



Effects & experiences

– final evaluation of the Swedish regional co-investment funds 2009–15

In 2009 a regional co-investment funds initiative was introduced across the nation. This report summarizes findings from Growth Analysis' study into this initiative. We discuss its effects on regional structures for risk financing and present a method to study its impacts on portfolio firms. We also test this method using preliminary data.

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Foreword

The Swedish Agency for Growth Policy Analysis (Growth Analysis) was commissioned in its 2009 appropriation directions to evaluate the measures taken to increase the regional supply of risk capital (equity capital) between 2009 and 2014 within the framework of Sweden's eight regional structural fund programmes.

The commission was reported in the form of three interim reports and a final report. The three interim reports have already been published. The first, *Staten och riskkapitalet* [The State and Risk Capital], was submitted to the government in March 2010, the second, *Kompetent kapital? Tre länder, tre försök* [Competent Capital? Three countries, three attempts] in November 2011, and the third, *Affärsänglar, riskkapitalfonder och policyportföljer* [Business Angels, Co-investment Funds and Policy Portfolios], in December 2013. The final report, *Effekter och erfarenheter* [Effects and Experiences], was handed to the Ministry of Enterprise and Innovation 30 December 2015.

This report is Growth Analysis' public version of the final report within the commission and corresponds in all material respects with the commission report already submitted to the Ministry. The Swedish version was published in April 2016. This is the English version of the report, titled *Effects and Experiences*.

The report contains in part descriptive data, tentative effect estimations regarding portfolio companies and regional capital supply structures. It should be emphasised here that strictly speaking, it is too early to assess the impact of the interventions at this time. For example, new investments were allowed under the measures right up until 30 September 2015. The combination of the prevailing lag in Growth Analysis' databases (around 1.5 years) and an understanding of the J-curve effect, means it is unreasonable to expect measurable (growth) impacts in the portfolio companies at this early stage. At best, early trends may be possible to discern. A more realistic expectation would be to regard the reports as presenting a developed method for measuring future impacts.

The authors of this main report are Jörgen Lithander (project manager, Growth Analysis) and the analysts Barbro Widerstedt and Ulf Tynelius (both from Growth Analysis).

In addition to the main report a quantitative study, *Background Report 1*, (only available in Swedish) was carried out by the consultancy firm Damvad on behalf of Growth Analysis. Similarly, a more qualitative study, *Background Report 2*, was carried out by Oxford Research on behalf of Growth Analysis (also only available in Swedish).

Before work on the report was begun, an extensive method description was developed. This work was carried out by professors Gordon Murray (University of Exeter), Colin Mason (University of Glasgow), Markku Maula (Aalto University) and Marc Cowling (University of Brighton). In addition to the actual method description, the above also provided comments and ideas regarding early drafts of the report.

A dialogue was also maintained with Tillväxtverket (the Swedish Agency for Economic and Regional Growth), Ramböll, Almi Invest and the Swedish Private Equity & Venture Capital Association (SVCA) while the report was being written.

Growth Analysis would like to thank everyone who contributed in some way to the work.

Östersund, April 2016

Jan Cedervärn
Acting Director-General
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Table of Contents

Summary	7
1 Starting points and structure	11
1.1 Report structure.....	11
1.2 The Growth Analysis evaluation commission	12
1.3 Approach.....	13
1.4 The policy initiative	15
2 What do the previous three interim reports have to say?	19
2.1 Interim report 1 “The State and Risk Capital“	19
2.2 Interim report 2: “Competent Capital”	21
2.3 Interim report 3: Business Angels, Co-investment Funds and Policy Portfolios	23
3 Investing activities and structures	30
3.1 Investment structure: SEK 3.4 billion in 320 portfolio companies	30
3.2 Co-investors	31
3.3 Portfolio companies.....	32
3.4 A geographical dimension	36
3.5 Summary	43
4 Has the intervention had any effect on the portfolio companies' growth?	46
4.1 The entrepreneurs' own opinions regarding needs, benefits and impact	46
4.2 Portfolio companies included in the impact assessment	49
4.3 Profile of the selected companies.....	50
4.4 The matching method.....	51
4.5 The regression model.....	54
4.6 Impact assessment	54
4.7 Summary	55
5 Have fund activities entailed any impact on the regional structure for risk finance?	58
5.1 Expectations and possibilities for structural impact	58
5.2 Three schematic phases in the regions' structure for risk finance	61
5.3 Signs of positive development in the regions	62
5.4 The funds' structural improvement activities.....	64
5.5 Identified obstacles for structural improvements	65
5.6 Summary	66
6 Policy discussion and recommendations	68
6.1 Early effects and geographical limitations	68
6.2 Thematic discussions and observations.....	70
6.3 Recommendations and future studies	74
References	78

Summary

The regional co-investment fund – structure builder or traditional venture capitalist?

Growth Analysis [*Tillväxtanalys*, the Swedish Agency for Growth Policy Analysis] has been commissioned by the Government to evaluate the Regional Co-Investment Funds programme. Our final report demonstrates major regional differences in the business sector and in capital supply structures, constituting a challenge when combined with unclear formulation of goals.

It is possible to identify two main paths in the programme: create growth in a number of investee businesses, and improve the regional infrastructure for entrepreneurial financing (structure for risk finance). The assignment to the funds needs to be clarified about that in order to become more effective.

It is actually too early to evaluate the effects of the initiative at this time. Yet the following can be stated: No identifiable differences between the investee businesses and the control group arise during the first two years following the investment. In years three and four after the investment, however, there are certain positive signs indicating that the investee businesses may have increased their number of employees. At present, there are indications of improvements in the regional infrastructure for entrepreneurial financing.

Growth Analysis is proposing two alternative changes to the programme in order to increase its effectiveness: streamlining to achieve growth in investee businesses, *or* a contextually adapted initiative.

Growth Analysis also intends to return with follow-up studies. An impact study when more investment data is available, an in-depth method description regarding how regional structures for risk finance can be described, measured and improved, as well as an exit study.

The studied initiative – regional co-investment funds

The background to the initiative is the perception that there is a “capital gap/equity gap” – an imbalance between the existing risk capital available on the market and the demands of the companies. If interpreted as a situation where investment-ready companies with considerable growth potential fail to find financing, such a “gap” can be viewed as an obstacle to growth. Added to this is the European Commission's declaration of intent to change funds in the structural fund programmes from direct grants to other forms of financing, such as loans, loan guarantee schemes and venture capital. Together, this gave rise to a policy initiative with eleven (originally twelve) regional co-investment funds, which together cover all eight of Sweden's NUTS 2 areas. The initiative (round 1) has continued during the period 2009–15 within the framework of the regional structural fund programmes.¹

The public sector is investing (via the regional funds) a maximum of 50 per cent and the private sector a minimum of 50 per cent in each individual investment. The target group comprises micro, small and medium-sized companies (SMEs), and the investments must supplement the market – not crowd out existing private investments – and relate primarily

¹ A second round (“Fund II”) with more or less the same conditions has been launched at the end of 2015.

to the early stages. The investment interval normally ranges from SEK 1–10 million (approx. EUR 110,000–1.1 million).²

The funds' capital base amounts to SEK 1.4 billion (approx. EUR 154 million)³. The capital has two sources, with one half coming from the European Regional Development Fund and the other half from public regional financiers (regional associations, county administrative boards, regional Almi Corporate Partners, etc.). Consequently, at least as much again must be added to this in the form of anticipated private, commercial co-financing.

The objective is partially unclear. Two main paths can be identified: create growth in a number of investee businesses, and improve the regional infrastructure for entrepreneurial financing (structure for risk finance). An express ambition was that the capital should revolve, i.e. enable the investors to continue investing from the realised capital gains of the investments already made; however, no specific return requirement had been specified for the funds.

Growth Analysis' assignment

In the 2009 appropriation directions, the Agency was commissioned to evaluate the regional CIF initiative. The evaluation must be able to act as a basis for learning prior to any future initiatives of a similar nature. Attention to the Swedish policy initiative must be supplemented with experiences from international research and empiricism with Swedish policy relevance.

Previous reporting

Three interim reports published in 2010⁴, 2011⁵ and 2013⁶. In addition to the ongoing policy action, the emphasis of the reports is on relevant international experience and policy discussions. Summaries from these interim reports are also presented in this final report (chapter 3).

Final Report

This final evaluation studies both (early) effects on the investee businesses, as well as whether any changes can be observed in the regional structure for risk finance. The initiative is also summarised with the aid of descriptive statistics.

Growth Analysis has procured two consultancy teams that have contributed with supporting material for the report: Damvad Analytics (appendix 1 – quantitative approach) and Oxford Research (appendix 2 – qualitative approach). Note: The both appendices are only available in Swedish and therefore not included in this English version of the report.

² Exchange rate Swedish kronor (SEK) → euro (EUR) as at April 6th 2016 (www.oanda.com).

³ This is the total public financing. After “deductions” for management fees, approx. SEK 1.2 billion (approx. EUR 130 million) remains for investments, according to *Tillväxtverket's* financing plan. (Tillväxtverket is the Swedish Agency for Economic and Regional Growth and the managing agency for the initiative). See Tillväxtverket (2010), ”Förutsättningar för fondprojektens genomförande” [“Conditions for the implementation of fund projects”].

⁴ Growth Analysis, (2010), “Staten och riskkapitalet” [“The State and risk capital”].

⁵ Growth Analysis, (2011), “Kompetent capital – Tre länder, tre försök” [“Competent capital? – Three countries, three attempts”].

⁶ Growth Analysis, (2013), “Affärsänglar, riskkapitalfonder och policyportföljer” [“Business angels, co-investment funds and policy portfolios”].

Conclusions

The funds have invested *in accordance with the existing requirements*. In total, nearly SEK 3.4 billion (approx. EUR 374 million) has been invested in 320 companies around Sweden since 2009. Ten per cent of the companies have gone bankrupt. The funds have exited from 45 companies. Major differences in the conditions in the regions and the investment profile of the funds are emerging. The eight NUTS 2 regions are not homogeneous, but the programme is “geographically blind”, i.e. the ground rules and “toolboxes” are the same for all funds, irrespective of regional conditions.

The initiative's geographic design means that “new” players are involved, with little – or no – previous experience of venture capital. In around 70 per cent of the total number of investment decisions, private co-financing can be linked to players other than companies whose primary task is the investment of capital. The regional format also means that the financing instrument is available to new segments of companies, often without previous experience of venture capital. All in all, this entails a need for *supplementary policy instruments*, such as training programmes for investors and initiatives that are aimed at increasing companies' investability. However, we cannot see any such structured operation being conducted.

When it comes to tangible *effects in investee businesses*, it is too early to draw any actual conclusions (incomplete data and short “exposure time”). In years three and four after the investment, however, there are certain positive signs indicating that the investee businesses may have increased their number of employees. This may be an indication of preparations for future growth. At the same time there is, as expected, a large spread among the companies, and the indication of an average increase is due to a few successful investee businesses.

Measuring position and changes in the regional structure for risk finance is a complex task. All in all, however, assessments from regional key individuals, the funds themselves, the investee businesses and private co-financiers indicate that the majority of the regions have experienced positive development in their capital supply structures. This picture is not uniform, however, but also indicates differences both between the regions and within various parts of a region's structure. We are also witnessing that the funds have implemented structure-building initiatives to varying extents. However, the empirical data does not allow any assessment of causality between these initiatives from the funds and the structural changes in the regions.

Two main paths in the programme (growth in a number of investee businesses and improving the regional structure for risk finance) are identified, but with no order of preference. They are perceived as imprecise and *need to be clarified*. Some funds have implemented extensive, direct initiatives and conducted concrete work in order to encourage both co-investment and demand for investment, while others only work indirectly with structure building. Some view themselves as regional development players, while others see themselves as traditional venture capital players. However, the level of *management fees* is the same for all the funds – three per cent – regardless of the regional conditions.

Proposals and recommendations

Growth Analysis recommends that:

- The formulation of goals is reviewed and clarified, and that a developed intervention logic is devised.
- The programme is *streamlined* to:
 - × solely a tapered assignment in relation to the investee businesses' growth with no ambition in respect of structural building *or*
 - × a *contextually adapted* initiative that is allowed to vary between a strict venture capital instrument and a broader, more development-oriented instrument, depending on regional conditions.
- Supplementary, supporting initiatives on both the supply and demand side are implemented. When it comes to policy instruments, we suggest more of a coherent system approach and less of a “silo mentality”.
- The quality of the investment data that is continually registered is improved so that both monitoring and evaluations can be performed with better precision.

Future studies

Growth Analysis intends to return in 2018 with a *follow-up study*. By this time, the investment data for all the years should be in place, and there should also be a longer “exposure period” for the investments in the investee businesses.

Growth Analysis also intends to return with a more in-depth report of method character, on the theme of the *regional structure for risk finance* (the infrastructure for entrepreneurial financing). There is a need to develop knowledge about how such a structure can be understood and measured, as well as the extent to which it can be altered through policy initiatives.

As the number of investee businesses grows, discussions about *exits* are also becoming increasingly significant. Issues such as e.g. exit routes, strategies, handling “living deads”⁷ and geographic aspects must be dealt with. Growth Analysis intends to return with a more in-depth report that includes an overview of current knowledge and international experience.

⁷ Companies that are underperforming in relation to expectations – they are surviving on the market, but have no potential for growth.

1 Starting points and structure

The purpose of this chapter is to introduce the reader to the report. Accordingly, the chapter opens with a *report disposition* followed by a general description of the agency's *evaluation assignment, approach* and the *policy initiative* concerned.

1.1 Report structure

Three perspectives and four categories

The report can be said to comprise three different perspectives (main sections): A *pre-understanding perspective* (Chapters 1–2) which provides the reader with a platform prior to continued reading and interpretation; a *contemporary perspective* (Chapters 3–5) that includes the actual final evaluation and a *forward-looking perspective* (Chapter 6) that includes discussions about experiences, lessons learned and recommendations.

Another way of presenting the arrangement is to start with the players and the geography under the spotlight, i.e. the funds, co-investors, portfolio companies and the eight regions (the funds' geographical home turf). The portfolio companies are treated in most detail in Chapter 4 and the regions in Chapter 5. Chapter 3 is a broader, descriptive, chapter in which all three players (funds, co-investors and portfolio companies) are present.

Two background reports – effects and portfolio companies and regions

Reporting comprises both the main report (this document) and two independent background reports. The latter consist of two consultant reports, one of which treats the effects in portfolio companies (Background Report 1) while the other addresses the effects on the regional capital supply system (Background Report 2). However, the two background reports are only available in Swedish. Because the background reports are extensive, the actual main report can be seen more as a summary which does not delve as deeply into details. Both background reports are downloadable in Swedish from the Growth Analysis [website](#).

In the main report: a profile of each chapter

Growth Analysis has previously published three interim reports that focus on different aspects of the commission. Together, they provide the pieces of the puzzle that allow a better understanding of the intervention and its role in a broader policy context. *Chapter 2* summarises these reports.

Chapter 3 is descriptive and provides an overview of what has actually taken place in each fund, i.e. investment volumes, structures within the portfolio companies and investors and examples of regional differences etc. (Based chiefly on Background Report 1).

Chapter 4 presents the results from (the early) impact assessment. Has the intervention given rise to any effects within the portfolio companies? (Based chiefly on Background Report 1).

Chapter 5 shifts the focus to the regional environment. Has the intervention – the activities of the fund concerned – entailed any effects on the regional structure for risk finance? (Based chiefly on Background Report 2).

Chapter 6 contains a summarising policy discussion and recommendations prior to continuing with the project and for other similar interventions in the future.

1.2 The Growth Analysis evaluation commission

Two complementing evaluations

The venture-capital intervention, described in more detail in section 1.4, will be followed up and evaluated in different ways – partly by Tillväxtverket⁸ through ongoing evaluation⁹ (the assignment has been procured and was carried out by consulting firm Ramböll) and partly by Growth Analysis. The two evaluation assignments can be viewed as complementary; constructive dialogues were also held between Growth Analysis and the private consulting firm Ramböll during the whole evaluation period.

The Government commission

Growth Analysis' original commission was stated by the government in its 2009 appropriation directions for the agency and has also been touched upon in later appropriation directions. The commission states that the evaluation is to act as a basis for learning in preparation for possible future interventions of a similar nature. The attention directed at the Swedish policy initiative must be complemented with experiences from international research and empiricism with Swedish policy relevance. The agency will also develop a method that can be used for evaluating the interventions. The commission will supplement the other evaluation initiatives that will be conducted at the project and programme levels. The commission as a whole will be reported in the form of three interim reports (2010, 2011 and 2013) and a final report in 2015.

Reports

The three *interim reports* were delivered according to plan and are presented in summary in Chapter 2. The interim reports have, in addition to frequently touching upon the intervention in progress, included method descriptions, a compilation of international empirical research within the policy area and in-depth comparative case studies about co-investment funds and business angels.

This *final report* includes inter alia a summary of the agency's experiences of the initiative as a whole, descriptive data and an impact assessment. The purpose of the latter is in short to study whether we can identify any effects (from the intervention) in the companies that have received equity capital and whether – and in which way – the regional structure for risk finance structure has been affected (improved). The final report is based on both qualitative and quantitative methods.

Strictly speaking, too early – more method than effects

By way of opening we must clearly point out that it is too early to evaluate the effects of the interventions at this time. For example, new investments were allowed under the measures right up until 30 September 2015. At the same time, registrations in Growth Analysis' databases have a lag of around 1.5 years, which means that the data available for impact assessments only apply to the period up until the end of 2013. To provide the

⁸ The Swedish Agency for Economic and Regional Growth

⁹ The term “ongoing evaluation” refers to business-related, project-focused follow-up and evaluation approach. When the Ramböll assignment is mentioned in the report, the term “ongoing evaluation” will be used throughout.

companies with a minimum one-year development period, the impact assessments were limited to those companies where investments took place between 2009 and 2012.

Given the concept of the so-called J-curve effect¹⁰, expectations of measurable (growth) effects in the portfolio companies must be kept low. At best, early trends may be possible to discern.

Having said this, there are still possibilities for descriptive data, certain observations and policy comments relevant for future interventions within the field.

1.3 Approach

Participation of international expertise

Growth Analysis decided to invite some of the most prominent international experts within the field to take part in the evaluation. Prior to this, the extensive material that described the intervention, its policy context and Growth Analysis' three earlier reports within the commission were compiled and translated. In January 2015, contact had been made with the four professors Gordon Murray (University of Exeter Business School); Colin Mason (Adam Smith Business School, University of Glasgow); Marc Cowling (Brighton Business School) samt Markku Maula (Aalto University). The researchers' profiles complement each other well through their various specialisations within business financing and the international experience of public sector policy initiative in this area. It should also be added that they represent both qualitative and quantitative approaches.

The four professors contributed to the evaluation in at least three different ways, by: (i) creating a method description through ongoing dialogue with Growth Analysis; (ii) participating in two feedback meetings with each of the two consulting teams (see below) and (iii) participating in a final seminar that discussed the consultants' draft reports.

Procurement, preparation and conditions

Based on the method description described above, two procurements were carried out during May and June, 2015. One was quantitative and focused on effects in the portfolio companies, while the other more qualitative and aimed at studying any effects on the capital supply systems in the regions. The first procurement was awarded to Damvad Analytics and the latter to Oxford Research. For the purposes of increasing the consultants' understanding of the intervention, the tender documentation included, in addition to the method description, Growth Analysis' earlier reports, observations and policy comments linked to the initiative.

In order to create the best conditions possible for the consultants' assignment, Growth Analysis had earlier made sure they had access to the material (such as surveys and interviews) from Ramböll's ongoing evaluation. The directive to the two teams of consultants also included the preparation and implementation of two feedback meetings with the two professors whose focus best corresponded to the assignment concerned. Furthermore, the importance of a dialogue between the two teams of consultants was emphasised.

¹⁰ Illustrates trends in a fund's yield. The graph assumes the curved form of the letter "J". See e.g. Grabenwarter U & Weidig T, (2005), *Exposed to the J-Curve – Understanding and Managing Private Equity Fund Investments*.

A final seminar was arranged in Stockholm for 23 October 2015 in which the reports from the two teams of consultants were presented and discussed. The four professors also took part in the seminar, as did representatives from the administrative agency (Tillväxtverket)¹¹, the regional funds (Almi Invest), the parallel ongoing evaluation (Ramböll), the Ministry of Enterprise and Innovation and analysts from Growth Analysis. The setup with participants including both academic expertise and the intervention's stakeholders was chosen to improve the possibilities for quality assurance from several standpoints.

Effects in portfolio companies and regions

A detailed method description of the work from the two teams of consultants is available in the background reports concerned. Broadly speaking, we can say the following:

Background Report 1, the *quantitative study*, focuses mainly on effects in the portfolio companies, but also descriptions.¹² Data from the fund project's web portal, Growth Analysis' own databases and a recently completed questionnaire survey by Ramböll were used.

Descriptive data includes practically the entire intervention period for new investments, 2009 to June 2015. Only the last three months (July – September 2015) were not captured by the data that was available at the time of data processing.

Because of the time lag in the register data necessary for *impact assessment*, the period studied is more limited. Accessible data did not extend further than the end of 2013, but in order to give the companies a minimum one year development period following investment, the impact assessment was limited to the companies in which investments had taken place during the period 2009–2012.¹³

To measure the effects of the investments in the portfolio companies, it is not enough just to study what has happened in them e.g. the increase or decrease in the number of employees, we must also find out if it is the intervention itself that gives rise to any changes we may see or if they would also have taken place without the intervention concerned. Thus we need to find a situation, a course of events, on a par with the company's not receiving any investment (the counterfactual situation) and compare it with the course of events where the investment actually takes place. The difference between the two courses of events will thus be the impact of the investment.

In this case the measures are designed such that randomised experiments are not possible.¹⁴ Instead, a quasi experimental method was used with the objective of creating a control group comprising companies that resemble to the greatest extent possible, the group of portfolio companies (i.e. the "treated" group, those who have received the investments). More precisely, the *Coarsened Exact Matching* (CEM) method was used.

¹¹ The Swedish Agency for Economic and Regional Growth

¹² However, the background reports is only available in Swedish

¹³ Accordingly, Growth Analysis will carry out a follow-up – a new impact assessment – in 2018 when data is available for the entire period and a longer development period for portfolio companies has passed.

¹⁴ Otherwise a conceivable design could e.g. has been an initial rigorous review of potential portfolio companies leading to the selection of a number of companies as "approved" investment targets. Lots could be drawn in stage two, to randomly divide the companies into two groups. In stage three, actual investments would be made in one of the groups but not in the other. Comparisons could then be made between these two groups. For a discussion regarding this, see e.g. Tillväxtanalys, (2016), "Hur randomiserade kontrollstudier kan utveckla tillväxtpolitiken – en översikt av erfarenheter och förslag på tillämpning" [Growth Analysis, (2016), "How randomized control studies can develop growth policy – an overview of experiences and proposals for application"].

Background Report 2, the *qualitative study*, focuses on the effects in the regions, i.e. whether the funds have contributed directly or indirectly to a better regional infrastructure for entrepreneurial financing.¹⁵ A number of different models and information sources have been used for this purpose. The starting point is the theory of change/intervention logic formulated and improved as the intervention was implemented and running (see also section 1.4). An adapted version of the evolutionary market development model¹⁶ was used to identify different development phases for venture financing in the regional markets.

Focus group interviews conducted by the consultant in situ in all eight regions are important sources of data. Data describing the regions was mainly gathered from existing public sources such as Statistics Sweden, “Företagens villkor och verklighet” [The Situation and Conditions of Enterprises] (the Swedish Agency for Economic and Regional Growth's national survey) and each respective region's own structural fund programmes for the period 2014 – 2020. Surveys and interviews previously conducted by Ramböll were also used.

1.4 The policy initiative

Improving the regional supply of venture capital – throughout Sweden

The subject of the evaluation is a policy intervention regarding regional venture capital funds that has been underway during the period 2009–2015. The initiative falls within the framework of the eight regional structural fund programmes and aims to improve the regional supply of venture capital (equity capital). The initiative is being carried out via eleven (originally twelve) regional co-investment funds.¹⁷ Together, the funds cover all of Sweden, something which naturally entails significant contextual differences between the funds areas of activity. Project owners (the players who run the funds) initially included Innovationsbron, Almi Invest, Saminvest, Norrlandsfonden and the sixth AP fund. During the project, certain changes have taken place in this regard.¹⁸

Invests together with private players

The public sector (through regional funds) invests a maximum of 50 per cent and private agencies a minimum 50 per cent in each individual investment. The target group is micro, small and medium-sized enterprises (SMEs) and the investments are to primarily be made in *early phases*.¹⁹ Investments usually take place in the range between SEK 1 million and SEK 10 million (approx. EUR 110,000–1.1 million).²⁰

The project is to be *market-complementary* and *revolving*. The former means that it must not crowd out existing private investments and the latter that the capital base must not shrink in the long term. Investments are always made together with a private player and on

¹⁵ The phrase “struktur för riskvillig finansiering” [≈ “structure for risk finance”] infrastructure for entrepreneurial financing”] was coined in the study – a broader concept that includes more than venture capital.

¹⁶ Originally developed by Avnimelech & Schwartz to understand the dynamic in the emergence of national venture capital markets. See Avnimelech G & Schwartz D, (2009), “Structural changes in mature Venture Capital industry: Evidence from Israel”.

¹⁷ For administrative reasons, the funds SCF II and III were merged during 2012.

¹⁸ In 2013, Almi and Innovationsbron merged to form a joint organisation, whereupon Almi took over Innovationsbron's operations. During the autumn of 2013, the six AP fund sold its fund (Mittkapital) to the wholly state-owned venture capital company Inlandsinnovation.

¹⁹ Investments may also be made in more mature companies if the purpose of the investment is expansion.

²⁰ Exchange rate Swedish kronor (SEK) → euro (EUR) as at April 6th 2016 (www.oanda.com).

the *same terms* as said player. As mentioned previously, the private player must invest at least the same amount as the regional public venture capital fund.

The funds' capital bases (public financing) varies between SEK 36 million and SEK 200 million (approx. EUR 4 million–22 million), making a total gross amount of SEK 1.4 billion (approx. EUR 154 million).²¹ The public capital has two sources; half comes from the European regional development fund and the other half from public regional fund providers (regional associations, County administrative boards, Almi Företagspartner etc.). At least as much again is expected from private, commercial, co-financing.

Initially, it was decided that the intervention project would run between 1 January 2009 and 31 December 2014. However, the managing agency Tillväxtverket decided in 2012 to postpone the final date for new investments until 30 September 2015.²² Follow-on investments in *existing* portfolio companies may however be made for a further five years between 1 October 2015 and 31 August 2020. All shareholdings are expected to be divested after this date.

Proactive and reactive approaches

The funds carry out their assignments in somewhat different ways. Broadly speaking, companies (especially at an early phase) with investment needs usually seek out a venture capital fund themselves. Almost as common is for the funds to look around for suitable investments (primarily companies in an expansion phase); more unusual – but nevertheless occurring – is for private investors to approach the funds together with a potential portfolio company.

Objective and programme logic

The intervention's objective, i.e. the actual fund assignments, was initially not totally clear. The overarching aim is to improve SMEs' capital procurement in early phases and contribute to growth in the portfolio companies. But there are also objectives about revolving capital in the funds, improved regional capital supply structures, skills enhancement among different investors, improved collaboration between investors, horizontal requirements (environment, equal opportunities and integration) etc.

Growth Analysis has previously touched on the problem of unclear defined objectives and the risk of conflicting objectives.²³ A relatively exhaustive discussion regarding objectives was also held during the intervention's first year with the aim of clarifying the expectations and restrictions the fund projects will encounter. Ultimately, a model of the intervention logic was developed as a result of these discussions; (see Figure 1 on the next page).

Simply put, two “paths” can be discerned; one which involves expectations of growth in the companies where investments have taken place (the white path in the figure) and one with expectations of an improved regional capital supply structure (the grey path).

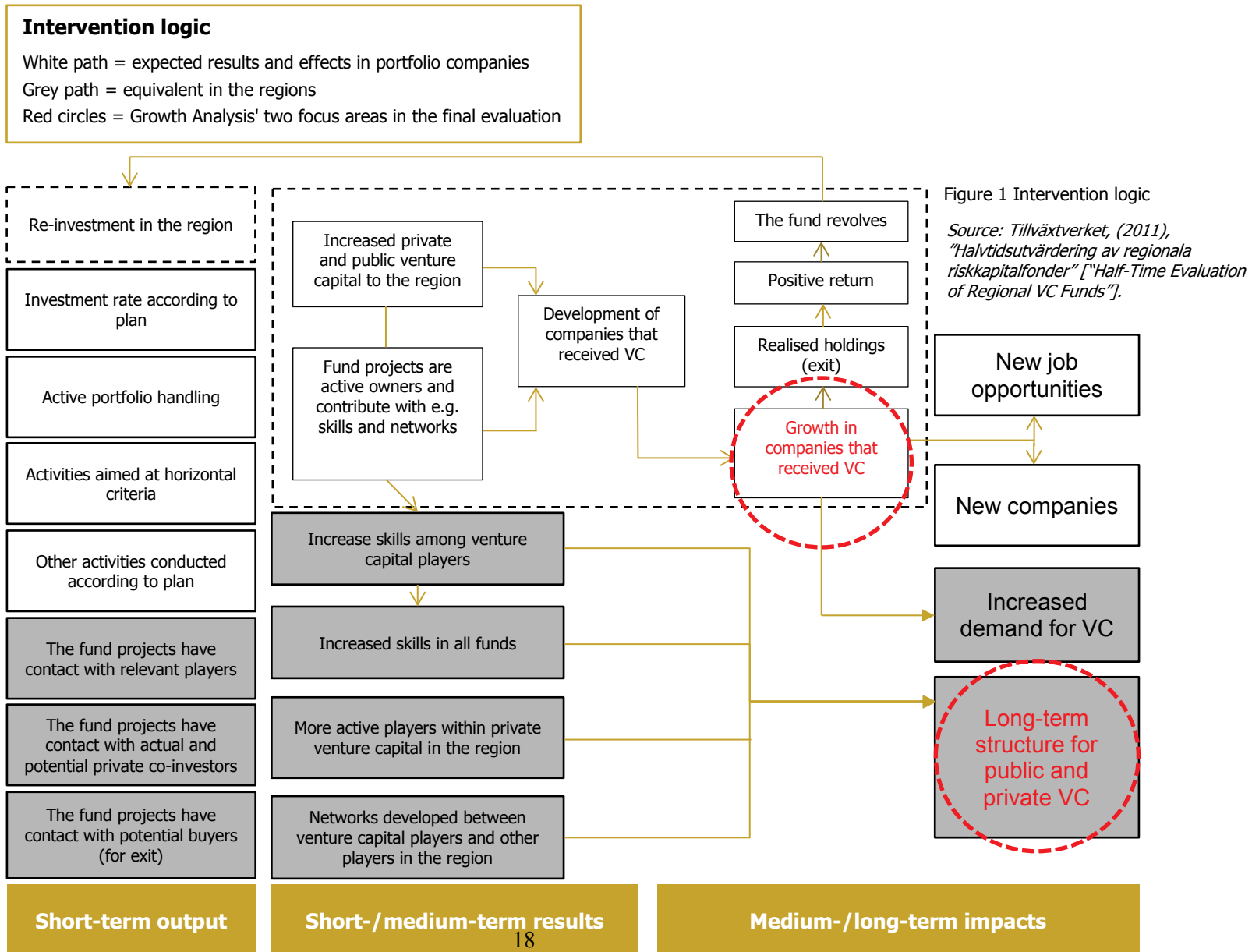
This intervention logic was the basis for Growth Analysis' final evaluation. Accordingly, in the report we have chosen to focus on (early) effects in these two paths (circled in red in the diagram). We should add that the latter, grey, path also gives rise to interesting

²¹ I.e. including administration costs. Around SEK 1.2 billion (approx. EUR 132 million) is available for investment.

²² In a decision dated 05/11/2012, the managing agency (Tillväxtverket) allowed an extension of new investment up until 30/09/2015 to provide more time for the projects to invest their funds.

²³ See e.g. Growth Analysis, (2010), “The State and Risk Capital”.

discussions about the role of the funds as regional development players. We will get back to this theme in Chapter 5.



2 What do the previous three interim reports have to say?

In a final report it is a good idea to summarise the experiences accumulated along the way. Accordingly, in this chapter we present summaries of Growth Analysis' previous three published interim reports. Links to the full text versions of each report are also provided for readers looking for more detailed information.

Growth Analysis has previously delivered three interim reports in compliance with the government's commission description. The reports were published in 2010, 2011 and 2013. Besides touching on the Swedish policy intervention, the emphases of the reports are on relevant international experience and policy discussions.

Experiences from other countries can provide interesting input even though contextual differences call for caution when translating them to Swedish conditions. A promotional initiative from the public sector must be understood on the basis of the policy context under which it acts. This means there are also aspects other than the actual initiative that influences its effect. In principle, most of these cannot be influenced by policymakers (but must be observed), while a few may be influenced to a lesser or greater extent. If and how such adjustments are made will influence the conditions for the intervention concerned. The interim reports highlight these issues in different ways. For references, we refer to the interim report concerned.

2.1 Interim report 1 "The State and Risk Capital "

In March 2010, Growth Analysis delivered its first interim report in the evaluation assignment: "*Staten och riskkapitalet*" [*"The State and Risk Capital"*] (download English version [here](#)). The report presents a method description, and international empirical research overview regarding the government as a venture capital player and a concluding policy discussion. A short description of the two latter parts follows below.

Research overview

On the basis of the report's overview of international research, a detailed study was made of fourteen different state venture capital programmes in eight countries that had been evaluated in various ways. This review was summarised in a number of general observations:

- The hypothesis of market failures are given limited support in research. It is rather a matter of rationally acting players in small or undeveloped markets.
- Public interventions must complement the private sector and not compete or force it out. It is clear that this is easier said than done. Governmental venture capital (VC) programmes often become caught between the additionality requirement on the one hand and the requirement to act on equal terms with the private market on the other, which entails a risk of competing with it.
- The context in which a VC programme operates is often a crucial factor behind a programme's success or failure.
- Many public VC programmes have ambitions linked to regional development policy, where the hope is for the intervention to create growth in a region that has none. This

often entails problems. Venture capital is *attracted* to growth regions, but does not *create* them.

- Incentive structures that stimulate co-investment from private players are important for a VC programme's ability to succeed.

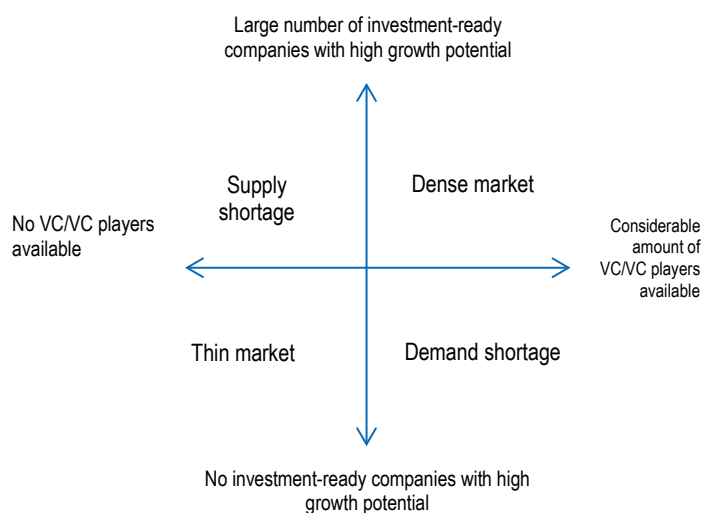
Policy discussion

The intervention has both possibilities and challenges. Realistic expectations must be made of venture capital. As well as being an extremely potent funding instrument with a well-documented ability to create growth, qualifications must nonetheless be made. Venture capital is a form of funding for a limited number of companies with very high growth potential. A small number of successful investments may give an exceptional return at exit, but most investments in early stages fail or give only a modest return. Venture capital is not the solution for the majority of companies in need of funding, Venture capital cannot *per se* turn around economic development in a region where trade and industry are weak.

The starting points for the intervention such as *funding gap*, *market failure* and *inadequate supply* were discussed and problematised in the report. Regardless of whether market failure or market rationality exist, a funding gap can be considered to be a problem for the economy insofar as new start-ups with growth potential are disadvantaged.

Rather than addressing the problem in purely supply terms, the “viscosity” (a sliding scale between “thin” and “dense”) of the market for entrepreneurial financing was discussed. Figure 2 below provides a summary of the discussion illustrated in the form of a four-field matrix. The vertical axis shows the number of companies with high growth potential that are ready to be funded while the horizontal axis symbolises the amount of venture capital/VC players available.

Figure 2 Schematic capital supply structure



In the matrix, the four quadrants illustrate the schematic situations “Dense market”, “Supply shortage”, “Thin market” and “Demand shortage”. Where a country or region is located in the matrix is naturally crucial for the policy measures that may be considered and equally a policy measure's opportunity for success. International experience often shows that government interventions focus heavily on the *supply side*, i.e. they are based on an implicit assumption that any financing problems are the result of too little capital –

a supply problem. The more of the “thin” market a country or region has, the clearer it becomes that effective policy measures must contain more than an increased supply of venture capital.

One conclusion is that it is important to view the intervention in context. A specific policy intervention may have *varying degrees of success depending on regional conditions*. An alternative to a uniform intervention is to adapt the tools to the specific regional conditions. Demand-side interventions and capital procurement instruments other than venture capital could then be discussed.

In this intervention, we could see that the private players’ yield targets come up against several political goals and restrictions. One of the major challenges is also the tightrope walk between *political and commercial goals*.

Clear rules of “the game” are always important. Growth Analysis observed that a clearer and more distinct goal structure would definitely have made things easier for the funds, clarified the expectations made of them and reduced the need for complicated reconciliations. It was deemed very important that the goal structure be discussed in future and clarified as far as possible.

2.2 Interim report 2: “Competent Capital”

Growth Analysis’ second report “*Kompetent kapital? – Tre länder, tre försök*” [*Competent Capital? – Three countries, three attempts*] was published in November 2011 (download English version [here](#)). The report presented experiences from three countries (Norway, Finland and Scotland) where the government had tried in various ways to involve private capital in funding interventions aimed at SMEs.

The country studies

In *Scotland*, the Scottish Co-Investment Fund (SCF) has been in existence since 2003. The intervention means that certified private parties (normally networks of investors and VC funds) identify investment targets, assess them and negotiate agreements. The SCF then goes in and provides 50 per cent co-financing on exactly the same terms. Important contextual factors to consider include both an existing intervention to promote business angel networks and substantial tax incentives for investments.

In *Finland*, the VIGO programme began in 2009 inspired by Israel’s Yozma initiative which had attracted a great deal of interest. The aim was to create a “fast track” to funding for companies in a very early phase. Experienced business developers, competence and international networks are important aspects. At the time of the study there were six specialised investment environments (following tender competition) called VIGO networks. The intervention had succeeded in attracting international capital but encountered difficulties in respect of coordinating *due diligence* between the individual VIGO network and funding providers Tekes and Seed Vera Venture.

Norway has worked with seed bed initiatives where the government provides loan capital in the form of “commitment loans” (50 per cent) and private investors provide equity capital in a seed fund. There is a risk relief element in the form of a reserve fund (“loss fund”). Part of the risk is thus transferred from private investors to the public sector. “Såkorn 1” [“Seed bed 1”] (1998) had one national and five small regional funds. Results were considered poor. The reasons given include, inter alia, lack of management and exit competence, inadequate risk relief, inadequate fundsize and overly expensive commitment

loans. In Sårkorn 2 [Seed bed 2], which was set up between 2005 and 2008, four national and five regional funds were formed. Compared to Sårkorn 1, the funds are larger and more emphasis has been given to competent management. The system of commitment loans remains in place.

Policy discussion

Comments on the country studies were made in five sub-areas: Evaluation, long-term approach, context, design and geography.

It is important to build up an institutional structure that favours learning. It is therefore somewhat remarkable that so few *evaluations* could be found despite ongoing interventions. In those nonetheless identified, the general impression was that it concerned separate studies more than it did parts of a cohesive system of evaluation. This might partly be explained by the presence of relatively “young” interventions. On the other hand, evaluations can be prepared and included as early as the design stage of the policy initiative. Nor do all evaluations need to be made *ex-post*. Where there is a time-lag (the so-called J curve), however, it may be necessary to wait between 10 and 15 years after the first investment before making an impact assessment to be sure of capturing all subsequent effects.

The market needs a *long-term* perspective and predictability in order to work well. Public sector interventions at irregular intervals, uncertainty as to whether ongoing interventions will be extended or not, changes in terms and conditions, etc. risk both influencing the private players’ willingness to invest and making it difficult to build up necessary competence where it is needed. Examples of such market reactions can be found in both Scotland and Norway. However, the area is not without its complications. While stable rules of play reduce player uncertainty, they must also show flexibility and an ability to adapt to changes in the world at large to be effective. One lesson that can be learned is to shift the efforts from short, direct policy measures to more long-term, indirect and system-impacting venture capital strategies, such as incentive structures and regulatory changes.

The rational will to learn from experience, including from other countries, demands alertness to *contextual circumstances*. In what context have such interventions developed? Even though challenges and goals might be as good as identical between regions and countries, factors such as industrial landscape, political systems, rules, tax systems, history, geography, etc. are of great importance when it comes to policy learning. In Scotland, for example, existing policy initiatives towards business angels and tax incentives seem to have played a great part in the success of co-investment funds (SCF). In Finland, the ambition to establish a fast track has been slowed by the players’ history – which illustrates the difficulty of introducing working methods that differ greatly from the earlier norm. How players in the capital procurement system can be promoted by effective policy interventions is a matter where Sweden can probably learn a great deal from other countries. But such learning requires significantly more than simply copying.

The design of a policy initiative is naturally important, for example in the way competence can be brought into the financial intervention at every process stage, incentive structure, simplicity and transparency etc. In Norway, experience from Sårkorn 1 indicates inadequacies in management and exit competence. In Sårkorn 2, this has been addressed alongside better collaboration between the funds. Finland’s ambition is to bring in competence in the form of established VC players with serial entrepreneurs and

professional business developers. As always in such a setting-up process, a goal discussion is highly relevant as the starting point.

On a general level, the question is what the actual goal of a public sector intervention is. Or, in other words, what is the public undertaking? Is there for example a long-term ambition to develop the capital procurement market as far as possible as regards diversity, function and quality to increasingly reduce the need for governmental intervention and selective measures, or is the goal more short-term? Is it the promotion of a small number of growth companies in specific interventions that is in focus? Interviews from Scotland indicate that a better functioning market is the primary objective.

In these contacts, the *geographical* dimension involves trying to strike a delicate balance. On the one hand, regional political ambitions may lead to geographically delimited funds, which risks limiting the number of suitable investment targets. On the other hand, research suggests that investors (and in particular business angels) want to invest locally, which may favour a regional presence. Here again, it is important to define goals very clearly and consider what policy instruments are best suited to each individual goal. An alternative is to work with national funds and supplemented them with *regional investor/investment readiness*-programmes. This will secure a *national dealflow* and increase the likelihood of business angels and companies' ready for investment coming into contact with each other.

The policy discourse concluded with a discussion of the *importance of informal investors – business angels*. A future study within the subject was announced (and realised later in interim report 3, see below).²⁴

2.3 Interim report 3: Business Angels, Co-investment Funds and Policy Portfolios

Growth Analysis delivered the third interim report – “*Affärsänglar, riskkapitalfonder och policyportföljer*” [“*Business Angels, Co-investment Funds and Policy Portfolios*”] in December 2013 (download English version [here](#)). The main theme of the report is government policy interventions aimed at promoting *business angel investments*. Information was gathered from France, Belgium (Flanders), Wales and Denmark. The report also contains short retrospectives from the two previous interim reports and also touches briefly upon the Swedish initiative with regional co-investment funds, from a business angel perspective. Some policy reflections and examples of Swedish policy work are also given. The most important report sections are summarised below.

Business angels in Sweden

Our picture of business angels (BA)²⁵ and their investments is incomplete. One explanation might be the existence of a large “invisible” market without public records, another could be imprecise definitions. As regards the latter, it is for example relevant to talk about a narrow and a broad definition. Factors that are considered then include for example the investor's independence of the company (e.g. whether investments in family members' companies are to be included or not), expected gains, the size of the investment and the degree of active owner involvement.

²⁴ In other studies too, Growth Analysis noted the inadequate level of knowledge for informal investments. For example, in Growth Analysis' (2011), “Kapitalförsäljningen i små och medelstora företag” [“Capital procurement in SMEs”] it was described as a “particularly serious blank spot” (page 14).

²⁵ The term business angels and the abbreviation BA are used interchangeably in the report.

In Sweden, much of our knowledge is based on two studies conducted between 2004 and 2006. According to these studies, the business angels' investment patterns depend on the definition used. On the basis of a broad definition, the investment volume can be estimated to be between SEK 3.5 and 4 billion (approx. EUR 385 million–440 million) spread over 30,000 investments in unlisted companies. According to the narrow definition, BA constitute about one tenth of this figure but account for approximately half of the investment volume.

Just like institutional venture capital, informal venture capital is concentrated geographically. Between 2002 and 2004, approximately 70 per cent was invested in metropolitan regions and a further 25 per cent in major regional centres.

The unclear knowledge situation makes it difficult to assess how the market has developed. Nonetheless, its scope is estimated to have increased over the past decade.

Business angels in the regional co-investment funds

In the Swedish venture capital project, a total of around SEK 2.2 billion (approx. EUR 242 million) was invested in 207 portfolio companies in the period from 2009 (project start-up) to the second quarter of 2013. Private co-financing accounts for around 65 per cent, i.e. a “gear ratio” of 1.87:1 of the public funds. In the fund reports, private investors are divided into three categories; (1) organised capital, (2) private companies and (3) private individuals. The last group could be called “business angels” according to a broad definition.

It is clear that the proportion of BA is considerable at roughly 40 per cent of the private, unique investors. In terms of volume, the business angels invest around 20 per cent of the private funds. Just over half of the BA are domiciled in the same region as the co-investing fund. More than one in four business angels have his/her home outside the region but inside the country. It is also worth noting that there are large variations between the regional funds.

Business angel policy in Europe – an empirical study

The international study was conducted by associate professor Jesper Lindgaard Christensen of the Department of Business and Management at Aalborg University in Denmark on behalf of Growth Analysis.

Method

The survey has the ambition to generate knowledge of the role that business angels play in the capital market and how well various promotional measures function (or do not function) in this market.

The study is based on a combination of “desktop” studies of existing reports, statistics and evaluations of interventions in the selected countries and personal interviews with key people with in-depth knowledge of policies for increasing BA's willingness to invest. The countries were selected on the basis of experience of these countries probably being of benefit to other countries. The following countries/regions were selected: Belgium (Flanders), Wales, France and Denmark.²⁶

²⁶ Denmark currently has no explicit promotional policy for BAs.

Information and statistics on business angels

Information and evidence about the area are generally sparse. National statistical offices lack information and alternative sources of data are few and often inadequate. In addition to problems in measuring there is also a lack of clear, common, definitions. As a result, the overall picture is diffuse and information is difficult to compare. Thus the quality, comparability, and scope/coverage of existing data need to be improved. In the present analysis, the shortcomings in the data mean that there is a limit to how far we can go as regards quantitative data. In many cases, the knowledge obtained is based on a combination of scanty statistical facts, information obtained through interviews, existing literature and personal assessments.

Business angels and promotional policy

In many countries, business angels have been seen as a subordinate policy area, but there is reason to be aware of their potential. Business angels play an important role in the financial ecosystem since they provide support to businesses in their early growth phases. BA not only contribute financial capital, but also have an important function as mentors for the companies they are financing. There are indications that their importance has not diminished but rather increased in recent years as the capital gap for growth-oriented companies in their early stages seems to have widened.

In the literature Lerner has argued that public sector efforts to support venture capital markets have long lead-times.²⁷ Some of the most common reasons such initiatives fail are impatience, an inability to see the broader context and the placing of trust in evaluation indicators that are all too narrow. The findings of the present study largely confirm these observations. Countries and regions support BA investments through support for business angel networks (BAN)²⁸, tax incentives, educational programmes for investors, matching events and co-investment schemes.

One topic under debate is whether the state should support the informal venture capital market in order to alleviate the effects of incomplete information and other “market failures”. Some of the arguments in favour of public intervention can be attributed to the characteristic qualities of BA investments that are said to (i) have a different cost structure than institutional venture capital, which permits smaller investments; (ii) have a greater geographical spread, which means that they help reduce regional financing gaps, and (iii) in addition to the monetary contribution also provide management with practical help.

In addition to these factors, the report’s field work also showed that business angels can be mobilised for a number of other, complementary, purposes. These broader BA functions open up for a greater choice of interventions in the area.

Policy work

The study found great differences in attitude towards promotional measures in the countries studied, from countries with active interventions on a broad front to Denmark, where no explicit policy within the area is currently applied. In most cases, the measures are relatively new. It should also be remembered that policies to promote BAs involve a long-term process that requires continuous work and patience. In the country studies, we have seen that the intensity of the interventions has varied considerably, even over relatively

²⁷See for example Lerner J, (2010), “The future of public efforts to boost entrepreneurship and venture capital”.

²⁸ The term business angel network and the abbreviation BAN are used interchangeably in the report.

short periods. For example, we have noted a decline in the active policy applied in France and a near discontinuation of interventions in Denmark, which are obvious indications that Lerner's warning not to underestimate the time it takes for policy measures to have any effect has gone unheeded. Continuity is important for interventions in the area since a long-term approach is important for the users and the organisations that conduct the programmes. There are also great differences between the countries in terms of where the capital gap actually is. In reality, the gap is not an immutable phenomenon, objectively speaking. It can be influenced by policy measures and acts as a screening mechanism and is subject to policy-related considerations.

France's business angel policy

The individual countries differed and also provided different types of insight. France has had a tradition of public intervention in capital markets and has applied different instruments such as credit guarantees and tax relief for the smallest companies. One lesson learned from the French example is that the government has supported the establishment of a sense of community concerning BANs and has thus facilitated the organisation and professionalisation of the BA market by expanding the role of the federal organisation France Angels.²⁹ Together with the information from the use of tax incentive programmes, this has led to the "visible" part of the market becoming relatively large, which is in turn positive for business angel visibility and helps to increase awareness of them. It is probable that the former active tax incentives, which benefited a broad spectrum of individuals – including some who did not exactly fit the "conventional" description of business angels – helped create a "equity culture", or at least greater awareness of the business angel investments. This may have contributed strongly to maintaining capital investments, even during the latest setbacks for the framework conditions that influence business angel investments.

Flanders' business angel policy

One of the most important lessons from the Flanders field study is that the continuous support of the state has been of the utmost importance. Historically, support for BANs has varied, but generally speaking there has been a long period characterised by active policies. The recommendation based on experience from Flanders is that the state should not think in a short-term perspective but be prepared to implement its interventions all the way. This is especially apparent when it comes to support for BANs. Mutual trust between funding organisations and operative organisations is also of the utmost importance for policy creation and a long-term approach to implementation of the schemes. Finally, there is a wide range of instruments available to support companies in the seed segment, which has meant that the financing gap is on relatively large amounts rather than in the seed segment.

Wales' business angel policy

Wales' financial ecosystem is characterised in general by a relatively well functioning interplay between the players in the capital market for seed and start-up and between private players and public policy. In general, there is a view that the financial system and related financing mechanisms and policy measures act as a "financing ladder" and that the system works well in that regard. In policy circles and Finance Wales³⁰, a shift is currently in progress from a "softish" to a more commercial view of money. Another general

²⁹ France Angels is an association that includes a large proportion of France's business angels.

³⁰ An organisation that provides commercial financing for growth-oriented SMEs in Wales.

element of importance is trust between the state and intermediaries. The principal players in the Welsh capital market emphasise the advantages of strong links between different players such as Finance Wales, Xénos, banks, organisations in the public sector and other private players. Finally, the study also shows the importance of taking the target group's adsorption ability³¹ into account when drawing up policies.

Denmark's business angel policy

In Denmark, little importance is attached to business angels as a possible source of financing for SMEs. The Ministry is generally reluctant to take initiatives in this area. Significant reasons include the negative experiences from two major policy initiatives: the PartnerKapital co-financing programme and the support for the Danish Business Angel Network. No formal evaluations have been made of the policies concerning business angels in Denmark. It was clear, however, that one lesson from the country study is that patience and broad evaluation criteria are important since policies for business angels have a number of indirect effects.

Goals for policy interventions

Desk studies and experiences from field work give a mixed picture as a basis for policy recommendations regarding the specific interventions that should be implemented. Positive assessments of co-investment programmes and tax incentives can be found in several cases, while in others such assessments tend to be negative. It should also be noted that promotional efforts for business angels focus on very heterogeneous groups and that this applies to both business angels, entrepreneurs and small companies. This presents great challenges when drawing up policy. It is difficult to reach two (or more) heterogeneous groups with a few instruments and with instruments that are too broad or general. Another challenge is to create greater awareness in the target group of the possibilities. Most of the policy creation in question and the knowledge of the policy programmes are limited to the (small) portion of the market that we call the "visible" part. Tax incentives are probably the tool that would also have the greatest impact on the "invisible" part of the market. There is a general need to develop the policy process and goals to include this "invisible" part as well.

Policy programmes with reciprocal effects – policy portfolios

The study indicates that some policy measures are interrelated. The efficiency of one intervention may in certain cases be dependent on other interventions. This leads us to the question of whether these policies would in fact benefit from being implemented in a sequence, since a policy instrument may build on the results of the previous instrument. This important question was discussed during the interviews and the debate has also begun to attract attention in academic circles and policy circles alike, even though it is still taking place on a very small scale. It is, however, still a fact that policy programmes appear to be introduced and evaluated in isolation. Interest is nonetheless growing in a policy and evaluation approach that to a greater extent takes into account a portfolio of different interventions and their interdependence instead of only isolated effects.

³¹ How the intervention is interpreted by the target group. If an intervention is deemed by the target group to be too complicated to apply and too difficult to understand it might lead to low rates of utilisation. The consequence would be an intervention with little effect.

Implications for evaluation

The study's findings indicate that it is inherently difficult to evaluate interventions for business angels because of the uncertain time perspective wherein the effects appear. The evaluations are also hampered by the fact that some of the effects are characterised as indirect and (almost) impossible to measure. The reciprocal influence between different types of policy interventions entail further complications since methods of evaluation are needed other than the conventional focus on measuring parameters for an individual programme at a specific point in time.

A Swedish policy for business angels? – a concluding policy reflection

The Swedish venture capital funds project is fully operational and will by all accounts continue over the next structural fund period (2014-20). The starting point for reflections is thus a pragmatic one: *can the prerequisites for an existing policy intervention be improved?* Given the existing project, credible possibilities to improve the prerequisites for its activities by means of complementary policy measures are discussed.

The reflective discussion has six main sub-headings: *Invisibility and evaluations, A long-term approach, The growing importance of angel investments, Tax incentives, Policy portfolio* and *Conceivable reinforcing policy initiatives*.

The first sub-section, "Invisibility and evaluations", addresses, inter alia, the visible and the invisible parts of the business angel market. The latter is considerably larger, but knowledge and policy measures alike are aimed at the former. All in all, this means knowledge is limited. The same applies to the occurrence of systematic evaluations both in the countries studied and as far as can be ascertained, Sweden.

The next sub-section, "A long-term approach", discusses the need for a long-term perspective for policy measures. The market needs a long-term perspective and predictability in order to function well. There is much to indicate that the venture capital funds project will continue during the next programme period (2014–20), which adds opportunities for a clear market offering and a consideration of complementary policy initiatives.

The third sub-section, "The growing importance of angel investments", points to a decline in the presence of formal venture capital in early growth phases, which leads to a greater relative importance for informal capital. In the on-going venture capital project, business angels constitute more than 40 per cent of the private investors but with substantial variations between the funds. The importance of a functioning exit market is also emphasised.

Based on Prof. Christensen's country study, the fourth sub-section – "Tax incentives" – comments on the investor deductions introduced in Sweden on 1 December 2013. It is expected to favour new, potential angels' entry into the market rather than the activities of established, serial angels. On the other hand, a hard-to-understand regulatory framework may reduce the degree of utilisation. In Growth Analysis' opinion, it is important that the investor deduction be evaluated as regards the effects, transparency and adsorption ability of the intended target group. A fundamental prerequisite for this to be implemented is the ability of data on investors and investment objects to be made fully accessible to future evaluators.

The fifth sub-section, "Policy portfolio", begins by linking to Prof. Christensen's argument in the country study concerning the need to take policy measures into account as components in a cohesive system. The implication is both the reciprocity between different interventions and the importance of the order in which they are implemented. An indivi-

dual measure may also lead to external effects that can influence the effects of another measure, even when the former viewed in isolation does not show any direct effects. In comparison with the pre-2009 period (before the start-up of the the Swedish regional co-investments funds), the contents of Sweden's policy portfolio in the area have changed, which – following Prof. Christensen's line of reasoning – should also have had an impact on the prerequisites for the policy tools.

The final sub-section, "Conceivable reinforcing policy initiatives", emphasises the importance of the implemented policy measures' following the same line and striving to achieve a clearly defined goal – a governmental policy/strategy regarding the issue in other words. Possibilities for improvement are judged to exist in this regard.³² Potential business angels (virgin investors) and entrepreneurs may be hampered by shortcomings as regards knowledge and information. This may lead to a greater need for coordinated policy measures in the *investor/investment readiness* categories and BAN activities. Exit issues are predicted to grow in importance in the venture capital initiative and promotional measures might be considered, such as stimulating learning between the funds.

While a number of policy measures are certainly being implemented in the subject area, it is doubtful whether the impression is one of a cohesive policy portfolio.

The above section has provided an outline of Growth Analysis' earlier studies and experiences in the commission. In the next chapter, we will proceed to present descriptive statistics about the intervention with regional venture capital funds.

³² However, at the time of writing the final report (March 2016), a little over two years since the publication of the interim report, we note steps in that direction as regards state financing initiatives even though they are not explicitly aimed at business angels. A government investigation has shown which parts of the capital supply chain require supplementary market interventions (SOU 2015:64) and the government has tabled a motion regarding proposals for changes in the organisational structure of government venture capital interventions for businesses (2015/16:110).

3 Investing activities and structures

The chapter provides a general description of the investments made under the intervention since its start in 2009 until June 2015³³. Profiles of co-investors and portfolio companies are presented. Because the intervention was carried out via funds in all of Sweden's eight NUTS 2 regions we cannot disregard the geographical dimension, and this has been included accordingly. Furthermore, because the regions are not homogenous, we have also included a background with regional economic structure and a few examples cuts at the fund level.

The chapter is based on Background Report 1, written by the Damvad Analytics consultancy. Thus for a more detailed description, we refer to the background report. (However, the background report is only available in Swedish).

Unless otherwise indicated, we use investment data throughout from the web portal the Ramböll consultancy operates on behalf of the managing agency (Tillväxtverket) in some cases using supplementary processes in Growth Analysis' IFDB database. Sources referred to in the background report are not cited in the chapter.

Unfortunately, there are certain noticeable inadequacies in the data. This involves e.g. a number of "unknown" co-investors in terms of category and domicile (see also section 6.2 for a discussion on data quality).

3.1 Investment structure: SEK 3.4 billion³⁴ in 320 portfolio companies

During the first two years of operation (2009, 2010), the investment level was relatively low. In all likelihood, this can be attributed largely to start-up problems (procedures, recruitment, co-financing, etc.), but also to the fact that the funds' market offering was initially neither well-known nor perhaps fully clear.

The highest investment level was reached in 2012, since when the volume has reduced somewhat. As can be seen in Table 1, investments up until the end of June 2015 amounted to SEK 3.36 billion (approx. EUR 370 million) granted to a total of 320 portfolio companies.

Table 1 Total investment volume, broken down by capital from funds and private co-investors

Invested capital (SEK/EUR million)	Of which from funds (SEK/EUR million)	Proportion (%)	Of which from private co-investors (SEK/EUR million)	Proportion (%)
3,360/370	1,352/149	40.2	2,008/221	59.8

According to the intervention's rules of play, the funds should invest jointly with private co-investors. *The private capital should amount to at least 50 per cent* in each individual investment.

³³ However, because it was possible to make new investments up until the end of September 2015, the final figures will deviate somewhat from those presented here.

³⁴ Approx. EUR 370 million

Our analysis shows this to have been achieved. The private co-investment proportion amounts to around 60 per cent. Or, if you put it another way, every invested public sector krona means a private co-investment of SEK 1.50. This is naturally positive from a gearing perspective, but it must also be interpreted together with a discussion about “dead weight”. To what extent would private financing still have taken place without the public co-financing? A high private proportion may, but need not, indicate a “deadweight loss”. However, setting up regional funds in areas with a low level of earlier venture capital interventions reduces the risk for the majority of the funds.

Thus the co-investment principle means that private co-investors are crucial for an investment to come into being. In the next section we take a closer look at who these investors are.

3.2 Co-investors³⁵

An interesting aspect is the type of private co-investors who are attracted by what the funds have to offer. In the web portal run by Ramböll on behalf of the managing agency (Tillväxtverket) a note is made concerning both their category and geographical domicile, which enable such an analysis.³⁶

Organised capital a minority

The breakdown is shown in Table 2 and concerns the following three categories: (i) Private individuals (business angels)³⁷; (ii) private companies³⁸ and (iii) organised capital³⁹.

Table 2 Private co-investors, distributed by number of investment decisions and investment volume

Category	Number of inv. decisions	Proportion (%)	Inv. volume (SEK/EUR million)	Proportion (%)
Private individuals	783	35.3	331/36	16.5
Private companies	779	35.1	659/73	32.8
Organised capital	473	21.3	747/82	37.2
Unknown	182	8.2	271/30	13.5
<i>Total</i>	<i>2,217</i>	<i>100</i>	<i>2,008/221</i>	<i>100</i>

Remarks: For a description of the breakdown of categories, refer to footnotes 37–39 below. Due to rounding, the percentages do not always add up to exactly 100%.

When it comes to *the number* of investment decisions, we can see that around 70 per cent can be linked to players other than companies whose core business is equity investments (i.e. organised capital). Both private individuals and private companies achieve a share of

³⁵ Figures used in this section are normally based on investment decisions. For linguistic reasons, the term “investor” is also used.

³⁶ Such a registration was proposed early on in the process by Growth Analysis for evaluation reasons.

³⁷ According to a broad definition. *Private individuals/Informal VC*: Private individuals, generally active or former entrepreneurs who invest parts of their own capital in the development of new companies. May be active to a greater or lesser degree. This also includes groups/syndicates of informal investors (business angel groups).

³⁸ *Private companies/Corporate VC*: Investments by companies whose primary activity does not consist of investments. Example: Established companies that invest in young entrepreneurial businesses. Also includes “John Smith Industries Limited” which invests in a local tourism enterprise because the owner believes in the idea and has a “feel” for the area.

³⁹ *Organised capital/Institutional VC*: Companies whose core business is equity investments.

over 35 per cent each. By completing the picture with the *share of investment volume* we gain an idea about any difference in the size of investments between the three investor categories. Organised capital now increases its share to around 37 per cent of private co-investment, while private individuals fall by almost 20 percentage points to 16.5 per cent. The private companies do not show any appreciable change. Thus it would appear that organised capital and private individuals have complementary roles. The first category makes fewer but larger investments, while the latter invests more frequently but with smaller amounts.

Mostly intra-regional investors

Where do these investors come from? Their breakdown by domicile is compared to the region where the investment takes place and is thus distributed over four geographical groups: (i) in the (same) region; (ii) outside the region, but in Sweden; (iii) outside Sweden, but within the Nordic region or the EU and (iv) outside the Nordic region and EU. Table 3 shows that the breakdown of investments is roughly the same whether this be in terms of the number of decisions or the investment volume in SEK. A little over half comes from the same region as the fund. The second largest investment group, around three in ten, comes from other regions in Sweden. Around 80 per cent of co-investors are thus domestic, while the foreign investor share of investment decisions remains at a little over six per cent. However, the latter group invests relatively larger amounts than the Swedes, and when we study investment volumes, their share rises to just over ten per cent.

Table 3 Private co-investor's geographical domiciles

Domicile, private co-investor	Number of inv. decisions	Proportion (%)	Inv. volume (SEK/EUR million)	Proportion (%)
In the region	1,142	51.5	1,016/112	50.6
Outside the region, but in Sweden	677	30.5	541/59	26.9
Outside Sweden, but in Nordic region/EU	111	5.0	168/19	8.4
Outside the Nordic region & EU	31	1.4	43/5	2.1
Unknown	256	11.5	240/26	12.0
<i>Total</i>	<i>2,217</i>	<i>100</i>	<i>2,008/221</i>	<i>100</i>

Remarks: Due to rounding, the percentages do not always add up to exactly 100%.

In this section we have discussed the private co-investors. In the next section, our focus is on the businesses that receive investment, known as portfolio companies.

3.3 Portfolio companies

The section describes portfolio companies based on their industry, size, phase and survival.

ICT– the biggest industry

The intervention regulations do not include any special industry restrictions, thus there are no formal obstacles for a portfolio covering a wide range of industries. A general

breakdown of portfolio companies based on industry structure drawn up by EVCA⁴⁰ is shown in Table 4 below.

Table 4 Portfolio companies' industry structure (as per EVCA), broken down by the number of investment decisions and investment volume. 2009–June 2015.

Industry	Number of inv. decisions	Proportion (%)	Inv. volume (SEK/EUR million)	Proportion (%)
IT/Telecommunications (ICT)	103	32	329.6/36	24.4
Life science (LS)	47	15	226.2/25	16.7
Industry/Transport (IND)	64	20	272.1/30	20.1
Trade (TRADE)	52	16	215.0/24	15.9
Energy/Environmental technology (CL)	28	9	162.8/18	12.0
Other (OTH)	27	8	146.0/16	10.8
<i>Total</i>	<i>320^a</i>	<i>100</i>	<i>1,351.7/149</i>	<i>100</i>

Note: a = Since two funds (Mittkapital i Jämtland and Västernorrland together with Partnerskapsfond Mittsverige) have invested in the same portfolio company (in the industry sector) the company appears twice in this table. The company has only been counted once in the total number of 320. Due to rounding, the percentages do not always add up to exactly 100%.

The table shows that *intervention decisions* fall into three size groupings. The biggest individual industry is ICT which alone accounts for around one third of all investment decisions. The other group comprises three industries (Industry/Transport, Trade and Life Science) whose individual shares are between 15 and 20 per cent. All in all, around half of the investment decisions are attributable to this group. The third group comprises Energy/Environmental technology together with Other, with eight and nine per cent respectively. Around one in six investment decisions concern this group.

If we instead study the *volume of capital*, certain differences arise which means that the size of investments differs between the industries. ICT is still the largest, but its share has now fallen by eight percentage points to a little over 24 per cent of fund investments. In other words, comparatively lower amounts per investment. In principle, Group two with Industry/Transport, Trade and Life Science remains unchanged with a little under 53 per cent. The industries in the third group (Energy/Environmental Technology and Other) have increased somewhat (around three percentage points each) and now account for almost one in every four kronor invested, which indicates a somewhat higher amount for these investments.

Smaller amounts, but a significant to the broader investment profile

Since it is presented without a frame of reference, it is difficult to comment the above investment structure. To make it easier to interpret, Table 5 shows a comparison between the intervention's investment and other, private, venture capital investments carried out in Sweden over almost the same period, i.e. 2009–2014.⁴¹ In this context, private players means players other than Swedish "Näringspolitiska fonder" [Economic/business policy funds]. The information comes from Growth Analysis' own calculations based on data

⁴⁰ European Private Equity & Venture Capital Association. For a more detailed description of the industry groups, see Background Report 1.

⁴¹ The regional funds' period is six months longer and lasts until June 2015.

from SVCA.⁴² It should also be noted that during the period, the “non-business policy” funds (the comparison group below) invested an amount that is around eight times larger than that invested by the regional venture capital funds under the intervention.

Table 5 Investment structure comparison between regional venture capital funds and non-business policy funds 2009–2014.

Industry	Regional venture capital funds		Non-business policy funds	
	Inv. volume (SEK/EUR million)	Proportion (%)	Inv. volume (SEK/EUR million)	Proportion (%)
IT/Telecommunications (ICT)	329.6/36	24.4	5,204/572	48
Life science (LS)	226.2/25	16.7	3,441/379	32
Industry/Transport (IND)	272.1/30	20.1	639/70	6
Trade (TRADE)	215.0/24	15.9	212/23	2
Energy/Environmental technology (CL)	162.8/18	12.0	918/101	9
Other (OTH)	146.0/16	10.8	321/35	3
<i>Total</i>	<i>1,351.7/149</i>	<i>100</i>	<i>10,735/1,180</i>	<i>100</i>

Remarks: The period for the regional venture capital funds is 2009–June 2015 and for the comparison group, 2009–14. Due to rounding, the percentages do not always add up to exactly 100%.

Source: Growth Analysis' own calculations based on data from SVCA

The comparison shows major differences between the two groups regarding the portfolio companies industry affiliation. The initiative's investments have a significantly broader industry profile than the comparison group. Examples: the comparison group devotes 80 per cent of the investments to ICT and Life Sciences while the corresponding share for the regional funds is only half as large. While the regional funds invest one out of every five kronor in Industry/Transport, the comparison group's share is only one in twenty. The industry group Trade reaches only 2 per cent of the comparison group's investment volume, while the regional funds invest almost 16 per cent.

This can be interpreted in several ways. The regional funds altogether cover the whole of Sweden, including rural and remote districts. That will of course affect the regional dealflow. The funds encounter greater heterogeneity in the the trade and industry structure compared to non-business policy funds (see also section 3.4). The perception the funds have of their own role is another aspect. It is reasonable to expect private players to focus on yield while the regional funds in addition may have more or less clearly expressed ambitions toward regional development (see section 1.4 and Background Report 2).

Another explanation can be found in the requirement for the intervention to complement the market, an approach that motivates other types of investment than those for private players. Regardless of the underlying causes, we can clearly see a significant difference in investing profiles.

⁴² SVCA = Swedish Venture Capital Association. Briefly, this comparison group thus *excludes* Industrifonden, Almi Invest, Fouriertransform, Innovationsbron and Inlandsinnovation. It *includes* private Swedish and foreign funds, public foreign funds and Swedish state pension funds. For a more detailed presentation of data and definitions, refer to e.g. Tillväxtanalys, (2015), “Riskkapitalstatistik 2014 Venture Capital – investeringar i svenska portföljbolag” [Growth Analysis, (2015), “Venture Capital Statistics 2014 Venture Capital – investments in Swedish portfolio companies”].

Micro-enterprises predominant

According to the regulations, investments in the initiative *may only take place in SMEs*, i.e. companies with up to 249 employees, which should not be too much of a limitation as this category constitute around 99.9 per cent of the entire business base in Sweden.⁴³

Our analysis shows this to have been achieved. As shown in Table 6, nine out of ten fund kronor were invested in small businesses with up to 49 employees. Among them, micro-enterprises (up to nine employees) dominate with just over 70 per cent.

Table 6 The volume of fund investments distributed by portfolio company size (number of employees)

Fund investments	0–9	10–49	>49	Total
Amount (SEK million)	949.2	271.2	131.3	1,351.7
Proportion (%)	70.2	20.1	9.7	100

Three out of every four fund kronor go to companies in an “expansion phase”

The investments must mainly take place in “early phases”. This provision was discussed and clarified by the managing agency in 2010 where it was given a run of the broad interpretation: “*the portfolio company must be at the seed stage, start-up or an expansion phase*”.⁴⁴

In our analysis, we have broken down investment volumes into these three phases (see Table 7).

Requirement met. The funds' investment capital has a very clear phase profile where the latter phases in the approved range are predominant. More than 98 per cent of the investments have been deemed expansion capital (74 per cent) and start-up capital (24.3 per cent), while the proportion of seed capital constitutes barely 2 per cent.

Table 7 The volume of fund investments distributed by portfolio company development phases

Fund investments	Expansion capital	Start-up capital	Seed capital	Total
Amount (SEK million)	1,000.6	328.5	22.7	1,351.7
Proportion (%)	74.0	24.3	1.7	100

One in ten businesses bankrupt

Finally, there is also cause to provide a picture of the companies that did not survive. Table 8 shows, broken down by industry, the number/proportion of portfolio companies who have survived or entered bankruptcy while a fund has been an active owner. Of the total

⁴³ Refers to 2014, Statistics Sweden's business database.

⁴⁴ Tillväxtverket, (2010), "Förutsättningar för fondprojektens genomförande", ["Conditions for the implementation of fund projects"], page: 16. The absolute majority of the funds are within the Almi Invest – an organization owned by the Swedish government. According to information received, Almi Invest applies the following rule of thumb internally for classifications: Start-up/seed phase = “PowerPoint stage”, no sales; Early phase = The company must have achieved sales based on its business model to a “real” customer; (Early) expansion = has sales, no positive cash flow, but if could reduce level of overheads would be cash-flow neutral; Expansion = Positive cash flow, limited upside but also limited risk.

number of businesses (320) that received investments through the initiative, a little over 10 per cent (34) went bankrupt.

The largest proportion of bankrupt companies belonged to Trade, followed by ICT and Industry/Transport. In relation to the proportion of investment decisions (see Table 4) bankruptcies are overrepresented in Trade and underrepresented in Life Science and Other.

Table 8 Portfolio companies in bankruptcy and surviving, distributed by industry (EVCA)

Industry	Bankrupt companies		Surviving companies	
	Number of	Proportion (%)	Number of	Proportion (%)
IT/Telecommunications (ICT)	11	32.4	92	32.3
Life science (LS)	0	0	47	16.5
Industry/Transport (IND)	7	20.6	55	19.3
Trade (TRADE)	12	35.3	40	14
Energy/Environmental technology (CL)	3	8.8	25	8.8
Other (OTH)	1	2.9	26	9.1
<i>Total</i>	<i>34</i>	<i>100</i>	<i>285</i>	<i>100</i>

Remarks: The table shows the distribution by industry (EVCA) of (i) the number of bankrupt companies, (ii) the proportion of bankrupt companies of the total number of bankrupt companies, (iii) the number of surviving companies and (iv) the proportion of surviving companies of the total number of surviving companies.

The above provides a general overview of how the intervention's investment pattern appears. Because implementation takes place in all of Sweden's eight NUTS 2 areas under different conditions, there is also a reason to take a closer look at the geographical aspect.

3.4 A geographical dimension

In this section, we highlight a number of examples of the regional differences found at the fund level. But first we sketch out the background of the regional economic structure that each fund has to work with, since without an understanding of which it would be difficult to interpret the funds' investment profiles.

Starting point: The ratio between portfolio companies and the regional "potential base"

It is necessary at the very outset to investigate how many companies there *actually are* in each region that meet the intervention's formal requirements for venture capital investments (e.g. in respect of size). This number can be seen as the region's potential base among which the portfolio companies will constitute a (very small) subset. The ratio between the potential base and the portfolio companies can also be seen as a form of regional investment ratio in which the numerator consists of the actual number of portfolio companies and the denominator is the potential base (n portfolio companies/ n companies formally entitled to intervention). We have already described the size and structure of the numerator – i.e. the portfolio companies – in the section above. Because the portfolio companies are drawn from the regional potential base, its size and composition is of

interest when interpreting the investments each fund makes. Let us therefore study the denominators in each fund area in more detail.

Table 9 begins by describing the size. Here the “potential base” is limited to formally investable companies, i.e. private, non-financial limited liability companies with workplaces in the investment area (fund area) of the fund concerned. Only companies with fewer than 250 employees (i.e. of SME size) are included.⁴⁵

As can be seen, the potential base each fund has access to differs appreciably, from just under 7,000 companies⁴⁶ in Värmland (2.6 per cent of the national total) to just over 73,000 in Stockholm (27.4 per cent of the national total). This already shows we can anticipate significant differences in *deal flows* between the funds.

Table 9 Companies with workplaces in each fund area; number and proportion of the national total

Fund area	Number of workplaces	Proportion, workplaces of nation's (%)
Övre Norrland	12,822	4.8
Mellersta Norrland	10,037	3.8
Norra Mellansverige (not Värmland)	14,973	5.6
<i>Värmland</i>	<i>6,908</i>	<i>2.6</i>
Stockholm	73,170	27.4
Östra Mellansverige	39,651	14.9
Västsverige	51,497	19.3
Småland & Öarna	21,483	8.0
Sydsverige	36,398	13.6
<i>Nationwide</i>	<i>266,939</i>	<i>100</i>

*Remark: The table shows the number of private, non-financial limited liability companies with workplaces in each region (“fund area”). Only companies with fewer than 250 employees (SMEs) are included. The two fund areas with the highest and lowest proportions of workplaces are highlighted in **bold** and *italics* respectively.*

Varying industrial base

In addition to *the number* of potential investment companies, *the regional industrial structure* is naturally also of great interest. From a venture capital standpoint, some industries are often more interesting than others, e.g. through different expectations regarding innovation, scalability, growth potential and international conditions in the industry concerned. Table 10 illustrates by fund area the distribution of the potential base of companies shown in Table 9.

⁴⁵ We must emphasise here that these are gross figures. The purpose is illustrative; for obvious reasons no assessments or limitations have been made in respect of the companies’ characteristics in the potential base (e.g. the phase they are in, investment requirements or growth potential). The “net denominator”, i.e. the proper investment candidates, are thus in reality significantly fewer.

⁴⁶ For the sake of readability, in this the section we write “companies” and not “companies with workplaces within...”.

Table 10 Companies with workplaces in each fund area, proportion of the nation's industry distribution (EVCA)

Funds	Total proportion nationwide (%)	Of which ICT (%)	Of which LS (%)	Of which IND (%)	Of which TRADE (%)	Of which CL (%)	Of which OTH (%)
Ö. Norrland	4.8	<i>3.4</i>	4.2	4.8	4.6	5.7	5.2
M. Norrland	3.8	<i>2.5</i>	3.1	3.8	3.9	5.8	4.1
N. Mellansv. not Värmland	5.6	<i>3.3</i>	5.0	5.6	5.2	8.2	6.3
Värmland	2.6	<i>1.8</i>	2	2.7	2.3	3.9	2.8
Stockholm	27.4	41.7	30.4	26.8	32.8	<i>16.9</i>	22.9
Ö. Mellansv.	14.9	<i>12.1</i>	16.7	14.7	13.8	15.5	15.6
V. Sverige	19.3	17	<i>16.9</i>	19.7	17.5	19.7	20.3
Småland & Öarna	8	<i>5.3</i>	6.2	8.6	6.9	11.2	8.7
Sydsverige	13.6	<i>12.8</i>	15.6	13.3	13.0	13.1	14.0
<i>Nationwide</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

*Remark: The table shows the proportion of private, non-financial limited liability companies with workplaces in each region ("fund area") as a proportion of the national total and broken down by EVCA industry and fund area. Only companies with fewer than 250 employees (SMEs) are included. The industries within each fund area that are overrepresented most in relation to the fund area's proportion of the total number of workplaces nationwide are highlighted in **bold**, while underrepresented industries are shown in italics. Due to rounding, the percentages do not always add up to exactly 100%.*

Source: Labour statistics based on administrative sources (RAMS) and Structural business statistics (FEK), Statistics Sweden. Adapted by Growth Analysis.

As can be expected, there are distinct differences between the regions. Most distinct is possibly Stockholm's overrepresentation within ICT with more than four of ten workplaces nationwide. Five regions are clearly overrepresented in CL, two within life science LS and one within OTH. In contrast, underrepresentation occurs chiefly within ICT, LS and TRADE.

It must be said that the industry breakdown is very general and there are great variations within each group. We must also emphasise that the figures say nothing about company growth potential, investment readiness, investment requirement or similar aspects. But, in general, Table 9 and Table 10 still confirm the picture of the differences in economic conditions that each fund has to deal with in its assignment. To the regional variations, we must also add considerable differences in the maturity and function of the capital supply market. We will return specifically to this issue in Chapter 5.

Major regional differences in investment profiles

If Table 9 and Table 10 can be said to show significant differences in *conditions*, then Table 11 shows that *outcomes* also differ between the funds. When we break down the initiative's total investments per fund and industry, major differences become apparent. In order to illustrate this, Table 11 below shows the two funds in each industry that have the biggest and smallest investment shares (calculated as the proportion of a fund's total investments in SEK). The volume of money invested by each fund is also shown.

Table 11 Largest and smallest proportional investments per industry and fund (percentages and SEK millions)

Industry	The two funds with the largest proportional investment/industry			The two funds with the smallest proportional investment/industry		
	Fund	Inv. prop. (%)	Inv. volume (SEK million)	Fund	Inv. volume (SEK million)	Inv. prop. (%)
ICT	1. Stockholm	62.4	87.2	11. Mittkapital	0.0	0.0
	2. Sydsv. Entrprskf. I	44.5	16.4	10. Sydsv. Entrprskf. II	8.1	10.9
LS	1. Sydsv. Entrprskf. II	33.2	44.8	11. Mittkapital	0.0	0.0
	2. Värmland	27.6	12.0	10. N. Mellansverige	1.9	1.8
IND	1. Mittkapital	44.8	72.1	11. Stockholm	2.8	4.0
	2. Småland & Öarna	34.0	40.2	10. Värmland	3.4	1.5
TRADE	1. N. Mellansverige	51.1	46.5	11. Sydsv. Entrprskf. II	0.0	0.0
	2. Saminvest	31.0	30.8	10. Västsverige	3.8	7.3
CL	1. Sydsv. Entrprskf. II	23.3	31.4	11. Mittkapital	2.5	4.0
	2. Västsverige	19.5	37.6	10. Saminvest	3.8	3.8
OTH	1. Mittkapital	36.2	58.3	11. Värmland	0.0	0.0
	2. Partnerinvest i Norr	28.8	47.6	11. N. Mellansverige	0.0	0.0
				11. Stockholm	0.0	0.0
				11. Östra Mellansverige	0.0	0.0
				11. Sydsv. Entrprskf. I	0.0	0.0

Remark: All fund investment profiles as shown in tables in Background Report 1

Stockholm, which has invested more than 62 per cent of its capital in ICT, and Mittkapital, which has not invested any money at all in the industry, are examples that illustrate these differences. On the other hand, Mittkapital invested almost half of its capital in industry and transport while Stockholm's proportion barely reaches three per cent. More than half of Norra Mellansveriges [Northern Central Sweden's] investments were aimed at Trade which is 20 percentage points more than the fund investing the second largest amount in that industry. Sydsvensk Entreprenörskapsfond II has not invested at all in Trade and Västsverige [West Sweden] has allocated barely 4 per cent of its total investments there.

We can conclude that there are *major differences between the funds's investment profiles* – an observation that comes as no surprise considering the differences that occur in each fund area's business landscape (see Table 9 and Table 10). In the next section, we turn our focus to the other end of the funds' operating cycle, from investments to divestments (exits).

One in three exits is an industrial sale

A functioning venture capital operation does not just involve activities such as investments and value-adding work. The ultimate aim is to convert the investments into cash or cash equivalents through what is known as exits, in which the fund sells its shareholding in the portfolio company. It is the express opinion of Growth Analysis that this is an important aspect that demands special attention, planning and strategies. To quote professor Colin

Mason: ”The core of the entrepreneurial process is the creation of financial value.”⁴⁷ We will return to this issue in section 6.3.

Table 12 shows the (complete) exits carried out within the initiative up until September 2015 and broken down into different categories.

Table 12 Exits 2009–Q3 2015, broken down by category

Type of exit	Number	Proportion (%)
Industrial sale	14	31.1
Repurchase by founder/entrepreneur	10	22.2
Other ^a	7	15.6
Existing owner (not founder/entrepreneur)	6	13.3
IPO ^b	4	8.9
Combinations ^c	2	4.5
Financial player	2	4.5
<i>Total</i>	<i>45</i>	<i>100</i>

Remark: All of the exits in the table are complete. No partial exits are included.

a = Repayment of convertible loans; b = includes market listing; c = combination of industrial sale and sale to existing owner.(n=1) and a combination of IPO and industrial sale (n=1).

Source: Swedish Agency for Economic and Regional Growth, (2016) Regional venture capital funds: Final evaluation 2015

We can see that industrial sales, with a proportion above 30 per cent, are the single most common exit form. By grouping exit categories, we can also see that a little more than half of all exits, in one way or another, have taken place back to the portfolio company and its owners.⁴⁸ Exits to external financial players are so far not particularly apparent in this context (4.5 per cent). IPOs (including market listings) accounted for a little under one in ten exits (8.9 per cent).

As is the case with the funds’ investment profiles (see Table 5) it can be difficult to interpret the regional funds’ exit structures without a comparison with private players. Accordingly, with the aid of SVCA, we have created a comparison group comprising private, Swedish VC players for the corresponding period. Because the exit categories are unfortunately not defined in the same way in the two groups, we have created a “translation key” in consultation with representatives from SVCA and Almi Invest, which has also entailed certain changes in designations and groupings compared to Table 12. A complete reconciliation is not possible to achieve, certain problems remain with delimitations and overlaps. Table 13 must therefore only be seen as an overview.

⁴⁷ Mason C et al, (2015), ”Business angel exits: strategies and processes”, page: 102.

⁴⁸ The three categories (i) repurchased by existing owner; (ii) founder/entrepreneurs and (iii) repayment of convertibles (other) amount to 51.1 per cent.

Table 13 Comparative exit structures between the regional venture capital funds (2009–Q3 2015) and private venture capital in Sweden (2008–2014)

Type of exit	Exits in regional venture capital funds ^a		Exits in SVCA's comparison group ^b	
	Number	Proportion (%)	Number	Proportion (%)
Industrial sale	15 ^c	33.3	84 ^d	48.8
Repurchase by founder/entrepreneur	10 ^e	22.2	27 ^f	15.7
Repayment of convertibles	7 ^g	15.6	2 ^h	1.2
IPO	4.5 ⁱ	10.0	17 ^j	9.9
Financial player	8.5 ^k	18.9	30 ^l	17.4
Other	- ^m	-	12 ⁿ	7
<i>Total</i>	<i>45</i>	<i>100</i>	<i>172^o</i>	<i>100</i>

Notes: a = exits during the period 2009–Q3 2015

b = comparison group containing all private VC exits in Sweden during the period 2008–2014 registered with SVCA

c = includes two combined exits (2 x 0.5) under the heading "Combinations" in the original table 12

d = Trade sale

e = includes one combined exit (1 x 0.5) under the heading "Combinations" in the original table 12

f = Management (Buy-back)

g = under heading "other" in the original table 12, but dominated by repayment of convertibles (as per comment in orig. table)

h = Repayment of preference shares/loans

i = includes one combined exit (1 x 0.5) under the heading "Combinations" in the original table 12

j = Public offering

k = Incl 6 existing owners (not founder/entrpr) as Almi Invest claims existing external owners more like financial players than founders/entrpr. Also includes one combined exit (1 x 0.5 = 0.5) under the heading "Combinations" in the original table 12.

l = Financial institution + another private equity house including secondary private equity funds

m = 7 in the original table 12, however assumed mainly to comprise repurchased convertibles (as per comment in the original table) and thus noted as such in this table

n = Other means

o = The original total was 224, but this was reduced by 52 as the category "Write-offs including sales for a nominal amount" following talks with SVCA is assumed to chiefly comprise bankruptcies not registered in this table. However, it should be noted that sales at very low values **may** also be included.

Source: Swedish Agency for Economic and Regional Growth, (2016), "Regional venture capital funds: Final evaluation 2015" and SVCA/Invest Europe, special data extract 25/02/2016 (Growth Analysis adaptation)

The table shows that in comparison with private players, the regional funds have a *lower* proportion of industrial sales but a *larger* proportion of exits which, in various ways, have taken place back to the portfolio company and its owners (repurchase by owner/founder and repayment of convertibles). It is natural to link these preliminary observations to geography, i.e. the funds' home turf. The regional funds are active throughout Sweden, but the private players do not have any "duty of presence". This means e.g. differences in *deal flows* and in the regional structure for venture financing (see Chapter 5) where not least the availability of other investment players should have an effect on exit opportunities. We have previously illustrated how investing profiles differ not only between the regional funds and the private comparison group (see Table 5) but also internally between the regional funds (see Table 11). We must also add the funds' interpretation of their assignment. Some of the funds regard themselves as regional development players, an approach which hardly has an equivalent on the private side.

The above would seem to be a reasonable background when an exit structure is interpreted, but it raises some questions. Is the venture capital instrument always the the most suitable financing form for all these companies? Is the instrument in the intervention used in the same way nationwide?

That was the broad picture about the exit profile. Can we detect any geographical patterns? A fund-by-fund exit structure can be obtained by breaking down the numbers presented in Table 12. However, because of the limited number of exits that have taken place thus far, there are very few observations per fund and this calls for great care when analysing and interpreting Table 14.

Having said this, we can still note certain indications of geographical differences both in terms of volume and structure. The average number of exits per fund is around four, but varies greatly between eight (SEF I) and zero (Värmland). When it comes to the type of exit carried out we could e.g. see that the industrial sales category is predominant in Övre Norrland [Upper Norrland] and Östra Mellansverige [Eastern Central Sweden] (four of a total of six in both cases), whereas this type of exit did not occur at all in five funds. In five funds, at least half of all exits went to existing owners including founders. IPOs and sales to other financial players are hitherto unusual; for the former group, this type of exit took place in three funds and in only two funds for the latter group.

Table 14 Exits up until Q3 2015, broken down by category and fund

Funds	Ind. sale	IPO^a	Comb.	Financial player	Exist. owner (not founder)	Re-purchased by founder	Oth.^b	Sum
Ö. Norrland	4	-	-	-	-	1	1	6
M. Norrland - Mittkapital	-	-	-	1	-	1	2	4
M. Norrland - Saminvest	1	1	-	-	1	3	-	6
N. Mellansv.	-	-	1 ^c	-	1	-	-	2
Värmland	-	-	-	-	-	-	-	0
Stockholm	1	-	-	-	1	-	-	2
Ö. Mellansv.	4	-	-	-	1	-	1	6
V. Sverige	1	2	1 ^d	-	-	1	1	6
Småland & Öarna	-	-	-	-	1	1	1	3
Sydsverige - SEF I	3	1	-	-	1	3	-	8
Sydsverige - SEF II	-	-	-	1	-	-	1	2
<i>Nationwide</i>	<i>14</i>	<i>4</i>	<i>2</i>	<i>2</i>	<i>6</i>	<i>10</i>	<i>7</i>	<i>45</i>

Note: a = includes market listing; b = e.g. repayment of convertibles; c = combination of industrial sales and sales to existing owners; d = combination of IPOs and industrial sales

Source: Swedish Agency for Economic and Regional Growth, (2016) *Regional venture capital funds: Final evaluation 2015*

The above attempts to create a picture of the exits that have taken place within the intervention. However, exit activities have only just begun and the number is limited. By the time of Growth Analysis' follow-up evaluation (planned for 2018), significantly more exits should have taken place, which will mean better capabilities in this regard. In conclusion, and based on the limited data available, we can already discern a tendency toward differences in respect of exits, not only between interventions as a whole and in comparison with

private VC players, but also between the funds themselves. This in itself is not surprising given the intervention's set up with funds allocated by region and the consequent differences in the regional conditions for such activities. In Chapter 5 we address the matter of venture financing structure in more detail.

3.5 Summary

Based on Background Report 1 and certain other comparative data, the chapter has provided a general, summarising presentation of the initiative's investments profile.⁴⁹ The funds have invested in compliance with existing requirements. Major differences in conditions in the regions and their investment profiles emerge.

In all, SEK 3.4 billion (approx. EUR 374 million) were invested in 320 portfolio companies. Of that amount, the funds invested just under SEK 1.36 billion (approx. EUR 149 million) which is around 40 per cent. The private co-investors invested just over SEK 2 billion (approx. EUR 221 million), around 60 per cent of the total investments.

The co-investment requirement of at least 50 per cent from private co-investors is thus met. Every public krona invested has thus enjoyed a gearing of 1.5:1. This is naturally positive from a gearing perspective, but it must also be interpreted together with a discussion about “dead weight”.

The *private co-investors* are studied more closely based on the proportion of investment decisions and investment volume. Organised capital is in the minority. Seven out of ten investment decisions can be linked to private individuals and private companies, while the proportion of organised capital is only a little above two out of ten decisions.⁵⁰ However, because the size of organised capital's investments is greater than those of private individuals, they account for almost SEK 4 out of SEK 10 from private co-investors. Investments from private individuals are on average somewhat smaller, which means their proportion in cash terms falls to just under 17 per cent of the total amount. The private company proportion does not change significantly.

No matter whether we study the number or the volume of investments, the *geographical distribution* of private co-investors remains roughly the same. Around 80 per cent of the investments are domestic, of which a little over half come from the same region as the fund. The second largest investment group, around three in ten, comes from other regions in Sweden. The proportion of investment decisions taken by foreign investors is a little over six per cent. However, they invest relatively larger amounts than the Swedes, and when we study investment volumes, their share rises to just over ten per cent.

The funds are not required to focus on any *particular industry*. A survey shows that the investment profile is also rather wide ranging. A comparison is made with other venture capital investments in the market, the so-called “non-business policy funds” (hereinafter called the comparison group). The comparison reveals major differences. The initiative's investments are significantly more widespread across different industries than the comparison group's. Examples: the comparison group devotes 80 per cent of the investments to ICT and Life Sciences while the corresponding share for the regional funds is only half as large. While the regional funds invest one out of every five kronor in Industry/Transport,

⁴⁹ Note that the data available at the time of analysis concerns the period from the beginning of the initiative (2009) until the end of June, 2015. However, new investments were allowed for a further three months, i.e. until the end of September, 2015.

⁵⁰ The just over eight per cent remaining cannot be linked to any category.

the comparison group's share is only one in twenty. The industry group Trade enjoys only two per cent of the comparison group's investment volume, while the regional funds invest almost 16 per cent. Regional heterogeneity in economic structure together with ambitions about regional development are thought, at least partly, to explain this.

The initiative is only aimed at *SMEs*. That aim has also been achieved. Nine out of ten fund kronor were invested in small businesses with up to 49 employees. Among them, micro-enterprises dominate (up to nine employees) with just over 70 per cent.

Fund investment capital has a very distinct *phase profile*. More than 98 per cent of the investments have been deemed expansion capital (74 per cent) and start-up capital (24.3 per cent), while the proportion of seed capital constitutes barely 2 per cent. Thus the requirement for investments at early phases as defined by the administrative agency is met.

One in ten companies has gone bankrupt. In relation to the proportion of investment decisions, bankruptcies are overrepresented in the industries Trade and underrepresented in Life Science and Other.

A *geographical dimension* is added in conclusion. A review of the number of workplaces and industry structure at fund area level shows that the eight regions have different conditions. (There are also strong grounds that speak for differences in the regional structures for venture capital financing; see Chapter 5).

In the next stage, we break down the intervention's sectoral profiles at the fund level. Major differences are revealed. Examples: Stockholm has invested more than 62 per cent of its funds within ITC, while Mittkapital has not invested in the industry at all. On the other hand, Mittkapital invested almost half of its capital in Industry and Transport while Stockholm's proportion barely reaches three per cent. More than half of Norra Mellansveriges [Northern Central Sweden's] investments were aimed at Trade, which is 20 percentage points more than the fund investing the second largest amount in that industry. Sydsvensk Entreprenörskapsfond II has not invested at all in Trade and Västsverige [West Sweden] has allocated barely 4 per cent of its total investments there.

There were exits from 45 companies. Data is thus currently relatively limited. An early observation shows industrial sales, with a proportion above 30 per cent, to be the single most common exit form. By merging similar exit categories, we can also see that a little more than half of all exits, in one way or another, have taken place back to the portfolio company and its owners.⁵¹ Other financial players are so far not particularly apparent in this context (4.5 per cent).

The exit profile for the regional venture capital funds is also compared with private, Swedish VC exits. Unfortunately, because categorisation differences make comparisons difficult, great care must be taken with interpretations. The tendency still appears to be that in comparison with private players, the regional funds show a *lower* proportion of industrial sales but a *larger* proportion of exits which, in various ways, have taken place back to the portfolio company and its owners (repurchase by owner/founder and repayment of convertibles).

By breaking down the data at the fund level, any geographical differences are also analysed. Indications of fund-by-fund differences as regards both the volume and structure

⁵¹ The three categories (i) repurchased by existing owner; (ii) founder/entrepreneurs and (iii) repayment of convertibles (other) amount to 51.1 per cent.

appear. The very low number of observations for each fund however, demands great care when analysing and interpreting.

It is natural to link these preliminary exit observations to some background characteristics like differences in fund dealflow, the funds' interpretation of their assignment (some of the funds regard themselves as regional development players) and regional differences in the supply of other investment players.

In total, this also raises some questions: Is the venture capital instrument always the most suitable financing form for all these companies? Is the instrument in the intervention used in the same way nationwide?

We now leave the descriptive investment component and proceed to the effects of the initiative, partly as regards the portfolio companies included in the subsequent Chapter 4 and partly in respect of the regional structure for risk finance in Chapter 5.

4 Has the intervention had any effect on the portfolio companies' growth?

Growth Analysis engaged the Damvad Analytics consultancy to investigate the effects in the portfolio companies of their receiving venture capital investments. The chapter briefly summarises their evaluation. For a more detailed description and exhaustive report of the method, we refer to Background Report 1 (however, the background report is only available in Swedish). Because the existing data does not actually permit conclusions to be drawn at this early stage, it must be emphasised that the chapter should mainly be seen as *the development of a method* for measuring effects, *designing* a control group and some *examples* of cuts that can be made. The early results reported in Background Report 1 and in section 4.6 below should therefore be interpreted with great care. There are thus good reasons to return with a follow-up study when more complete data is available (see also section 6.3).

We have chosen to highlight four perspectives from the extensive material in the background report: (i) the portfolio companies' own assessments of the investments, (ii) the companies that are included in the selected group for affect measurement, (iii) a matching process to create a control group of companies and (iv) a brief presentation of the indicative results.

Sources referred to in the background report are not cited in the chapter.

4.1 The entrepreneurs' own opinions regarding needs, benefits and impact

It is easy to regard an investment in a portfolio company as a sum of money. However, this is not the whole truth. A venture capital investment can be broken down into both financial and non-financial components. While the former is easy to measure, the latter is more difficult to quantify – but that doesn't mean it must be of less importance.⁵² In this introductory section we approach both parts by recounting the opinions entrepreneurs have of the issue. In Table 15–Table 17 we use the results of a web survey submitted to the portfolio companies by ongoing evaluation consultants Ramböll. At the time the survey was drawn up (Q4 2014), a total of 313 companies had received investments. Ramböll succeeded in obtaining contact details to 261 of them (around 83 per cent). Fifty per cent of them responded to the entire survey and a further 5 per cent responded in part. Thus the actual respondents constitute a little over 40 per cent of the total population.

Non-financial need and benefit

Table 15 shows the portfolio companies' own evaluations of their needs for non-financial values on the first investment occasion and the extent to which the funds and the private co-investors are perceived to have met their needs. The companies have graded their needs and the perceived benefit with the aid of a five point scale where 1 = no need/contribution and 5 = very great need/contribution.

⁵² See e.g. Mc Millan I C *et al*, (1989), “Venture capitalists involvement in their investments: Extent and performance” or Large D & Muegge S, (2008), “Venture capitalists' non-financial value-added: an evaluation of the evidence and implications for research”.

Contacts and networks, ideas and mentorship are ranked highest among both needs and benefits

On average, the companies consider “Assistance with relevant networks and contacts to external players” and “Sounding board for ideas/mentorship” as areas where they have the greatest *need*. “Direct management and operational work in the portfolio company” was deemed to have the lowest need.

On average, companies feel that private co-investors *contribute* to a somewhat greater extent than the fund. The rankings of needs and the perceived benefits are fairly well in accordance. The fund’s primary contributions include “Assistance with relevant networks and contacts to external players” and “Sounding board for ideas/mentorship” while the private co-investors are categorised highest among “Sounding board for ideas/mentorship”. The lowest benefit of the fund is deemed to be within “Direct management and operational work in the portfolio company” while the lowest value of the private co-investors was “The creation of formal systems and structures for developing management within the company” for the private co-investors.

Table 15 Portfolio company assessments of the need for non-financial contributions from investors

Category non-financial contribution	Investment requirement	Fund contribution	Private co-investor contribution
Assistance with relevant networks and contacts to external players	3.2	2.7	3.0
Sounding board for ideas/mentorship	3.1	2.7	3.1
Strategy work in support of the company’s long-term planning	2.9	2.5	2.9
Skill supplies/recruiting to internal key positions	2.7	2.1	2.4
Creation of formal systems and structures for developing management within the company	2.5	2.0	2.2
Help with checks and follow-ups	2.2	2.0	2.4
Direct management and operational work in the portfolio company	<i>1.9</i>	<i>1.6</i>	2.3

*Remark: Scale 1 – 5 where 1 = no need/contribution and 5 = very great need/contribution The biggest proportions in each category concerned are highlighted in **bold** while the lowest proportions are in *italics*.*

Source: Questionnaire survey carried out by Ramböll, 2015

Use of the financial investment

The portfolio companies were also asked how they had *used* the capital contributions the venture capital financing involved, distributed across five different areas of use and three different alternative responses (weighting). The alternatives were: “not at all”, “to a certain extent” and “to a great extent”. Table 16 shows the proportion of responses for the alternative “to a great extent”.

Business/market development is the most usual

Distribution is not even; more than half of the portfolio companies (56 per cent) state that the capital contribution is used for “Business/market development” to a large extent. “Product development” (48 per cent) and “Skills acquisition” (40 per cent) also have high

proportions. Significantly fewer use the capital contribution to any great extent for “Operating expenses” (13 per cent) and “Investments in capital” (11 per cent).

Table 16 The portfolio companies' use of the capital contribution

Area of use for the capital contribution	Number of companies that responded “to a great extent” (%)
Business/market development	56
Product development	48
Skills acquisition	40
Operating expenses	13
Investments in capital	11

Remark: Investments in capital refers to machinery, premises, vehicles or similar.

Assessment of the investment's impact on the portfolio company

The companies were also asked how they consider the investments to have impacted them and what they assess the future impact will be. Nine conceivable impact possibilities were listed and the companies graded their assessments with the aid of a five point scale where 1 = no impact at all and 5 = very large impact.

Expansion before profitability

The companies' assessments revealed impact across a broad range (see Table 17). A number of tendencies were however noted. In the case of impacts thus far, two areas where impacts are appreciated greater than others emerge; “Faster expansion” and “Improved opportunities for other financing”. “Increased profitability” comes last. Assessments of future impact reveal smaller differences between the various impact areas. However, confidence is still greatest regarding increased financing opportunities and more rapid expansion. It can be noted that the companies anticipate a lower future impact, compared with impacts hitherto, in all areas except where it concerns profitability. All in all, in the wake of the companies' own assessments, we can expect most initial effects on expansion, partially with the aid of other financing. No major positive impact on profitability can be anticipated in the short term; it is anticipated to occur later.

Table 17 Portfolio company assessments of the investment's impact on the company

Impact category	Impact thus far	Future impact
Fast expansion	3.6	3.1
Improved opportunities for other financing	3.5	3.2
More professional board	3.1	2.8
Increased number of employees	3.1	2.8
Internationalisation	3.1	3.0
Increase production capacity	2.9	2.7
Increase skills	2.9	2.7
Higher ambitions	2.9	2.7
Increased profitability	2.7	2.9

*Remark: The assessed impact with the average highest value is **highlighted in bold**.*

In this section we have discussed the portfolio companies' own assessments of needs, benefits and impacts. The perspective in the next section, where we describe different steps in the preparations for a statistical impact assessment, is more external.

4.2 Portfolio companies included in the impact assessment

The number of portfolio companies in the selection shrinks from 320 to 170

In comparison with the descriptive statistics presented in Chapter 3, the selection of portfolio companies now becomes more limited. This depends chiefly on two factors; firstly the register data used has a lag of around 18 months, and secondly, the Statistics Sweden register lacks information about certain necessary variables in a small proportion of the portfolio companies.⁵³ The first limitation means that the necessary information about companies and individuals from Statistics Sweden's databases at the outside covered the period up until the end of 2013. To provide companies with a minimum one-year development period, the impact assessments were limited to those companies where investments took place between 2009 and 2012. Accordingly, investments in portfolio companies made between 2013 and 2015 have not been included for practical reasons. The 320 companies that formed the basis for the descriptive statistics has therefore now shrunk to 170 companies. The impact assessment is thus based on these 170 companies, equivalent to somewhat more than half of the total number of portfolio companies. The different stages are shown in Table 18 below.

Table 18 Selected companies – a subset of the total population

Portfolio company category	Number	Proportion (%)
Total population of companies invested in between 2009 and June 2015	320	100
Companies invested in between 2009 and 2012	183	57
Companies with the required registered data	170	53

Fewer first-time investments in 2009

Based on their first investment dates, these 170 companies are comparatively evenly distributed across the years (see Table 19). The exception is the year 2009 (start-up year for the intervention), where the number of investments were only around half of those during each of the remaining years.⁵⁴

⁵³ I.e. no information registered in FEK. The most likely explanation would be that at least most of these companies have begun activities and thereafter either gone bankrupt, being purchased or merged before there was time to close the accounts.

⁵⁴ This observation was expected as the investments in principle did not get underway until the middle of 2009.

Table 19 Annual distribution of first-time investments

Year of first investment	Number	Proportion of selected population (%)
2009	22	13
2010	50	30
2011	44	26
2012	54	32
<i>Total</i>	<i>170</i>	<i>100</i>

Note. Due to rounding, the percentages do not add up to exactly 100%.

Source: IFDB, Ramböll/Fondprojekten, adapted by Growth Analysis

There are different industry distributions between the populations

Because almost half of the total population of portfolio companies has dropped out, there is reason to study whether the selected companies are representative. A study of industry and ownership forms shows certain deviations. The selected companies are, in comparison with the total population of portfolio companies, over-represented in the ICT and Life Science industries and under-represented when it comes to Energy/Environmental Technology. An χ^2 test shows that the differences between the selections are statistically significant. This must be noted when interpreting the (early) impact assessment in section 4.6. Regarding the form of ownership (men/women), there are no statistically significant differences.

In this section, the limited number of selected companies is explained and certain comparisons between the subset and the total population of portfolio companies have been made. In the next section, we leave the total population and focus on the 170 selected companies.

4.3 Profile of the selected companies

Without going in to detail (see Background Report 1 for such), the characteristics of the selected companies the year before the date of the investment (*t-1*), may be described by the following average:

- Annual sales: SEK 6.3 million/EUR 693,000⁵⁵
- Number of employees: 6.8 (i.e. a micro-enterprise)⁵⁶
- Productivity (value-added/employee): SEK 334,000/EUR 36,740⁵⁷
- Capital intensity (non-current assets/employee): SEK 801,000/EUR 88,110

It is also noteworthy that during the period studied (2009–2012), more than one third of the selected companies received other financial business support.⁵⁸ This is a distinct difference compared to other companies in the marketplace; 35 per cent of the selected companies received such support compared to 2 per cent for Sweden's entire business base.

⁵⁵ During the four years studied, between 77.3 and 88.9% had annual sales below SEK 10 million (EUR 1,1 million) at the time of investment.

⁵⁶ During the four years studied, between 77.3 and 87% had fewer than ten employees at the time of investment.

⁵⁷ During the four years studied, between 78 and 83.3% had productivity levels below SEK 500,000 (EUR 55,000) at the time of investment.

⁵⁸ Growth Analysis' MISS database was used here.

This is not only an interesting piece of information per se, but is also significant when assessing any growth impact. If the group of portfolio companies has made use of other business/innovation grants to a greater extent than the control group, it could signify that it is partially the results of this – and not just the capital investment – which are actually measured. Such additional effects from other support can thus be said to dilute the effect of the support we are studying, a phenomenon sometimes described in evaluation terminology as contamination. Concerning business support and any venture capital investments from other players received *the year before*, or the *same year*, as the regional venture capital fund investments, our regression model checks for them (see section 4.5).

But what about support granted *after* the regional venture capital fund investments; how does this affect our impact measurements? This raises a number of problematising questions, such as: what causes could conceivably lead to this increased element of other support; might the actual venture capital investment influence the company's behaviour; is the investment able to change the perception of the company among external players? Perhaps information and tips from the funds are behind the portfolio companies' increased knowledge about other business support and their likelihood of applying for it? Perhaps, as a positive result of the *due diligence* process, the portfolio companies gain a "hallmark of quality" that makes them more interesting in the eyes of other investors.⁵⁹

Assume that the companies in the selected group and control group have exactly the same characteristics. Assume further that the probability of obtaining other business support (following the venture capital investment) would depend on the actual venture capital investment and its impact on the company's behaviour or how the company is perceived by other external actors. In such a scenario it might not always be relevant to talk about diluted or contaminated effects but rather sequential ones where any growth effects from other business support could also be seen as (indirect) impacts from venture capital investments. This issue is interesting and may require deeper study.

In this section we have presented certain fundamental characteristics among the selected companies. It is now time to move on to the actual matching method – identifying suitable comparison companies, in other words the creation of a control group.

4.4 The matching method

For a more detailed description, we refer to Background Report 1 (however, only available in Swedish).

To measure the *effects* of the investments in the portfolio companies, it is not enough just to study what happens in them e.g. changes in the number of employees or the volume of sales. We must also find out if the *intervention itself* gives rise to any changes we may see or if they would also have taken place without our intervention. Thus we need to find a situation, a course of events, on a par with the company's not receiving any investment (the counterfactual situation) and compare it with the course of events where the investment actually takes place. The difference between the two courses of events will thus be the impact of the investment.

⁵⁹ Compare the surveys shown in Table 17 where the companies assess how the investments have impacted them thus far and how they assess the future impact. "Increased opportunities for other financing" is high on the list.

In this case the measures are designed such that randomised experiments are not possible.⁶⁰ Instead, the choice was a quasi experimental method with the objective of creating a control group comprising companies that resemble to the greatest extent possible the group of portfolio companies (i.e. the “treated” group, those which have received the investments). To be more precise, use was made of the relatively recently developed method, *Coarsened Exact Matching* (CEM).⁶¹

The observations are made at intervals

The CEM method has been used previously by Growth Analysis in several evaluations.⁶² The method addresses the difficulty of finding exact matches in variables between “treated” companies (in this case the group of selected portfolio companies) and the control group we are seeking to create. It is not hard to realise that exact matches for continuous variable such as sales or profits (exactly the same monetary amounts or percentages) would not only be difficult to find, but perhaps are also not especially necessary. CEM addresses this by defining, *ex ante*, intervals (strata) within which variables that describe a company's characteristics are allowed to fall; in other words, a “coarsening” of the variables. A treated company (portfolio company) can then be paired with a control company whose e.g. annual sales fall within the previously determined interval. Exact matches can then be made based on the defined range.

In this impact assessment, the matching process and regressions are based on the Stata programme in which pre-defined algorithms are used to calculate strata sizes.

Thus two stages can be identified in the matching process: (i) the data is coarsened according to Stata's pre-defined algorithms; (ii) the portfolio companies (the treated companies) are matched to a larger population so that exact matches are achieved based on the coarsened variables.

Precise strata matches also mean a number of portfolio companies that do not have a twin drop out of the analysis. Prior to each matching model, companies in the control group whose industry classifications (three-digit SNI 2007) do not match any portfolio company are purged. Data is also purged of outliers.

A control group, comprising twin companies is created.

The basic principle is that an investment takes place in a portfolio company (among the selected companies) during year *t*. This company is then compared with the control company that had similar characteristics to the portfolio company the year before the invest-

⁶⁰ Another conceivable design could be e.g. an initial rigorous review of potential portfolio companies in stage one, leading to the selection of a number of companies as “approved” investment objects. Stage two could include the drawing of lots to randomly divide the “approved” companies into two groups. The actual investments would be carried out in stage three in one group, but not the other. Comparisons between these two groups would then take place in stage four.

⁶¹ See e.g. Blackwell M et al, (2009), “cem: Coarsened exact matching in Stata” or Iacus S et al, (2012), “Causal Inference without Balance Checking: Coarsened Exact Matching”

⁶² Tillväxtanalys, (2012), ”Företagsrådgivning i form av konsultcheckar” [Growth Analysis, (2012), “Business counselling in the form of consultancy checks”] and Tillväxtanalys, (2014), ”Företagsstöd till innovativa små och medelstora företag – en kontrafaktisk effektutvärdering” [Growth Analysis, (2014), “Business support to innovative SMEs – a counterfactual impact assessment”].

ment, $t-1$.⁶³ Any differences over time in the outcome variables studied (e.g. annual sales) may then under certain circumstances be linked to the venture capital investment.

The similarities between the portfolio companies and the control group (their characteristics) are captured in seven different variables. It is thus here matches take place. The variables are:

- Annual sales ($t-1$)
- Number of employees ($t-1$)
- Productivity ($t-1$)
- Capital intensity ($t-1$)
- Age of companies (t)
- Growth in sales ($t-1$)-(t)
- Industry (t)

Productivity is defined above as added value/employee, *capital intensity* as fixed assets/employee, *age* as the number of years the company was recorded in the company register up until the investment, *growth in sales* as the percentage increase between the year prior to the investment ($t-1$) and the year of investment (t) and *industry* as designated and matched at section level⁶⁴ as per SNI 2007. Annual sales and the number of employees are matched to logarithmised values.

Table 20 shows a comparison between the portfolio companies in the selection and the purged population of Sweden's public limited companies.⁶⁵ As can be seen, there are certain differences before matching. The differences are statistically significant for all variables, but at different levels. Significance for sales and productivity is only at the ten per cent level, while the differences for the number of employees, capital intensity and age are at the one per cent level. However, after matching no significant statistical difference remains.

Table 20 Comparison of business characteristics

Variable	Portfolio company	Control group before matching	Control group after matching
Annual sales (SEK thousand)	6,253	7,657*	6,349
Number of employees	6.8	3.8***	6.8
Productivity (SEK thousand)	334	441*	343
Capital intensity (SEK thousand)	801	2,248***	660
Age	5.1	8.9***	5.1

Note: *, ** and *** indicate significance levels of 10, 5 and 1 per cent

⁶³ As could be seen in section 4.6, the number of control companies is significantly larger (by a factor between 50 and 60) than the number of portfolio companies in the estimates presented in it.

⁶⁴ I.e. 21 categories.

⁶⁵ Purged of companies that do not present an industry match for any portfolio company in the 3-digit industry level, and purged of outliers.

4.5 The regression model

The econometric model specification used in the assessment of the effects is shown below. We assess the effect of three outcome variables: annual sales, the number of employees and productivity

$$Y_i = \alpha_i + \beta_1 investment_i + \beta_2 VC_i + \beta_3 VC_{lag_i} + \beta_4 AS_i + \beta_5 AS_{lag_i} + \varepsilon$$

where Y represents the variable upon which we are estimating the effect, *investment* describes whether the company has received a venture capital investment, the variables VC and VC_{lag} if the company has received another form of venture capital investment⁶⁶ in years t and $t-1$ (where t represents the date the venture capital investment was received from the regional venture capital funds). AS_i och AS_{lag_i} describe whether the company received other, financial, business support⁶⁷ year t or $t-1$. ε is the model's error term. β_1 describes the *average treatment effect on the treated* (ATT), i.e. the average (estimated) impact of receiving a venture capital investment.

Thus far we have described in general terms the setup that enables us to carry out an impact assessment. In the next section, we will show (early) results from such an assessment.

4.6 Impact assessment

Table 21 below shows the effects of three outcome variables in the intervention's portfolio company: annual sales, the number of employees and productivity. We must yet again emphasise that this analysis has been carried out so early that available data are not yet of the scope and quality to allow true conclusions to be drawn. For example, new investments were allowed under the measures right up until 30/09/2015, while the register data necessary for an impact assessment does not extend beyond 2013. A number of investments have thus already been excluded for this reason. Because the process (the investment) can hardly be assumed to have an immediate effect on the portfolio company, an exposure period has been included. In this assessment, the exposure for some companies is only one year, which is obviously insufficient. The number of portfolio companies in which the impact can be measured after a more reasonable four-year exposure period (time since initial investment) is no more than 13, which also means individual companies have a major impact. Thus the table should be interpreted more as an illustration of the impact assessment rather than precise and solid results.

What still can be seen is shown in brief by the following. The left column shows the date for the annual assessment, where $t+1$ shows the impact one year after the initial investment, $t+2$ two years after the initial investment and so forth. The next three columns to the right show estimated outcome variables. The right column shows a number of portfolio companies (treated companies) and the number of control companies. Note that the number of control companies is significantly larger (by a factor between 50 and 60) than the number of portfolio companies.

⁶⁶ Information about this was taken from Growth Analysis' venture capital database and refers to venture capital investments recorded in the SVCA register, wherein recipients can be identified for around SEK 8 of each SEK 10 invested.

⁶⁷ Information on this was taken from Growth Analysis' MISS database.

Table 21 Estimated annual impacts

Date	Annual sales (logarithmised)	Number of employees (logarithmised)	Productivity (SEK thousands)	Number	
				Portfolio companies	Control companies
t+1	-0.03 (0.32)	0.17 (0.20)	-127.36 (88.95)	94	5,826
t+2	0.36 (0.34)	0.23 (0.23)	-54.16 (82.74)	64	3,833
t+3	0.44 (0.56)	0.76** (0.38)	-251.13* (130.11)	42	2,390
t+4	1.21* (0.71)	1.79*** (0.51)	230.68* (122.02)	13	663

Remark: The number of portfolio companies are those remaining after the matching process, i.e. companies which, after the CEM algorithm, receive twin companies within the same strata. *, ** and *** indicate significance levels of 10, 5 and 1 per cent. Impacts on sales and the number of employees are estimated using logarithmised values.

In year $t+1$, *Annual sales* have a marginally negative estimated impact, positive coefficients are estimated in the subsequent year and a positive development trend, even though no clear statistically significant impacts occur (however, the positive impact in year $t+4$ has a 10 per cent significance level). The *number of employees* shows positive trends with the difference between the portfolio company and the control company growing over time. We note a statistical significance at the one per cent level four years after the initial investment. Generally speaking, the portfolio companies have lower *productivity levels* than the control group during the first three years. This switches in year four when the portfolio companies have higher productivity than the control companies at a 10 per cent statistical significance level. This is a tendency that might be linked to the concept of the so-called J curve.

In Background Report 1, a few examples of more detailed estimates are also shown that could be made using more robust data. These are the effects for companies of different sizes and industries, companies divided by fund and comparisons with other companies that have received venture capital investments from other players (SVCA's members). However, we will not look into them further here.

4.7 Summary

The chapter describes in general terms the portfolio companies' own assessments of needs, benefit and impact, the structure of the selected group of portfolio companies, the selected *Coarsened Exact Matching* (CEM) method and a short presentation of an (early) impact assessment.

The available data is not yet of a quality that permits any definitive, far-reaching, interpretations of the results. Observations are few in number and the time since investment (treatment) is for most companies extremely short. Having said this, a few short reflections can still be made. The preliminary indication is that no identifiable differences between the portfolio companies and the control group arise during the first two years following an investment. However, in years three and four following an investment there are certain positive signs that indicate the portfolio companies may have increased the number of employees. This could be an early indication of preparations for future growth.

The *portfolio companies' own points of view* were presented with the aid of survey results from the Ramböll ongoing evaluation consultancy. The way they rank needs and the perceived benefit of the investments correspond relatively well. On average, companies feel that private co-investors contribute to a somewhat greater extent than the fund. The fund's primary contributions include "Assistance with relevant networks and contacts to external players" and "Sounding board for ideas/mentorship" while the private co-investors are categorised highest among "Sounding board for ideas/mentorship". The lowest benefit of the fund is deemed to be within "Direct management and operational work in the portfolio company" while the lowest value of the private co-investors was "The creation of formal systems and structures for developing management within the company" for the private co-investors.

More than half of the portfolio companies state that the capital contribution (from the venture capital investment) is used for "Business/market development" to a large extent. "Product development" (48 per cent) and "Skills acquisition" (40 per cent) also have high proportions. Significantly fewer use the capital contribution to any great extent for "Operating expenses" (13 per cent) and "Investments in capital"⁶⁸ (11 per cent).

When it comes to the impact of investments on the companies, they feel there are relatively early initial effects on expansion, partly with the aid of other financing. No major positive impact on profitability can be anticipated in the short term, in the opinion of the portfolio companies.

The selection of companies for the impact assessment is more limited compared to the descriptive statistics. The descriptive statistics are based on 320 companies; this is reduced to 170 companies in the selection for impact assessment. This depends chiefly on two factors; firstly, the register data used has a lag of around 18 months, and secondly, the Statistics Sweden register lacks information about the necessary variables in some of the portfolio companies. These 170 companies are, based on the initial investment date, relatively evenly distributed between the years 2009 and 2012, the exception being 2009 (when interventions began), where the number of investments only reached around half compared to the remaining years of the period.

The selected companies are, in comparison with the total population of portfolio companies, over-represented in the ICT and Life Science and under-represented when it comes to Energy and Environmental Technology. Examples of characteristics (average) from the selected companies the year before the investment (*t-1*):

- Annual sales: SEK 6.3 million/EUR 693,000
- Number of employees: 6.8 (i.e. a micro-enterprise)
- Productivity (value-added/employee): SEK 334,000/EUR 36,740
- Capital intensity (non-current assets/employee): SEK 801,000/EUR 88,110

It is also worth noting that during the period studied (2009 – 2012), 35 per cent of the selected companies received other business support compared to 2 per cent for Sweden's entire business base. A significant difference, in other words.

To measure the *effects* of the investments in the portfolio companies, it is not enough just to study what happens in them e.g. fewer/more employees or higher/lower sales etc. We

⁶⁸ Investments in capital refers to investments in machinery, premises, vehicles or similar.

must also find out if the intervention *itself* gives rise to any changes we may see or if they would also have taken place without our intervention. We use a quasi-experimental method for the purpose of creating a control group comprising companies that are to the greatest extent possible similar to the group of portfolio companies. The matching method is known as *Coarsened Exact Matching* (CEM). In CEM, intervals (strata) are defined *ex ante* within which matching variables are allowed to fall (a coarsening of the variables). A treated company (portfolio company) can then be paired with a control company whose e.g. annual sales fall within the previously determined interval (stratum). Exact matches can then be made based on the defined range.

Portfolio companies are matched with control group companies with the aid of seven different variables: annual sales ($t-1$), the number of employees ($t-1$), productivity ($t-1$), capital intensity ($t-1$), company age (t), sales growth ($t-1$)-(t) and industry (t). After the match there is no significant statistical difference remaining between the portfolio companies and the control group.

A *regression model* is presented where a control is made for other business support or venture capital investments that have taken place outside of the intervention in years $t-1$ or t .

In the concluding *impact assessment*, the preliminary indication is that no identifiable differences between the portfolio companies and the control group arise during the first two years following an investment. However, in years three and four following an investment there are certain positive signs that indicate the portfolio companies may have increased the number of employees.

This chapter has focused on the portfolio companies; in the next chapter we switch to studying whether the activities of funds have had any impact on the regional structure for risk finance.

5 Have fund activities entailed any impact on the regional structure for risk finance?

Growth Analysis engaged consultants Oxford Research to investigate the impact of the funds on the regional ecosystem for risk finance (the structure for entrepreneurial finance). The chapter briefly summarises their evaluation. For a more detailed description, we refer to Background Report 2 (however, the background report is only available in Swedish). Sources referred to in the background report are not cited in the chapter.

5.1 Expectations and possibilities for structural impact

Path two in the programme logic model presented in section 1.4 shows expectations for the intervention beyond the actual impact within the portfolio companies. The funds could also have an impact (improvements) on the regional ecosystem for risk finance. That goal and that part of the intervention logic were however rather imprecisely formulated. The following attempts to take a few steps towards clarification.

Structure for risk finance – more than supply of VC-capital

Background report 2 introduced the term *structure for risk finance* (infrastructure for entrepreneurial finance), which is a broader concept than mere equity/venture capital.⁶⁹ Growth Analysis agrees with the consultants that the term can be used in this context. It refers to financing with a high appetite for risk which includes equity capital but also other forms of financing where the investor can be said to take a certain increased risk. Examples of this are provisional loans, convertible loan instruments, customer financing and in some cases even conventional bank financing. This broader scope is motivated partly by the actual need companies have for supplementary financing, and partly by the practical abilities for structural improvement the regions actually have where a focus solely on equity capital would appear to be extremely challenging.

Four basic components and opportunities for impact

When discussing if something has changed or not, it is reasonable to first stop to consider the subject and clarify the definition of it. What can be said to comprise a structure for risk finance? Taking its inspiration from the concept for an entrepreneurial ecosystem, a schematic model was presented in Background Report 2 in which four main components (supply, demand, regional collaboration and exit opportunities) constitute the framework of such a structure. Below is a short review of the component parts and how the *funds* might be able to affect them.

1. Supply

Supply is taken to mean the scope – and expertise – of other risk finance providers. Also included are their level of organisation and any interventions to stimulate an increase in supply.

⁶⁹ Translations are always delicate. The Swedish concept is “struktur för riskvillig finansiering” which might be translated to “structure for risk finance”. The point is a broad concept that captures the infrastructure for entrepreneurial financing, i.e. more than only a structure for VC-financing.

Development can e.g. take place through the funds' contacting potential co-investors, offering capital (co-investing), information, support with legal issues and due diligence or other practical support. Such activities could be expected to bring additional investors, and also encourage investors to increase their investments.

2. Demand

Demand is taken to mean the number of potential investment targets, their growth potential and knowledge of the venture capital instrument. Any demand-side stimulus interventions also form part of this component.

Development is anticipated to occur in several ways. Implemented investments provide experience in the portfolio companies, but also in general in that the funds meet companies in the region and disseminate knowledge about VC- investments. More direct interventions are “constructive refusals” and investment experience. The former means companies that sought financing but were turned down by the funds, in the next step receive *feedback* from the funds in the form of an explanation of the refusal along with tips about other financing and/or possible other players to contact.

3. Regional collaboration

Regional collaboration is taken to mean the number of other growth-promoting players and interventions in the region. Other component parts are the quality and scope of collaboration between them.

Development can take place through fund dialogues with relevant players such as within the fields of regional development and growth, financing and business development.

4. Exit opportunities

Exit opportunities are taken to mean the portfolio companies' attractiveness for investors in the next financing round and also the supply and scope of such investors.

Development can take place through the active efforts of the funds in gaining the interest of possible follow-on investors in broad terms. They may be existing or potential, within different categories and both inside and outside the region and country.

Theory of change

The above four main components/dimensions within the regional structures for risk finance can be incorporated in an intervention logic for the development of such a structure (see Figure 3).⁷⁰ Naturally, it would have been preferable had such a change theory been elaborated and accepted by the intervention's stakeholders before the intervention began.

⁷⁰ A significantly more developed model compared to the one created within the initiative in 2010 and which was presented in section 1.4.

Figure 3 Theory of change for the development of regional structures for risk finance

	Activities	Outcomes	Impacts	
Co-investment funds, activities	Contact with & info about the fund to potential portfolio investors	Increased interest in investing		Development of regional structures for risk finance
	Information about possible investments	Increased knowledge of and experience in investing	Development of supply side	
	Support to co-investors: contract formalities, evaluation models about businesses etc.	Increased investments		
	Contribution of funds up to 50% of the invested amount	Increased inflow of funds from region		
	Contact with & information to potential portfolio companies	Improved attitude toward equity capital	Development of demand side	
	Feedback to portfolio companies	Increased knowledge and experience of equity capital investments		
	Help with contacts to portfolio companies following refusal	Increased ability to attract external capital		
	Business development, portfolio companies	Increased knowledge about public & private interventions, tools, assignments	Development of regional collaboration	
	Help with contacts to portfolio companies	Better coordination of regional development initiatives		
	Dialogues with regional development players	Increased interest from national & international industrial players		
	Dialogues with growth players	Increased interest from national & international financial players	Development of exit opportunities	
	Dialogues with potential buyers			
	Dialogues with coinvestors			
	Dialogues with regional industry representatives			
	Dialogues with companies for regional exit opportunities			

The regions' initial position and perception of their own roles

An important aspect in change work is the value (*baseline*) upon which the change should set out from. In this case we can immediately make three comments: (i) there are no available numerical values for the level/maturity of a structure for risk finance. Accordingly, to capture both the initial position and the changes requires information from several sources and qualitative assessments; (ii) the intervention is implemented in all eight NUTS 2 regions in Sweden and there are good reasons to assume that such a structural level varies significantly between the regions⁷¹ and (iii) the NUTS 2 region is an administrative (and geographically large) unit which in many cases includes both urban areas with universities and colleges and more rural areas with a different density and structure of companies and inhabitants. There are thus equally good reasons to assume the occurrence of intra-regional differences. Such differences at the initial positions would probably affect the requirement and incentive to work with structural improvement activities.

⁷¹ Other regional differences might be easier to point out. See section 3.4 where some examples of that are presented. Table 9 and Table 10 illustrates clear differences in regional economic structures and the number of workplaces that, in purely formal terms, meet the initiative's requirements for venture capital investments.

Another very important aspect is how the funds themselves perceive their assignment. The formulation of objectives and the expectations of other regional players⁷² opens the door for various interpretations and priorities of the “second path” – improving the structure for risk finance. As described in Chapter 5 in Background Report 2, there are also significant differences in the way each fund regards itself as a regional development player.

5.2 Three schematic phases in the regions' structure for risk finance

Background Report 2 uses an adapted variation of the evolutionary market development model as a tool for assessing the situation and changes in the regional structures for risk finance.⁷³

The model comprises three phases (see Table 22). These are, in rising levels of development: *latent*, *growth* and *maturity*. Each phase is associated with certain conditions along the four dimensions reported in section 5.1 above. On the supply side, it concerns e.g. the number of players, collaborations between them, working methods, level of competence and liquidity; on the demand side, the number of investment-ready companies, knowledge of and attitude towards venture capital. The level of regional collaboration is described on the basis of the degree of collaboration, knowledge and an understanding of each other's working methods and roles. Finally, exit opportunities are captured in terms such as network between players, level of activity and development of exit routes.

⁷² In some cases, such regional players are also co-financers of the intervention, a fact which can be assumed to impact their expectations of the funds' activities and roles.

⁷³ See Avnimelech G & Schwartz D, (2009), “Structural changes in mature Venture Capital industry: Evidence from Israel”.

Table 22 Phase classification, regional structures for risk finance

Basic conditions	Phases in structural development	Supply of risk finance	Demand for risk finance	Regional collaboration	Exit routes/ next-level investors
<i>E.g. Trade and industry structure (suitable for venture capital)</i> <i>Regional capital base</i> <i>Appropriate regulations</i>	Latent	Few players Low liquidity Fragmented players Low competence	Few inv. ready comp. Poor knowledge of VC Poor attitudes to VC	Overlapping initiatives Low knowledge of each other's work Little collaboration	Low exit activity Unclear exit routes
	Growth	More players Increased liquidity Increased syndication Increase skills Clearer working methods emerge	More inv-ready companies Better knowledge of VC Better attitudes to VC	More dialogue Increased knowledge of each other's work Growing understanding of each other's rolls and working methods Players find ways to collaborate	Growing exit activity Clearer exit routes emerge Networks with exit players established
	Maturity	Critical mass of players High liquidity Established syndicate High competence Established working methods VC and growth companies develop together in a dynamic adaptation process	Good "inv. readiness" among the companies Good knowledge of VC Good attitudes to VC	Players collaborate and adapt to each other	Good exit activity Functioning regional exit market or established pipelines out

The above model is used in the next section in each and every one of the intervention's fund areas.

5.3 Signs of positive development in the regions

Efforts have been made using various methods to assess the eight NUTS 2 regions' base-lines regarding the regional structures for risk finance and any changes that may have occurred. Important information sources included the consultants' own on-site focus group interviews in all eight regions. A number of players deemed relevant were invited to attend the interviews. Examples of such participants include the funds themselves, business angels, regional growth managers, the University holding companies, incubators, accelerators and other business support players etc. Data describing the regions was also gathered

from existing public sources such as Statistics Sweden's industry structure data, Tillväxtverkets national survey "Företagens villkor och verklighet" ["The Situation and Conditions of Enterprises"] and each respective region's own structural fund programmes for the period 2014–2020. In addition, surveys and interviews performed by the Ramböll ongoing evaluation consultants were also used. Qualitative assessments were then made based on a weighted picture.⁷⁴

Table 23 presents the overall assessment of the initial conditions and changes in the regions. As shown, there seems to have been a generally positive development. In half (four) of the regions development is summarised as "Positive medium/major" and in an almost equally large group (three out of eight regions) as "Positive, minor". In one region, development was deemed "insignificantly different from 0", i.e. in principle unchanged.

Table 23 Assessment of the initial position and development in the current eight fund regions

Region	Starting point	Development	Remark
Stockholm	(Late) growth	Positive, minor	A very active, but fragmented system with many actors and many parallel activities. A certain mismatch of focus between research initiatives and commercialisation initiatives. Unutilised potential to attract foreign investors.
Västsverige	Growth	Positive, medium	Strong commitment, both at the regional level and from players in the system. Good balance between initiatives for research, commercialisation and growth. Strong networks. However, the system is heavily dependent on public financing at every level.
Norra Mellansverige	(Early) growth	Positive, medium	Many players who take ownership of regional development issues. Proximity to Stockholm, ability to "import" capital and competence. Committed local investors. However, the majority of companies seem to require instruments other than venture capital.
Övre Norrland	(Early) growth	Positive, minor	Many players who take ownership of regional development issues. Developed regional network, strong collaborations. At the same time, possible too much focus on keeping companies within the region – probable missed opportunities for expansion and profitable exits. Furthermore, the majority of companies seem to require instruments other than venture capital.
Mellersta Norrland	Latent	Positive, medium	Many players who take ownership of regional development issues. Targeted initiatives to promote different parts of the system. The companies have had access to a great deal of growth capital through several public initiatives. Skills development is evident. However, major risk of future public financing dependency.
Sydsverige	Growth	Not significant	Lack of regional strategy and leadership (for innovations and high-potential entrepreneurship). Many actors and initiatives; fragmented and overlapping. Mismatch of focus between research initiatives and commercialisation initiatives. Unutilised potential to attract foreign investors.
Östra Mellansverige	Growth	Positive, minor	The regional players, including Almi Invest, seem to collaborate in a pragmatic and appropriate way for the creation of positive development in the region. There seems to be a good understanding of each other's work and conditions and certain adaptation would appear to take place.

⁷⁴ A significantly more detailed method description can be found in Background Report 2.

Region	Starting point	Development	Remark
Småland och öarna	Latent	Positive, major	There appears to be a systematic policy-driven shift away from a conventional industrial region to an innovation-driven knowledge region. The fund has a role to play in this work and is an appreciated regional player. However, the majority of companies seem to require instruments other than venture capital.

The above indicates that changes have taken place. But, what activities have the funds carried out in this direction? Is it possible to comment on links in the chain of causation? The next section addresses this.

5.4 The funds' structural improvement activities

Table 24 briefly summarises the activities the funds carried out on the basis of the theory of change presented in Figure 3. The activities are in the next step divided in three groups with regard to the observed differences between the funds.

Table 24 Variations in fund activities

Activity	Done by all funds to roughly the same extent	Done by all funds but to different extents or in different ways	Only done by certain funds
Contribution of funds up to 50 % of the invested amount	X		
Dialogue with potential buyers	X		
Dialogue with co-investors	X		
Dialogue with entrepreneurs	X		
Contact with pot. reg. investors & info about the fund and co-investm. model			X
Support to co-investors: formalities re contracts, valuation models of companies etc.			X
Contact with & info to potential portfolio companies			X
Business development of portfolio company			X
Help with contacts to portfolio company			X
Dialogue with regional development players			X
Dialogue with other players within the capital supply structure			X
Dialogue with regional trade and industry players about possible exit solutions			X
Contact with & info about funds and co-invest. opportunities for potential extra-regional investors			X
Feedback to portfolio companies following refusal			X
Help with contacts to portfolio companies following refusal			X

We have hereby described the regional structures for risk finance and the funds' structural improvement activities. At the same time, the counterfactual position is unclear; we do not know if the changes would still have taken place without the intervention and the work of the funds. The consultants assert that their empirical data is not sufficiently extensive for them to comment on the causality between the funds' activities and development in the regional structures. We must therefore be satisfied by observing that activities *have been* carried out and changes *have been* noted. Accordingly, we must add that Growth Analysis intends to return with a more in-depth report of the regional structures for risk finance (refer also to section 6.3).

Nevertheless, two further reflections can be made based on Table 24: (i) There are variations in the way the funds work and (ii) it would appear there are activities in some funds more reminiscent of a regional development player than a conventional VC fund.

The above not only shows differences in the structural improvement activities the funds have carried out, but also presents the changes in the structure of the regions considered to have occurred for venture financing. Such activities and changes are seldom achieved in the total absence of friction. Accordingly, the next section discusses different obstacles identified for both the regions and the individual funds alike.

5.5 Identified obstacles for structural improvements

In most change processes it is reasonable to discuss driving forces and resisting forces. In the case of regional structures for risk finance, it is reasonable to regard the work of the funds through their direct and indirect initiatives as a positive force. However, the fund does not work in a vacuum but is affected by (and itself affects) other players and processes. Such interactions can act both as stimuli and obstacles. This section highlights some of the obstacles identified in the study, both for *the region's* opportunities for structural development and the *fund's* opportunities to work with structural improvements (in the region).⁷⁵

Regional obstacles

The region is the arena in which the funds act. Obstacles to the region's structural development thus also hinder the fund from contributing to such development. Four obstacles have been identified:

- *Unfavourable initial conditions.* For example, an economic structure that is dominated by major companies in traditional industries; a lack of skills among the companies, investors and other players in regard to various forms of venture financing; poor regional access to capital (e.g. a lack of private investment capital, too few individuals have built up private capital to form the basis of private investments).
- *Fragmented entrepreneurial ecosystem.* For example, when major investments into research within certain profile areas are not matched by investments in commercialisation at a later stage, or when major initiatives that are taken to increase access to venture capital are not matched with initiatives to improve the quality of demand.
- *High level of public sector system involvement.* For example, when attention is directed to how the public entities should work together without major collisions and

⁷⁵ The focus here is on the fund and region, which means important exogenous factors such as prevailing economic conditions, currency exchange rates, political stability etc. are not addressed.

duplicating work and how to get existing (often sub optimal) solutions to function. The above instead of focusing on how private and non-profit players can find functional, long-term methods of working and collaboration, and the solutions that are actually necessary.

- *Inadequacies in regional leadership and/or overall regional strategy* for growth and development in general, and venture financing in particular. This results in various players having difficulty in seeing a common direction and objective.

Obstacles to the funds

In addition to regional conditions that hinder changes in the structure for risk finance, the study has also identified obstacles that are more attributable to the fund itself and its rules of play. These four obstacles are:

- Consistent in every region, the size of *management fees* (3 per cent). This level severely limits opportunities for implementing targeted structural improvement initiatives. It is especially problematic in regions where the funds manage large portfolios with relatively small investments (a portfolio structure that is relatively costly). Such portfolios are more common in sparsely populated regions where the need for structural development initiatives is also the greatest.
- While the *toolbox* at the funds' disposal (also illustrated in Table 24) may well be usable in some respects, it is not entirely appropriate for building regional capital supply structures. The demand side inadequacies or minor/fragmented supply of private investment capital that exists in several of the regions, requires entirely different types of tools than those the funds can provide.
- Absence of certain *financial instruments*. The funds can mainly collaborate and improve the functionality of the instruments that already exist in the region such as loan financing through local banks and business angel financing. But the study also shows that several of the regions suffer from a lack of entirely different types of financial instrument such as loan guarantees, which cannot be generated from the bottom up but which devolve upon political decisions.
- The *lack of clarity* that still exists concerning the co-investment funds' structural improvement assignment as well as how the various types of initiative should be linked and work together on the national and regional levels, make systematic work with the issue difficult.

5.6 Summary

Based on Background Report 2, this chapter has summarised the various aspects that can be linked to the main issue: has the initiative with regional venture capital funds affected the regional structure for risk finance? The answer is: in general, the regional structures are deemed to have improved. The funds have carried out structural improvement activities to varying extents. However, in order to comment on a causal link, we need a larger, deeper, empirical base than we do today.

By way of introduction, we discussed the concept around which the study was centred, *the regional structure for risk finance*, used throughout the chapter. Risk finance has a broader interpretation compared to venture capital and also includes other forms of financing with

a high risk appetite. When putting together a structure for risk finance, *four fundamental components* emerge: Supply, demand, regional collaboration and exit opportunities.

The next step presented a *theory of change* for the development of such a regional structure in which the above four dimensions were introduced. It was emphasised that the *funds' own interpretation* of their structural improvement assignment is important for prioritising of resources and activities. Furthermore, there are good reasons to assume that the *initial position* with regard to the structure for venture financing in the eight regions was different at the outset of the initiative. There are no simple numerical values for assessing the situation and changes in such regional structures. Other methods and models must be used (and combined).

A modified *variant of the evolutionary market development model* was therefore introduced. The model describes (in rising levels of development) three phases or development levels in a regional structure for venture financing: Latent, growth and maturity. Each phase is associated with certain conditions along the four basic dimensions previously addressed: Supply, demand, regional collaboration and exit opportunities.

Next, a brief *assessment of the initial position and development* in each of the eight regions was presented. The division is based on the market development model addressed earlier. The overall impression is one of positive development. In four of the regions, development is summarised as “Positive, medium/major”, in three of the regions as “Positive, minor” and in one as unchanged in principle. The assessment is based on visits in each region, focus group interviews with relevant regional key persons, a number of existing public sources and the use of results from questionnaires and interviews under the initiative previously carried out by the ongoing evaluation consultants, Ramböll.

Fund activities, which form part of the change theory previously addressed, are highlighted again and *grouped based on the differences* considered to exist between the funds. In other words, if the activities are carried out by *i)* all funds; *ii)* by all, but in different ways/to different extents or *iii)* if they are only carried out by certain funds. It is apparent that there are not only variations in the funds' working methods, but also that there are activities more reminiscent of a regional development player than a conventional VC fund. The consultants refrain from discussions about causal links between fund activities and the changes in the regional structure previously addressed, as this would require further empirical data.

Finally, we presented *a number of obstacles* identified in the study, both for the region's opportunities for structural development and the fund's opportunities to work with structural improvements (in the region).

- *Regional obstacles: i)* Unfavourable initial conditions; *ii)* fragmented entrepreneurial ecosystem; *iii)* high level of public sector system involvement and *iv)* inadequacies in regional leadership and/or overall regional strategy.
- *Obstacles to the funds: i)* Level of management fee; *ii)* content of the funds' toolbox; *iii)* absence of certain financial instruments and *iv)* lack of clarity in their assignments.

In this chapter we have discussed the regional structure for risk finance and the funds' structural improvement initiatives. In the report's final chapter we link together our experiences and observations with a concluding policy discussion.

6 Policy discussion and recommendations

Growth Analysis has followed the regional venture capital funds intervention since 2009. In practice, it has entailed collaboration in several different ways, namely: *meetings and discussions* with representatives for the managing agency (Tillväxtverket, the Swedish Agency for Economic and Regional Growth), the funds, the ongoing evaluation consultants (Ramböll) and the Ministry of Enterprise and Innovation as well as participation in and presentations at many Swedish and international *conferences*. Gathering of qualitative and quantitative *data*, meetings, dialogues and collaborations with ten or more *researchers* in the field, most of them international. Most importantly, it also included authorship of three *interim reports* and this *final report*. This chapter summarises the most important experiences in the form of a policy discussion and concrete recommendations.

The chapter opens with a discussion about early effects and is followed by a number of observations grouped according to subject, and concludes with our more general recommendations and planned future studies.

6.1 Early effects and geographical limitations

In all, just under SEK 3.4 billion (approx. EUR 374 million) has been invested in 320 companies around Sweden since 2009. The funds have been active in their regions. In addition to the actual investments that also means a great number of contacts with players. In simple terms, two “pathways” can be discerned through the initiative's intervention logic (see section 1.4, and Figure 2). However, with no order of preference. One path involves expectations of growth in the companies where investments have taken place, while the other involves expectations of an improved regional structure for risk finance. Can we see any such effects?

In the case of the first path, it is too early to draw any actual conclusions from the impact assessment of concrete *effects in the portfolio companies* as reported in Chapter 4 and in more detail in Background Report 1. However, in years three and four following an investment there are certain positive signs that indicate the portfolio companies may have increased the number of employees. This could be an indication of preparations for future growth. At the same time, as anticipated, there is also a great spread among the companies and the indication of an average increase is the result of a few, successful portfolio companies. Growth Analysis intends to return with a new impact assessment in 2018 when the data situation has improved (see also section 6.3).

What can be said about the second pathway, *developing regional structure for risk finance*? As described in Chapter 5 and in more detail in Background Report 2, measuring this presents a challenge. There is no simple method for reading off the current value or changes. The underlying empirical data currently available does not allow conclusions about the causality between the funds' measures and changes in the structure for risk finance. What is still true is that assessments from regional key players, the funds themselves, the portfolio companies and private co-investors indicate a positive trend in the capital supply structures in the majority of the regions. Yet this picture is not uniform but has differences, not only between the regions but also within different parts of a region.

It is also apparent that the funds' self image of their being *regional development actors* or not varies. This means certain funds only work indirectly with structural improvements i.e. through their investments and the side effects that can be expected to occur spontaneously,

while other funds have carried out extensive direct initiatives and concrete work to stimulate both co-investment and investment demand. Growth Analysis intends to return with an in-depth study in the field concerning regional capital supply structure (see also section 6.3).

We note that *geographical delimitations* have certain consequences. A comparison between the initiative as a whole and other venture capital investments in the country, the “non-business policy funds” (see section 3.3, Table 5), shows clear differences. We see a significantly broader industry profile for investments in the regional funds. For example, a significantly smaller proportion of investments were made within IT/Telecommunications and Life Science, but a greater proportion within Industry/Transport and Trade. There are also considerable differences between the funds (see section 3.4). One reasonable assessment would be the impact of the geographical breakdown into eight regions with different economic structures. The funds of the initiative have to invest in the companies in their regions, which entails a different selection process than that of private players where the entire nation constitutes their deal flow base. Another partial explanation is the probability that the funds' assignment – although unclearly formulated – is aimed at several different targets of which developing the regional structure for risk finance is one. Together with the fact that part of the public financing can be regarded as regional, there is also regional development aspects included in the funds' agendas.

All in all, this should explain a great deal of the investment pattern that arises. Investments in companies that are not usually of interest to venture capital may be interesting from a regional development perspective. This may concern companies which lack great growth potential per se but which are financially sound and have quite a large local and regional significance. There may be a need for capital in the companies, but perhaps not actually through the venture capital instrument. In such investment cases, the choice of financing instrument may be regarded as governed more by supply (the existing initiative) than by a specific demand for venture capital.

Another interesting aspect is the *exit issue*. Investing capital is one thing, “harvesting” a yield is another. Are there follow-on investors and buyers? If so, which categories? Could we see any geographical differences or changes over time? Furthermore, successful exits also impact the system in other ways. Mason captures this in the expression “entrepreneurial recycling”, which refers to entrepreneurs who, after the exit, use their (new) financial resources and accumulated experience for other entrepreneurial activities e.g. by investing in other companies or by starting new companies themselves. Successful exits are also a signal to other investors about the opportunities for returns inherent in venture capital investments.⁷⁶

A comparison between the regional venture capital funds and private players' exits indicate certain differences. The discussion above regarding geographical presence throughout Sweden and definitions of objectives should also apply here. For example, the regional portfolio structure and supply of other investment actors (potential follow-on investors/buyers), should impact the exit opportunities for each fund. Growth Analysis intends to return with a new study in this area (see also section 6.3).

⁷⁶ Mason C & Botelho T, (2016), “The role of the exit in the initial screening of investment opportunities: The case of business angel syndicate gatekeepers” and Mason C & Harrison R, (2006), “After the exit: acquisitions, entrepreneurial recycling and regional economic development”.

The requirement for private co-investments of at least 50 per cent means that private capital is essential; no co-investment means no investment at all. An analysis of co-investors shows that organised capital is in minority in the initiative while private individuals and companies that do not have investing as their core business play a major role. One reasonable consequence of this is that financing experience should be lower than in conventional VC funds, which ought to impact their ability to contribute *non-financial value-added VC* (i.e. non-financial support to the portfolio company).⁷⁷ The regional design also means that the investment instrument now becomes available in a different way than before to new segments of companies that lack previous experience of venture capital.

All in all, this adds up to a requirement for competence enhancing initiatives on both the supply and demand sides. Within the framework for their limited *management fees*, the funds have also carried out certain initiative to this end to varying degrees. However, we do not see any coordinated, structured national initiative as a complement to the actual investment programme.⁷⁸

6.2 Thematic discussions and observations

The role of the state

As always, there is reason to discuss the state's commitment; why should public funds (taxpayers' money) be used in this context; what is the fundamental problem that must be solved, or at least mitigated? In the opinion of Growth Analysis, the state's role should supplement that of the market by creating economic policy additionality. In this case, it entails a delicate balance between risk appetite and yield requirement and significantly more than the funds' investing their entire capital bases. If the state wants to be an actor in fields/phases where private players are not active, the risks are higher. The yield requirement must then also reflect this. Socio-economic gains are not the same as private financial profits. A focus on maximum yield increases the risk that other players are elbowed aside (crowding out). Pushing aside private players cannot be the state's role, regardless of whether high yields can be achieved.

The market needs a long-term perspective and predictability in order to function well. Short-term state investments and frequent changes to conditions etc. not only risk affecting the appetite of private players to invest, but also make the establishment of competent financial environments difficult. The two pathways discussed below in the section "The intervention's objective" can also be linked to the state's role seen from the perspective of time. The first path is able to support a number of companies in the short-term, while the other path involves the long-term creation of a structure which is able over time to reduce the requirement for policy interventions as the market structure matures.

We also refer to our two first interim reports⁷⁹ and Kapitalmarknadsrådets (the Capital Market Council's) comments.⁸⁰

⁷⁷ See e.g. Large D & Muegge S, (2008), "Venture capitalists' non-financial value-added: an evaluation of the evidence and implications for research".

⁷⁸ Compare the discussion about policy portfolio and reinforcing policy initiative in Growth Analysis, (2013), "Business angels, venture capital funds and policy portfolios".

⁷⁹ Growth Analysis, (2010), "The State and Risk Capital". Growth Analysis, (2011), "Competent capital?—three countries, three attempts".

The venture capital instrument

In terms of policy context, there is great faith in the venture capital instrument. For the right company in the right situation, it can also be extremely effective. However, there is reason to remind ourselves that the financing form is not a solution for the major part of the Swedish business base. It is suitable only for a limited number of companies with very high growth potential. For the overwhelming majority of companies, bank loans are the most important form of external financing. The reasons for this are not only whether an external assessment of the company deems it to have good growth potential or not, but also the wish of many entrepreneurs to retain control of their companies (see e.g. the literature about the “pecking order theory”⁸¹ and “control aversion”⁸²). However, in recent years the financial crisis and more stringent banking regulations have affected financing opportunities for companies. But increased loan financing difficulties are not solved by an increased supply of government venture capital, but rather through a review of the lending market and perhaps by considering new instruments, e.g. loan guarantee schemes.

Venture capital should not be regarded as a substitute for bank loans or as a regional policy tool – a way of bucking the economic trend in regions with weak economies. Venture capital is attracted to growth regions, but does not create them. The method description prepared by the four international experts in this field engaged by Growth Analysis, expresses it as follows:

*”Silicon Valley succeeds not because of the amount of venture capital available but, rather, because of the quality of the entrepreneurial firms attracted to the region and their willingness to take external equity finance.”*⁸³

We also refer to the research overview presented in our first interim report.⁸⁴

The intervention's objective

Initially there was a relatively high degree of uncertainty regarding the intervention's explicit objectives. What were the funds expected to actually achieve? How should they be assessed? The objective formulation of “revolving capital” implied significant yields, while terms such as “early stages” and “market complementary” directed thinking more toward risk-taking and a presence in market segments where private players were lacking. The funds had also to promote improvements in the function of the regional capital supply structure. It was unclear which structures, as was the manner in which the funds should contribute. Add to this, horizontal requirements regarding the environment, equal opportunities and integration. The funds were also restricted geographically and only allowed to invest within their own fund area, usually a NUTS 2-region.

Because every investment must take place together with a private co-investor⁸⁵, the funds were entirely dependent on private capital. In the preliminary studies carried out, said

⁸⁰ As of 2011, Growth Analysis is tasked with running a “Kapitalmarknadsråd” (a “Capital Market Council”). The overarching purpose of the council is to bring competence and experience of the capital market's appearance and development to the agency, especially in respect of SME access to capital. For the Capital Market Council's comments referred to above, visit the Growth Analysis website (link).

⁸¹ See e.g. Myers S C & Majluf N F, (1984), “Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have”.

⁸² See e.g. Cressy R, (1995), “Business Borrowing and Control: A Theory of Entrepreneurial Types”.

⁸³ Murray G, Cowling M, Mason C & Maula M, (2015), “Methodologies for an Interim Evaluation of the Swedish Regional Co-investment Funds (CIFs)”, page: 39.

⁸⁴ Growth Analysis, (2010), “The State and Risk Capital”.

⁸⁵ Maximum 50% public financing and investments otherwise under the same conditions.

capital was considered to be in short supply and as such was an argument for the initiative itself.

A relatively exhaustive discussion regarding objectives was held during the intervention's first year with the aim of attempting to clarify the expectations and restrictions the fund projects encountered. Ultimately, a model of the intervention programme logic was developed as a result of the discussions reported in section 1.4, Figure 2. In simple terms, two “pathways” were identified, one which involves expectations of growth in the companies where investments have taken place and one with expectations of an improved regional capital supply structure (risk capital structure). Even though this was an advance, considerable uncertainty remained, more precisely about what was expected of the funds, how to prioritise between the two and the actual meaning of the structure concept, etc. As a consequence of this, different regional interpretations arose about what could be expected of “their” fund.

We might add that a proposal for a developed version of an intervention logic in respect of “path 2” – the regional risk capital structure – has been drawn up as part of the work on this report (see section 5.1, Figure 3).

The *lesson learned* from this is the importance of investing in a well-thought-through intervention logic at the very early stage.⁸⁶ The resources required for this may be shown to provide the greatest yield in the policy initiative.

Contextual differences

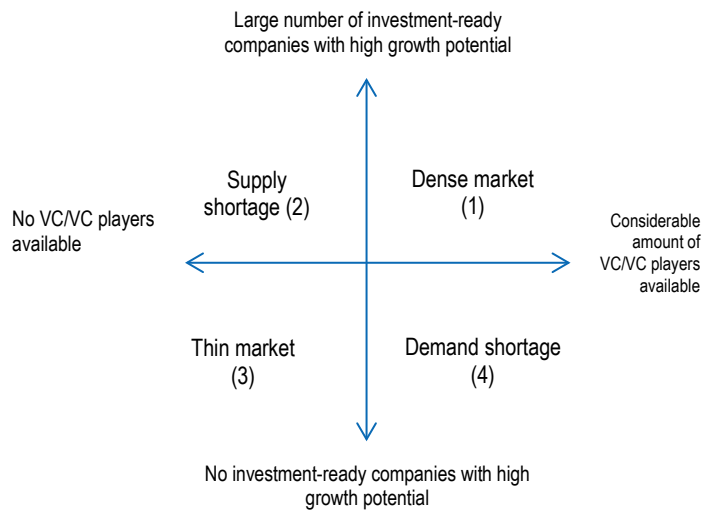
Sweden is a long, elongated, country. The structure of its economy, population and access to universities are examples of factors that vary markedly within the country.⁸⁷ So do the conditions for venture capital financing, as confirmed in e.g. Chapter 5. However the regional venture capital funds constitute a uniform initiative. The funds in all eight NUTS 2 regions (covering the whole country) have the same toolbox and same rules of play.

Here we would like to refer to Figure 2 in section 2.1, i.e. the matrix that provides a schematic description of the venture capital market's function.

⁸⁶ See e.g. Funnel S C & Rogers P J, (2011), *Purposeful Program Theory*.

⁸⁷ See e.g. the recurring report “Regional tillväxt” [“Regional growth”] from Growth Analysis that illustrates such differences from a number of perspectives.

Figure 2 Schematic capital supply structure



The eight regions cover everything from Sweden's capital city to regions whose sparse populations are their predominant feature. The difference this makes to the number of companies, financiers, research institutions, advisors and other relevant players is naturally great. In other words, regional venture capital funds all operate according to local conditions.

The *regions* should thus wind up in different quadrants in our matrix depending on their initial circumstances. *The intervention* is heavily supply oriented and thus implicitly directed toward the conditions shown in quadrant 2 (Supply shortage). It is obvious that regions within, or close to, quadrants 3 or 4 will require more than an increase in supply of venture capital to develop the market.⁸⁸ It is debatable whether the fund(s) within or close to quadrant 1 (Dense market) have any need of state interventions at all.

In the opinion of Growth Analysis, policy instruments will be more effective if they take contextual differences into consideration. Accordingly, we point out a number of proposals in this regard in the section 6.3 below.

We also refer to the discussion in our first two interim reports.⁸⁹

Collaborative policy initiatives

It is somewhat surprising that the relatively large investment in regional venture capital funds appears so isolated from a policy instrument perspective. It would seem likely that structured, complementary initiatives to promote both the supply and demand sides would have improved conditions for the actual financing initiative. To benefit from policy interventions, we need to regard them as part of a cohesive, interrelated, system and not as separate, isolated, measures.

Concrete examples of such initiatives might include promotional activities for business angels/business angel networks, the establishment of venues where players from both the supply and demand sides can meet, starting regional programmes with the objective of

⁸⁸ E.g. competence raising initiative on both the supply and demand side (Investor readiness/Investment readiness, promote business angel network, promote the establishment of relevant meeting arenas).

⁸⁹ Growth Analysis, (2010), "The State and Risk Capital". Growth Analysis, (2011), "Competent capital?—three countries, three attempts".

improving the investment readiness of companies, improving their knowledge of various financing instruments and developing the companies' ability to present their business plans.

We also refer to our second interim report with examples from e.g. Scotland and our third interim report in which business angels, promotional policies and policy portfolios were discussed.⁹⁰

Access to data

Stable data is necessary to accomplish the follow-up and evaluation assignment. In connection with earlier evaluations and follow-up within the initiative, observations about the shortcomings and differences between the funds in these respects have been noted by both Growth Analysis and ongoing evaluation consultants, Ramböll. Relatively large improvements have taken place in the dialogue over time, but inadequacies still remain (see e.g. section 6.1 in Background Report 1). In the opinion of Growth Analysis, it is *extremely important* that this be secured before stage 2 of this intervention. In the case of future initiatives, we suggest the issue of data supply to be discussed early. In principle, the evaluator's data requirement should be seen as a baseline value – a non-negotiable part of publicly funded policy initiatives.

Evaluation process

This evaluation assignment has covered an unusually long period of time since the start in 2009 and this report, slightly more than six years later. Growth Analysis sees several gains with the setup.

The longer time horizon provided us with the ability to participate in a great number of progress meetings together with the managing agency and the regional funds, which afforded us a significantly higher level of contextual understanding than had been the case if we joined *ex post*. Interim reports and frequent contacts with academic expertise enabled us to delve deeper into sub-areas we considered relevant. We were also able to disseminate such experience to the intervention's stakeholders in informal contexts along the way.

The initiative has also involved a good collaboration with the ongoing evaluation consultants (Ramböll).⁹¹ Growth Analysis feels that our two parallel assignments complemented each other and were mutually beneficial.

6.3 Recommendations and future studies⁹²

Growth Analysis recommends that the formulation of the initiative's objectives be reviewed and clarified and that fully developed intervention logic are created. Key questions such a review might ask include: is the objective to promote a number of growth companies *or* the long-term development of regional risk capital markets?; Is the most important aspect a high yield to enable the funds to revolve *or* should it seek to complement the market and avoid crowding out private players?; Should the funds be seen as strictly venture capital players *or* as broader regional development players?

⁹⁰ Tillväxtanalys, (2011), "Kompetent kapital? – tre länder, tre försök" [Growth Analysis, (2011), "Competent capital – Three countries, three attempts?" and Tillväxtanalys, (2013), "Affärsänglar, riskkapitalfonder och policyportföljer" [Growth Analysis, (2013), "Business angels, venture capital funds and policy portfolios"].

⁹¹ Ramböll is procured by the managing agency *Tillväxtverket* for close, ongoing follow-up.

⁹² No technical or legal aspects of the recommendations have been considered.

Based on Growth Analysis' total experiences from this policy initiative, we see three conceivable future alternatives: (i) continued activity much the same as today; (ii) refining the intervention to become strictly venture capital financing, and (iii) modifying the intervention contextually.

In our role as evaluator, we recommend the selection of alternative (ii) or (iii) (depending on political preference). Regardless of the way forward selected, we recommend that the principles regarding co-investment and market-complementing initiatives in early phases remain, together with a realistic yield ambition (which reflects the motive behind the government intervention).

Instrument design – three conceivable paths

Path 1: No changes

Alternative 1 means that the policy initiative continues to be run with regional funds, with one fund per NUTS 2 area. This alternative also means that the partially unclear and contradictory objectives remain along with hopes for growth in the portfolio companies, an improved regional capital supply structure, a yield level that allows revolving capital and a high risk appetite, and an execution in which co-investments and market-complementing activities are cornerstones. In fact we feel that Almi Invest, through the regional funds, will do a good job *within* the framework that would then exist. The benefits derive from the model's having become well established and well known in the market. On the other hand, we feel that the unclear objectives and contextual blindness that would continue to apply would mean worse conditions for efficacy than alternatives 2 and 3. The volume and quality of deal flow would vary considerably between the regions, certain investments would be carried out where regional development ambitions form part of the underlying decision data and some of the funds will not have the tools they actually need to achieve the objectives.

Path 2: Narrower assignments

Alternative 2 means that the policy intervention's objective is reformulated to only apply to *growth in the portfolio companies*. There should thus be no ambition to act for structural improvements or regional development. However, because these tasks continue to be important, they should be carried out by another player. In this case, we also propose that the number of funds be severely limited. The precise design can be discussed, but one alternative would be two funds, one North and one South; another alternative would be a single nationwide fund with local offices at three or four places around Sweden.

The benefits would include focused assignments, less administration, an improved deal flow and probable opportunities for higher yields. The disadvantages are that the initiative would probably not reach the entire country and that the impact of initiatives aimed at structural improvements would only be indirect (through the actual investments).

Collaboration with other players is necessary if direct structural improvement initiatives are carried out from outside the funds. The market-complementary approach will be more difficult to maintain and will require significantly greater attention to be paid toward crowding out effects where geography and selection methods increasingly resemble those of the marketplace. In this case, the role of the state must be very clearly defined.

Path 3: Contextually adapted initiative

Alternative 3 means that the precise assignment and toolbox are not identical for all NUTS 2 areas. The initiatives *are adapted to prevailing regional circumstances* and explicitly allowed to vary between a strict venture capital instrument and a broader, more development-oriented instrument depending on the maturity of the regional capital supply market. In concrete terms, certain regions where the capital supply market is deemed “thin” might e.g. include established collaboration with other financial players together with initiative to develop both the supply and demand sides. Conversely, in markets that are “dense”, there will be no requirement for structural improvement initiatives. The need for government, market-complementary, financing initiatives in the most mature areas may also need to be discussed.

The part of the intervention logic that refers to the “second path” (see section 1.4) in the programme period from 2007 to 2013 will thus require development and clarification with concrete objectives and expectations. Regional current situation and needs analyses need to be prepared, e.g. in dialogues between the management agency and regional players within areas like capital supply and growth/development. The need for market development initiatives in each region can be determined based on these dialogues. One manageable method might be a grouping of regions into two or three categories based on the regional analyses. The proposal also means that some of the funds will require resources over and above the current level of management fee in order to accomplish their structural improvement assignments. A comparison can be drawn with Norway where the regional seedbed funds enjoy different conditions than the national funds as a result of a different capital supply structure.⁹³

The benefits are a low risk of crowding out private players, improved abilities for each fund to adapt its working methods to prevailing circumstances and thus increased opportunities to develop the regional venture financing structure over the long term. The disadvantages are the need to determine the maturity of regional markets, a requirement for more players to collaborate, probable lower yields and expenses incurred for the funds tasked explicitly with structural improvement assignments.

Future evaluations and studies

In 2015, Growth Analysis was commissioned by the government to begin an evaluation of financing instruments under the EU Structural Fund Programme 2014 – 2020. As previously touched upon in section 6.1, we intend to carry out the three below-mentioned assignments as part of this commission.

Follow-up study

Initial investments under the policy intervention were allowed to continue until 30/09/2015. This final evaluation is thus extremely early. It was carried out at a time when the available data was not of the scope and quality to allow any real conclusions to be drawn regarding the impact assessment. Only investments carried out up until the end of 2012 could be observed due to time lags in registered data, while the exposure period for the investments included is extremely short, in some cases just one year. The number of

⁹³ In comparison with the Norwegian “landsdekkende” (“nationwide”) funds, the “distriktsrettede” (“non-urban”) funds receive a contribution to the administration costs, a broader investment profile, a higher proportion of government capital and lower government loan interest. Interview with S. Jodal, Investment Director, Innovation Norway (2015-12-07).

portfolio companies in which impact can be measured following a four-year exposure period is no more than 13, which also means individual companies have a great impact.

Accordingly, Growth Analysis intends to revert in 2018 with a follow-up study.

Regional structure for venture financing

Chapter 5 and Background Report 2 discuss the regional structure for risk finance from the standpoint of its component parts, opportunities for change and outcomes. Growth Analysis feels this to be an area of interest that requires method development and deeper analysis even without regard to the regional venture capital fund initiative itself.

Accordingly, we intend to revert with a special report concerning this.

Exit

At the time of writing, the investments in the initiative means that the Swedish state has participations via the regional funds in just under 300 companies around Sweden. Further investments will take place in round two, which has just begun. Thus far the funds have carried out around 50 exits. There is every reason to believe that the exit issue will play a significant part in the future of the initiative. If the initiative is to function in the long-term, it is not enough just to invest, it also requires strategies and above all interested follow-on investors (buyers) in order for participations to be divested.

Accordingly, we intend to revert with a special report concerning this.

We should mention that these studies are also addressed in the evaluation plan that Growth Analysis reported in compliance with the 2015 appropriation directions (ref. no. 2015/17).

References

Chapters 3, 4 and 5 are based chiefly on the two background reports. Source references in the background reports have not been repeated in the chapters concerned but can be found in their entirety in the background reports. In respect of Chapters 3 and 4 we refer therefore to Background Report 1, and for Chapter 5, to Background Report 2. (However, the two background reports are only available in Swedish). In some cases, Growth Analysis has carried out its own calculations or has used sources not mentioned in the background reports. In these cases, references are made in the normal manner in the text in the chapters concerned and the full sources are listed below.

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- IFDB, Growth Analysis (individual and business database; a longitudinal micro database that covers all individuals, companies and workplaces in Sweden).
- MISS, Growth Analysis (information about state support to businesses).
- Ramböll/the fund projects (web portal for investment data).
- Labour statistics based on administrative sources (RAMS) and Structural business statistics (FEK), Statistics Sweden.
- Venture capital database, Growth Analysis. The statistics are based on data from SVCA (the Swedish Private Equity & Venture Capital Association).
- SVCA/Invest Europe (Special data processing of exit structures and private VCs). Sten Tärnbro, Analyst, SVCA, 25/02/2016.

Interviews

- Stein Jodal, Investment Director at Innovation Norway (07/12/2015).

The Swedish Agency for Growth Policy Analysis (Growth Analysis) is a cross-border organisation with 60 employees. The main office is located in Östersund, Sweden, but activities are also conducted in Stockholm, Brasilia, New Delhi, Beijing, Tokyo and Washington, D.C.

Growth Analysis is responsible for growth policy evaluations and analyses and thereby contributes to:

- stronger Swedish competitiveness and the establishment of conditions for job creation in more and growing companies
- development capacity throughout Sweden with stronger local and regional competitiveness, sustainable growth and sustainable regional development.

The premise is to form a policy where growth and sustainable development go hand in hand. The primary mission is specified in the Government directives and appropriations documents. These state that the Agency shall:

- work with market awareness and policy intelligence and spread knowledge regarding trends and growth policy
- conduct analyses and evaluations that contribute to removing barriers to growth
- conduct system evaluations that facilitate prioritisation and efficiency enhancement of the emphasis and design of growth policy
- be responsible for the production, development and distribution of official statistics, facts from databases and accessibility analyses.

About the Report series: Growth Analysis' main channels for publications.

Other series:

Statistics series – continuous statistical production.

Svar Direkt [Direct Response] – assignments that are to be presented on short notice.

Memorandum series – some examples of publications in the series are method reasoning, interim reports and evidential reports.

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