government-owned agency. Given the clearly indicated market failures in the early stage segment, the present lack of financial resources by other players, and the current lack of impact of FII in this key statutory area, informed questions of the usefulness of FII as a policy vehicle are not unjustified. The primary *raison d’être* of FII is in danger if its management is not able or willing to establish a clear role for FII in resolving market failures. FII has yet to show that it is fully committed to this goal and is prepared to work in close collaboration with other State and private players of the innovation system.

4 Government Intervention in Venture Capital

4.1 Market Failure

Technically, a 'market failure' exists when the price established in the market does not equal the marginal social benefit of a good and the marginal social cost of producing the good. Within the context of financing high-tech young firms, a market failure can occur when the market does not provide sufficient finance to meet the demands of young firms regardless of their willingness to pay the price (interest payment) required. Asymmetric information increases the uncertainty and risks for providers of capital who would rather leave the market than provide finance under these conditions. The absence of finance means that existing companies fail through lack of necessary resources and new companies are not formed. Both outcomes are a social and economic cost to society.

It can be taken as a *sine qua non* that governments would prefer not to intervene in financial markets unless there is clear evidence of market failure leading to a serious misallocation of resources. Further, governments have to be convinced that their actions will effectively address the identified problem at an acceptable level of costs. Thus, governments (and, relevantly, the European Commission's Competition Directorate. See chapter 4.4) need to be convinced that an addressable market failure exists. The fact that many financial institutions are loath to finance young firms is not *per se* evidence of a market failure. Indeed, if the young firms are highly risky and the expected value of any external investment does not provide an acceptable risk premium to investors, then their actions are economically rational. Those arguing the case for intervention have to show that there are specific circumstances that prevent capital markets from acting efficiently and finding an equilibrium price at which the market clears. Absence of information leading to the decision not to offer finance at any price would constitute a market failure, which could justify some form of government intervention. Perverse incentives that bias the normal matching of supply and demand would also constitute a market failure. Loan guarantees may on occasions have this effect on the actions of both capital providers and users.

There is a substantial literature on the interests and actions of the key actors in the venture capital process and the effect of their behavior on the optimum

allocation of finance to potentially attractive young businesses^{80 81 82}. The literature centers on a treatment of the genesis, effect and management of agency costs as faced by the providers of capital (limited partners), the users of capital (portfolio firms) and the allocating intermediary agents (the venture capitalists). The effect of moral hazard issues on the behavior of actors in this market is central to these arguments⁸³. That agents can act in a manner which adversely affects the supply or demand of capital, is in large part based on the absence of full and equal information available to all the parties to the transactions, i.e. the information asymmetry problem. Thus the actions of government, in addition to providing more capital from public resources, also focus on correcting the causes of market failure in order that government interventions in private markets remain temporary.

4.2 New Technology Based Firms

The importance of new firm formation and growth, particularly in knowledge-based sectors of the economy, has almost universal recognition by governments. Ever since the seminal studies of MIT academic David Birch (1979) in the US demonstrated the major impact of firms of under twenty employees on the net growth of the American labor force, a series of research programs have evidenced the critical role of SMEs within an advanced and prosperous economy.⁸⁴ The value of these firms is not just restricted to quality employment growth. The literature brings out a number of other potentially key roles of new technology based firms (NTBFs):

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- 80 See for a well-known treatment of agency costs and the venture capitalists' contractual responses to this threat. Sahlman W. A., 1988, Aspects of Financial Contracting in Venture Capital Investments, *Journal of Applied Corporate Finance*, 23–36.
 - 81 For a more recent treatment see Kaplan S. N. and Strömberg P., 2002, *Characteristics, Contracts, and Actions: Evidence from Venture Capitalist Analyses*, NBER Working Paper No.w8764, NBER.
 - 82 For an interest paper on the interests of the venture capitalists and the subsequent effect on their optimization objectives, see Gifford S., 1997, Limited attention and the role of the venture capitalist, *Journal of Business Venturing*, 12, 459–482.
 - 83 Amit R., Glosten L., and Muller E., 1990, Does Venture Capital Foster the Most Promising Entrepreneurial Firms, *California Management Review*, 32, 102–111.
 - 84 Birch D. L., 1979, *The Job Generation Process*, MIT Program on Neighborhood and Regional Change, Cambridge, MA.

- efficiency of innovation
- export intensity
- regional development
- reciprocal relationship with large firms
- increase industry competitiveness.

The diversity of desirable potential benefits from a vigorous NTBF sector has made the encouragement of such firms a policy priority. However, while recognizing the potential importance of these types of young firm, there is also a substantial awareness that small firms, particularly in critical areas of high-tech and other knowledge-based industries, face peculiar problems that may well make them a ‘special case’ in policy terms.⁸⁵ ⁸⁶ Storey and Tether⁸⁷ have argued that this special case status of NTBFs can be justified for the following reasons:

- difficulties of the assessment of demand in highly immature markets increase both costs and uncertainties for the NTBF
- investors face added uncertainties as the initial NTBF financings have to cover both technology development and product marketing demands in the commercialization transition
- persistent threat to the young firm of accelerated redundancy in choosing the wrong technology in rapidly changing technology-based sectors
- lack of managerial skills among entrepreneurial scientists/technologists increases both costs and uncertainties for the NTBF as it seeks to commercialize its technological advantages.

These generic weaknesses particularly affect NTBFs at their earliest stages of development. The genesis of these difficulties hinge in large part on the consequences to small firms of an asymmetry of information in dynamic and volatile technology environments. Thus, investors have difficulties in determining the attraction or otherwise of a potential company. Similarly, the

85 Bank of England, 2001, *Financing of Technology-Based Small Firms*, Bank of England, Domestic Finance Division, London.

86 Hyytinen A. and Pajarinen M., 2002a, *Financing of Technology-Intensive Small Businesses: Some Evidence on the Uniqueness of the ICT Industry*, ETLA Discussion Papers No. 813, The Research Institute of the Finnish Economy, Helsinki.

87 Storey D. J. and Tether B., 1996, New technology-based firms in the European Union: an Introduction, *Research Policy*, 26, 933–946.

NTBFs find it difficult to initially identify and then convince sources of finance as to the value and attractiveness of their entrepreneurial ideas. The outcome of these dislocations is that there usually exist imperfections both in the supply of finance to NTBFs (the 'equity gap') and in the quality of firms that wish to take up such sources of finance (the lack of 'investment ready' firms⁸⁸).

Given that these weaknesses reduce the rate of formation of high potential young firms and also reduce the interest of professional investors in financing the growth of such firms, the State has a very active interest in addressing and correcting these weaknesses in the capital markets. In consequence, a range of support measures have grown up to specifically target NTBFs as a particularly important cohort of high growth potential, young firms. These measures are largely focused on equity rather than debt based instruments given the limited potential of young firms to provide sufficient interest cover to satisfy banks and other potential creditors⁸⁹. While in a number of countries (for example, Finland), the support programs do not formally differentiate between technology-based and other potentially high-growth young firms, the reality is that the schemes are largely conceived and executed as if they were specifically technology focused programs.

4.3 Forms of Government Intervention

The constraints facing the new and young firm are manifold. A government interested in supporting SMEs in general or NTBFs in particular can address a range of issues. NTBFs face financial rationing, but they also have problems in attracting competent managers with established careers in larger companies to take the substantial risk of joining a start-up or young company. Markets are rarely kind to new entrants, particularly if they are small, unknown and resource constrained. Very often firms are obliged to directly enter new markets where the use of distributors or joint ventures with more established firms would make more economic sense at put the young firm at less risk.⁹⁰ Similarly, young

88 Department of Industry Science and Tourism, 1997, *Small Business Research Program: Investment Readiness Study*, Commonwealth Government, Canberra.

89 Berger A. N. and Udell G. F., 1998, The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle, *Journal of Banking & Finance*, 22, 613–673.

90 Burgel O. and Murray G. C., 2000, The International Market Entry of Start-up Companies in High-Technology Industries, *Journal of International Marketing*, 8, 33–62.

NTBFs are very often specialist in focus and this limits their familiarity with other important technologies or their access. This is part of a wider problem in that the nascent or young NTBF and its management are required to find and make sense of a huge array of different information in order to survive and flourish as an economic entity. Much of this information is not readily available to the inexperienced young firm or its management, which at least initially is likely to have more of a technological than a commercial history. Government in seeking to support these firms in their critical early stages post formation has to both understand the nature of the threats and the appropriate support measures to attenuate such problems.

Table 11. Typology of Government Support Measures for NTBFs

State policies directed at new technology-based firms tend to be concentrated in addressing five areas of weakness:

- Financial constraints
- Management weaknesses
- Market imperfections
- Access to technology
- Access to information

In addition, policies may be classified by their mode of delivery, i.e. either direct to the applicant firm or via agents:

- *Direct* policy instruments
- *Indirect* policy instruments

The majority of schemes to support NTBFs have traditionally been direct, i.e. involving some type of assistance to the entrepreneur/business. Indirect policies have more commonly aimed at infrastructure or market improvements. More recently, there has been increasing support for the State to act indirectly through its encouragement and development of existing market structures.

In addition to a variety of ways in which the State can assist young firms, there are also a number of levels at which the State can intervene. They can choose to support NTBFs directly by grant or subsidy. Conversely, they can direct resources indirectly to the NTBFs by way of the professional investment firms, which seek to invest in such companies. In this review, we will concentrate primarily on those instruments which are linked to *equity* support by professional investors rather than loans or grants from the State. Further, we will not discuss those schemes which seek to improve the quality and supply of information to the entrepreneur or enhance his or her training. In this report, we will remain primarily concerned with the supply of finance to the young and resource-constrained business.

Equity (often termed “risk capital”) has a particularly important role for the support of NTBFs given the lack of ‘collateralizable’ assets belonging to the young firm, and the often extended periods of negative cash flows before a new project or firm becomes profitable^{91 92 93}. These two factors usually rule out traditional bank debt as a major source of funding⁹⁴. Within the present report, the concentration on equity schemes is also appropriate given that FII programs are exclusively focused on equity rather than debt or grant provision.

Government employees making decisions that impact directly on the workings of factor markets are increasingly treated with some reservations by policy makers and program designers. Civil servants are not trained private equity investors nor do they operate under remuneration packages that reward them on the basis of the success of their commercial decisions. Governments are increasingly of the opinion that public actions are a poor substitute for private, commercially driven activity in specialist markets that are characterized by high levels of complexity and volatility. Accordingly, there is an increasing interest in crafting public interventions, which enable commercial activity in early-stage VC markets to be more economically attractive to private agents. The State seeks to support rather than substitute for private action by changing the risk/reward profile of the target activity.

4.3.1 Direct versus Indirect Policies Direct Intervention on the Supply of Venture Capital

As noted, the State may seek to address problems in the supply of finance to high potential young firms by using its own resources directly to address the problem. A State investment agency may be set up to deal directly with target applicants. Such policies would be termed ‘direct’. Conversely, those policies which seek to address these market failures by incentivizing the supply of venture capital from

91 Roberts E. B., 1991, *Entrepreneurs in High Technology*, Oxford University Press, New York.

92 Bygrave W. D. and Timmons J. A., 1992, *Venture Capital at the Crossroads*, Harvard Business School Press, Boston, MA.

93 Bank of England, 2001, *Financing of Technology-Based Small Firms*, Bank of England, Domestic Finance Division, London.

94 Capital loans and other instruments where the greater risks of investing in young companies are compensated by an ownership (equity) position in the event of success are becoming increasingly common. However, Almi in Sweden argue that micro-loans with delayed repayment of principal and interest are as relevant as equity to NTBFs.

private agents in established capital markets and which specifically focus on the venture capital firm, are termed 'indirect' investment programs ('fund of funds'). This is because they do not provide direct financial transfers to specific target SMEs but incentivize the intermediary agents in the capital markets and supply capital via these private intermediary venture capitalists.

Direct Intervention by the State

Pros: Lerner^{95 96} highlights the importance of R&D spillovers as a key rationale for government investment in the venture capital industry. Social returns to investments in innovative firms are often higher than private returns. As private investors do not capture full benefits of the investment, it may be sub-optimal for them to invest. For the same reasoning, it may be desirable for the government to invest in such firms for reasons of net social benefit when private funding is not forthcoming. Lerner also shows the certification role of government by demonstrating that firms receiving investments by SBIR (Small Business Innovation Research) programs in the US between 1983 and 1997 grew faster than non-awardees and were able to attract more venture financing. If this finding of positive effects of government subsidies can be generalized, it might also apply to companies funded by VC finance provided by government funds.⁹⁷

Cons: Although there are some potential benefits in direct government involvement, the current research finds a significant number of reasons why government should not be involved in venture level decision-making.^{98 99 100 101}

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- 95 Lerner J., 1999, The government as venture capitalist: The long-run impact of the SBIR program, *Journal of Business*, 72, 285–318.
- 96 Lerner J., 2002, When bureaucrats meet entrepreneurs: The design of effective 'public venture capital' programmes, *Economic Journal*, 112, F73–F84.
- 97 Manigart S. and Beuselinck C., 2001, *Supply of Venture Capital by European Governments*, Working paper, Ghent University.
- 98 Gilson R. J., 2002, *Engineering a Venture Capital Market: Lessons from the American Experience*, Paper presented at the Global Markets, Domestic Institutions: Corporate Law and Governance in a New Era of Cross-Border Deals.
- 99 Manigart S. and Beuselinck C., 2001, *Supply of Venture Capital by European Governments*, Working paper, Ghent University.
- 100 Bouix J., Dodge C., Huttunen J., Pirinen P., Suominen R., and Viertola K., 2000, *Comparison of public special financing programs for SMEs: Canada, Finland, France, Germany and Norway*, Ministry of Trade and Industry, Helsinki.
- 101 Bannock Consulting Ltd, 2001, *Innovative instruments for raising equity for SMEs in Europe*, Final report prepared for DG Enterprise of the European Commission by Bannock Consulting.

For example, it has been argued that investments by government in the VC industry may lead to a slower development or even suppression of the private VC industry.^{102 103} This is the ‘crowding-out effect’, where private VC funding decreases and is substituted by government funds.^{104 105 106} Public VC may well fund the best projects by investing at below market rates and thereby leaving the second best projects to private VC investors.¹⁰⁷ In these cases, the inappropriate intervention by governments can actually prevent the creation or subsequent working of an active and flourishing private VC market. Second, there is an argument that government investments and subsidies often grant a ‘license to steal’ to the entrepreneurs.¹⁰⁸ For example, the SBIC (Small Business Investment Company) program seldom controls what happens with the money after a company receives a grant. Therefore, adequate control and follow-up of companies receiving government VC funds is needed in order to avoid abuse. Third, the appropriateness of using of public servants to assess VC investment opportunities is questionable. Their reward system is in most cases independent of the outcome of the investments.¹⁰⁹ In this line of reasoning, public servants should either be rewarded and incentivized as their counterparts in the private sector, or conversely, the inappropriateness of using public servants in areas of direct commercial activity should be recognized. There is also an argument that direct investing activity by government is vulnerable to pressures from politicians and other interest groups to direct the investment activity to directions

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- 102 Surlemont B., Wacquier H., and Leleux B. F., 1998, *State versus Private Venture Capital: Cross-Spawning or Crowding Out? A Pan-European Empirical Examination*, Paper presented at the Babson College-Kauffman Entrepreneurship Research Conference.
- 103 Gilson R. J., 2002, *Engineering a Venture Capital Market: Lessons from the American Experience*, Paper presented at the Global Markets, Domestic Institutions: Corporate Law and Governance in a New Era of Cross-Border Deals.
- 104 Khanna J. and Sandler T., 2000, Partners in giving: the crowding-in effects of UK government grants, *European Economic Review*, 44, 1543–1556.
- 105 Hyytinen A. and Väänänen L., 2002, *Government Funding of SMEs in Finland*, The Research Institute of the Finnish Economy, Helsinki.
- 106 Armour J., 2002, *Law, Innovation and Finance: A Review*, Working paper, Centre for Business Research, Cambridge University, Cambridge.
- 107 Manigart S., De Waele K., Wright M., Robbie K., Desbrieres P., Sapienza H. J., and Beekman A., 2002, Determinants of required return in venture capital investments: a five-country study, *Journal of Business Venturing*, 17, 291–312.
- 108 Florida R. and Smith D. F., 1993, Keep the Government out of Venture Capital, *Issues in Science and Technology*, 9, 61–68.
- 109 Surlemont B., Wacquier H., and Leleux B. F., 1998, *State versus Private Venture Capital: Cross-Spawning or Crowding Out? A Pan-European Empirical Examination*, Paper presented at the Babson College-Kauffman Entrepreneurship Research Conference.

that benefit themselves.¹¹⁰ Fifth, direct investments are also highly expensive for the government.^{111 112}

4.3.2 Indirect Intervention in the Supply of Venture Capital

The State does not have to act directly if it can influence or adapt the commercial environment to a degree that will encourage private investors to undertake the desired actions.^{113 114} Governments have at their disposal a wide range of fiscal and regulatory instruments in addition to considerable freedom in the allocation of grants and other government transfers and subsidies. On some occasions, government can best influence the supply of venture capital by removing legal or regulatory stumbling blocks. For instance, the elimination of the ‘prudent man’ rule in the United States at the end of 1970s allowing trustees of pension funds to increase their allocations of finance to venture capital as an asset class without making themselves legally vulnerable.¹¹⁵ The 1981 Companies Act in the UK similarly removed a major barrier to venture capital activity by allowing venture capitalists to use the assets of a target management buy-out as the security for raising finance to purchase the buy-out. The removal of this barrier effectively launched the highly successful UK buy-out industry.

The State is seeking a market-mediated response to the reality that without some kind of intervention there will be an insufficient supply of seed and early stage capital. In seeking to address this market failure, the State has to decide whether or not to tackle this problem via its own actions or by indirectly incentivizing

110 Lerner J., 2002, When bureaucrats meet entrepreneurs: The design of effective 'public venture capital' programmes, *Economic Journal*, 112, F73–F84.

111 Bannock Consulting Ltd, 2001, *Innovative instruments for raising equity for SMEs in Europe*, Final report prepared for DG Enterprise of the European Commission by Bannock Consulting.

112 Bouix J., Dodge C., Huttunen J., Pirinen P., Suominen R., and Viertola K., 2000, *Comparison of public special financing programs for SMEs: Canada, Finland, France, Germany and Norway*, Ministry of Trade and Industry, Helsinki.

113 Gilson R. J., 2002, *Engineering a Venture Capital Market: Lessons from the American Experience*, Paper presented at the Global Markets, Domestic Institutions: Corporate Law and Governance in a New Era of Cross-Border Deals.

114 Martin S. and Scott J. T., 2000, The nature of innovation market failure and the design of public support for private innovation, *Research Policy*, 29, 437–447.

115 Mayer C., 2002, Financing the New Economy: financial institutions and corporate governance, *Information Economics and Policy*, 14, 311–326.

third parties. As part of the overall appraisal, the evaluators decided to seek the views of a number of specialist policy-makers who had responsibility for designing their government's prescription to the equity gap issue. One of the most uniform of the responses gained from interviews with a representative group of internationally senior policy-makers (see References for a list of interviewees) was their response to the question: "Do you believe that the State should be *directly* involved in selecting attractive seed/early-stage portfolio firms in which to invest?" Not one respondent strongly agreed with that statement while the single largest response was to very strongly disagree. Clearly, policy-makers have come to accept that the skills set required to successfully generate, identify and execute seed/early stage investments in new technology based firms cannot be easily replicated by the State. Accordingly, in most cases, the State sought to attract professional private sector investors to act as agents on behalf of government. Private investors seeking to maximize their wealth by making attractive investments were seen as more effective instruments of government policy than non-specialist civil servants operating in a bureaucratically structured and highly constrained reward system. The State can, if it wishes, recruit over time investors and management to run its own investment company. However, evidence suggests that it is very difficult for governments to retain specialists in the area of venture capital and private equity with private firms repeatedly 'cherry picking' attractive government staff.

To Protect or to Reward Private Investors: Managing Success and Failure

Based on the premise that, in the absence of government intervention, private investors will either not invest in seed and early stage investments or that their activities in this area will be sub-optimal, the State has to make the decision how best to encourage a greater interest from commercial investors. The intervention of the State has to skew the reward /risk profile from that pertaining in the market without their involvement. This may be achieved by reducing the costs of failure (down-side protection) or magnifying the economic returns from success (up-side leverage). These outcomes are not necessarily alternatives and some programs will incorporate elements of both actions. The State may also seek to alter the economics of seed and early stage funds not by influencing the consequences of adverse or positive outcomes but by altering the operating costs of an early stage venture capital firm via direct subsidy. Table 12 describes some features used in government-sponsored venture capital programs to incentivize private investors to resolve market failures.

Table 12. Features used in government-sponsored venture capital funds to incentivize private investors to invest in market failure areas

Feature	Description	Incentive effects	Examples
Public investor co-investing with private limited partners	Government matching the investments by private limited partners	Helps in setting up a fund. Also helps to build a sufficiently large fund to benefit from economies of scale. However, investing <i>pari passu</i> with private investors does not have direct incentive effects, i.e. it does not improve the expected returns for private investors in market failure segments such as early stage	<50% • Europe/EIF • Finland/FII • Israel/Yozma ≥50% • Australia/IIF and Pre-seed Fund • USA/SBIC and SSBIC • UK/regional venture capital funds
Capped return for public investors	After all the investors (including the public investor) have received a target IRR (e.g. interest rate + perhaps some risk premium) the rest of the cash flows are distributed exclusively to private investors.	Capped return for the government increases the expected IRR for private investors. The incentive effect is such that it increases the compensation for good performance. This in turn creates a strong incentive for the private investors to incentivize the general partners to make successful investments and add value to portfolio companies	• UK/regional venture capital funds ¹¹⁶ • Australia/Pre-seed fund ¹¹⁷ • Chile/CORFU ¹¹⁸

116 DTI, 2001, *The Regional Venture Capital Fund Programme*, Department of Trade and Industry, Accessed: 10.11.2002, <<http://www.dti.gov.uk/sbs/ef/regionalventure.htm>>.

117 AusIndustry, 2002, *Pre-Seed Fund - Guidelines*, AusIndustry, Accessed: 10.11.2002, <<http://www.ausindustry.gov.au/library/PSFGuidelines20021025122528.pdf>>.

118 Gilson R. J., 2002, *Engineering a Venture Capital Market: Lessons from the American Experience*, Paper presented at the Global Markets, Domestic Institutions: Corporate Law and Governance in a New Era of Cross-Border Deals.

Buy-out 'option' for private limited partners	Private investors are given the option to buy the share of the government in the fund at (or until) a specific point of time at predetermined price (typically nominal price + interest rate). This option is agreed between government and the other limited partners at the start of the fund.	The effect of the buy-out option on the IRR of private investors is quite similar to the effect of 'capped return" of public investors. However, there are two additional benefits: 1) The buy-out option gives both the public investors and the private investors an opportunity to demonstrate fund success earlier and more visibly than in the capped return alternative 2) In the case of success, government gets a quick exit from the fund and can put the money to work again instead of waiting for the returns on fund termination	<ul style="list-style-type: none"> • Israel / Yozma¹¹⁹ • New Zealand / New Zealand Venture Investment Fund¹²⁰ • Korea
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119 Gilson R. J., 2002, *Engineering a Venture Capital Market: Lessons from the American Experience*, Paper presented at the Global Markets, Domestic Institutions: Corporate Law and Governance in a New Era of Cross-Border Deals.

120 Ministry of Research Science and Technology, 2001, *2001/2002 Budget for Vote Research, Science and Technology*, Ministry of Research, Science and Technology, Accessed: 10.1.1.2002, <www.morst.govt.nz/budget/budget.doc>.

Downside protection	Downside protection means the government underwrites an agreed percentage of the limited partners losses from the portfolio.	Downside protection has a negative effect from the incentive perspective. While downside protection helps support the IRR, it decreases the difference in returns for private investors and the management company between successful and unsuccessful investments. The effects of good selection and value-added efforts have a lower impact on the performance of the fund.	<ul style="list-style-type: none"> • Germany / WFG^{121 122 123} • Germany / tbg & KfW¹²⁴ • France / SOFARIS • Denmark/ Udviklingselskaber
Fund operating costs	Government gives a subsidy to the management company to cover some of the fixed costs from running the fund.	The fund operating costs are neutral from the perspective of incentives to fund management or LPs while increasing the IRR of the fund	<ul style="list-style-type: none"> • Europe / European Seed Capital Scheme

- 121 Mayer C., 2002, Financing the New Economy: financial institutions and corporate governance, *Information Economics and Policy*, 14, 311–326.
- 122 Gilson R. J., 2002, *Engineering a Venture Capital Market: Lessons from the American Experience*, Paper presented at the Global Markets, Domestic Institutions: Corporate Law and Governance in a New Era of Cross-Border Deals.
- 123 Becker R. and Hellmann T., 2000, The Genesis of Venture Capital: Lessons from the German Experience.
- 124 Fiedler M.-O. and Hellmann T., 2001, Against all odds: the late but rapid development of the German venture capital industry, *The Journal of Private Equity*, 4, 31–45.

Timing of cash flows	Ordering of the cash flows so that public investor puts the money in first and gets the money out last	The IRR of the private investor can be enhanced through timing of cash flows improving the attractiveness of the fund to the non-government limited partners.	<ul style="list-style-type: none"> • UK / Regional Venture Capital Funds
Option to abandon	A trial period after which the fund can be closed in case it does not attract sufficiently attractive dealflow	Bad for incentives as 'it makes the unthinkable thinkable'. An option to bail out from the fund in a case if it is not successful decreases investors' incentives to make the fund successful and is likely to lead to an increased likelihood of failure.	

Managing Success – Upside Incentives

The purpose of upside incentives is to increase the rate of returns to private investors by a preferential reallocation of the net rewards from a portfolio of investments making the expected returns from investments in market failure area comparable to other investment opportunities. Thus, in practice, the investment sums of the State in a leveraged fund will subsequently take a smaller share of any net gains than their private co-investors. This is done by restricting or capping the returns to the invested monies of the State when it is involved as a limited partner in the fund. Additionally, the State may be required to make its investments before the finances of the private investors are ‘drawn down’ into the fund. Similarly, the private investors may be distributed the principle and any returns from individual investments plus any final residual surplus from the fund before the public investor. This has the effect of returning a larger proportion of the net capital gain of the fund to the private investors than their investment in the fund would warrant if all investors were treated equally. These actions are the opposite of when the State invests *pari passu* with private investors, i.e. the State and the private investors are treated equally in any commitments to or returns from the fund. FII normally invests on *pari passu* terms. Thus, while FII investments increase the size of any fund into which it invests and its contribution may assist in realizing any scale effects on the operation of the fund, *its actions have no leverage effect on the returns to private investors*. Given the profit requirements on FII, this arrangement is rational but it does mean that the State forgoes any leverage incentivization of private investors. It is highly likely that leverage effects will be much more valuable to private investors than any scale effects from FII merely being involved on the same terms as any private investors in the fund.

Importantly, upside leverage instruments do not protect the venture capital firm or the limited partners against the costs of ‘adverse selection’ and project failure but rather multiply the financial benefits of success to the disproportionate advantage of the venture capital firms and their private equity investors (limited partners). Given that a relatively small number of successful investments will typically provide the majority of capital gain for a venture capital fund, this leverage again can have critically important performance benefits particularly for the smaller fund.

State-sponsored leverage schemes usually allow each euro or dollar of a venture capitalist’s fund to be matched with one or more euros or dollars of the government’s money. The German BTU scheme (co-financing variant) will match the venture capitalist on a *deal by deal* basis at parity (i.e. 1:1 ratio) to a

ceiling of DM 3 million investment from the federal government. In the American SBIC Scheme, the leverage is 2:1 for most licensed US venture capitalists outside special development areas up to a ceiling of a State contribution of US \$90 million *per fund*. Thus, a US \$45 million fund of private investors can attract the maximum leverage of US \$90 million publicly guaranteed monies to become a \$135 million US fund. In 1997, the Australian government formally adopted a local equivalent of the revised SBIC Scheme by creating the Industrial Investment Fund with A\$130 million available for leveraged investment on a 2:1 State/Private ratio. In a later variant of this program, the Australian government's Competitive Pre-Seed Fund, which was established in 2001, is based on a 3:1 public to private leverage ratio. In providing such a generous State contribution, the latter scheme recognizes the economic challenge of the initial commercialization of R&D activities for a commercial investor.

In addition, these schemes materially assist the fund in being able to provide portfolio companies with successive rounds of finance. This dearth of 'follow-on' finance is a major problem for a small venture fund supporting an exciting, and invariably cash demanding, investee company.¹²⁵ In the absence of sufficient follow-on finance, the original investor is likely to face severe dilution and a diminishing share in any eventual capital gain from the investment. In effect, the first investor takes the highest level of risk and by not being able to continue to invest is denied an appropriate reward. The addition of State money not only provides leverage benefits but the larger size of the fund gives the fund managers much more liquidity to continue investing in their most promising portfolio companies.

The State may insist on a share of any capital gain of the fund. The higher the returns to the State's investment, the less the effect of a leverage of the private investors returns. While any increase in the share of investment returns to the State increasing the cost to the venture capitalist of the State's participation, the benefits of leverage are likely to outweigh the incremental costs – provided that attractive investments are made and successfully exited by the fund and the share demanded by the State is not too onerous. Again, the prevailing logic of the program remains solely in rewarding successful investment by private agents. In practice, the State is usually less interested in a risk-adjusted return on its funds and more attracted by the supply side stimulation to the venture capital market

125 Murray G. C., 1994b, The Second 'Equity Gap': Exit Problems for Seed and Early Stage Venture Capitalists and Their Investee Companies, *International Small Business Journal*, 12, 59–76.

resulting from its involvement. For the State to demand a large share of net returns becomes counter-productive to its more valuable policy focused role of incentivizing private investors. For example, the UK Regional Venture Capital Funds set up in 2001 ‘cap’ the returns to the State’s investment in each fund to a ‘cash to cash’ net Internal Rate of Return of 5%. Any additional capital gain from the fund’s investments goes exclusively to the private limited partners. (See appendix 6 for a description of the 2001 UK Regional Venture Capital Fund scheme).

Thus, the State’s financial contribution allows the managing partners of the fund to ‘gear up or leverage’ the returns from the investment to the exclusive benefit of the private equity investors. Zero Stage Capital, a Boston-based, early-stage venture capital firm, and one of the first US managing partnerships to be awarded a license under the revised SBIC leverage scheme, has estimated that the benefit of this instrument can translate into a one third improvement on the terminal IRR of an average performing fund¹²⁶. The 1:3 leverage component (i.e. 25% of the funds’ capital is provided by the State) of the cited British scheme has the effect that with an overall fund return of 20% IRR, the private partners will receive a net annualized return on their investments of 27% IRR. Regardless of the limited partners’ return, the State’s return is capped at 5% IRR *after* the limited partners have earned a threshold IRR of 10%. Many recent government venture capital programs targeted at resolving market failures have recently adopted either a ‘capped return’ for the government or a ‘buy-out option’ for the private investors in order to incentivize private investors to invest in early stage areas where a market failure exists. Such schemes have been launched by the government e.g. in the UK, Israel, Australia, New Zealand, Chile, and Korea.

State leverage may be either directed at the fund itself or, less commonly, at a specific portfolio company. Underwriting schemes are commonly authorized on a specific deal by deal basis. Thus, each portfolio company has individually to be accepted into the scheme by the underwriter. In the case of the upside leverage, this is addressed at the level of the fund in the case of the US’ SBIC scheme, the British Regional VC Fund program and one of the variants (KfW ‘refinancing’) of the German BTU Scheme. The other BTU scheme (tbg ‘co-investment’) participates directly in a portfolio company in parallel with the venture capitalist with a separate decision being made on each investment.

126 Correspondence with Paul Kelley, President of Zero Stage Capital, Cambridge, MA.

Managing Failure – Downside Protection

Early-stage investments in NTBFs carry a range of firm and industry specific risks. Thus, it is not uncommon for a very significant proportion of the investee firms in an early-stage portfolio to result in full or partial loss of the venture capitalist's investment.^{127 128 129} This malign outcome skews the risk/reward distribution strongly towards poor fund returns in both theory and practice.¹³⁰ Recognizing this peculiar reality, a number of governments have instituted publicly supported, insurance or underwriting schemes to encourage investors to remain in this activity. The SOFARIS program in France, the “Udviklings selskaber” program in Denmark or the now terminated PPM scheme in the Netherlands are all examples of State guarantees. Thus, the professional investor does not bear the full cost of a failed investment but is partially compensated or ‘bailed out’ by the State acting as an underwriter.

This safety net, it is assumed, will change the venture capitalist's risk preference and behavior towards greater investment activity in younger and more speculative enterprises. Evidence from the German BTU scheme would suggest that this assumption is correct. However, one major problem with downside protection is that it does not discriminate between unlucky and merely incompetent investors. Guarantees protect the venture firm recipients from excessive losses. Underwriting does little to improve investment returns compared to leverage/equity enhancement schemes or programs (e.g. Israel's Yozma) that have allowed fund managers to buy the State's interest in successful funds. In effect, guarantee schemes allow less successful investors to be protected from the consequences of their own actions.

Regardless of the moral hazard problem, down-side protection can be viewed as important by smaller funds in particular.¹³¹ Being already constrained by limited

127 Huntsman B. and Hoban J. P., 1980, Investment in New Enterprise: Some Empirical Observations on Risk, Return and Market Structure, *Financial Management*, 44–51.

128 Murray G. C. and Marriott R., 1998, Why has the investment performance of technology-specialist, European venture capital funds been so poor?, *Research Policy*, 27, 947–976.

129 Sahlman W. A., 1990, The Structure and Governance of Venture-Capital Organizations, *Journal of Financial Economics*, 27, 473–521.

130 Burgel O., 2000, *UK Venture Capital and Private Equity as an Asset Class for Institutional Investors*, London Business School and British Venture Capital Association, London.

131 One expert respondent also argued that institutional investors also saw some value in limiting the downside of their investment in venture capital as it gave them some comfort in explaining their investment decisions to the trustees of their funds in the event of a poor fund performance.

funds under management, the write-off of a significant number of investments can reduce the level of residual operating funds available for investment to below a viable limit. Also, the very nature of early-stage investment requires that significant risks are taken and a high level of uncertainty is accepted. A fund that is not losing a proportion of investments is probably acting in too conservative a manner in emerging and immature technology markets. Thus, accepting a material level of losses is virtually inevitable in early-stage investments. Yet, it is exactly this type of investor that is least likely to have the resources to accept such losses. Hence, the logic of underwriting a percentage of early-stage fund losses can appear attractive to early-stage fund managers.

It is common for these schemes to assume a substantial proportion of the costs of project failure particularly at the vulnerable early period of a new business. Both *Udviklingselskaber* and *SOFARIS* provide a 50% cover as did the PPM scheme (which ended in the Netherlands in 1995). The BTU scheme assumes a maximum cover of 75% of total project investment cost (although calculated in different ways for the two variants of the scheme). Both the BTU and the PPM schemes extended this guarantee for five years from the time of the first venture capital investment in a portfolio company. After five years, cover under the PPM scheme declined by 10% a year to disappear at year 10. The critically vulnerable first year of the investment was also removed from the cover in the post 1988 variant of the PPM scheme. All schemes instituted a ceiling level of cover (i.e. liability) per portfolio firm.

The adverse consequences of a guarantee scheme may actually be greater than just protecting unsuccessful investors. Any scheme that builds a safety net into the operation of a commercial fund alters the risk/reward profile of the investor. As already noted, the intended logic is to purposively alter the investor's behavior. A guarantee may well encourage investors to act in a manner which reduces their willingness to undertake rigorous 'due diligence' on a firm before investing. Indeed, depending on the risk preference of the investor, he or she may be happy to invest in projects with a significantly negative net present value given that a considerable element of the loss is covered and any gain, however unlikely, is still fully or largely owned by the investor. This moral hazard problem is endemic to incentives of this nature. In short, fund guarantee schemes can allow private investors to gamble with government's money at little personal cost. There is certainly a contemporary view held by a number of German academic and industry observers that the generosity of the BTU scheme did encourage a number of inappropriate organizations to enter the venture capital

industry in the technology bull market of 1997–2000.¹³² The validity of this comment was corroborated by a senior German policy maker in discussion with one of the evaluators who noted that the BTU scheme had decided in 2002 to dispense altogether with the guarantee element of this program. This decision was made in the light of the excessive losses incurred in underwriting the investment guarantee.

The WFG case is an earlier German example of the incentive problems that are created by government programs that include downside protection.¹³³ Whereas upside leverage increases the economic returns to the skills and value added efforts of the venture capital partners, downside protection provides no such incentives to the better or more experienced investors. State-provided incentives should spur recipients to make the extraordinary commitments necessary to create globally successful businesses.

Thus, the greatest problem of down side protection is the most difficult one to observe. Down side protection removes the investors' interests from an exclusive focus on maximizing the rewards of success. Rather, it increases the benefits of a comfortable mediocrity. With losses partly underwritten, investors do not lose a great deal but neither do they create much – either in terms of internationally successful businesses or greater levels of employment growth for the State. Guarantee schemes are insidious. They are more likely to help the survival of venture capital firms rather than accelerate the success of their investments. The result is that while several new investments may have been sponsored, such assistance is not designed to unreservedly incentivize the creation of world-class new enterprises. Guarantees do not encourage exceptional effort or 'winner take all' strategies. The passion of creating the next generation of global enterprises is replaced by the comfort of "if it goes wrong, it will not hurt much". Accordingly, these schemes are commonly of negligible interest to main stream and professional venture capital firms that wish for positive incentives to scale up the rewards of taking risky decisions backed by adequate capital resources, demanding investors and the exceptional effort of skilled management teams.

132 At the LMU Private Equity Conference 2002 held in Munich on the 9th November 2002, industry and academic delegates from Germany were almost unanimous in the view that unwise investments had been encouraged by the generosity of the underwriting of venture capitalists in the scheme to the extent that investors had terminated portfolio companies that were worth more on liquidation (50% guarantee) than if restructured (<50% or original investment realized).

133 Gilson R. J., 2002, *Engineering a Venture Capital Market: Lessons from the American Experience*, Paper presented at the Global Markets, Domestic Institutions: Corporate Law and Governance in a New Era of Cross-Border Deals.

It is interesting to observe that the more developed (and successful) the venture capital community, the less likely is downside protection to feature as a main element of supply-side programs to encourage venture capital. In the relatively few US and UK government supported venture capital schemes, the emphasis is primarily on the leveraging of the rewards to private investors. No formal guarantee schemes for equity are in place in either country (although in the UK Regional VC Fund scheme the returns of the State are subordinate to those of the private investors). Conversely, the major countries of mainland Europe (France, Germany, Sweden, the Netherlands, Denmark) have all had state-sponsored schemes with a direct guarantee component.

Support for the Fund's Operating Costs

Specialist early-stage, technology funds are commonly characterized by their small size. The great majority of specialist, seed capital funds in Europe have historically been capitalized at under 20 million euros. Some regional seed funds in Europe have had as little as 2 million euros under management.^{134 135} The UK's University Challenge Fund provides universities with seed funding for the financing of interesting intellectual property of approximately £4 million. Given their structure and resources, these small funds are able to exploit few of the scale and scope economies available to larger development capital funds of 500 million euros upwards.¹³⁶ However, industry norms for the level of fee income available to the managing partners (i.e. the venture capital firm) are based on the precedents set by these larger and more influential funds. In addition, in most venture capital communities, the managing partners have seen significant downwards pressure on the percentage of fee incomes negotiable and an increase in the stringency of the conditions under which these fees are provided. These pressures are in no small part a consequence of early abuses of inexperienced institutional investors by aggressive venture capital firms.^{137 138} The bargaining power of the institutional investors is either applied directly (in the case of larger

134 Murray G. C., 1998, A policy response to regional disparities in the supply of risk capital to new technology based firms in the European Union: The European Seed Capital Fund Scheme, *Regional Studies*, 32, 405–419.

135 Murray G. C. and Marriott R., 1998, Why has the investment performance of technology-specialist, European venture capital funds been so poor?, *Research Policy*, 27, 947–976.

136 Apax Partners' last fund was over \$4 billion in size.

137 Zider B., 1998, How venture capital works, *Harvard Business Review*, 76, 131–+.

138 These circumstances lead one industry commentator memorably to observe that the UK venture capital industry had “mugged” the institutional investors - Initiative Europe, 1994.

investors) and/or via the agency of a ‘gatekeeper’, i.e. a specialist private equity consultant advising several institutions on an optimal asset allocation program. Fund of funds managers can similarly exert downward pressures on the fee-based incomes of individual managing partnerships given their influence on the allocation of institutional funds under their control.

The ‘going rate’ management fee for development or merchant capital funds is around 2–2,5% of the total value of the funds raised, although this rate may taper in the closing years of a ten year, fixed term fund. The appropriate figure for specialist, early-stage technology funds in order to cover the operating costs of the venture capital management activity is probably about 4–5% of finance raised¹³⁹ depending on the scale of the funds managed. This latter percentage figure has appeared totally unacceptable to the vast majority of institutional investors or their advisers. In 1989, the British Venture Capital Association suggested to government that they might consider providing a subsidy towards the costs of professional management in seed funds. This was a recommendation of the newly constituted Seed Committee. The UK government declined to become involved in the proposed scheme, which was quietly dropped. The Seed Committee subsequently was wound up. In a survey¹⁴⁰ of the twenty leading venture capitalists in the UK in 1990, there was universal acknowledgement that the industry’s inability to find a way that seed and start-up investments could be profitably supported was seen as one of the most important failures of the UK industry in the decade of the 1980s.

The European Seed Capital Fund pilot program of the European Union (1988–95) was a pan-European attempt to address this issue of the relatively (high) fixed costs of managerial governance in small funds.¹⁴¹ Half of the eligible operating costs of the twenty-three early-stage funds in the program were paid for by the European Commission through the provision of a non-interest bearing, term loan to the funds. This subsidy on operating costs was paid to cover start-up costs and the first five year’s running costs of the fund. This term loan was only repayable if the fund subsequently made a net profit on its investments over the ten years of the fund’s life. The focus of this scheme proved very popular and

139 Robert Hook is a founder partner of the Cambridge early-stage technology fund, Prelude Technology Investments Ltd. His estimate of an appropriate fee income was made at a seminar of the European Seed Capital Fund network.

140 Murray G. C., 1991, *Change and Maturity in the UK Venture Capital Industry 1991–95*, British Venture Capital Association, London.

141 Murray G. C., 1994a, An Assessment of the First Three Years of the European Seed Capital Fund Scheme, *European Planning Studies*, 2, 435–461.

twenty-one funds were set up or re-organized to take part in this pilot activity. Research showed that the European Commission's intervention was appreciated by early-stage fund managers and private investors alike. They argued that the *imprimatur* of the European Commission's support allowed them to increase substantially the level of private finance raised – a 'certification effect'. Further, the scheme allayed institutional investors' (i.e. the limited partners) fears that their contributions were excessively diverted to paying management incomes rather than purchasing equity in exciting young businesses.

The initial review of the European Seed Capital Fund Scheme carried out by Murray in 1991 for the European Commission placed considerable emphasis on the economic vulnerability of small, grant-dependent funds. The observation was made that both under-funded regional and commercial funds would run out of finances within their ten year horizons *even without making any investment in portfolio companies*. Essentially, the administrative costs of the funds were strongly out of kilter with the level of finances available. The average size of the 21 funds surveyed was only 1.7 million euros (range 0.5–7 million euros).

Demand-side Issues

Table 13 creates a typology that segments direct and indirect policies further into demand and supply-side responses to the venture capital market. The more recent concentration on demand side issues reflects the very common observation of the venture capital community that there is generally no shortage in the supply of expansion stage venture capital finance but, rather, a shortage in the quality of applicants for their money. Given that the project level returns required by venture capitalists are exceptional and are measured in IRRs of 50% per annum and above¹⁴² for early stage companies, most companies will not meet these exacting standards. Demand side issues recognize that a system which ultimately rejects more than 95% of all the firms that seek to obtain venture capital financing is enormously wasteful in both applicant firm and investor resources. Accordingly, a number of countries have created 'investment ready programs'. These are also replicated an European Community level by such training initiatives as I-tec and Gate2Gate initiatives¹⁴³. Indeed the renaissance in entrepreneurship as a legitimate career and a valuable field of study at school and

142 Murray G. C. and Lott J., 1995, Have UK Venture Capitalists a Bias against Investment in New Technology-Based Firms, *Research Policy*, 24, 283–299.

143 Gate2growth replaced I-Tec in 2001 as a source of advice to young firms and venture capitalists alike provided by DG Enterprise of the European Commission. See www.Gate2growth.com

university is in part the result of a government-fuelled concern that the level of entrepreneurial activity in society needs to be stimulated¹⁴⁴. Technology or science parks and business incubators are more specialist means by which the divide between research and its commercial exploitation is being bridged.

Table 13. Typology of Government Support Measures classified by Demand or Supply-side Focus¹⁴⁵

	Demand-side Measures	Supply-side Measures
Direct Investment	<ul style="list-style-type: none"> • Public incubators 	<ul style="list-style-type: none"> • Public sponsored VC funds
Indirect Investment	<ul style="list-style-type: none"> • Promotion of enterprise • Management and skilled workforce • Business incubators, e.g. science and technology parks, commercial clusters. 	<ul style="list-style-type: none"> • Downside protection • Upside-leverage • Subsidizing fund costs • Exit schemes • Tax incentives • Business Angel networks

While these demand side schemes are undoubtedly important, this present evaluation is largely addressing supply side issues of the provision of early-stage finance within the context of the Finnish economy.

Logic and Modes of Government Intervention: Conclusions

The findings on which this section of the report is based come from academic, government and industry perspectives. It is important to note that in practice there seems to be very few sources of disagreement between theorists, policy makers and practitioners. It should also be noted that the interviews held with policy makers or industry representatives certainly could not be conceived as random. The evaluators specifically sought out persons with significant knowledge and experience of the venture capital programs of interest. Findings and opinions of the expert respondents may usefully be summarized into a series of related statements on which there was near uniform consensus:

144 Two recent UK government's initiatives to promote entrepreneurial action at university level in the science and engineering fields, i.e. the University Challenge Fund and the Science Enterprise Challenge, have been successful in encouraging the training of science graduates in basic business skills. Some of these graduates have gone on to form companies in which the University Challenge Funds have invested.

145 Christofidis C. and Debande O., 2001, *Financing Innovative Firms through Venture Capital*, EIB Sector Papers, European Investment Bank, Luxembourg.

- The State's involvement in seed/early stage should properly be viewed as a temporary rather than a permanent intervention into the venture capital market.
- In the event that the State becomes a permanent investor in a market that would collapse or fail without the continued presence of the State, the logic of an achievable market solution should be rigorously questioned.
- Given that early stage investments take a relatively long period of time to reach maturity and exit¹⁴⁶, it is likely that the State should plan that its involvement with a specific seed fund should be over a minimum duration of approximately ten years unless the fund is 'bought out' earlier.
- The State's primary role is to act as a catalyst whereby private agents are attracted to enter a new market and gain specialist experience and knowledge at a limited and acceptable level of costs.
- The State should ensure that it leaves that market as soon as a stage is reached where its continued presence cannot be economically or socially justified. The State should be planning its exit prior to the moment that it becomes actually engaged in the investment activity which it is trying to stimulate. Exits should be engineered that provide an economic incentive for the private partners to the State to assume the roles of the State participant. The early removal of the State as an investor in a seed/early stage fund should be designed to offer a leverage advantage to the remaining private investors.
- The State should see itself as an indirect investor through a 'fund of funds' mechanism. Other than in exceptional circumstances, the State should not see itself as investing directly in specific companies. This prohibition is particularly important where government employees have to make the investment selection choice. The State should avoid situations where government employees are mandated to act as investment professionals. The State should publicly communicate the nature and characteristics of the funds in which it would wish to invest. Given the scarcity of experienced managers and funds at the

146 Bannock 1991 suggests that a realistic time frame from start-up to some form of exit is around seven years Bannock G. 1991. *Venture Capital and the Equity Gap*. National Westminster Bank: London.

seed/early stage, the State should be obliged to select all applicant funds through an open and public tendering process.

- The main instrument employed to incentivize private investors and limited partners should be through the provision of State funds applied as a subordinated limited partner. These funds structures should enable the fund managers to exploit the advantage of leverage to the benefit of their limited partners. The leveraged structure should also benefit the fund managers through the ‘carry’ system.
- There may be a case for leverage in excess of 1:1 private/State funding. However, this case should be made on a fund by fund basis. There remains a danger that the State is the biggest loser from poor investment decisions, limited partners do not need to strive to ensure the success of the managing partners seeing the State’s contribution as a buffer against their own losses.
- The use of a guarantee in order to provide downside protection to limited partners or the fund manager should be applied sparingly and with discretion. Implicit in the provision of project guarantees or underwriting is some form of protection against failed investments. By providing a safety net, a guarantee structure can remove or lessen the incentive for managers to succeed and be rewarded by maximizing the capital growth of the portfolio of the fund. The inclusion of investment protection should be made on an assessment of individual circumstances. However, in the opinion of the evaluators and the expert respondents interviewed, the base case should be programs *without* a guarantee structure.
- While the provision of seed or early stage capital implies a failure in supply markets, an efficient system needs the balancing of both supply and demand. Too little attention has been applied to improving the quality of entrepreneurs and managers. This omission is despite repeated protestations by venture capitalists that the dearth of experienced and high-quality management teams is one of the biggest constraints on the growth of the industry outside North America. Just how the various levels of managerial experience from pre-seed to pre IPO are to be made available is not the focus of this report. However, it is an issue of major importance as there is a shortage of skilled and experienced management capable of rapidly building young companies to international excellence. In Finland the taxation related to lack of incentives for high-growth entrepreneurship has been

claimed to be the biggest bottleneck that limits entrepreneurial activity and growth.^{147 148 149}

- Even a cursory appraisal of venture capital initiatives in Europe, Israel, North America, Australia and beyond has convinced these authors of the existence of numbers of skilled industry practitioners and policy makers. They share an interest and a commitment to issues centering on the financing of the innovation process and the nurturing of young new technology based firms being created from these processes. A deep level of skills also resides within some of the more established venture capital associations. It is hoped that future policy is crafted with the active involvement of such experts in order that high levels of extant skill and experience are not ignored but are made available to government.

4.4 Enterprise and Competition Policy of the European Commission

The nature and degree of government intervention in order to develop venture capital are partially regulated by the European Commission in the European Union. In its Enterprise Policy, The European Commission has for several years given a strong priority for developing the European venture capital markets.¹⁵⁰ Until recently, there has been confusion concerning what types of government intervention would be acceptable from the competition policy perspective. However, during the last two years, there has been significant and rapid development in the EC regulations concerning individual government intervention to support the development of national venture capital markets.

147 Arenius P. and Autio E., 1999, *Kansakuntien yrittäjyyspotentiaali – kymmenen maan välinen vertaileva tutkimus – Suomen osaraportti*, Teknillinen korkeakoulu, Yritysstrategian ja kansainvälisen liiketoiminnan laboratorio, Espoo.

148 Arenius P. and Autio E., 2000, *Global Entrepreneurship Monitor – 2000 Finnish Executive Report*, Research Reports / Center for Technology Management 1–2000, Helsinki University of Technology, Espoo.

149 Arenius P., Autio E., Kovalainen A., and Reynolds P. D., 2001, *Global Entrepreneurship Monitor 2001 Finnish Executive Report*, Center for Technology Management Research Reports 1–2001, Helsinki University of Technology, Espoo.

150 European Commission, 1998, *Risk Capital Action Plan*, The Commission of the European Communities, Brussels.

In August 2001, the European Commission published a Communication “State Aid and Risk Capital”, which outlined certain conditions under which the European Commission would view national government intervention as positive.¹⁵¹ The new Communication is a response to the increased policy priority for finding ways to more effectively intervene and stimulate the development of the European venture capital markets. The objective of the new Communication is: “*To authorize under certain conditions the granting of State aid in favor of risk capital*”.¹⁵² Table 15 summarizes the new Communication.

The new Communication is seen as a major development in adapting the competition policy to support the enterprise policy.^{153 154} The European Commission has used it as an example “*showing how State aid rules may need to be adapted to new market situations*”¹⁵⁵ This policy clarification is also considered to be an important development in the implementation of the *Risk Capital Action Plan* and has already been applied in several new venture capital schemes of the Member States.^{156 157}

The enterprise policy and the competition policy of the European Commission have become much more compatible during the last two years allowing effective instruments to resolve identified market failures. The new Communication “State Aid and Risk Capital” was created to enable State aid on certain conditions to effectively resolve market failures particularly in early stage venture capital.

151 European Commission, 2001b, State aid and risk capital, *Official Journal of the European Communities*, (2001/C 235/03), C235/233–C235/211.

152 European Commission 2001 State aid and risk capital – summary of legislation (<http://europa.eu.int/scadplus/leg/en/lvb/l26081.htm>)

153 European Commission, 2002f, *European Union competition policy – XXXIst Report on competition policy*, European Commission, Directorate-General for Competition, Brussels.

154 European Commission, 2002e, *European Competitiveness Report 2002*, Commission Staff Working Paper SEC(2002) 528, The Commission of the European Communities, Brussels.

155 European Commission, 2002f, *European Union competition policy – XXXIst Report on competition policy*, European Commission, Directorate-General for Competition, Brussels.

156 Liikanen E., 2002, *Stimulating investment in European IT*, Speech/02/541, European Investment Forum, Copenhagen, November 5, 2002.

157 European Commission, 2002c, *Communication from the Commission to the Council and the European Parliament on Implementation of the Risk Capital Action Plan (RCAP)*, COM (2002) 563(01), The Commission of the European Communities, Brussels.

Concerning the new Communication ‘State Aid and Risk Capital’, Maria Rehbinder, DG Competition, European Commission, stated: “State aid discipline must be able to respond to developments in the markets and changes in Member States’ policy priorities.”¹⁵⁸ She pointed out that a new type of soft law was needed because the traditional approach to State aid control posed problems for risk capital measures, which are needed to encourage the development of European risk capital markets to reach levels comparable to those in the US. Regarding the application of the new Communication in establishing new policy measures to spur venture capital markets, she pointed out that the paper strongly underlines the need to establish the presence of a market failure as a criterion for authorizing aid. She stated that the criteria provided for assessing compatibility in the Communication are:

- a "safe harbor" for transactions below certain levels (EURO 1 million in Article 87(1)(a) -regions; 750 000; 500 000 in other regions)¹⁵⁹
- above these levels there is a need to prove market failure; the aid must be proportionate to the market failure; and must minimize distortion; and
- additional compatibility criteria are expressed as "positive" and "negative" elements to be taken into account.

It is very important for national policy makers to carry out research on the venture capital market in order to identify and elaborate specific market failures. When an intervention is proposed, there is an obligation on the State authorities to be able to demonstrate the market failure in order to gain the European Commission’s agreement for State aid to be used to resolve the market failure.

158 Rehbinder M., 2001, *Recent Developments in Commission Policy and Practice*, Paper presented at the EC State Aid Conference on 2 November 2001.

159 The justification given is that for small transactions the argument that market failure exists through high transaction costs is more persuasive.

4.4.1 Examples of Commission-Accepted Funds

The new Communication on State aid and risk capital was published in August 2001. The first government sponsored venture capital program accepted based on this new Communication was the UK Regional Venture Capital Funds program. These funds have been designed to incentivize private investors to invest in market failure areas by boosting the return expectations through asymmetric profit sharing. The return for the government is capped at 6% level so that private investors share the exceeding returns. The cash flows in the funds have also been designed to boost the returns for the private investors in order to make the funds targeted to resolve market failure as attractive investments for fully commercial institutional investors.

Concerning the application of the new Communication, the XXXIst Report on competition policy states that: "The aim of the UK scheme is to address a lack of funding at regional level available to SMEs for equity investments. *The Commission acknowledged market failure for this segment because the thresholds as laid down in the risk capital communication were not exceeded.* The same line of reasoning was adopted in the French 'Régime Cadre – Fonds de capital investissement' case. When assessing these notifications, the Commission applied point VIII of the Communication and was able to conclude that the aid granted to the private investors and to the SMEs was compatible with State aid rules. As for the funds created under the measures, the Commission concluded that they are not enterprises receiving aid within the meaning of Article 87(1) of the EC Treaty. Other cases where the Communication was applied in 2001 included 'Linea de apoyo a la capitalización de empresa de base tecnológica' (Spain) (2), and a further UK scheme intended to fill the gap in the provision of risk capital in small amounts to SMEs in the coalfield areas of England."¹⁶⁰ Examples of European Commission's decisions concerning risk capital interventions of EU Member States can be found on the European Commission's website.¹⁶¹

Given that there are now clear guidelines and examples where these guidelines have been applied, it is likely to be easier and faster to get new government venture capital schemes accepted by the European Commission. Table 14 gives

160 European Commission, 2002f, *European Union competition policy – XXXIst Report on competition policy*, European Commission, Directorate-General for Competition, Brussels.

161 European Commission, 2002h, *State aid decisions – by aid instrument – equity capital*, The Commission of European Communities, Accessed: 1.12.2002, <http://europa.eu.int/comm/competition/state_aid/register/ii/by_instrument_equity_capital.html>.

some examples of recent government-sponsored venture capital schemes in which there are incentives to attract private investors.

Table 14. Examples of recent government-sponsored venture capital funds with incentives for private investors

Vehicle	Country	Start	Terms	EU process	Links
Community Development Venture Fund ¹⁶²	UK	2002	<ul style="list-style-type: none"> Government invests 50% (32 MEUR) Private investors have preferential terms 	29.8.2001-9.4.2002	IP/02/528
Regional Venture Capital Funds ¹⁶³	UK	2001	<ul style="list-style-type: none"> Government invests 25% Private investors have preferential terms (capped return by the government) 	18.10.2000-6.6.2001	Case C 56/2000 OJ L 263, 3.10.2001 IP/01/785
High Technology Fund for early stage enterprises ¹⁶⁴	UK	2000	<ul style="list-style-type: none"> Government invests 50% (31 MEUR) Private investors have preferential terms 	12.7.2000	ip/00/756
Línea de apoyo a la capitalización de empresa de base tecnológica	Spain	2001		11.12.2001	Case N 630/01 Commission decision of 11.12.2001 OJ C 32, 5.2.2002
Régime Cadre - Fonds de capital investissement	France	2001		13.11.2001	Case N 448/2000 Commission decision of 25.7.2001 OJ C 318, 13.11.2001
Sächsische Beteiligungsgesellschaft	Germany	2001			Case N 349/2001 Commission decision of 30.1.2002

162 European Commission, 2002b, *Commission approves the Community Development Venture Fund providing risk capital for enterprises in the most deprived areas in the UK*, IP/02/528, The Commission of the European Communities, Brussels.

163 European Commission, 2001a, *Commission approves Regional Venture Capital Funds for England*, IP/01/785, The Commission of the European Communities, Brussels.

164 European Commission, 2000, *Commission approves State aid contained in UK's High Technology Fund for early stage enterprises*, ip/00/756, The Commission of the European Communities, Brussels.

Similar schemes in other countries				
Yozma	Israel	1993	<ul style="list-style-type: none"> • Government invests 40% • Buy-out option for the private investors 	
Yozma seed	Israel	2000?	<ul style="list-style-type: none"> • Government invests 50% • Buy-out option for the private investors 	
CORFU	Chile		<ul style="list-style-type: none"> • Capped return for the government 	
VIF ¹⁶⁵	New Zealand	2001	<ul style="list-style-type: none"> • Buy-out option for the private investors 	
AUSTEP Pre-see fund ^{166 167}	Australia	2001	<ul style="list-style-type: none"> • Government invests 75% maximum • Capped return for the government 	

165 Ministry of Research' Science and Technology, 2001, *2001/2002 Budget for Vote Research, Science and Technology*, Ministry of Research, Science and Technology, Accessed: 10.11.2002, <www.morst.govt.nz/budget/budget.doc>.

166 UWA, 2001, *Australia's Pre-Seed Fund*, Media statement 16.8.2001, The University of Western Australia, Accessed: 25.11.2002, <[http://www.uwa.edu.au/media/statements/2001/08/australias_preseed_fund_\(16_august\)](http://www.uwa.edu.au/media/statements/2001/08/australias_preseed_fund_(16_august))>.

167 AusIndustry, 2002, *Pre-Seed Fund - Guidelines*, AusIndustry, Accessed: 10.11.2002, <<http://www.ausindustry.gov.au/library/PSFGuidelines20021025122528.pdf>>.

4.5 International Comparison of Government Interventions in Venture Capital

Evaluations should necessarily go ‘back to basics’ and ask what is the purpose of the program in question? What assumptions are the key objectives based on? How credible does the program currently appear in the light of the assumptions made with partial information at the start of the program? However, in the real world of governmental action, it is common to reference the State’s actions to the comparable efforts of other governments seeking to address the same policy issues or concerns. Both approaches are valid and are highly complementary. Where available, the selection of appropriate country and policy comparisons is of enormous help if valid conclusions are to be drawn. Thus, the evaluators of FII have sought to identify programs in other countries which are either comparable to Finnish activities or, conversely, can be used to reference possible policy alternatives or developments. In making this selection, one constraint was imposed on the authors by MTI. It was requested that at least two other Nordic countries were included in any evaluation schema.

With the exception of the Nordic requirement, the authors sought to find countries that could be defended as appropriate comparators. A two-stage approach was taken:

First, the selected countries had to be defended on the basis of their relevance to Finland. In making this selection, a number of criteria were adopted. Candidate countries had to demonstrate:

- A clear recognition by government of the importance of SMEs, and particularly NTBFs, in contemporary enterprise and innovation policies
- A history of active NTBF policy development with findings that could be publicly accessed
- An involvement by the State in the provision of venture capital based instruments in a community with an established venture capital/private equity industry
- Evidence of contemporary success of policy instruments in sustaining or generating NTBF formation and growth
- Direct similarities to Finland in areas of economic size, cultural affinity (i.e. Nordic comparisons) and sophistication of technological development.

Secondly, the countries selected also had to have a set of programs that allowed meaningful comparisons to be drawn. In order to do this, a template was constructed to look at key program characteristics including:

- Policy focus
- Policy objectives
- Development of the national venture capital industry
- Mode of operation of government agencies
- Importance of technology-based new firms
- Degree of State support
- Type of State support
- Channels (direct/indirect) for support
- Conditions under which support given
- Level of risk assumed by government
- Other related support measures.

Based on the above selection criteria and in discussion with the Finnish colleagues, the following countries were selected and approved by the evaluation sponsors as appropriate comparators:

- United States of America
- Israel
- United Kingdom
- Germany
- Sweden
- Denmark
- Australia.

The evaluators have had direct experience and contact with government and private agencies working in early-stage equity investment in all of the countries selected.

In addition to the above-mentioned countries selected for closer analysis, there are several other countries in which the government has taken active measures to stimulate the venture capital markets using innovative instruments to incentivize private investors to resolve market failures. Some interesting countries in this respect are New Zealand, Korea, and Chile. Some of the government policy measures of these and other countries are described in this report when describing the features of various government venture capital programs.

Given the number of programs associated with venture capital that have existed over several years (ICFC, the precursor to 3i plc., was formed by the UK government in 1945 specifically to address 'equity gap' issues), it is not possible to do justice to this diversity of policy activity. Therefore, only a small number of programs will be cited for each of our target countries. The venture capital schemes which will be exemplified in summary form have been chosen on the basis that their actions reflect i) the present and/or future interests of FII and the Finnish Government and/or ii) these schemes identified have relevance to different State approaches to the support of young firms.

The country analyses are summarized in appendices in appendix 2.

4.6 The Views of Non-Finnish Policy Makers Regarding the Optimal Modes of Government Intervention to Address Market Failures in Venture Capital

In order to reference externally the activities of FII, a number of semi-structured telephone interviews were conducted with senior policy makers concerned with the supply of finance to new technology based firms within their national innovation systems. Senior government officials were contacted in Israel, Sweden, Germany, Denmark, Australia and the United Kingdom. In all cases, the respondents had direct experience of venture capital programs. Regarding the Israeli, Australian, German and one of the two UK interviewees, they had each been the most senior civil servant responsible for the design and implementation of a recent major governmental program in early stage venture capital. Discussions were also held with senior officials of DG Enterprise of the European Commission and the European Investment Fund. The EIF has a remit to co-invest in a number of venture capital funds set up by the European Union Member States and focused on equity gap and related market failure issues. The discussions produced a remarkable consensus of views which are summarized below:

With one exception, no interviewee saw seed and very early stage funds being viable in the longer term in Europe without the direct support of the State. The single dissenting view was also made conditional on the fund also doing other non-seed investments. When asked to give the names of any independent, early stage funds currently operating successfully without State subsidy anywhere in the world, no examples were given. If seed investment were possible without

governmental financial support, it was thought that it could only be through the aegis of a large established venture capital fund which was prepared to make the occasional seed investment. Seed capital as an exclusive investment focus for a commercial venture capital fund was not seen as economically viable.

Interviewees were particularly adamant that neither the State nor its agents should actively be involved in selecting high potential young firms in which to invest. This was seen as *solely* the responsibility of professional venture capital managers contracted by the State to manage its funds. The consensus view was that the State's role should be *indirect*, namely either acting as a limited partner in a commercial fund or encouraging investment via a financing of fund of funds type operations. The State should only set the criteria under which it would be prepared to invest in a privately managed fund. Any fund meeting these criteria in a public tender should be able to attract government funds.

Public funds addressed to early stage investments should seek to encourage private limited partners to participate as co-investors. The respondents were virtually uniform in their view that the State's role is that of a catalyst. That the fund is eventually taken over exclusively by private investors is the ideal consequence of the State's pro-active intervention. This was only likely to happen if the State could leverage the returns of the private investors (limited partners). This objective was attempted via subordinating the State's claims to any investment surplus. Without the critical presence of private investors, the State would be locked into a market-based activity with little opportunity for an exit. No catalytic role would be possible.

The idea that successful funds might be purchased (the Israeli respondent used the term 'soft privatization') at a pre-determined date (e.g. five years from its inception) as with the original Yozma funds in Israel generally attracted wide support. It was viewed as an interesting means by which the State could exit a fund while signaling its success to private investors. Respondents saw this as an ideal outcome but one that might not always be feasible given the present difficult economic situation for early stage investors. Such a buy-out option also emphasized the catalytic and temporary role of the State.

Interviewees expressed some greater variance of opinion as to whether or not the State should offer private investors guarantees limiting their downside risk in investing in early stage deals. Overall, the majority of expert respondents did not see this as an appropriate action given the moral hazard problem underwriting fund losses created. Private investors should be incentivized by the opportunity of making large profits not by being protected from the negative consequences of

their investment actions best summarized the general view. Those funds that had had direct experience of a guarantee scheme were among the most vociferous opponents of such a facility. Recent German experience of such schemes in the BTU program has been highly problematic.

Whether or not the State should seek to make a return on its investments above the State's cost of capital generated the widest range of responses. Several respondents liked the idea that the State was also seen to gain from attractive investments. It was felt that if the State had no commercial interest in the economic outcome of the high potential enterprises in which it also invested, it would lose the respect of the other private co-investors in a fund. However, one opposing view to this was that the State was not there to make profits but to catalyze the required private sector activity. There should be no reason for the State not to leave as soon as it was shown that attractive investments could be made in early stage investments. Respondents were more in agreement that, whatever the State's reward, it should be relatively modest. The real return to government is the creation of a successful private channel of finance to young, high potential companies.

Whatever else the State did, it should insist that its sponsored funds were managed by the best professional and profit-motivated managers that the funds could attract. Thus, such managers needed to be properly remunerated and incentivized as in the private sector. It was also recognized that over time several of the best managers were very likely to gravitate to larger funds and move out of the early-stage areas of interest to policy makers.

Transposing the consensus views of these foreign policy experts to the current Finnish situation resulted in an analysis strongly in line with that of the two FII evaluators. An indirect fund of funds operation allows the State to define the 'terms of engagement' but does not have public servants attempting to act as professional investment managers. The State seeks to make the investment environment sufficiently attractive for professional managers so that they are prepared to invest in an area of importance to public policy. The State does not seek to extend its reach or that of its employees beyond areas where it has a direct competence.

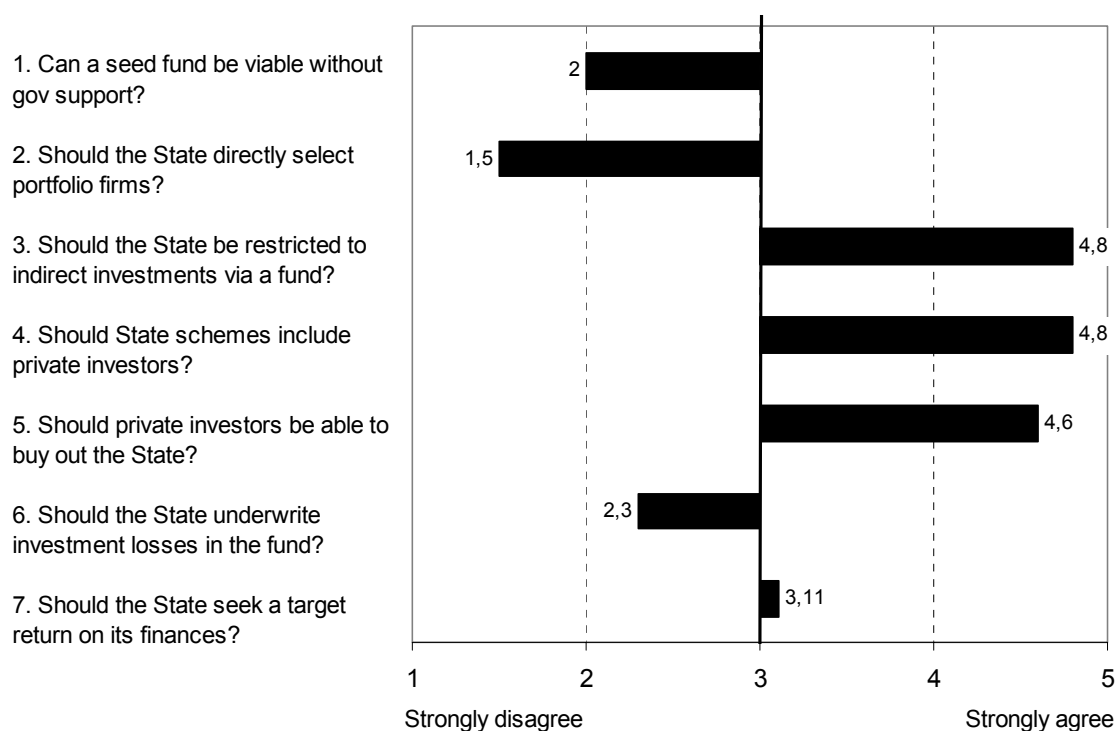


Figure 30. Attitudes of non-Finnish policy experts to government venture capital

4.7 Conclusions

In summarizing the best practices from contemporary research findings and international comparisons of extant schemes, we present the following outline scheme for a government intervention to resolve a market failure in early-stage venture capital. The purpose of such a scheme is for the State to act as a catalyst in order to encourage private sector venture capitalists and limited partner investors to supply risk capital for the earliest stages (seed and start-up capital) of new firm financing. It is in these most speculative investment areas involving relatively small amounts of capital that market failure most commonly occurs.

The key principles of the approach are to i) catalyze private institutional investors to provide capital and ii) attract experienced and competent private venture capitalists to make the firm level investment decisions. The role of public policy is to incentivize the private actors by creating a vehicle which rewards the investors with competitive return and risk expectations broadly comparable to other (later stages) sectors of the venture capital market which do not experience market failures. A key feature of any effective policy intervention is the

alignment of incentives to support effective investment selection and value added for the selected target portfolio firms. In order to achieve this outcome, it is critical that the State orchestrates wide interest in any sponsored scheme in order to attract the best possible management companies to bid for the management of the proposed investment vehicles. Such a bidding process should be open up to all competent parties irrespective of nationality. In the following paragraphs, the key features of this approach are described in more detail.

1. *Identification of the market failure.* A market failure needs to be clearly identified and its implications quantified. This is important in order to both assess and justify the cost of government intervention. The assessment of the market failure is also important for planning the scale of the required intervention and for ensuring supportive relationships with the European Commission.
2. *Vehicles for resolving the market failure are designed.* An important part of the process is to involve expert members of the venture capital industry from the beginning of the design of any policy initiative. The national venture capital association is a natural stakeholder to be included in the planning process. Further, industry representatives are able to contribute a level of experience and technical detail not generally available to government officials.
3. *The creation of targeted venture capital funds as the mode of policy intervention.* The operating mode is to create an agreed number of venture capital funds in which a government agency is one of the founding limited partners. The government does not invest directly into any single portfolio company nor does it have any role in the investment decisions of the managing partner of the fund. Because the funds are designed to resolve an identified market failure, they have a number of parameters that are different when compared to a normal (i.e. private) venture capital fund:
 - Because the purpose of the vehicles is to help resolve a market failure, the funds should employ legal covenants, which constrain the scale and scope of investments that can be made in order to address the identified market failure. For instance, in the case of early stage investments, the maximum investment per company should be set as

relatively low level¹⁶⁸. The idea is to ensure that the investments are targeted at the market failure as effectively as possible.

- The government agency acting as a limited partner invests a significant amount of money to help establish the funds rapidly. The level of government support will depend on particular circumstances. However, funds of under €30 million should not be encouraged given the negative effects of fixed costs on small fund efficiency. It is not likely to be less than 25% of the total fund and should not exceed 50% of the total funds raised in order to meet the European Commission guidelines. The level of initial financing provided by the government should clearly signal its commitment to the scheme. Financial institutions are required to provide the rest of the funding.
- In order to make this activity attractive for competent and experienced private investors, the government agency acting as a limited partner needs to engineer the return expectations so that the fund will offer an IRR for private investors and the management company which is competitive in comparison to other (non-market failure) activities of the asset class, e.g. later stage investments.
 - The key feature is a *buy-out option* for the private limited partners to purchase in full the stake of the government agency in the fund in the event of the fund becoming commercially successful. It is proposed that this transaction is made at a nominal price *plus* a predetermined rate of interest within an agreed period of time (around 5–7 years). The buy-out option should be limited to a certain period of time in order to attract the private investors to exercise it and thereby allow the government to exit from the program. The pricing structure and the conditions for the buy-out would be agreed with the limited partners at the time of creating the fund.

168 This would be in line with the recent EC regulation in which the limit is set to 500 000 euros. Similarly, the UK Regional Venture Capital Funds are set at a maximum first investment per company of £250,000 (€397000)

- Such a buy-out option has several positive effects:
 - i. The buy-out option helps make the IRR expectations of the fund materially more competitive with the other investment alternatives of competent private investors
 - ii. The buy-out option creates a natural exit for the government in the event of the success of the fund. (The State's IRR expectation after 5–7 years of its contribution to the fund should reflect¹⁶⁹ the long-term bank rate.). Through this mechanism, the government can demonstrate the success of the program while accomplishing its earlier exit. Even more importantly, the government can put its money to work again much earlier than if it had to wait for the cash flows from the exits of individual ventures and the final termination of the fund.
 - iii. The buy-out option (in comparison to a 'capped return' for the public investor) helps the general partner to signal already after a relatively short period of time that it has invested successfully. This is valuable when managers seek to raise the next fund. Normally, fund success cannot be shown much before a substantial proportion of portfolio companies have been successfully exited. In this buy-out alternative, the decision of the limited partners to buy-out the government investor after the predetermined period of e.g. 5–7 years gives a strong advanced signal of the likely success of the fund.
 - iv. The buy-out option creates a natural exit for the government in the event of the success of the fund. (The State's IRR expectation after 5–7 years of its contribution to the fund should exceed the long-term bank rate.) Through this mechanism, the government can demonstrate the success of the program while accomplishing its earlier exit. Even more importantly, the government can put the

169 There is a debate on whether or not the government's funding should share in the profits generated by the fund. The view of the evaluators is that any profit share should be modest and only reflect the government's cost of capital. The purpose is to incentivize the private market to act. Any profit assumed by government reduces this incentive.

money to work again in the highest priority market failure areas much earlier than if it had to wait for the cash flows from the exits of individual ventures and the final termination of the fund.

- v. With a strong managerial incentive created by the buy-out option to make the fund successful, it is much more likely for the government to get a small positive return from the investment (e.g. bank rate or an appropriate interest rate) compared to investments *pari passu* with private investors. In this latter case, private investors are not fully rewarded for their skill in selecting good deals or their efforts to add value to the ventures. This is likely to impact directly and negatively on the interest of the managing partners and their willingness to be involved in such schemes.
 - An additional means by which the IRR of private investors and general partners can be made competitive with alternative investment opportunities is the timing of the cash flows. By organizing the cash flows so that the government agency invests first but receives its share of the investments returns after the private investors have been recompensed reduces the time that the capital of the private investors is tied in the fund. Preferential and accelerated payment schedules properly increase the IRR for the private investors at the expense of the State.
 - This proposed scheme would not utilize downside guarantees for the private investors. The idea is to make their IRR expectations sufficiently attractive by exclusively concentrating on improving the upside potential. This is important for ensuring that the managerial incentives are fully aligned with the goal of making the fund successful. By accepting normal downside risk combined with a higher than normal upside potential creates an incentive system whereby a competent investor receives returns solely as a result of the skills and effort applied to adding value to the new firm ventures. With downside protection schemes, a moral hazard problem is generated because investors are protected rather than fully incentivized.
4. A ‘beauty parade’ type of bidding process is arranged to select the best possible management teams to manage the new vehicles. The establishment

of the funds and the bidding process are advertised as widely as possible to attract the attention of potential management companies. The bidding process should not be restricted to venture capital management teams from any one country. The potential management companies are requested to submit bids in a standardized format including their proposed investment strategy for the fund, organizational commitments and competencies (the identities and track record of committed full-time partners and other staff), and a plan detailing the management's own capital commitment and their plans to raise the rest of the capital. The idea is that the management companies are selected exclusively on their demonstrable capability to invest successfully and add value to the fund's portfolio companies. The bidding process is primarily about the setting the conditions necessary in order to attract and secure the best teams to manage these fund vehicles. New management companies and existing management companies are evaluated using the same selection criteria. Established management companies may find it attractive to expand their activities towards earlier stages by managing these early stage vehicles in addition to their existing funds.

The outlined approach has been briefly introduced and discussed in various interviews with industry and government practitioners. It is not presented as a fully determined proposal but as a general framework to be amended in the light of Finnish circumstances. However, the logic and structure of the model have received a lot of support in discussions with several representatives of the Finnish venture capital industry and government agencies as a potential solution for catalyzing investments in early-stage venture capital funds. While there are many other important issues involved in helping the venture capital market to develop (for example, taxation, regulation, education etc.^{170 171 172 173}), the above

170 Reynolds P. D., Bygrave W. D., Autio E., Cox L. W., and Hay M., 2002a, *Global Entrepreneurship Monitor 2002 Executive Report*, Babson College, Ewing Marion Kauffman Foundation & London Business School.

171 European Commission, 2002a, *Better Environment for Enterprises*, Communication from the Commission to the Council and the European Parliament Com (2002) 610(01), The Commission of the European Communities, Brussels.

172 HM Treasury and Small Business Service, 2002, *Enterprise Britain: a modern approach to meeting the enterprise challenge.*, Stationery Office, London.

173 Arenius P., Autio E., Kovalainen A., and Reynolds P. D., 2001, *Global Entrepreneurship Monitor 2001 Finnish Executive Report*, Center for Technology Management Research Reports 1–2001, Helsinki University of Technology, Espoo.

synthesis represents the evaluators' view as to current best practice regarding government's efforts to catalyze the supply of venture capital.^{174 175}

174 Also in line with EC and OECD recommendations e.g. OECD, 1997, *Government Venture Capital for Technology-Based Firms*, OCDE/GD(97)201, Organization for Economic Co-operation and Development, Paris.

175 Gilson R. J., 2002, *Engineering a Venture Capital Market: Lessons from the American Experience*, Paper presented at the Global Markets, Domestic Institutions: Corporate Law and Governance in a New Era of Cross-Border Deals.

5 Conclusions and Recommendations

5.1 Finnish Venture Capital Market

While the Finnish venture capital market experienced rapid growth during the latter part of the 1990s, the size of the venture capital market in relation to Finland's GDP is still very small. Finland's below European average share of GDP represented by venture capital financing is alarming particularly given Finland's position as a technologically advanced nation competitively placed in the new knowledge economy.

The size of the Finnish venture capital market (measured as a percentage of GDP) is very small by international comparisons particularly given Finland status as a high technology economy.

In a deeper analysis of the Finnish venture capital market, it can be noted that the existing availability of expansion-stage venture capital is sufficient for the amount of good quality deals coming to venture capital investors. The problem, however, is that the volume of high-quality expansion stage deals in Finland is unacceptably low reflecting an under-developed venture capital market. The scarcity of early stage (seed stage and start-up-stage) financing is likely to be an important contributory factor to the lack of high-quality, expansion stage deals.

Partly because of the lack of competitive early-stage financing, many potential entrepreneurs do not consider starting a new company as an attractive career alternative. Given the lack of sufficient and appropriate financing, many of the entrepreneurs with the highest potential find that they are better off choosing another alternative rather than starting a new venture. There was almost unanimous agreement among the respondents of our survey and interviews that there is an important market failure in seed-stage venture capital in Finland. 83% of our survey respondents considered that government should increase its involvement in seed stage financing.

In developing the supply of venture capital to the Finnish economy, there is a strong case for State intervention in order to encourage the supply of early stage (seed and start-up) venture capital provided by the private sector.

5.2 The *Raison d'Être* of FII

The *raison d'être* of FII is to resolve market failures in the supply of equity finance to SMEs with a particular emphasis on market failure in the supply of early-stage venture capital. In addition to the primary goal of addressing market failures, the current remit of FII also requires that the organization is profitable. Although the profitability goal of FII acts as a governance mechanism preventing government funds from being wasted in commercially non-viable investments, the current interpretation of the profitability requirement also effectively limits the capability of FII to resolve market failures. At periods in the economic cycle when specific investment sectors (early-stage venture capital) or industries (biotechnology and life sciences) become commercially difficult for professional investors, this is when the State has a critical supply-side role. However, given the imposition of this profitability performance hurdle, FII faces identical economic constraints at the same time as private investors. Therefore, instead of acting as a 'countervailing force' and effectively helping to resolve market failures, FII also has to adhere to the short-run dictates of the market. Because of this behavior, many interviewers have questioned whether FII is an effective policy vehicle for the government. As an agent of government, the importance and relevance of FII is that it can act differently from a purely private-sector investor. If it cannot or does not wish to act in such a fashion, there are no compelling arguments for the Finnish government to invest the tax payers' money merely to create another private venture capital business. FII exists either a) to do something that the private-sector cannot do, and/or b) to incentivize private sector players do something they would not otherwise do without the State's encouragement or incentives.

In FII's case, the profitability goal and its current interpretation have recently decreased the effectiveness of FII as a policy tool. The principle of co-investing with private investors on equal terms means, in effect, that the capability of FII to resolve market failures through filling the gaps itself, or by incentivizing the private sector to fill the gaps, is very limited. According to FII's current operating logic (i.e. investing *pari passu* with private investors), this State agency can only invest in areas which are attractive enough for private investors also to invest on equal terms. The only flexibility FII has to catalyze private investors is to commit its own resources first and provide a part of the funding to supplement the funding from private investors. This does not seem a very creative means of resolving important market failures. It severely constrains the flexibility and ability of FII to respond to such adverse situations. If the primary *objective* of FII is to help resolve market failures, FII activity in this role should result in a proportionally larger share of FII investments going to areas or

investment stages where market failures are more common or disruptive. If measured by its involvement in such critical investment stages over time, FII's effectiveness has recently decreased.

The effectiveness of FII in resolving market failures is fundamentally weakened by two constraints on its operations. First, the imposition by government of a minimum annual profitability requirement virtually removes the ability of FII to undertake significant investments in the earliest and most risky investment stages. Secondly, FII's operating principle of investing pari passu with private investors further undermines the purpose and effectiveness of FII.

5.3 Performance Measurement

Policy Performance

In the monitoring of the performance of FII as a policy vehicle for the government, it is important to develop measures that unambiguously show whether or not the activity is effective in resolving the identified problems. At the moment, the performance measurements employed to assess FII are insufficient. The main policy measures of the fund of funds investments are the allocation of FII's capital in three sectors "regional, venture capital, and private equity". This categorization leaves many problems:

- The classification is not accurate enough regarding investment stages. The market failure is strongest in seed investments. There is probably more expansion stage capital available in Finland than can be profitably invested at the present time. This is because of the lack of high-quality deal flow, which, in turn, is partially a result of the severe market failure in earlier stage investments.
- The current classification does not recognize an important group of investments, which are both early stage *and* regional. Geographical location and stage of investment are two separate dimensions.
- The classification focuses on a categorization of funds in order to allocate FII investments. This does not take full account of what specific investments are actually made by the funds in these categories. It is a universal phenomenon that investment fund managers tend to move to later stage investments as soon as they have

a chance to do so. This is because as an investment category later stage investments are more profitable, less risky, they require less work by the fund managers per invested euro, and they offer a shorter time to exit. The last factor is particularly important for new fund management teams because they normally need to create a track record as soon as possible in order to be able to raise the next new funds. As a consequence, venture capital funds that are labelled as early stage may in effect move to later stage investments very quickly if given the opportunity. The current focus on fund labels does not guide FII to ensure that the investments made by the government really help resolve market failures.

From the perspective of a government agency acting as a limited partner with an explicit remit to promote early stage investments in Finland, FII should take an active role ensuring that the policy measures are effective. If the purpose of FII is to promote early stage (i.e. seed and start-up stage) investments, it should help create funds that really do focus on those areas. Since the reason for a market failure is that private investors do not see the segment as attractive enough compared to other segments, a government agency with the remit to help resolve market failures should proactively help create vehicles which target those market failures. When setting up vehicles to address the identified market failures, it is important to create appropriate legal covenants in order to confine the size and scope of the investments made to the targeted area in order to satisfy the policy goals. However, in order to attract private purely commercially oriented investors to invest in areas of market failure, the government agency will necessarily have to compensate the private investors for the restrictions on their freedom to invest in more attractive areas. Thus, creation of more effective policy tools requires a proactive approach, which understands the interests and likely actions of each party to the investment activity. The required elements of an effective program include restrictions of the investments to the identified market failure area, compensation for private investors accepting these restrictions in order to attract private investors to invest their money, and effective governance and monitoring on behalf of FII. Fund categorization is not a sufficiently precise level of monitoring.

The performance of FII in fulfilling the State's policy goals should be measured more precisely. In addition to fund categorization, FII should measure the actual investment allocation made by the funds in which it invests.

Financial Performance

Currently, the financial performance of FII is measured with reference to the organization's annual profit. The current financial objective given to FII by the Ministry of Trade and Industry is to generate a return in excess of the current inflation rate. While this profit benchmark is low, it does not take into account a) the dynamics in the cash flows in venture capital investing, and b) the potential needed to create significant incentives for private investors in order to effectively resolve market failures during periods of challenging market conditions.

With regard to the dynamics of venture capital, two points are relevant, First, venture capital investing is highly cyclical and success in venture capital investments follow closely more general economic cycles. In times of market downturn as witnessed in the venture capital industry post Spring 2000, investment decreases rapidly. The remaining investors can attempt to 'sit it out' nurturing their present portfolios or they may retreat to later stage investments. If a public investor is under a strong pressure to make profits each year, it will encounter great difficulties in reconciling this goal with also continuing to invest in a market downturn. Such a crude profitability goal will effectively prevent FII from fulfilling parallel policy goals.

Second, another highly specific and universal characteristic of venture capital fund investing is represented by the J-curve. Essentially, the fund in its early years will bear significant costs as investments are made and managerial charges are incurred. Even in a successful closed end fund of ten years' duration, the limited partners are not likely to see their original investment sums returned until midway through the fund's life. Capital gains on these investments - even if successful - are also likely to be delayed for some years. Thus, the first few years are characterized by increasing and then decreasing cumulative negative cash flows prior to entering into positive flows (i.e. the J-curve) as the fund exits from successful portfolio investments. This pattern is indirect contradiction to an annual profit target.

If the financial performance of FII continues to be a key objective imposed on the organization, it should be measured over a sufficiently long period of time in order to allow FII the opportunity to meet both its financial and policy goals. This means that FII has to be given the managerial freedom to take risks and to invest counter-cyclically. However, it is the view of the evaluators that simultaneous profit and policy goals in this area of activity cannot practicably be reconciled.

5.4 Organization and Rewards

The current organization of FII is a small team of a CEO, three investment directors and three other employees operating from one location in central Helsinki. This small team is well suited to a fund of funds operations. FII is viewed by industry colleagues as very competent in the core activities of a fund of funds operation, namely financial appraisal and monitoring. However, it is also clearly recognized that the team has insufficient resources for the execution of direct investments on a continuing basis. FII should not be encouraged to expand its organisation or extend its present responsibilities. The fund of funds operations should remain as the central activity of FII. There is little argument to support increased long-term activity in direct investments. It is an area outside the core remit of FII and does not fit well with FII's existing experience and management resources. Any demand for FII to become involved in direct investment should be exceptional. If a case can be made, FII should use relevant external experts in carrying out such operations. The need for direct intervention should only be undertaken in concert with other players of the Finnish innovation system when specialist technological or sector skills are required.

The optimal compensation scheme differs considerably between a fund of funds and a direct investments operation. Effective fund of funds operation is small, centralized and consists to a large part of financial and accounting specialists backed up with good database management. In contrast, direct investing requires a strong local presence and more emphasis on business development and other forms of value adding at the investee firm level. The optimal compensation schemes for a fund of funds operation can be identified when examining how pension funds, insurance companies and other financial institutions manage their venture capital and private equity allocations. The organizations, competencies and compensation characteristics familiar to the private equity directors of a limited partnership differ markedly from those of a general partner in a venture capital fund. General partners should be rewarded for their effectiveness in project level decision-making and in providing the value-added to their portfolio companies. In FII's case, their main role and the competencies they require resemble closely those of a limited partner, *not* a general partner. The current organization is not appropriately designed to nor are the reward systems appropriate for a direct investment organization.

FII should continue to focus on its effective (and respected) fund of funds operating model. Management should not start expanding the organization in order to increase its long-term operations in direct investing. If direct investments are ever deemed justified by its

stakeholders, FII's role should be to work in concert with relevant expertise from organizations.

5.5 Early Stage Investments

Our survey, interviews, and other evidence have given a virtually unanimous picture of a serious and persistent lack of seed-stage equity capital in Finland. There is also a similar consensus that seed-stage venture capital is not a fully commercial activity able to be sustained as a profitable activity in its own right. International evidence over a long time shows that seed stage investments are very rarely commercially attractive particularly when compared to later stage or management buy-out investments. Nevertheless, access to small tranches of risk capital is a crucial part of the support environment that allows the new growth-oriented ventures to emerge.

Lack of seed stage financing also has a negative effect on the deal flow for later stage venture capital investors. In line with international evidence, our interviewees and survey respondents strongly agreed that the public sector should be active in this segment. 83% of the respondents saw a need for the government to increase its involvement in the supply of seed capital. This view was based on the understanding that, in the absence of public intervention, no private or commercial agency is going to address the problem.

Government intervention should be clear and organized to best ensure that increased involvement will stimulate the growth of those new ventures with the highest commercial potential. Therefore, the division of roles between private and public players should be such that government proactively stimulates the commercial interest in undertaking the activity, but private-sector firms alone subsequently make the selection and financing decisions at the level of portfolio firms. This transparent division of responsibilities, risks and rewards between public and private players is seen as fundamental. The fund of funds operating model is ideal for achieving these goals.

The current model of FII does not work effectively in catalyzing seed stage investments. Because FII invests on same terms as other private investors, it is not effectively able to catalyze activity in seed stage. Despite the involvement of FII, private investors presently do not find seed investment sufficiently attractive. Therefore, the key change needed in the operations of FII is to develop better instruments, which will allow private investors to make returns broadly comparable to their other investment opportunities. Such instruments, which

commonly improve the return expectations of private investors through asymmetric profit sharing between the public and private investors, have been engineered and used in many other countries to tackle these challenges.

According to the information gathered in the evaluation, the management of FII has not appeared particularly enthusiastic in finding ways to solve the difficult problems in the supply of early stage financing. In order to identify and to put into practice credible working solutions, a much greater level of commitment and determination is needed. Accordingly, FII should take a more proactive role in stimulating the supply of seed-stage venture capital. The skills and experience of FII's management represent an impressive resource to help achieve this goal. Early-stage market failure cannot be solved passively. In the absence of government action, the sub-optimal supply of seed capital finance will not change.

FII should take a more proactive role in stimulating the supply of seed-stage venture capital. Early stage market failure cannot be solved passively without the active involvement of the State as a co-investor and risk taker.

5.6 Regional Investments

Currently, FII, Finnvera, and Sitra all have ownership stakes in the existing regional venture capital funds. Overlapping roles and the lack of clear responsibility have created ample confusion. There is a clear need to clarify these agencies' roles and to consolidate the ownership of regional funds.

FII has been generally considered as having done a good job in setting up 'limited partnership type' regional venture capital funds. Investments in regional venture capital funds is the activity where FII received the best feedback in our survey of the stakeholders.

In managing the regional funds, there are benefits from having a single government body acting as a fund of funds investor. Central coordination helps in transferring knowledge and in professionalizing the management of the funds. It is also easier to develop performance measurements appropriate to a policy perspective when this task is the responsibility of one government agency. In managing the existing limited partnership funds, FII is acknowledged as having done a good job. Thus, it could be seen as the natural candidate to continue this role.

However, there is more than one type of regional fund. Regional policy has a history, which is complex and has involved the influence and interests of many agencies of the government. While it is not the objective of the present evaluators to comment on regional policy *per se*, we do believe that there is a clear need to rationalize and make the current enterprise support arrangements simpler to their users in regional areas of Finland.

Regional investments should be consolidated and managed by fewer players in order to clarify roles, and to reduce the existing overlap in activities of several government agencies. One agency taking primary responsibility for regional funds could help develop the effective coordination of regional enterprise financing activities.

5.7 Direct Investments

Although the fund of funds operating mode has been stated as the most desirable form of activity for FII, the legislation gives an opportunity for FII to also make direct investments. FII has used this opportunity and has been planning to increase its annual allocation to direct investments. While direct investments in some cases might be justified, these circumstances are the exception. Both theory and practice would strongly suggest that the State's involvement in making commercial decisions should be undertaken with considerable reservation. There appears little support from other parties in the Finnish innovation system for FII to expand its direct investment operations.

While there are always some cases where intervention is justified, direct venture capital investments as a mode of government intervention have been generally seen as ineffective and expensive. The poor alignment of incentives, vulnerability to political pressures and lack of trained investment staff make direct investment by public agents of questionable value. Internationally, it has led to a track record of losses in such operations where government assumes it can act as with comparable experience and efficiency to private agents seeking to maximize their own profits. In the case of FII, an odd contradiction is that while FII has successfully introduced the limited partnership structure in regional funds – by arguing the benefits of such a *term* structure over an *evergreen* fund structure – FII itself has recently tried to evolve closer towards the evergreen model. This is one effect of increasing the allocation of direct investments from FII's own balance sheet.

Of the various alternative rationales for direct investments, our research found stakeholders giving most support for direct intervention by FII in strategically important, emerging technology areas. The prime example is the current situation facing the Finnish biotechnology/life sciences sector. However, such intervention should not be viewed as FII's opportunity to develop a biotechnology team and become a new biotechnology investor. Instead, the role for FII would be to act *in collaboration with* the other players of the Finnish innovation system. A priority role at present is to help rationalize and consolidate a number of young Finnish life science companies that are too small to survive independently but still represent potentially interesting and valuable technology and intellectual property. This would require the refinancing and aggregation of existing enterprises in order to create viable companies capable of acquiring international financing on competitive terms in the future. In practice, this would mean FII treating biotech as a *special project*, which it would plan and co-ordinate with existing life science investors. This would require the delegation of technical appraisals and other industry specific knowledge to external specialists. It would not require FII to develop its own in-house specialists for 'one-off' interventions. FII would not undertake such investments in the absence of other commercial investors. However, it should also be noted that no rigorous argument has yet been presented for the above proposal. Such an independent analysis should be a precondition of any State action.

A key issue in identifying such 'strategically important' targets is to operate in close collaboration with other players of the innovation system. The meaning of strategic importance should be unambiguously clear in order to justify FII's attention and the employment of scarce State resources. It is confusing and ineffective from the perspective of the Finnish innovation system if FII operates independently without aligning its involvement in strategically important operations with other players of the innovation system. A strategically important intervention would, by definition, need the broad consensus of the relevant technical specialist agencies. For instance, Tekes and Sitra carry out research on science and engineering priorities and have an international technological and geographical perspective. Leveraging these organization competencies would be a necessity in order to determine with any credibility the strategically important areas where large-scale direct involvement is justified. Regardless of FII's role, such allocations should be based on a decision at the highest levels of Finnish technology and innovation policy after a rigorous analysis of the purported problem. It should not automatically be assumed that FII should intervene without such an analysis.

In addition to direct intervention in sectors such as biotech, an alternative way to operate would be establishing a ‘special situations’ fund managed by private venture capitalists to target the identified market failure. The fund(s) should be set up with strict rules and limitations in order to ensure that funds remain targeted to the identified market failure. These constraints are likely to skew the risk and return characteristics making it unattractive for the private investors. Accordingly, private investors participating in such funds could be compensated by asymmetric profit-sharing between the public and private limited partners. In this model, the decision-making on a project by project basis would be delegated to private investors with suitable commercial incentives, experience, and contact networks to add value to the target firms. The ideal outcome would be highly targeted intervention resulting in a real increase in value to the firms so supported via the use of private-sector skills and experience.

Should FII continue to be involved in direct investment activity, it should limit direct investments to technology areas with a recognized national policy importance. This requires consensus decision-making regarding strategic target industries and technologies. It also implies FII’s involvement in significant operations planned in coordination with other major players in the Finnish innovation system. FII should not recruit its own staff for such exceptional activities. An alternative preferred to direct investments is to create a focused fund managed by professional private investors.

5.8 Other objectives

One valuable role of FII has been its support in helping channel European Union funding to Finnish venture capital funds. Given the limited supply of domestic risk capital, the immature venture capital market, and the challenges for Finnish firms in internationalizing, an important part of the development of the venture capital market for FII in the future could be supporting the Finnish venture capital funds in attracting capital from foreign investors.

5.9 Roles and Collaboration

In collecting the material necessary to evaluate FII, it has become evident that opportunities exist to improve the level and quality of the collaboration between players in the Finnish innovation system. The operations of different State agencies have been driven more by the specific histories and interests of

individual agencies rather than a desire to coordinate the related objectives and goals of the Finnish innovation system. Some problems in the innovation system may be a consequence of the differing ownership structures, i.e. FII, Finnvera and Tekes are jointly under the control of the Ministry of Trade and Industry while Sitra is under the authority of the Finnish Parliament. Further, no single ministerial portfolio or other key individual has pre-eminent responsibility for driving and developing the innovation system as a whole. The evaluators believe that the Finnish Innovation System needs such a champion rather than the current structure of diverse and, to an extent, competing responsibilities.

Recently, an informal forum, “the group of six” has created to improve the collaboration and coordination among the State agencies involved in the Finnish innovation system (Sitra, Tekes, Finnvera, T&E Centres, Finpro, and FII). Recently, also the Foundation for Finnish Inventions joined the forum. This informal forum has so far had a couple of meetings at senior executive level. While this is a significant and positive development, it is not likely to be sufficient. Further, effective enterprise policy requires coordinated actions not only between several government special financing agencies but also in more fundamental functions such as taxation, regulation, and education given their importance as preconditions for entrepreneurial activity. Without sufficient measures taken to improve the incentives and other preconditions for high-growth entrepreneurship, government supply of venture capital can have only a limited impact on growth-oriented entrepreneurship. Effective enterprise policy requires a clearly identifiable and responsible champion at the highest level of the government capable of influencing and driving the development of the environment for entrepreneurship in all key areas.

Improved coordination between FII and other government agencies involved in the Finnish innovation system is urgently needed. The emergent informal forum is a valuable but not yet sufficient development. Currently, there is no single individual or ministerial brief responsible for driving the Finnish innovation system as a whole. There is a need for more centralized authority and direction in overseeing and coordinating the activities of various agencies and other vital areas such as taxation to improve the conditions for growth-oriented entrepreneurship. The present innovation system is still too much driven by its history and casually evolved structures rather than Finland's future needs.

In our evaluation, a picture emerged that FII is seen by its peers as more distant when compared to other State agencies in the Finnish innovation system.

Whereas Sitra and Tekes have previously been more independent, they have recently developed a close working relationship. Tekes was seen as having the most clearly defined role in the innovation system. With FII, Sitra and Finnvera, there was more confusion, e.g. their overlapping roles in regional investments. Overall, the most unclear division of work was seen to be between FII and Sitra because both have a more general role in the development of the Finnish venture capital market. In identifying complementary roles for these organizations in the area of developing venture capital, a generally agreed view was that Sitra could be more focused on direct investments in the early stage area, whereas FII should operate as a fund of funds. Sitra already has investment teams operating in the area, has an experienced workforce, conducts research in the area, and collaborates effectively with Tekes in direct investments. FII, on the other hand, has good relationships with venture capital funds, institutional investors, the European Investment Fund, and has developed an organization best suited to a fund of funds operation. Conversely, it does not have the experience, organization and depth of managerial knowledge needed for effective operations in direct investing.

The main problem of FII as a collaborator with other government agencies was seen by survey respondents as its habit of acting in isolation from others, its risk adversity, and the organization's prioritization of profitability over key policy goals (e.g. early stage financing). The activities of FII were seen as being driven largely by personal priorities rather than based on needs identified in the innovation system. Such a critical response may be because respondents, including key collaborators, had a substantial lack of understanding of the role of FII. One further reason may be the variety of activities FII is pursuing without publicly presenting a clear view as to its priorities. There was a concern that FII is a product of conflicting political interests. Accordingly, management struggles to reconcile and manage the disparate set of goals imposed by various stakeholders involved in the creation and continued support of the organization.

The effectiveness of FII as a policy tool for resolving market failures in venture capital has decreased at the same time as the need for such tools has increased. As a consequence, there is an evident need to improve the capability of FII to seriously and committedly focus on the identified market failures in early stage financing. If legislation, organizational structure, or other factors do not make it possible for FII to effectively address the identified market failures, the *raison d'être* of FII is seriously at question. If FII cannot be mandated with this important role, there may be a need to release resources and reorganize them in other ways which can more effectively target key market failures. The remit to resolve market failures in the supply of venture capital is, and remains, the

primary reason why FII was created as an important agent of government intervention.

If FII is not able to establish and pursue a clear and effective role of resolving market failures in seed and start-up stage venture capital because of incompatible objectives, inappropriate organizational structure or for any other reasons, the continued existence of FII should rightly be questioned. There may be a need to reallocate resources between various government agencies in order to ensure that these market failure problems are addressed effectively. Reorganizations including the merger of existing agencies should not be ruled out of the options to be considered.

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List of Interviewees

Non-Finnish experts

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Earley, Rory	Westport Private Equity Ltd. (and formerly, DTI/Small Business Service), UK
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Harding, Rebecca	Industrial Society, UK
Holloway, John A.	European Investment Fund, Luxembourg
Lorenzen, Hans-Peter	Federal Ministry of Economics, Germany
Marklund, Göran	Vinnova, Sweden
Nordstom Borup, Jacob	Danish Growth Fund, Denmark
Vigier, Pierre	European Commission, DG Enterprise

Experts in Finland

Autio, Erkki	Helsinki University of Technology
Hanhijärvi, Hannu	Sitra, The Finnish National Fund for R&D
Henriksson, Tom	Nokia Ventures Organization
Huttunen, Juhani	The Confederation of Finnish Industry and Employers
Hyytinen, Ari	Etlatieto Oy
Jääskeläinen, Riitta	Finnish Industry Investment Ltd.
Jalonen, Risto	Aboa Venture Management Oy & FVCA
Kariola, Ere	3i Finland Oy
Kelly, Peter	Helsinki University of Technology
Korhonen, Kalle J.	Ministry of Trade and Industry & FII
Korvenoja, Riikka	Finnish Venture Capital Association
Koskenlinna, Markus	Tekes, the National Technology Agency of Finland

Kurkijärvi, Kalevi	Bio Fund Management Ltd
Lehto, Kimmo	The Local Government Pension Institution
Lehtomäki, Vesa	Sitra, The Finnish National Fund for R&D
Lindblad, Olli	Sitra, The Finnish National Fund for R&D
Mäkinen, Markku	Finnvera
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Ojala, Veijo	Finnvera
Paaermaa, Risto	Ministry of Trade and Industry
Paasio, Antti	Turku School of Economics & FII
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Saarnivaara, Veli-Pekka	Tekes, the National Technology Agency of Finland
Suominen, Risto	The Federation of Finnish Enterprises
Tapio, Markku	Ministry of Trade and Industry & FII
Tarjanne, Artturi	Nexit Ventures Oy & Finnish Software Entrepreneurs
Turunen, Matti	Eqvitec Partners Oy
Valtonen, Pertti	Ministry of Trade and Industry
Viertola, Kimmo	Finnish Industry Investment Ltd
Virtanen, Erkki	Ministry of Trade and Industry
Ylä-Anttila, Pekka	Etlatieto Oy

Evaluation Steering Group

Keronen, Jouni	Fortum Corporation
Paananen, Elmar	Eimo Oyj
Pietarinen, Matti (Chairman)	Ministry of Trade and Industry
Porkka, Martti	Sampo Plc
Tolppanen, Ari	CapMan Oyj
Vairimaa, Raine	Ministry of Finance
Valtonen, Pertti	Ministry of Trade and Industry

List of Websites

Area	Organization	www page
Finland	Federation of Finnish Enterprises	www.yrittajat.fi
Finland	Finnish Industry Investment Ltd.	www.teollisuussijoitus.fi
Finland	Finnish Private Equity and Venture Capital Association	www.fvca.fi
Finland	Finnvera	www.finnvera.fi
Finland	Ministry of Trade and Industry	www.vn.fi/ktm
Finland	Sitra, the Finnish National Fund for Research and Development	www.sitra.fi
Finland	TEKEL, the Finnish Science Park Association	www.tekel.fi
Finland	Tekes, the National Technology Agency	www.tekes.fi
Finland	TT – The Confederation of Finnish Industry and Employers	www.tt.fi
Finland	T&E Centres	www.te-keskus.fi
Finland	Yritysuomi	www.yritysuomi.fi
Europe	European Commission, Enterprise	europa.eu.int/comm/enterprise
Europe	EVCA, the European Private Equity and Venture Capital Association	www.evca.com
Europe	Trend Chart on Innovation	trendchart.cordis.lu
Global	Global Entrepreneurship Monitor	www.gemconsortium.org
Global	OECD, the Organisation for Economic Co-operation and Development	www.oecd.org
Australia	AusIndustry	www.ausindustry.gov.au
Australia	The Australian Venture Capital Association Limited	www.avcal.com.au
Denmark	Danish Growth Fund	www.vaekstfonden.dk
Denmark	Danish Venture Capital Association	www.dvca.dk
Germany	BVK, the German Venture Capital Association	www.bvk-ev.de
Germany	DtA, Deutsche Ausgleichsbank	www.dta.de
Israel	IVA, Israel Venture Association	www.israelventure.com
Israel	IVC, Israel Venture Capital	www.ivc-online.com
Israel	The Yozma Group	www.yozma.com
Sweden	ALMI	www.almi.se

Sweden	Industrifonden	www.industrifonden.se
Sweden	Industriförbundet	www.industriforbundet.se
Sweden	NUTEK	www.nutek.se
Sweden	Swedish Venture Capital Association	www.vencap.se
Sweden	Vinnova	www.vinnova.se
UK	BVCA, the British Venture Capital Association	www.bvca.co.uk
UK	Small Business Service	www.sbs.gov.uk
USA	NVCA , the National Venture Capital Association	www.nvca.com
USA	SBIC, the Small Business Investment Company Program	www.sba.gov/INV

Appendix 1

Glossary of Terms¹⁷⁶

Term	Definition
Added value	A private equity management team's exceptional experience, know-how or valuable business contacts which constitute a vital input for the growth of investee companies.
Angel financing	Capital contributed by independently wealthy private investors. See business angel.
Asset class	A category of investment, which is defined by the main characteristics of risk, liquidity and return.
Business angel	A private investor who provides both finance and business expertise to an investee company.
Buyout	A transaction in which a business, business unit or company is acquired from the current shareholders (the vendor). See management buyout (MBO), management buyin (MBI), institutional buyout (IBO), leveraged buyout (LBO).
Buyout Fund	Funds whose strategy is to acquire other businesses; this may also include mezzanine debt funds which provide (generally subordinated) debt to facilitate financing buyouts, frequently alongside a right to some of the equity upside.
Capital under management	This is the total amount of funds available to fund managers for future investments plus the amount of funds already invested (at cost) and not yet divested.
Carried interest	A bonus entitlement accruing to an investment fund's management company or individual members of the fund management team. Carried interest (typically up to 20% of the profits of the fund) becomes payable once the investors have achieved repayment of their original investment in the fund plus a defined hurdle rate.
'Classic' Venture Capital	An American term used to describe investment in seed, early stage and development funds but excluding private equity investments such as management buy-outs (often termed 'merchant' capital)
Collateral	Assets pledged to a lender until a loan is repaid. If the borrower does not pay back the money owed, the lender has the legal right to seize the collateral and sell it to pay off the loan.
Covenants	An agreement by a company to perform or to abstain from certain activities during a certain time period. Covenants usually remain in force for the full duration of the time a private equity investor holds a stated amount of securities and may terminate on the occurrence of a certain event such as a public offering. Affirmative covenants define acts which a company must perform and may include payment of taxes, insurance, maintenance of corporate existence, etc. Negative covenants define acts which the company must not perform and can include the prohibition of mergers, sale or purchase of assets, issuing of securities, etc.

176 http://www.evca.com/html/PE_industry/glossary.asp?action=search&letter=no

Deal flow	The number of investment opportunities available to a private equity house.
Development capital	See expansion capital.
Due diligence	For private equity professionals, due diligence can apply either narrowly to the process of verifying the data presented in a business plan/sales memorandum, or broadly to complete the investigation and analytical process that precedes a commitment to invest. The purpose is to determine the attractiveness, risks and issues regarding a transaction with a potential investee company. Due diligence should enable fund managers to realise an effective decision process and optimise the deal terms.
Early stage	Seed and start-up stages of a business. See seed, start-up. Compare later stage.
Early Stage Fund	Venture capital funds focused on investing in companies in the early part of their lives.
Expansion capital	Also called development capital. Financing provided for the growth and expansion of a company, which may or may not break even or trade profitably. Capital may be used to: finance increased production capacity; market or product development; provide additional working capital.
Fund	A private equity investment fund is a vehicle for enabling pooled investment by a number of investors in equity and equity-related securities of companies (investee companies). These are generally private companies whose shares are not quoted on any stock exchange. The fund can take the form either of a company or of an unincorporated arrangement such as a limited partnership. See limited partnership.
Fund of funds	A fund that takes equity positions in other funds. A fund of fund that primarily invests in new funds is a Primary or Primaries fund of funds. One that focuses on investing in existing funds is referred to as a Secondary fund of funds.
Fundraising	The process in which venture capitalists themselves raise money to create an investment fund. These funds are raised from private, corporate or institutional investors, who make commitments to the fund which will be invested by the general partner. limited partner, commitment. See general partner,
General partner	A partner in a private equity management company who has unlimited personal liability for the debts and obligations of the limited partnership and the right to participate in its management.
Initial investment	First venture-backed investment made in an investee company. Compare follow-up investment.
Institutional investor	An investor, such as an investment company, mutual fund, insurance company, pension fund, or endowment fund, which generally has substantial assets and experience in investments. In many countries, institutional investors are not protected as fully by securities laws because it is assumed that they are more knowledgeable and better able to protect themselves.
IRR Internal Rate of Return	The IRR is the interim net return earned by investors (Limited Partners), from the fund from inception to a stated date. The IRR is calculated as an annualised effective compounded rate of return using monthly cash flows to and from investors, together with the Residual Value as a terminal cash flow to investors. The IRR is therefore net, i.e. after deduction of all fees and carried interest. In cases of captive or semi-captive investment vehicles without fees or carried interest, the IRR is adjusted to created a synthetic net return using assumed fees and carried interest.

J-curve	The curve generated by plotting the returns generated by a private equity fund against time (from inception to termination). The common practice of paying the management fee and start-up costs out of the first drawdowns does not produce an equivalent book value. As a result, a private equity fund will initially show a negative return. When the first realisations are made, the fund returns start to rise quite steeply. After about three to five years the interim IRR will give a reasonable indication of the definitive IRR. This period is generally shorter for buyout funds than for early stage and expansion funds.
Later stage	Expansion, replacement capital and buyout stages of investment.
Limited partner	An investor in a limited partnership (i.e. private equity fund). Compare general partner. Compare early stage.
Limited partnership	The legal structure used by most venture and private equity funds. The partnership is usually a fixed-life investment vehicle, and consists of a general partner (the management firm, which has unlimited liability) and limited partners (the investors, who have limited liability and are not involved with the day-to-day operations). The general partner receives a management fee and a percentage of the profits. The limited partners receive income, capital gains, and tax benefits. The general partner (management firm) manages the partnership using policy laid down in a Partnership Agreement. The agreement also covers terms, fees, structures and other items agreed between the limited partners and the general partner.
Management buyout (MBO)	A buyout in which the target's management team acquires an existing product line or business from the vendor with the support of private equity investors.
Pari passu	Participate on equal terms, making investments on a pari passu basis with other investors (EIF)
Portfolio company (or investee company)	The company or entity into which a private equity fund invests directly.
Private equity	Private equity provides equity capital to enterprises not quoted on a stock market. Private equity can be used to develop new products and technologies, to expand working capital, to make acquisitions, or to strengthen a company's balance sheet. It can also resolve ownership and management issues. A succession in family-owned companies, or the buyout and buyin of a business by experienced managers may be achieved using private equity funding. Venture capital is, strictly speaking, a subset of private equity and refers to equity investments made for the launch, early development, or expansion of a business. See venture capital, venture capitalist.
Public offering	An offering of stock to the general investing public. The definition of a public offering varies from country to country, but typically implies that the offering is being made to more than a very restricted number of private investors; that road shows promoting the offering will be open to more than a very restricted audience; or that the offering is being publicised. For a public offering, registration of prospectus material with a national competent authority is generally compulsory. See IPO.
Rescue (or turnaround)	Financing made available to an existing business which has experienced trading difficulties, with a view to re-establishing prosperity.
Seed stage	Financing provided to research, assess and develop an initial concept before a business has reached the start-up phase. See early stage.

Start-up	Financing provided to companies for product development and initial marketing. Companies may be in the process of being set up or may have been in business for a short time, but have not sold their product commercially. See early stage.
Track record	A private equity management house's experience, history and past performance.
Turnaround	See rescue.
Venture capital	Professional monies co-invested with the entrepreneur to fund an early stage (seed start-up) or expansion venture. Offsetting the high risk the investor takes is the promise of high return on the investment. See private equity, venture capitalist.
Venture capitalist	The manager of private equity fund who has responsibility for the management of the fund's investment in a particular portfolio company. In the hands-on approach (the general model for private equity investment), the venture capitalist brings in not only moneys as equity capital (i.e. without security/charge on assets), but also extremely valuable domain knowledge, business contacts, brand-equity, strategic advice, etc.

Appendix 2

Summary of the European Commission's Communication on State Aid and Risk Capital

Table 15 summarizes the recent Communication of the European Commission on State aid and risk capital.

Table 15. European Commission Communication on State aid and risk capital 2001^{177 178}

<p>State aid and risk capital</p> <p>1) OBJECTIVE</p> <p>To authorise under certain conditions the granting of State aid in favor of risk capital.</p> <p>2) INSTRUMENT</p> <p>Commission notice - State aid and risk capital (Text with EEA relevance) [Official Journal C 235 of 21.08.2001].</p> <p>3) SUMMARY</p> <p>Definition of risk capital</p> <p>1. The Commission defined (in SEC(1998) 552 final of 31 March 1998)) risk capital as equity financing provided to companies in their start-up and development phases.</p> <p>Context</p> <p>2. On a capital market sometimes short of financial resources, European companies, and in particular small and medium-sized enterprises (SMEs) and the high-technology sector, face an equity gap. Indeed, the provision of equity finance presents numerous challenges both to the investor, who needs to make a careful analysis, and to the enterprise, which must agree to share control with an outside investor. In order to ensure that European enterprises do not become overdependent on debt finance, the European Union has developed a general policy in favor of promoting risk capital. In March 2000 the Lisbon European Council set the date of 2003 for implementation of the risk capital action plan (RCAP).</p> <p>3. However, from the viewpoint of competition, risk capital financing proved problematic in relation to the Commission's general policy on State aid, particularly as regards the essentially commercial nature of such financing on the fact that the beneficiary is often in the private sector.</p>

177 European Commission 2001 State aid and risk capital – summary of legislation (<http://europa.eu.int/scadplus/leg/en/lvb/l26081.htm>)

178 European Commission, 2001b, State aid and risk capital, *Official Journal of the European Communities*, (2001/C 235/03), C235/233–C235/211.

4. In this notice the Commission recognises the important role that public authorities still have to play but takes the view that risk capital measures must be restricted to addressing certain "market failures" in the knowledge that public capital for enterprises is not the same as State aid. It has already published a number of instruments setting out the criteria for determining whether individual measures are covered by the definition of State aid and could thus apply to risk capital measures. These instruments include the 1984 notice on government capital injections, the 1998 notice on the application of the State aid rules to measures relating to direct business taxation and the notice on the application of Articles 87 and 88 of the EC Treaty to State aid in the form of guarantees. The present notice supplements this legislative framework by clarifying certain aspects of the approach taken to risk capital aid.

Scope

5. On the one hand, the notice recognises that there are three types of aid beneficiary, viz. the investors, the funds through which the finance is channelled and the companies invested in. The Commission has, however, pointed out that this type of financing is not always considered to be compatible with the EC Treaty (see Article 87(3)), which allows the granting of State aid under certain conditions. The specific nature of risk capital aid stems from its commercial purpose. On the other hand, since certain measures to support risk capital do not have any distortive effect on competition, the Commission has acknowledged following a thorough analysis that State aid for risk capital is admissible where it can be shown that there is a market failure.

Main assessment criterion: market failure

6. A market failure can be defined as a situation in which the economic efficiency of supply and demand is not achieved owing to imperfections in the market mechanism. The causes of such market imperfections are often to be found in imperfect information and high transaction costs, which penalise mainly SMEs and new firms.

7. With a view to authorising risk capital financing, the notice is based on Article 87(3) and considers that such financing must not exceed 500 000, 750 000 in regions eligible for aid under Article 87(3)(c) or 1 million in regions eligible for aid under Article 87(3)(a). The Commission must, however, ascertain whether the aid is proportionate to the market failure and must ensure that the distortive effect on the market is minimal. It is prepared to accept different forms of financing (investment funds, grants to cover administrative and management costs, guarantees to investors or venture capital funds, etc.).

Criteria for assessing the compatibility of the measures

8. The Commission looks, among other things, at the size and stage of development of the enterprises concerned, the existence of safeguards against distortions of competition, etc.

9. These criteria may positively influence the Commission's assessment but they are not sufficient to permit the granting of aid. The weight given to these criteria may depend on the form of the aid and the aid measure itself. The Commission will take account of the regional nature of the measure and will ascertain whether the measure is proportionate.

Notification procedure

10. Any aid scheme not satisfying the conditions of this notice or of the *de minimis* rule must be notified using a standard form.

11. The notice will remain in force for five years provided that no new decision is taken.

4) IMPLEMENTING MEASURES

5) FOLLOW-UP WORK

Appendix 3

Country Summaries

The following chapters summarize briefly the government venture capital programs in the selected countries (United States, Israel, German, United Kingdom, Denmark and Australia). Figure 31 presents the development of the investments in R&D and venture capital in these countries between 1996 and 2001.

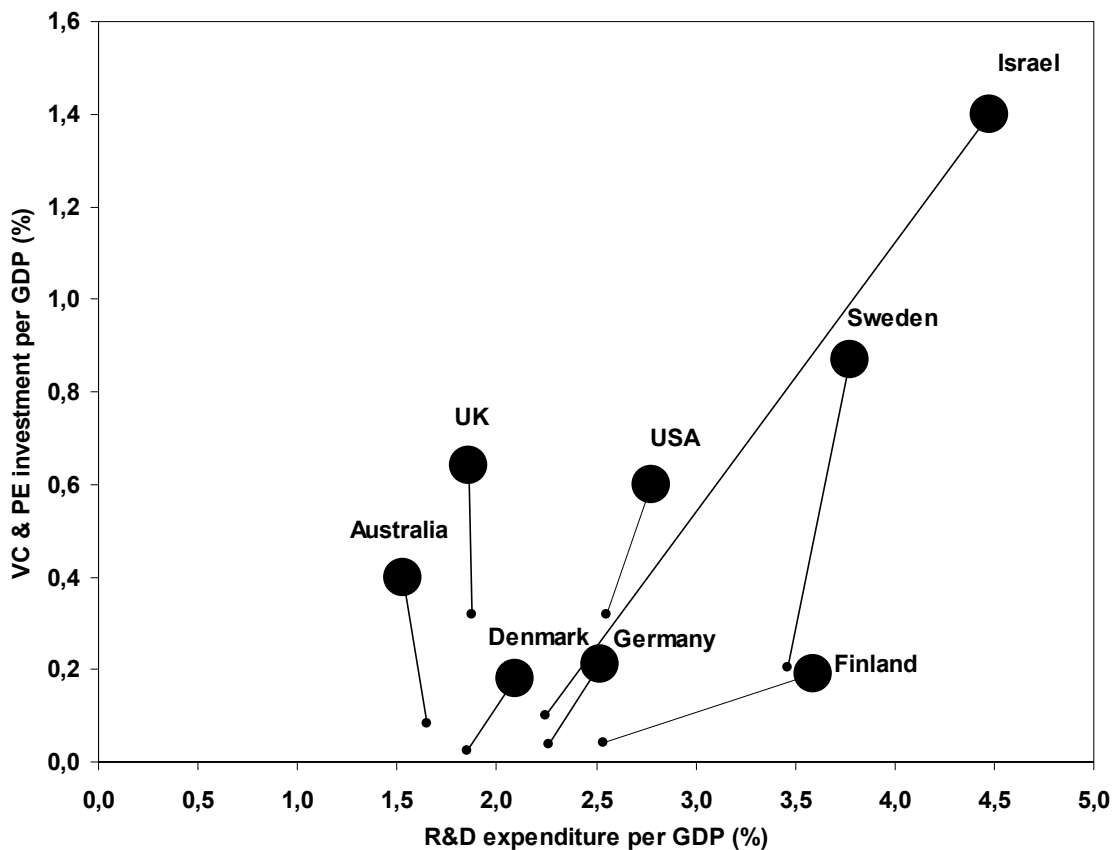


Figure 31. The shares of R&D expenditures and VC investments as a percentage of GDP in selected countries in 1996 and 2001¹⁷⁹

179 Sources: OECD, EVCA, 3i/PwC, Worldbank, Tekes

United States of America

The USA is the largest venture capital market in the world. In the peak year of 2000, National Venture Capital Association members raised \$104.6 billion and invested \$102.3 billion. In 2001 with the advent of the severe market corrections, fund raising and disbursements fell to \$40.6 billion and \$37.7 billion respectively, the lowest figures since 1998. The USA is also arguably the most studied VC market in the world. While the USA is a society, which extols individual choice, the “free market” and “small government”, it is noteworthy how much legislative and fiscal support the VC industry has received since its genesis after World War II.¹⁸⁰ As the size and importance of the venture capital industry has expanded, a host of agencies have become involved either directly or indirectly with promoting venture capital. In a summary report of this nature, it is impossible to do justice to the diversity of country programs. Therefore, only a small number of programs will be cited for each of our target countries. In the case of the United States, importance of the Small Business Investment Companies (SBIC) and the Small Business Innovation Research (SBIR) programs will be specifically noted.

Of particular importance in the history of the US venture capital industry is the role that the federally-funded Small Business Administration (SBA) has played in the industry’s evolution, particularly through the Small Business Investment Company (SBIC) program which started in 1958. These investment companies allowed a generation of investment managers to ‘cut their teeth’ via the management of government-supported investment programs designed to assist entrepreneurs and small businesses’ men and women. SBICs worked on the margins of the capital markets investing in enterprises that would be of no interest to large merchant banks nor the small number of established VC and MBO funds. This was one of the first major programs to use government-mediated finance (i.e. sourced at cheaper rates than for other non-governmental users of the capital markets) in order to leverage the investment returns to ‘limited partner’ contributors to small, privately owned and managed investment firms (SBICs). The program can offer leverage up to 300% of the fund’s own capital in areas where there is a special socio-economic case for additional public support. The SBA also sponsored the Small Business Development Centers Program – a university-related technology transfer program started in 1976. Given the contemporary importance given by several governments in developed

180 See e.g. Bygrave W. D. and Timmons J. A., 1992, *Venture Capital at the Crossroads*, Harvard Business School Press, Boston, MA., Lerner J., 1999, The government as venture capitalist: The long-run impact of the SBIR program, *Journal of Business*, 72, 285-318.,

economies to venture capital support to young firms and the encouragement of the commercialization of university research, one cannot fail to be impressed at the foresight of US legislators and policy makers.

The SBA also co-ordinates the Small Business Innovation Research (SBIR) program which was set up in 1982. SBIR provides awards (grants) for small technology-based firms. It is a highly competitive program that encourages small business to exploit their technological potential. Pump-priming awards from the SBIR provide the incentive and support to inexperienced technical entrepreneurs to test the potential of their innovations at a comparative level of safety. The rationale of the SBIR program is that by including qualified small businesses in the nation's R&D arena, high-tech innovation is stimulated. Through the SBIR program, the United States signals its support of the entrepreneurial spirit while simultaneously contributing to its specific research and development needs.

Critically, SBIR targets the entrepreneurial sector specifically because of its innovative potential. A percentage of federal R&D funds are reserved for SMEs. SBIR funds the critical start-up and development stages through to the early commercialization of the technology, product, or service. The SBIR program embraces two levels of small business support:

- Phase I is the start-up phase. Awards of up to \$100,000 for approximately six months support exploration of the technical merit or feasibility of an idea or technology.
- Phase II awards of up to \$750,000, for as many as 2 years, expand Phase I results. During this time, the R&D work is performed and the developer evaluates its commercialization potential. Only Phase I award winners are considered for Phase II.
- Phase III is the period during which Phase II innovation moves from the laboratory into the marketplace. No SBIR funds support this phase. The small business *must find funding in the private sector* or other non-SBIR federal agency funding.

SBIR is managed by the SBA which co-ordinates the participation of the eleven major federal agencies (for example, the departments of Defense and Agriculture) involved in the scheme.

Given that the US venture capital industry's average investment in a new enterprise in 2001 was of the order of \$10 million, tiny seed investments were

also outside the scope of many industry players. The comments below are only surprising in their indication of how small the size of investment US VCs were prepared to consider in 1998.

“The garage start-up is dead. We want to be able to invest \$4 million in a start-up”

John Doerr, Kleiner, Perkins, Caufield and Byers, Silicon Valley Ca., 1998

“...don't ask for pocket change. Don't come to Battery Ventures wanting \$1 million. We only do \$3 million to \$12 million deals.”

Morgan Jones, Battery Ventures, Boston MA, 1998

The organizations involved in public venture capital in US operate on both a federal and a State level¹⁸¹. SBA has a portfolio of 219,000 loans worth of \$45 billion¹⁸².

On the regional level there are at least 43 State venture firms in at least 30 States. These funds often invest in technology-based firms. The State-level equivalent for the SBIR program is the State SBIRs, run since 1982 in at least 6 States.

181 Lerner J., 1999, The government as venture capitalist: The long-run impact of the SBIR program, *Journal of Business*, 72, 285–318.

182 History of SBA 1957–2000.

Israel^{183 184 185 186 187 188 189}

After the United States, the most frequently cited country regarding genuinely early-stage venture capital has been Israel. This relatively tiny nation of around six million persons became in the 1990s one of the world's leading powerhouses of high-tech entrepreneurial activity. Israel had a higher level of venture capital as a share of GDP in the period 1998–2001 than any OECD country. On average for these years, Israel ranked ahead of the United Kingdom, Sweden and the United States in terms of venture capital raised and invested relative to its size. Growing rapidly in the 1990s, venture capital investments reached over 2% of GDP in 2000, but then declined with the downturn in technology markets.¹⁹⁰ After the US, there are more Israeli originated firms that have undertaken an Initial Public Offering (IPO) on NASDAQ than from any other country, with the exception of Canada.

Several factors help explain Israel's success in fuelling high-technology start-ups through venture funding: a risk-taking culture, wide-ranging technological know-how partly associated with military-related developments, and a large supply of skilled human resources and intellectual capital based on both an excellent educational infrastructure and the international migration of Jewish scientists to Israel from particularly the former USSR. In addition, Israel has benefited from large inflows of venture capital from abroad especially from the United States.

When analyzing the Israeli experience holistically, the unique political and economic history of the country has to feature largely in any analysis. However, from a policy perspective, the question becomes - how unique and exclusive to

183 <http://ifise.unipv.it/index.html>

184 <http://www.israelventure.com/>

185 <http://www.yozma.com/>

186 <http://www.ivc-online.com/>

187 <http://www.israelventure.com/IVA-PPTn.ppt>

188 Trajtenberg M., 2001, *Government support for commercial R&D: Lessons from the Israeli experience*, Paper presented at the NBER conference on Innovation Policy and the Economy, Washington, DC.

189 Trajtenberg M., 2000, *R&D policy in Israel: An overview and reassessment*, NBER Working Paper Series #7930.

190 OECD, 2002, *Venture Capital Country Note: Israel*, DSTI/IND(2002)16, Organisation for Economic Co-operation and Development, Paris.

Israel's contemporary experience are their policy programs in the field of venture capital and the support of NTBFs?

Two particular programs are of interest in relation to early stage support. These are i) the Yozma program which was set up in 1993 to develop the Israeli venture capital industry and ii) the present Technology Incubator program. Both programs came from the Office of the Chief Scientist (OCS), which was set up in 1970 with a direct remit to increase the R&D expenditure of Israel. At the start of the 1990s, Israel did not have a domestic VC industry. What funds had reached Israel were largely from investors in the US (and, to a lesser extent, Europe) with a strong commitment to supporting Israel and the Jewish nation. The objective of the OCS was to create *de novo* a VC industry to act as a source for capital for the emerging hi-tech start-up companies.

Yozma (1993–97) has become one of the most well known government-initiated VC programs internationally. Its reputation rests on three related outcomes. Firstly, this program was pivotal in creating an indigenous Israeli venture capital industry. Secondly, this latter goal was demonstrably achieved within five years. Finally, the government was able to withdraw from an active involvement in the market place by selling, *at a profit*, its shares of eight of the ten Yozma funds back to the Israeli and foreign private investors. These ambitious goals were designed into the original specification of the Yozma program by creating attractive incentives for the private investors to act according to the policy goals of Israel.

Professor Dan Kaufmann (2001) of the Jerusalem Institute for Israel Studies sees the Israeli industry as having gone through three distinct phases as it evolved to a level of commercial maturity by the end of the 1990s:

Phase 1 (1993–1996): Creation, Emergence and Learning of Israeli VC Industry

- Industry dominated by Yozma funds
- Very low start-up company valuations
- Small funds (~\$20M)
- Small amount invested in each start-up and small numbers of investments
- Large share of co-investment with other Israeli VCs
- Little seed investments and no specialization in areas
- Foreign partners had an important operational role
- Cumulative learning

- Very little understanding of the market and the VC business - very small added value by venture capitalists
- Goal of venture capitalists to make fast exit through M&A (in low valuations – \$10M–\$70M).

Phase 2 (1996–1998) – Growth

- First round of private venture capitalist funds not related to Yozma were raised
- Still low valuation in private investment, compared to US start-ups
- Medium-sized funds predominate (~\$100M)
- Increase in the amount invested in each start-up and fewer portfolio companies
- Increase in seed investments and beginning of specialization in investment areas
- Foreign partners had less important, non-operational roles.

Phase 3 (1999–2000) – Maturity

- Many venture capitalist companies and large variety of VC company types
- Normal valuation in private placements, compared to US start-ups
- Most venture capitalists specialized in certain areas
- Increase in seed investments
- Increase in venture capitalists added value capabilities
- Increase in co-investment with US venture capitalists
- Goal of venture capitalists to create successful independent companies or very high valuations at exits
- Israeli start-up companies becoming less dependent on Israeli venture capitalist's added value.

Yozma and the government's finance were initially directed towards new funds primarily created by experienced non-Israeli investors bringing their finance and skills to Israel. Yozma provided up to 40% of the capital in each of the new funds but limited itself to no more than \$8 million per fund, with private partners contributing \$12 million. Thus, the overseas investors in the new funds have to find 60% of the funds under management. The incentive for private investors was the option to buy Yozma out of their fund after five years at the pre-arranged option price of the investment value + LIBOR+1% in addition to 7% of the future profits. Yozma invested in 10 small new funds and 15 start-ups directly. The target funds have grown from the original \$200 million to \$2.9 billion under

management. The Israeli Government exited Yozma in 1997, and this first fund was followed by Yozma II in 1998. The public funding of the venture capital sector has reduced to nearly zero from the 50% (including Yozma) of the early 1990s.¹⁹¹

Today there are about 100 Israeli VC funds with about \$5 billion under management, and VC investments are being made at a rate of about \$2.5 billion annually (in a country with a GDP of about \$100 billion and a population of 6 million). Kaufmann concludes that the success of the Yozma program was conditional on the potential value represented in the technology of young entrepreneurial firms in Israel. The attraction of these companies stemming from an increasing spend in civilian R&D over the 1980s coupled with a highly trained population was readily recognized by overseas VC firms. Thus, Israel offered investors many good investment opportunities. The government's assistance to entrepreneurs was strongly focused on leveraging Israel's technology and innovation excellence beyond its domestic shores. In essence, the Yozma program was about setting up the right conditions for the commercialization of new technologies by ensuring linkages to sources of finance and new (and larger) markets beyond Israel.

After Yozma, the Israeli government has concentrated public policy on its incubator program, set up in the early 1990s. There are 24 technologically focused and geographically spread incubators. In Israel, the incubators assist seed companies in the areas of management, business development, marketing, setting up strategic alliances and raising VC investments. Initially the infrastructure needs of these technology incubators were supported up to 100% by the Israeli government, but today the VC funds are playing a more prominent role. In effect, the government has encouraged the privatization of these incubators. This is not dissimilar to the actions taken to privatize Yozma over time. It reflects a strong Israeli belief that after successfully setting initial conditions for industry development, the State should withdraw from an activity better undertaken by profit-focused, private businesses.

In 2002, the Israeli government announced a seed capital program largely based on the earlier Yozma model, i.e. the initial investors have the option to buy out the State from the funds at some future date when risks and uncertainties are more defined. It will be of considerable interest to many observers whether or not

191 OECD, 2002, *Venture Capital Country Note: Israel*, DSTI/IND(2002)16, Organisation for Economic Co-operation and Development, Paris.

the earlier successes of the Yozma program can be replicated in a smaller scale, and in an investment activity which is known as being notoriously difficult at securing attractive returns.

Germany^{192 193 194 195 196 197 198 199 200 201}

The BTU-program (*Beteiligungskapital für kleine Technologieunternehmen*) was set up in 1995 to address the gaps in venture capital financing for small technology-based start-ups²⁰². The BTU offers two types of support, equity co-financing for start-ups and loan refinancing for venture capital funds²⁰³. The scheme is a successor to the earlier TBJU scheme. Its main purpose has been to encourage the investment of venture capitalists into high-potential young firms which do not have the collateral for normal, debt-based bank instruments.

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- 192 Becker R. and Hellmann T., 2000, The Genesis of Venture Capital: Lessons from the German Experience.
- 193 Fiedler M.-O. and Hellmann T., 2001, Against all odds: the late but rapid development of the German venture capital industry, *The Journal of Private Equity*, 4, 31–45.
- 194 <http://faculty-gsb.stanford.edu/hellmann/pdfs/happyvc01all.pdf>
- 195 <http://www.bvk-ev.de/stats2001.php/aid/68>
- 196 Haar B., 2001, Venture Capital Funding for Biotech Pharmaceutical Companies in an Integrated Financial Services Market: Regulatory Diversity within the EC, *European Business Organization Law Review (EBOR)*, 2, 585–602.
- 197 Mayer C., 2002, Financing the New Economy: financial institutions and corporate governance, *Information Economics and Policy*, 14, 311–326.
- 198 Gilson R. J., 2002, *Engineering a Venture Capital Market: Lessons from the American Experience*, Paper presented at the Global Markets, Domestic Institutions: Corporate Law and Governance in a New Era of Cross-Border Deals.
- 199 Tykvova T., 2000, *Venture Capital in Germany and Its Impact on Innovation*, Center for European Economic Research (ZEW) - Department of International Finance and Financial Management.
- 200 Adelberger K. E., 1999, *A Developmental German State? Explaining Growth in German Biotechnology and Venture Capital*, BRIE Working Paper 134, The Berkeley Roundtable on the International Economy (BRIE), University of California at Berkeley, Berkeley, CA.
- 201 Walz U. and Bascha A., 2001, *Financing Practices in the German Venture Capital Industry: An Empirical Assessment*.
- 202 In Germany SMEs had relied traditionally on strong long relationships with their banks. Equity markets were relatively under-developed in Germany throughout the majority of the 1990s.
- 203 European Trend Chart on Innovation, Country Report: Germany, Jan-June 2001.

Providing a mixture of equity leverage and down-side protection via a 50% guarantee, the scheme expanded until 2000. In the three years up until this date, the federal government provided over 2 billion euros to the BTU scheme.

One consequence of a scheme with, in effect, two banks (i.e. tbg and KfW competing to provide two variations of a State support scheme, was that early-stage investments in Germany grew over the period to 2001 from a negligible figure to the largest venture capital commitment to early-stage technology in the European Union. There has been considerable discussion that the schemes were too generous. Certainly, the federal government has had to accept a major liability in the light of the “dot.com” implosion where large amounts of BTU guarantees were called in by the participating VC firms. Equally of concern to policy makers has been their assertion that German high-tech young companies are on occasion of a lower quality than their (particularly) UK counterparts, which have been raised in tougher soil. Certainly, the scheme appears to have engendered a ‘moral hazard’ dilemma. Given the guarantee for the VC firms, a number of companies have been forced into liquidation as it was more profitable for the investors to claim a 50% guarantee rather than receive a lesser amount from a buyer which would keep the guaranteed company afloat.

The Technologie-Beteiligungs-Gesellschaft (tbg, operating under DtA, Deutsche Ausgleichsbank) provides equity financing for young technology-based firms. tbg invests only with a lead investor that invests at least an equivalent share (1:1 leverage). The lead investor has an active role while tbg remains passive. In return for the lead investor's commitment, tbg may compensate partially any potential loss sustained. The refinancing of loans and coverage for risks is provided by Kreditanstalt für Wiederaufbau (KfW). “It offers low-interest loans to refinance venture capital providers who pass on this funding as venture capital to young technology-based firms. KfW partially releases the venture capital providers from their liability for the refinancing loan.”²⁰⁴

DtA is the business start-up and SME promotion agency of the German Federal Government, an all-around service and special purpose bank for SME entrepreneurs in Germany. Of its two subsidiaries, tbg concentrates on young high-tech start-ups, while gbb focuses on equity assistance below the high-tech threshold especially for start-ups in the new Federal States.²⁰⁵

204 European Trend Chart on Innovation, Country Report: Germany, Jan-June 2001. p. 33

205 Deutsche Ausgleichsbank www.dta.de

The German government has reigned in the BTU schemes since 2001 given recent and substantial losses incurred via the guarantee scheme. A new scheme in 2001 was launched to assist the provision of seed and pre-seed finance, the BTU-Early stage Scheme.

Sweden^{206 207 208 209 210}

Swedish policy towards innovation and industrial RTD policy went through a major change starting in 1999 when the three ministries of Industry, Employment and Communications were amalgamated. This was a visible indication of the Swedish Government's commitment to creating a more efficient co-ordination between the different policy areas crucial to innovation. This resulted in the formation of VINNOVA (the Swedish Agency for Innovation Systems) in 2000. The main objectives of VINNOVA are:

- Financing RTD
- Fostering co-operation between academic and industrial institutions
- Promoting the diffusion of information and knowledge, especially to SMEs
- Stimulating Sweden's role within the EU's RTD framework programs
- Evaluating and developing the Technology Foresight process
- Developing the role of research institutes in innovation systems.

At the same time as RTD policy was being amended, the business and industry development side was also under government scrutiny. NUTEK, the Agency for Business Development, was revamped and assumed control of regional enterprise support through the incorporation of the ALMI group of 40 local/regional bodies advising SMEs.

206 http://naring.regeringen.se/propositioner_mm/

207 Kuusisto J. and Arnold E., 2002, *Government innovation support for commercialisation of research, new R&D performers and R&D networks*, Technology Review 121/2002, Tekes.

208 http://www.vencap.se/article_view_e.asp?ArticleID=18

209 <http://www.industrifonden.se/english.html>

210 Hyytinen A. and Pajarinen M., 2001, *Financial Systems and Venture Capital in Nordic Countries: A comparative Study*, Etna Discussion Papers No. 774, The Research Institute of the Finnish Economy, Helsinki.

A key part of the Swedish re-alignment was the creation of a new Regional Development Policy based on the regional policy bill “A Policy for Growth and Vitality in All Regions”. Regional growth agreements have been created, which will develop into regional growth programs in 2004 combining an analysis based on a set of priorities for the financing, implementation and evaluation of a series of regional growth initiatives. Also for 2002, VINNOVA intends to launch a program provisionally entitled “Regional Growth by the Development of Dynamic Innovation Systems”. The programs seek to achieve effective cooperation within each region between companies, the R&D system and the political system (the triple helix) in order to increase the international competitiveness of the regions in focused areas.

The Swedish public funding system is organized through three central agencies:

- Industrifonden (Swedish Industrial Development Fund)
- NUTEK (Swedish Business Development Agency)
- ALMI Business Partners AB.

Industrifonden, founded in 1979, is a Swedish governmental foundation whose objective is to promote industrial growth in Sweden. As it is publicly financed and provides venture capital finance, it is the closest equivalent to FII in Finland. Industrifonden has received capital contributions from the government, totaling SEK 1.6 billion (175 million euros). Profitable investments have increased its current capitalization to SEK 4 billion (440 million euros).

Industrifonden provides both debt and equity capital to SMEs with less than 250 employees or with a turnover less than SEK 400 million. The minimum size required for a project is SEK 4 million (0.44 million euros), and Industrifonden can provide up to 50% of the capital needed. However, Industrifonden requires that there is another external investor present in the investment. The targeted firms are mostly technology-based firms that require financing for R&D or marketing efforts. Thus, they are mainly in the start-up or early growth phases.

Industrifonden is a minority shareholder in 73 firms, and has loans to 136 firms. Also, it is a co-owner in seven regional venture capital funds. In 2001, Industrifonden made a result of SEK 510 million. The amount of capital committed was SEK 2042 million, and it has 305 investments in its portfolio. Industrifonden co-operates with the Swedish Business Development Agency, NUTEK.

NUTEK is the central Swedish public authority for industrial policy issues. Its role has been revised and expanded since 2000. Particularly, it has taken on a greater involvement in the execution of regional policy initiatives. NUTEK is engaged in four main areas of activity: financing, entrepreneurship programs, company development and regional business development. The activities between NUTEK and Industrifonden are coordinated so that NUTEK handles the applications and makes recommendations to Industrifonden. It is this latter organization that undertakes the subsequent analysis and makes the investment decision. The arrangement is to make the roles more clear to co-ordinate financing, and increase the level of financing directed to SMEs.

NUTEK in turn is connected with ALMI Business partners, a company with a regional network of 21 offices. Regional ALMI Business Partner offices are owned by State and local councils. ALMI provides both information and support and loans and guarantees for small, local firms. ALMI operates a fund worth of SEK 4 billion.

Denmark^{211 212 213}

In Denmark, the administering agency for public financing to SMEs, research institutes, high-potential businesses and venture capital funds is directed through a single firm, Business Development Finance (“VaekstFonden”). Constituted in the legal form of a private venture capital fund, it makes investments directly in firms seeking financing, commitments to venture capital funds, and manages a loan guarantee scheme. Started in 1992, the fund has been implementing a new strategy since early 2001. Instead of exclusively underwriting loans, BDF has become an active early-stage investor. Using equity, convertible loans, and loans, the fund makes investments on commercial terms in firms that have difficulties raising capital.

In 2001, the Growth Fund made investments to 69 firms, totaling to DKK 334 million (45 million euros). It also made capital commitments to VC funds worth

211 The European Charter for Small Enterprises, Implementation report, Denmark 2002.

212 Danish Venture Capital Association <http://www.dvca.dk/>

213 Harding R., 2002b, Plugging the knowledge gap - an international comparison of the role for policy in the venture capital market, *Venture Capital*, 4, 59–76, Harding R., 2002a, *A Gap Analysis of the Danish Venture Capital Market*, Danish Growth Fund.

of DKK 100 million (13 million euros). The expected numbers for 2002 are DKK 250 million (34 million euros) for direct investments and DKK 250–400 million (34–54 million euros) for venture capital fund commitments. The capital base on the fund is currently DKK 2 400 million (323 million euros).

The fund manages a range of instruments from a guarantee scheme for venture capital companies (“Udviklingselskaber”) and also a loan guarantee scheme, (“VækstKaution”). The former scheme, which started in 1992, is concerned with reducing venture capital firms’ risk in investing in innovative young firms that have had difficulties with raising private finance. 50% of the funds at risk are guaranteed by the State for the venture capital firm for an eight-year period after which the guarantee reduces and eventually terminates in year 12. The sixteen development companies administering the scheme for the Danish State have made guarantees of over €134 million and have invested in over 140 companies.

United Kingdom^{214 215}

The UK enjoys the biggest venture capital and private equity industry in Europe. In 2001, some £12.2 million was raised (a record year) and £6.2 billion was invested in a record 1,597 companies. The UK is second only to the USA in size and history. It has embarked since the present government’s 1998 White Paper on Competitiveness on a range of policy initiatives designed to encourage and exploit the knowledge economy as represented by NTBF firms. Given the size and sophistication of the UK’s venture capital community, the government has until recently not felt the need to support or subsidize this investment activity. The biggest SME schemes were the Small Firm’s Loan Guarantee Scheme and the more technology-oriented SMART merit awards for NTBFs. However, neither of these schemes was designed to aggressively build the recipient company over a relatively short period. However, the increasing scale of the industry and its diffidence towards early-stage investment have increasingly obliged the government to be an active player in the early-stage venture capital market.

One of the two most important new schemes has been the Regional Venture Capital Funds. These funds are directly designed to address ‘equity gap’ issues

214 <http://www.bankofengland.co.uk/publica.htm>

215 <http://www.sbs.gov.uk/>

and the maximum funding per firm is 790,000 euros, i.e. two tranches of £250,000. Supporting, in a competitive bidding process, one fund in each of England's nine regions, the UK government has allocated £80 million (127 million euros) as the State's contribution of the total investment funds. This sum represents 25% maximum in each fund with the European Investment Fund putting in a further 25% of the total fund. The private partners must contribute a minimum of 50% of the total funds raised. However, while the SBS money is subsidized, EIF's returns are *pari passu* with any other commercial investor in the fund. The State also takes a more minor guarantee role by requiring that the private funds be repaid first before the State is repaid. Similarly, the limited partners are allowed to receive a 10% IRR before the State starts receiving any surplus back. The State's distribution of rewards is capped at 5%. Thus the State's returns are subordinated to the other limited partners while ensuring that the State invests first and is returned its principle funds (and any interest) after all LPs. This subordination is calculated to cap the State's returns at 5% while ensuring private limited partners a 27% return if the fund reaches a net IRR of 20% per annum.

The Regional VC Funds form part of the wider Enterprise Fund. A second element of the government's program is the UK High Technology Fund. This is managed by Westport UK Ltd. A professional fund of funds. This fund manager was given a target of £105 million to be raised from private sector investors alongside £20 million of government investment. This target was exceeded, as Westport was successful in raising £106.1 million from private sector investors. The Enterprise Fund was established on a 'fund of funds' basis, investing in existing high-technology based venture capital funds instead of directly in high-technology firms. Westport attracted not only institutions new to investing in the high technology sector but also those who had never previously invested in venture capital. The fund is already making investments in those venture capital firms that are specialist in investing in early-stage, technology-focused companies. Investments in sectors being supported by the Fund include software, pharmaceuticals, communications, Internet technologies and biosciences. It is, as yet, too early to make any observations on the commercial success of this government-supported fund.

The UK government is exceptional in Europe in having embraced a significant number of new financing initiatives, which include venture capital as a component part²¹⁶. Notably these include the *University Challenge Fund* (a seed

216 HM Treasury and Small Business Service, 2002, *Enterprise Britain: a modern approach to meeting the enterprise challenge*, Stationery Office, London.

fund initiative for British universities) and the socially targeted *Phoenix Fund*, which has a community development remit. These initiatives should have also been in the context of a change in policy towards the provision of advice in small firms. The Small Business Service set up the Small Business Investment Taskforce to look critically and informedly at the full range of the government's support to small and medium-sized enterprises, particularly those involving new technologies.

Australia

Given its geographic isolation coupled with the need of a modern economy to invest in the commercialization of new ideas, Australia has encouraged a range of enterprise-based schemes since the early 1980s. In 1996, (in part at the author's instigation) the Commonwealth Government started to place considerable importance on encouraging the supply of venture capital to young Australian companies. The government also invested in demand-side activities particularly through its "investor ready" program for young companies seeking external funding.

The venture capital activities of the government have been arranged under *AusIndustry*, the Commonwealth government's business unit financing innovation and R&D. Operating under Department of Industry, Tourism and Resources, AusIndustry was established in 1995.^{217, 218} It manages an annual budget of A\$1.7 billion, and channels its support in the form of grants, loans and tax concessions. AusIndustry provides a number a programs focused on small-businesses, specific industries, R&D and venture capital. The programs are organized through private sector investors who make the specific investment decisions on behalf of the State.

COMET is program for commercialization of emerging technologies. Launched in November 2000, funding of \$30 million over three years has been allocated for the COMET program. Funds are aimed for early-growth companies, individuals and spin-off companies focused on the commercialization of innovative products. Competitive, merit-based grants are delivered by private

217 AusIndustry website www.ausindustry.com.au

218 Ferris W. D., 2001, Australia chooses - Venture capital and a future Australia, *Australian Journal of Management*, 26.

sector consultants. This scheme closely reflects the US SBIR and the UK's SMART Award Schemes.

The Innovation Investment Fund (IIF) promotes the commercialization of R&D. The small, high-tech companies at the seed, start-up or early expansion stages. Nine government-licensed private sector fund managers with funds ranging from \$30 million to \$50 million have been created with a remit to invest their funds in new technology-based companies. The total capital of the program, \$358 million, is provided by both the Commonwealth and private sector investors, in a proportion of 2:1 government/private monies.

AUSTEP Pre-seed fund is directed at universities and public-sector research agencies to address the gap between promising scientific discoveries and commercialization. Funds are managed by four private investors, with total funds of \$100 million, of which \$72.7 million is provided by the government. This program was set up in 2001. This highly leveraged fund has been designed to create sufficient incentives to attract private investors (via a capped return for the government).^{219 220}

The IIF and the Pre-Seed Fund were modeled closely on both American and European experience in that they contain both a leveraged financing and a guarantee element in the programs. The urgency of schemes that encourage the supply of venture capital finance have been made more cogent by the fact that the Australian Commonwealth has not had legislation that would have allowed for the formation of a tax transparent Limited Liability Partnership. This has made the Australian environment very unattractive to overseas investors. This fact is reflected in the relatively low value of venture capital as a percentage of GDP in Australia at approximately 0.1 percent of GDP in 2000.

However, on 14 November 2002, the Federal Government tabled two bills which remove an Australian taxation impediment faced by international investors wishing to invest in Australian companies. The bills – Taxation Laws Amendment (Venture Capital) Bill 2002 and Venture Capital Bill 2002 – which apply retrospectively from 1 July 2002, were designed to put Australia's venture

219 AUSTEP Strategic Partnering, 2001, *Competitive Pre-Seed Fund for Universities and Public Sector Research Agencies: AUSTEP Submission on Threshold Issues*, AUSTEP Strategic Partnering.

220 UWA, 2001, *Australia's Pre-Seed Fund*, Media statement 16.8.2001, The University of Western Australia, Accessed: 25.11.2002, <[http://www.uwa.edu.au/media/statements/2001/08/australias_preseed_fund_\(16_august\)](http://www.uwa.edu.au/media/statements/2001/08/australias_preseed_fund_(16_august))>.

capital industry on an equal footing with international best practice. The requirement to pay tax on gains derived from Australian investments has been a major disincentive for many international investors (which are frequently exempt from tax in their own countries, e.g. UK pension funds), from investing in Australia. It has significantly reduced the global funds available for financing start-up and expanding companies, particularly in Australian biotech and information technology industries.²²¹

221 PriceWaterhouseCoopers, 2002, *Venture Capital reform: Increased venture capital funds to flow into Australian companies*, Press release 15.11.2002, PriceWaterhouseCoopers Australia, Accessed: 15.11.2002, <<http://www.pwcglobal.com/Extweb/service.nsf/docid/9A312FC0BD088407CA256C750000BDE2>>.

6. In your opinion, if it were impossible to effectively reduce market failures (e.g. in the supply of early stage venture capital) and be profitable at the same time, which of the two goals should FII focus on?

- a) to focus on reducing market failures and increasing the allocation of investments in important but financially less attractive segments ignored by private investors, even if it meant that FII could make net losses on its portfolio
- b) to focus on keeping the FII's investment portfolio profitable and increasing the allocation to financially attractive investments, even if it meant FII reducing commitment and effort to alleviating market failures

7. How clear and distinct is the role of the Finnish Industry Investment Ltd. among the other development agencies of the Finnish government (Sitra, TEKES, Finnvera etc.) in providing finance to high growth young firms?

	Not at all		Very clear			Don't
	1	2	3	4	5	Know
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. In your opinion, what is the most important change, if any, needed in the goals and/or operations of FII?

9. In your opinion, what is the most important measure the Finnish government should take to assist the success of high growth young firms in Finland?

10. Are there any other comments you would like to make concerning FII?

Please return the completed questionnaire to Dr. Markku Maula by **telefax (09 - 412 44 800)**. If you have any questions or comments regarding the survey or the evaluation, please contact Dr. Markku Maula by email or by phone (040 - 556 0677). Thank you for your valuable help!

Appendix 5

Short Biographies of the Two Evaluators

Dr. Gordon Murray

Gordon Murray is an Associate Professor of Entrepreneurial Management at the Department of Entrepreneurship, London Business School, England (www.london.edu). He has worked for both international corporations and in government service before becoming an academic in his early 40s. Since 1990, he has researched, lectured and consulted internationally in the two related areas of New Technology-based Young Firms and the development of the International Venture Capital Industry. Dr. Murray is also deeply interested in both the commercial and policy implications of venture capital. He has conducted policy-focused research for the UK, German and other European governments, the Australian Commonwealth and the European Commission, in addition to undertaking consulting commissions for several corporations, the British and European Venture Capital Associations, banks and other financial service providers. Particular long-term interests include how national venture capital industries have evolved over time; performance issues; and in trans-Atlantic and pan-European comparisons of venture capital support for, especially, start-ups and other early stage, technology investments. The strategic logic of corporate venture capital is a contemporary research interest with colleagues at Helsinki University of Technology.

Dr. Murray is a senior advisor on policy-related issues concerning the financing and growth of New Technology Based Firms to the UK government's Department of Trade & Industry and is a member of the recently created (2000) Small Business Investment Task Force. He is a member of the SBIT panel allocating £80 million of government capital to regional 'seed' venture capital funds. He has also regularly advised the European Commission on the financing of high-growth young firms and has recently become an invited member of the Professional Chamber of the Enterprise Policy Group set up in 2001 by Commissioner Liikanen (DG Enterprise). He is the only academic member of the High-Tech Committee of the British Venture Capital Association. Dr. Murray is also a member of the advisory board of a UK/US venture capital firm – Granville Baird Capital Partners. Dr. Murray will take up a Chair in Management at the University of Exeter in the UK (www.exeter.ac.uk) in January 2003.

Dr. Markku Maula

Dr. Markku Maula is Senior Researcher at the Institute of Strategy and International Business of Helsinki University of Technology. He has worked at the Institute in various roles since 1997. Dr. Markku Maula graduated as Doctor of Science in Engineering (with distinction) in 2001.

In his research, Dr. Maula has focused on venture capital, corporate venturing, and entrepreneurial management with his dissertation focusing on corporate venture capital. Dr. Maula has received several international awards for outstanding scholarship. He is only the second scholar in Europe to win the Heizer Award from the Academy of Management for the best doctoral dissertation in the field of new enterprise development. A research study on corporate venture capital by Markku (co-authored with Professor Gordon Murray of London Business School) was awarded the McKinsey & Company Best Conference Paper Prize Honorable Mention at the prestigious Strategic Management Society conference in 2000.

In addition to his research and teaching roles, Dr. Maula has gained experience of a venture capital firm and a communications network manufacturer. Dr. Maula also acts as an advisor in areas related to business strategy, corporate finance, and innovation and enterprise policy.



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Julkaisun nimi Suomen Teollisuussijoitus Oy:n kansainvälinen evaluointi		
Tiivistelmä Suomen Teollisuussijoitus Oy on Suomen valtion omistama pääomasijoitusyhtiö, joka aloitti toimintansa vuonna 1995. Suomen teollisuussijoituksen tehtävä on tukea pääomasijoitusmarkkinoiden kehittymistä parantamalla riskipääoman tarjontaa erityisesti alueilla, joilla markkinapuutteet rajoittavat riskipääoman saatavuutta lupaaviin pieniin ja keskikokoisiin yrityksiin. Yhtiö sijoittaa kohdeyrityksiin epäsuorasti rahoittamalla niihin sijoittavia pääomasijoitusrahastoja. Yhtiö tekee myös suoria sijoituksia. Kuten muissakin Euroopan maissa, Suomen pääomasijoitusmarkkinat kasvoivat nopeasti 1990-luvun jälkipuoliskolla. Kasvusta huolimatta Suomen pääomasijoitusmarkkinoiden koko suhteessa kansantalouden kokoon on kansainvälisessä vertailussa varsin vaatimaton etenkin jos huomioidaan Suomen yritysraenteen korkea osaamisintensivisyys. Heikko aikaisen vaiheen riskipääoman saatavuus on tärkein ja pysyvin markkinapuute Suomen pääomasijoitusmarkkinoilla. Suomen Teollisuussijoitukselle annetussa tehtävässä korostuu markkinapuutteiden korjaaminen alkuvaiheen sijoituksissa auttamalla perustamaan ja rahoittamalla aikaisen vaiheen sijoituksiin keskittyviä pääomasijoitusrahastoja. Samanaikaisesti yhtiön on kuitenkin odotettu tekevän myös voitollista tulosta. Vuotuisen voitollisen tuloksen tavoittelu on johtanut tilanteeseen, jossa yhtiö on hankalassa markkinatilanteessa kohdistanut kasvavan osuuden sijoituksistaan myöhäisemmän vaiheen sijoituksiin saavuttaakseen tuottotavoitteen. Keskittyminen tuottotavoitteeseen sekä toimintamalli, jossa yhtiö sijoittaa samoin ehdoin yksityisten sijoittajien kanssa on johtanut heikentyneeseen vaikuttavuuteen pahenevan markkinapuutteen korjaamisessa aikana jolloin vaikean markkinatilanteen takia tarve interventiolle olisi suurin. Evaluoinnin pääsuosituksena on kohdistaa yhtiön toiminta entistä tehokkaammin jäljellä oleville markkinapuutealueille, joista alkavien yritysten siemen- ja käynnistysvaiheen riskirahoitus on hankalin ja pysyvin. Yhtiön suositellaan keskittyvän markkinapuutteiden korjaamiseen epäsuoralla toimintamallilla, jossa yhtiö rahoittaa ja auttaa harkittujen, epäsymmetriseen voitonjakoon perustuvien kannusteiden avulla käynnistämään yksityisten ammattimaisten pääomasijoittajien hallinnoimia markkinapuutealueille kohdistettuja siemen- ja käynnistysvaiheen pääomasijoitusrahastoja. Samalla toimintamallilla yhtiö voi auttaa korjaamaan markkinapuutteita myös alueellisen riskirahoituksen markkinapuutteissa. Lisäksi yhtiöllä nähdään olevan myös tärkeä rooli tukemassa ulkomaisen pääoman, mukaan lukien Euroopan Unionin rahoituksen kanavoitumista suomalaisiin pääomasijoitusrahastoihin. Suoria kohdeyrityksiin tehtäviä sijoituksia suositellaan lähtökohtaisesti vältettäväksi. Yhtiön hallintoa ja jatkuvaa arviointia suositellaan kehitettäväksi heijastamaan yhtiön päätehtävää pääomasijoitusmarkkinoiden puutteiden korjaamisessa. Yhtiön suositellaan kehittävän entisestään yhteistyötä innovaatiojärjestelmän muiden toimijoiden kanssa. Valtion erityisrahoitusyhtiöiden yhteistyön ja roolien kehittämisen lisäksi nähdään tarvetta myös korkean tason koordinaatiolle muun muassa yrittäjyyspolitiikan ja yleisen talouspolitiikan välillä merkittävien tulosten saavuttamiseksi kasvuhakuisen yrittäjyyden edistämiseksi. KTM:n yhdyshenkilö: Elinkeino-osasto/Pertti Valtonen, puh. (09) 1606 3614		
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		Organets tillsättningsdatum
Titel Internationell utvärdering av Finlands Industriinvestering Ab		
Referat Finlands Industriinvestering Ab, som är ett riskkapitalbolag som ägs av finska staten, inledde sin verksamhet år 1995. Finlands Industriinvestering Ab har till uppgift att stöda utvecklingen av kapitalmarknaden genom att bidra till ett ökat utbud av riskkapital särskilt inom de områden där existerande marknadsbrister försvårar tillgången till riskkapital för lovande små och medelstora företag. Bolaget investerar indirekt i målföretag genom att finansiera riskkapitalfonder som gör investeringar i företagen. Bolaget gör också direkta investeringar. Liksom riskkapitalmarknaden i andra europeiska länder växte också riskkapitalmarknaden i Finland snabbt under den senare hälften av 1990-talet. Trots tillväxten är den finska riskkapitalmarknaden internationellt sett ganska liten i förhållande till hela samhällsekonomin särskilt med tanke på att den finska företagsstrukturen är långt kunskapsintensiv. Den bristande tillgången på riskkapital för nybildade företag är den allvarligaste och mest bestående av bristerna på den finska riskkapitalmarknaden. I det uppdrag som Finlands Industriinvestering Ab fick framhävs avhjälpandet av marknadsbristerna när det gäller investeringar i nybildade företag i och med att bolaget ålades att hjälpa grunda och finansiera riskkapitalfonder som koncentrerar sig på investeringar i nybildade företag. Samtidigt förväntas också bolaget generera vinst. Målet att årligen behöva generera vinst har lett till en situation där bolaget för att kunna nå avkastningsmålet i en svår marknadssituation har riktat en allt större andel av sina investeringar till företag som befinner sig i ett senare skede av livscykeln. Det faktum att bolaget har koncentrerat sig på avkastningsmålet tillsammans med bolagets verksamhetsmodell – att bolaget gör investeringar på samma villkor som privata investerare – har gjort att effekten av bolagets åtgärder för att avhjälpa marknadsbristerna har minskat i en tid då behovet av intervention beroende på den svåra marknadssituationen är som störst. Den viktigaste rekommendation som ges i samband med utvärderingen är att bolagets verksamhet ännu effektivare än förut skall inriktas på avhjälpande av de marknadsbrister som återstår. Den svåraste och mest bestående av dessa är bristen på såddfinansiering och uppstartsfinansiering för nya företag. Det rekommenderas att bolaget skall koncentrera sig på avhjälpande av marknadsbrister med hjälp av en indirekt verksamhetsmodell där bolaget finansierar och genom välgenomtänkta incitament som baserar sig på osymmetrisk vinstutdelning hjälper att grunda riskkapitalfonder som administreras av privata professionella kapitalplacering och som tillhandahåller sådd- och uppstartsfinansiering som riktas till områden med marknadsbrister. Med hjälp av denna verksamhetsmodell kan bolaget även avhjälpa brister i utbudet av regional riskfinansiering. Dessutom anses bolaget ha en viktig stödande roll i kanaliseringen av utländskt kapital, inklusive finansiering från Europeiska unionen, till finländska riskkapitalfonder. Bolaget bör i regel undvika att göra direkta investeringar i målföretag. En ytterligare rekommendation är att bolagets förvaltning och den kontinuerliga utvärderingen av bolaget skall utvecklas så att de återspeglar bolagets viktigaste uppgift som består i att avhjälpa brister på riskkapitalmarknaden. Bolaget skall således vidareutveckla samarbetet med de övriga aktörerna i innovationskedjan. Förutom att de statliga specialfinansieringsbolagen skall utveckla samarbetet sinsemellan och sin egen roll tycks det också finnas behov av samordning på högre nivå, bland annat mellan företagarpolitiken och den allmänna ekonomiska politiken, för att påtagliga resultat skulle kunna nås i främjandet av tillväxtorienterat företagande.		
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