

Report

The need for government supported capital measures in the market for early stage risk capital in Norway

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Leo A. Grünfeld, Lisbeth M. Iversen and Gjermund Grimsby



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SUMMARY

Overall assessments

This report contains a survey of demand and supply in the market for early stage risk capital in Norway. We specifically aim to identify whether there is a need for government supported investment vehicles to overcome market imperfection. For the earliest stages (seed stages) there is now a clear and increasing shortage of risk capital for funding projects with a high growth potential. In the more mature segments, later stage venture and expansion, it is not equally clear that the market is unable to match demand with sufficient amounts of capital supply. The Norwegian venture capital industry focusing on these later stages is relatively well developed and shows a clear pattern of recovery after a severe downturn during the financial crisis. The seed segment however, does not appear to recover, and there is no reason to expect that other sources of capital supply are able to fill this void. The number of government support schemes directed towards early stage companies is large in Norway. However, outside the most peripheral areas of Norway, the size of these measures in terms of capital is highly limited. We claim that there is a clear need for establishing new support measures that are able to follow potential high growth firms over a long period with significant amounts of equity capital.

The demand for early stage project funding in Norway

The demand for early stage capital in a country is a wide and complex subject that needs to be studied with care. In this study, we are focusing on early stage companies that display a potential for strong growth and that could be considered as investment cases for private and public sector investors, like seed and venture funds. It is outside of the scope of this study to discuss the demand for early stage funding among firms that are predominantly structured as small companies with limited earnings and growth potential. Notice though that such companies strongly dominate the pool of newly established as well as old small firms. Our survey of demand for early stage project funding in Norway is based on the approaches outlined below.

- **The number of start-ups with growth potential:** During the period 2006-2008, close to 80 000 firms were established in Norway. The vast majority of these firms are not expected to become high growth companies. We have identified 1600 (2 % of all start-ups) potential high growth start-ups during this period. The selection requires that such firms must show operational deficits exceeding 1 million NOK after two years and that they belong to industries that tend to produce high growth forms. The selection criterion is indicating that the start-up is actually investing in development. It is a strict criteria but it is highly compatible with the patterns of firms that enter the portfolios of seed funds and other professional early stage investment agencies.
- **The number of potential cases in the later stage venture and expansion segments:** Based on characteristics of firms that are selected into the portfolios of Norwegian venture capital and expansion funds, we have identified approximately 1800 venture cases (1 % of all active firms) and 3500 expansion cases (1 % of all active firms). Venture cases must have operational revenues and display substantial growth and negative as well as worsening profits. Expansion cases must be of a certain size and display strong long term growth and improving profits over the last 5 years.
- **Firms approaching early stage venture funds, TTOs and incubators (deal flow numbers):** Base on a survey covering 53 funds, TTOs and incubators, the deal flow number in 2010 reached 4700 cases. Approximately 1800 were considered by the agencies, while 257 entered into the portfolios. 31 of them entered into seed fund portfolios.

- **Start-ups in TTOs and incubators in Norway:** Another set of indicators of demand for early stage capital is derived from the number of early stage projects in the portfolios of Technology transfer offices (TTOs), incubators, research parks and industrial parks in Norway. Overall, approximately 300 companies were established in the TTOs with funding from the Research council of Norway (FORNY-program) during the period 1995-2008. These firms are normally technology intensive and require substantial supply of capital in order to succeed. The number of project that has links to incubators, research parks and industrial parks in Norway exceeded 1200 in 2009. These companies are more heterogeneous and a large share of them is not necessarily potential high growth firms.
- **Changes in demand since 2007:** The demand for early stage capital funding is strongly affected by the business cycle. High economic growth triggers a larger number of startups while start-up activity is strongly dampened in periods of recession. For instance, from 2007 to 2008, the number of potential high growth start-ups fell by 25 percent. At the same time, companies starting up in periods with low growth often tend to demand more external capital since own capital resources from entrepreneurs are more limited. Consequently, the overall demand for external capital among early stage projects may not be reduced although the number of cases falls.

The supply of early stage project funding in Norway

Our survey of early stage risk capital supply in Norway splits sources of supply into three groups: Equity capital, loans and government supported capital schemes. As to the last group, government support schemes may overlap with the loans since the government offers support through supply of subsidized loans.

- **Supply of equity capital:** We have investigated alternative sources of equity capital supply in Norway, covering entrepreneurial capital, business angel capital supply, capital through seed and venture funds, and finally capital through professional investment companies and larger corporations (corporate venture capital). Among the start-ups that we have identified as potential high growth companies, entrepreneurs provide a substantial amount of capital as start-up capital (median = 250.000 NOK). Nevertheless, amount of capital is clearly small in light of the large operational deficits these firms face during the first years.

Business angels often provide capital to such companies in the early phase. In Norway, there are approximately 2500 business angels who have invested in 4500 companies. However, many of these companies are not typical high growth companies. Among the 1600 high growth companies we have identified, only 5 percent had funding from business angels.

Seed and venture funds normally tend to supply capital to firms that are slightly more mature, yet the seed funds may also involve in firms from the very start. Norwegian seed fund capital is now almost non-existent as most of the seed funds have moved out of the investment phase, and are now in the follow-up phase. In 2006, 7 % of the potential high growth companies received capital from seed funds. In 2008, the figure was down to 1 %. In both a Nordic and European context, the supply of seed stage capital in Norway is now severely low.

Capital supply from later stage venture funds is now slowly recovering after three years of strong reductions. The Norwegian venture capital industry is relatively well developed and seems to be able to recover from the financial crisis. This is opposed to what we see in Sweden where such capital is still hard to find.

A more common form of professional ownership is found among professional investment companies and larger corporations owning portfolios of early stage firms. In 2009, 7.5 % of all companies in Norway were

owned by such agents. Among the potential high growth companies, 25 % had this form of ownership, indicating that such professional agents play a very important role in supporting early stage firms and projects with capital.

- **Supply of loans:** Firms with a high growth potential often need substantial external capital in order to invest in growth. Early stage firms normally lack the ability to attract loans since the risk too high for banks and there is a substantial lack of collateral. Nevertheless, in our group of 1600 potential high growth firms, the median debt-ratio was 12 %, substantially higher than in start-ups that are not potential high growth cases. This tells us that loan capital is a potential source of capital for some of these firms, but that it plays a marginal role as compared to equity capital.
- **Supply through government support schemes:** There exist a relatively large number of government support schemes focusing on early stage companies in Norway. We have surveyed relevant schemes under Innovation Norway, The research council of Norway and SIVA. For instance, 191 out of 1600 potential high growth projects (12 percent) received funding from the innovation Norway programs. Although the number of measures is significant and the coverage rate is relatively high, the amount of capital allocated to such firms (except for the most peripheral regions) is highly limited. Moreover, except for a few measures, the flexibility of the instruments is low, reducing the relevance of many of the schemes.

Market imperfections

The argument for government intervention in the market for early stage capital rests on the existence of market imperfection. In other words, there are structural weaknesses in this market so that the market itself is not able to provide the correct amount of capital. Access to private capital to the earliest stages is highly limited in Norway and far less than what is optimal. The main reasons for this is related to

- **Asymmetric information:** It is systematically complex for investors to assess the quality of a project that is in its earliest stages. Also, the entrepreneur has strong incentives for presenting the project more favorably than what is reasonable. Hence, investors tend to avoid the earliest stages.
- **Knowledge externalities:** Innovative companies that invest large amounts of capital and other resources into costly R&D projects most often contribute to the further development of a common knowledge pool that other firms and institutions may gain from over time, without necessarily paying for using the knowledge. Such spillover effects are normally termed positive knowledge externalities and they contribute substantially to economic growth, although the investor himself does not gain from it in terms of private revenues. Because externalities provides society with gains that are not accounted for by private investors, the government has an incentive to support such activity, regardless of whether the innovator is an early stage company or a large corporation.
- **Risk aversion:** Private investors don't like risk. If it is risky, they require substantial compensations in terms of expected returns on the investments. Strong risk aversion means that many early stage projects are not funded, due to risk. Consequently, many projects that may be profitable both for investors and society as a whole will not see daylight. The government however, may not worry much about risk as long as the expected returns on the whole portfolio of government investments carries a sufficiently large expected return.
- **Recessions and flight to safety:** During recessions, the most risky asset classes always suffer the most since investors become increasingly risk averse. This pattern is notoriously affecting the early stage segment, and although the demand for such capital is dampened in periods of low growth, demand is by no means

matched by sufficient amounts of capital supply. Hence there is a strong argument for government intervention during business cycle troughs as market imperfections are strengthened during these periods.

Designing government measures to enhance early stage investment returns

Although there is clear need for government support correcting for market imperfections in the market for early stage capital, there are significant problems relating to how measures are to be designed in order to solve the market imperfections. The track record of Norwegian as well as European seed funds with public support has so far not been convincing, at least in terms of returns, hardly reaching positive returns on average. This is due to how the funds are structured and designed. We point out that previous seed funds in Norway to a certain extent lack the ability to satisfy three core criteria for success. Three core criteria for success:

- **Ability to follow the ventures all the way to exit.** Early stage investment vehicles always experience that the few successful cases they invest in, require long and costly investment paths. Consequently, the investment mandate cannot be too rigid with respect to how much one can invest in one specific case. Too strict limitations on the allocation of capital to each portfolio company will reduce the fund's ability to follow up projects that often require substantial investment in the later stages. As a consequence, the funds will obtain a reduced earnings potential, driving down the attractiveness of private investments in the fund. This aspect has been thoroughly documented in this study, showing that funds focusing on seed investments to a large extent have the same investment needs as a start-up fund. Partly, this is a result of seed funds not being able to hand sell equity before a complete exit or an IPO is reached. Most funds of this type experience that new investors require that the fund remains in the portfolio company as an owner equally long. Partly, this problem can be solved by establishing larger funds that allow more capital behind each successful case. Funds in Norway that report high returns and at the same time focus on seed investments are often operating in several segments, allowing for both seed and start-up investments. This way, funds establish a healthy combination of maturities in the portfolio, which also appears more attractive to private investors. This brings us to the second criterion.
- **Attracting professional private co-investors:** The ability to successfully select good early stage cases as well as the ability to follow up the ventures and finally exit them, is strongly linked to the quality of co-investors. Most notably, it appears to be important to bring in industrial players that know the technology, the market and the potential new owners of a venture. The ability to attract such owners as limited partners in seed funds is strongly related to the fund's ability to alleviate risk through government risk absorption. Present programs for risk reduction in existing seed funds appear highly moderate, amounting to no more than 1 percent of potential losses per year. Hence risk reduction must be designed in order to attract such investors.
- **Competence of investment team:** The investment manager teams must cover a large set of specialties: Selection competence, financial competence, industrial competence, entrepreneurial competence and exit competence. Experience from research shows that larger and more experienced teams tend to outperform smaller and less experienced teams. In order to ensure sufficient investment competence, it is required that funds are sufficiently large and significantly larger than what we have seen in previous seed funds in Norway with government support. Larger funds are able to raise a larger and more experienced staff. Also, funds that may invest in both seed and start-up may appear more attractive for experienced fund managers, raising the probability of positive returns and attracting more private investors.

1. INTRODUCTION

This report contains a study of the need for government supported capital measures in the marked for early stage project funding in Norway, also termed risk capital market. The study is conducted on behalf of the Norwegian Ministry of Trade and Industry by MENON Business Economics. It is based on a large empirical material covering the population of early stage firms in Norway and private and public suppliers of risk capital. Furthermore, we provide a discussion on whether there is a shortage of capital directed towards early stage project. The report also contains a separate section covering information on early stage capital market conditions that form the basis for determining the need for public sector capital support measures in reference to the EU/EEA state aid guidelines on “State aid to Promote Risk Capital Investments in Small and Medium-Sized Enterprises”.

According to these guidelines, risk capital relates to the equity financing of companies with perceived high-growth potential during their early growth stages. Consequently, demand for risk capital is linked to two properties; the early stage of a company and a high growth potential. The two properties defining this market are generally hard to identify. What do we mean with early stage and how is it possible to identify projects with a high growth potential. To a large extent, these two questions form the core problem in designing policy measures with the ambition of reducing market failure in the market for risk capital.

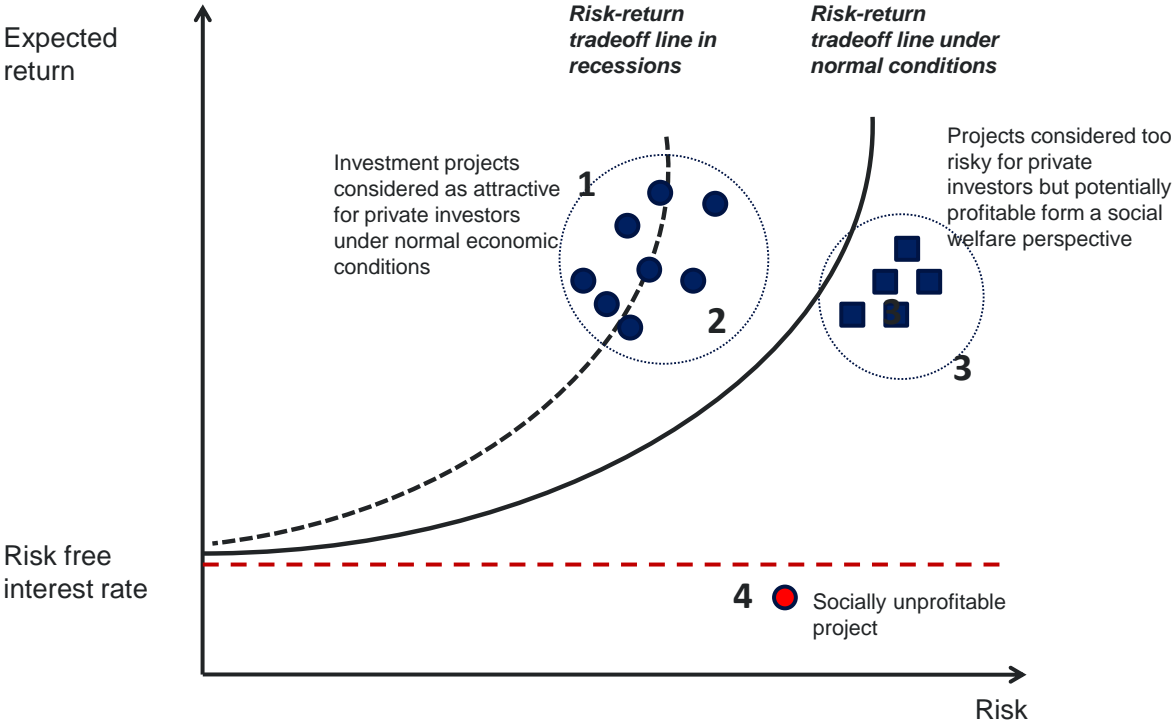
Clearly, most early stage companies are not heavily dependent on access to substantial amounts of capital for early stage investments. The vast majority of start-ups and young firms are either low on activity and ambitions or highly labour intensive. A large part of them are providing labour intensive services with a relatively low growth potential. In such companies, lack of risk capital is a less relevant subject. Furthermore, many of the young companies with a high growth potential are strongly linked to industrial players or holders of private fortunes that supply the company with the capital needed. Notice that a large proportion of early stage high growth companies originate from or are strongly linked to larger firms and private/industrial investors, often as industrial spinouts. In some cases, even these companies are in short of capital, yet the most common case where there is a lack of risk capital is where the company to a larger extent is a stand-alone case. The typical case here is the science based start-up with few links to industry. In light of this important reflection, this report looks deeper into the role of ownership in early stage companies, specifically identifying supply of equity from different types of owners like entrepreneurs, business angels, industrial players, professional investors, venture funds etc. From a research perspective this population based exercise is unique as no other research institution hold a database covering information on ownership types and characteristics in all companies in a nation.

The seed and venture capital industry has received strong attention as an important source of capital in the risk capital market. In this report, we devote a lot of attention to this type of capital, particularly focusing on the seed stage. We describe the presence, structure and investment strategies of these funds in Norway, and compare central characteristics of this industry to other countries in Nordic region as well as selected other European countries. We follow the developments in fundraising, investment and capital available for future investments over the period 2007 to 2010, a period marked by a strong financial crisis with a substantial cut in private sector investments directed towards the risk capital segment.

The question of whether there is a need for government supported risk capital measures can only be answered by identifying market failure in the risk capital market. Market failure may result from strong information asymmetries between investors and entrepreneurs, by the failure to account for knowledge externalities from

innovative start-ups driving up the social benefits from the investment, and finally by excessive risk aversion resulting in investor flight from the risk capital market. The problem of allocating optimal amounts of capital to the more risky segments is strongly enlarged in recessions and periods of low economic growth. Hence, a mapping of the role of imperfections in this market is strongly tied to the cyclical pattern of the economy. From an economics perspective, this is an interesting aspect as market failure predominantly is studied from a structural perspective and not from a macroeconomic business cycle perspective.

Figure 1: Illustration of the risk return tradeoff and the role of government capital support



In the figure above, we have illustrated how the market for risk capital works according to the tradeoff between risk and expected returns. The investment projects in group 1 and 2 provide the investor with sufficient returns to justify the high risk. Projects in group 3 carry a too high risk for private investors, yet for a risk neutral investor, the returns exceed the risk free interest rate and are thus sufficiently high to justify investments. Projects falling into group 4 do not reach the risk free returns and should under no circumstances receive capital. Ideally, the government may stimulate private investors to invest in projects with higher risk given that they provide an expected return that exceeds the risk free interest rate, yet among all these projects, stimulus should be given to those projects that provide the highest expected returns. In a situation where risk aversion is increased, which is the case in economic downturns, the companies that run projects that fall into group 2, will not be able to attract investments from private investors. On the margin, these projects are the best projects falling outside the private risk capital investor’s focus, and should fall into the focus of government stimulated programs for early stage investments with a high growth and earnings potential.

Due to high risk, investors in the early stage risk capital market require high expected returns. Consequently, funds focusing on the seed stage are particularly concerned about the expected returns in potential investment cases. Nevertheless, the returns and track record of most European seed funds over the last 20 years are not impressive, and many of these funds have been supported through government support programs. It is

highly important to realize that although there exists a need for government intervention in the market for early stage risk capital, government support programs will not help unless they are designed to efficiently alleviate the problems. As outlined by Lerner (2010), the history is full of government programs directed towards entrepreneurship where the intention is good but the effect is ignorable. In this report we describe some of the experiences on organizing early stage investment vehicles drawn from previous evaluations of seed funds in Norway. More specifically, we discuss the role of the size of funds and their management teams, the role of limitations on their investment mandates and limitations on investment size and tranches.

1.1. MAIN OBJECTIVES AND THE STRUCTURE OF THE REPORT

The three main objects of this study is to

1. Map and describe the market for risk capital funding in Norway (seed, start-up and expansion), and by that both describe the demand and supply side of the market.
2. Give an assessment of the expected future development in the market.
3. Provide a consideration for the need of public intervention in this market – in order to secure sufficient funding to knowledge intensive and innovation driven companies, predominantly in the seed and start-up phases.

The study is divided into three separate parts. In part one, we discuss the demand for and supply of risk capital among early stage companies in Norway. We also provide brief evidence regarding expected future developments in the market. Part two contains a detailed outline of the structure and functioning of the risk capital market in Norway, specifically dealing with the more detailed questions that form the foundation for EFTA Surveillance Authority (ESA) considerations on state aid¹ regulations in this market. Some of the material in part two may appear as a repetition from part one. This is due to the fact that many of the subjects raised by the EU/EEA state aid guidelines on “State aid to Promote Risk Capital Investments in Small and Medium-Sized Enterprises” are directly linked to the mapping of demand and supply of early stage risk capital. In part three, we provide a discussion of the existence and size of an “equity gap” in the market for early stage risk capital. Moreover, we relate this discussion to a consideration of existing market failures in all segments within the venture capital market. This discussion is used to provide a mapping on whether there is a need of public intervention in this market in Norway. Finally, we draw some conclusions on how to intervene in the early stage risk capital market, suggesting a policy design that contributes to increase the likelihood of commercial and technological success among early stage companies with a high growth potential.

1.2. SOME DEFINITIONS REGARDING THE MARKET FOR RISK CAPITAL

The market for early stage risk capital consists of projects or companies operating in different stages, from the earliest stage of formulating a concept or a potential technology to the stage where a product or a service is well established in a market, yet where additional markets are explored. It may take 10 years or even more from the earliest to the latest stage within this market. In principle, we are talking about different worlds for investors with widely deviating risk considerations. When analysing this market, it is important to be clear about what kind of projects we talk about. Notice though that definitions are not used consistently in the literature or between different agencies. Hence, we need to clarify this matter.

¹ “State aid to promote risk capital investments in small and medium-sized enterprises”

² Considered - used at least one day to consider investments

According to the EU (2006), the market for early stage risk capital (often also named venture capital) can be divided into three distinct groups based on the phase the firms are operating in: seed, start-up and expansion. EU gives the following definitions:

- 1) “seed capital” means financing provided to study, assess and develop an initial concept, preceding the start-up phase;
- 2) “start-up capital” means financing provided to companies, which have not sold their product or service commercially and are not yet generating a profit, for product development and initial marketing;
- 3) “expansion capital” means financing provided for the growth and expansion of a company, which may or may not break even or trade profitably, for the purposes of increasing production capacity, market or product development or the provision of additional working capital;

“Venture capital” means investment in unquoted companies by investment funds (venture capital funds) that, acting as principals, manage individual, institutional or in-house money and includes early-stage (seed and start-up) and expansion financing.

Notice that the EU-definitions are relatively similar to the definitions applied by the European Venture Capital Association (ECVA). Yet, EVCA operates with the term later stage venture and growth capital, where later stage venture may be interpreted as the more mature end of start-up and the less mature part of expansion

Table 1: European Venture Capital and Private Equity Association’s definition of fund phases

INVESTMENT STAGES	
Seed	Financing provided to research, assess and develop an initial concept before a business has reached the start-up phase.
Start-up	Financing provided to companies for product development and initial marketing. Companies may be in the process of being set up or may have been in business for a short time, but have not sold their product commercially.
Later stage venture	Financing provided for the expansion of an operating company, which may or may not be breaking even or trading profitably. Late stage venture tends to be financing into companies already backed by VCs.
Growth capital	It is a type of private equity investment, most often a minority investment but not necessarily, in relatively mature companies that are looking for capital to expand or restructure operations, enter new markets or finance a significant acquisition without a change of control of the business. As round of financing, growth capital tends to be first private equity backing of the company. Additionally, all investments made by buyout funds into venture type of stages should be defined as growth capital.

More importantly, venture funds often define their investments differently from the EU and EVCA definitions. For instance, seed fund capital is rarely invested in projects that are not formally organised in a company structure. Moreover, most venture funds, not focusing on the seed segment, require that firms already have some commercial revenues. Hence, when fund managers report investment activity to the EVCA or other statistical offices, there is a clear tendency to report more mature companies than what these definitions suggest. There is also an issue on companies moving from one stage to another over time. A seed company may and should develop into a company in the later stages, but unless investors report such changes a seed company may obtain features that closely resemble the features of more mature companies. Hence, in the statistics, some of the companies that are reported as operating in the seed stage are actually now start-up or later stage ventures. Notice also that the term pre seed is often applied in this market. It is predominantly used for projects where the concept or technology is still vaguely defined where the project has not yet been formalized in terms of formal company structure. Pre seed is often used as a term for projects that TTOs and incubators involve in. The seed definitions above are relatively wide and may include pre seed. However, in this report, we only discuss this segment in terms of reflecting the potential demand for seed capital as pre seed cases mature and flow into the seed segment.

In our analysis in part 2 and 3, we have chosen to apply the EVCA definitions, yet the differences from the EU/EEA definitions are small and mostly related to the later stages in venture.

1.3. SOURCE OF INFORMATION USED IN THE STUDY

This study is based on several sources of information that together contribute to improve our understanding of the early stage risk capital market in Norway and how it functions. In addition, we provide information from sources covering the activity in the risk capital markets in other countries.

The main sources of information are listed below:

- NVCA and EVCA (PEREP Analytics) database contains information on all activity (investments, divestments and fundraising by phase) reported by the investment managers in venture funds Norway and the member countries of EVCA. This information is used to study the activity level in Norway by phase and type of activity, deal by deal. The deal by deal information makes it possible to look at the growth rate for the companies receiving project funding. Information from EVCA/NVCA/PEREP_Analytics has also made it possible to compare the venture capital investment level in Norway with other European countries.
- The MENON company and ownership database contains information on approximately 300.000 companies in Norway. The database is used to identify the economic characteristics and performance of portfolio companies in Norwegian venture funds. Moreover, we identify a population of potential seed, venture and expansion cases in Norway from this database, illustrating the demand for risk capital in Norway. The amount of equity capital and loan in companies is also identified to study the use of and need for external funding for firms operating in the early stage risk capital market. We also apply this database to identify supply of capital through different types of investors/owner in the Norwegian economy.
- A survey was submitted to over 160 respondents by email. The respondents consisted of investment managers representing all segments offering venture capital. Respondents also represent executive directors of all Innovation Norway regional offices, managers of TTOs, research incubators, industry incubators, project manager of all cluster programs sorting under the programs Norwegian centre of expertise (NCE) and Arena. The response rate in the survey is an overwhelming 69 per cent. The

survey includes questions about deal flow, capital supply by phase, market outlook and expectations, experience relating to interaction with public supported seed capital and government funded investment companies. The survey also identifies investment behaviour, such as the average level of investment per case, and minimum/average/maximum investments per case, etc.

- Government agency databases covering the funding activities within selected programs of Innovation Norway, The Research Council of Norway and SIVA.

All data is on the micro level, allowing us to merge data from all databases on the firm or fund level. This gives us a unique insight into what role the different sources of capital plays in the market for early stage risk capital.

In addition to the data sources, we have collected and synthesised the literature covering the early stage risk capital market in Norway as well as internationally. This literature is covered in part three.

PART ONE

2. DEMAND FOR EARLY STAGE RISK CAPITAL IN NORWAY

The demand for early stage risk capital in a country is a wide and complex subject that needs to be studied with care. There are very few studies in the literature that gives a good picture of a country's overall demand for this type of capital. Our mapping of the demand side is based on a number of empirical approaches and we have tried to identify the demand side from two different angles – a population approach and a deal flow approach. In the population approach we try to identify a relevant number of early stage firms that may demand capital in order to finance significant investment projects. In the deal flow approach we collect information on the number of firms/projects that investors are confronted with within a certain period of time. The deal flow numbers are clearly based on firms that are searching for capital. In both cases the focus is particularly on early stage companies that display a potential for growth through relatively capital intensive investment projects. Furthermore, the cases could be considered as investment cases for private and public sector investors, like seed and venture funds.

Mapping demand for risk capital is hard, and this is especially so for subsidised capital. Merely asking firms whether they need more equity capital rarely serves any purpose as they mostly will respond with a yes. Way too many mappings of the early stage equity gap is based on such methods. In addition, demand for early stage project funding is basically infinite, given a sufficiently low price on capital. The price is determined by negotiations between business owners and potential investors. Everything else being equal, in theory, the price is determined by trade-offs between expected returns and risk, as outlined in chapter 1.

2.1. POPULATION APPROACH

The demand for early stage risk capital is a function of the number of new establishments and what kind of companies that enters. The population approach is based on mapping of all new Norwegian companies and their development over time. For companies that we define as potential seed companies, we track development during the first two years of their life. For those companies that resemble the characteristics of start-up and later stage venture cases, we follow the companies for a longer period of time

Seed / Start-up companies with potential for growth and need for capital

To study the demand of early stage risk capital among seed companies, we start out with all companies establish between 2006 and 2008. During that period, close to 80 000 limited companies were established in Norway. To narrow the sample down to potential cases for seed investments, we have identified companies with a deficit in operating result below of -1 MNOK or more the second operating year (notice that we only focus on the second year). Such a development path indicates that the firm is starting to engage in a relatively costly investment project as a young company. We have excluded companies and industry groups which are not potential seed or venture investment objects (see box below). The relatively high negative level of operating deficit is chosen because it indicates that the company may have invested in capital intensive technology or knowledge based innovation. In addition, a significant operational deficit increases the probability that the firm is actually searching for capital. It is a relatively strict criterion, but it is highly compatible with the patterns of firms that enter the portfolios of seed funds and other professional early stage investment agencies.

CRITERIA FOR THE POTENTIAL SEED CASE POPULATION

The sample consist of companies established between 2006 and 2008 with more than one million in operating deficit in the second year of operation.

Industries that are excluded from the population is: property and real estate businesses, holding companies, petroleum and gas extraction and production, shipbuilding and oil building platform, hydroelectric power production, shipping, foundations, interest groups, business and labor organizations. These kinds of businesses are not the typical growth companies searching for seed or venture investments.

Out of the 80.000 new establishments, only 1595 companies are fulfilling these criteria. This represents approximately two per cent of all start-ups in the period from 2006-2008. Table 2 show the number of potential investment objects per year. Notice that this selection criterion is relatively strict since many early stage companies that have still not started the development process will be left out of the group. Hence, one may claim that this population leaves out the least mature potential seed companies. However, a population based approach cannot distinguish between companies in such an early stage that have a future demand for capital and those that have not.

In our study of supply of capital in chapter 3, we have mapped all companies in this population that have received capital from business angels, venture funds, other professional investment companies as well as corporations and government support schemes. The mapping clearly indicates that the population is strongly over-represented among firms that receive funding from these agents, indicating that the selection criteria are successful when it comes to identifying what investors regard as early stage companies with a high growth potential.

Table 2: Potential early stage investments objects – sample data (Source: MENON Business Economics)

Year of establishment	Number of observations
2006	535
2007	605
2008	455
Total	1595

In light of the discussion in the introduction on market imperfections and the impact of business cycles, it is particular interesting to consider the how the demand for early stage risk capital changes over time. From 2007 to 2008, we observed a 25 percent reduction, indicating that the recession is clearly affecting the number of cases potentially demanding early stage capital. Notice though that this development may also be triggered by a cut in the supply of such capital as investors flee to less risky assets. Consequently, fewer entrepreneurs are willing to initiate a new project.

Later stage and expansion

It is naturally hard to identify a typical investment object for later stage venture funds and there is a large degree of variation between the venture cases in existing funds.

The number of cases outlined above relates to cases that are typically categorized as seed projects or potentially start-ups. In a study from 2008, MENON (2008) estimated the total number of venture and expansion cases in the full population of firms in the economy. The selection of such cases was based on a thorough mapping of the development paths among firms that are found in the portfolios of venture and expansion funds located in Norway.

The criteria are listed in the box below.

Criteria for being selected into the late stage venture and expansion populations (Menon, 2008)

Late stage venture:

- 3 to 10 years old
- Turnover between 2 and 30 million NOK
- Yearly growth in turnover – minimum 20 percent over the last 3 years
- Negative growth in operating result the last 3 years

Expansion:

- 5 to 20 years old
- Turnover between 10 and 200 million NOK
- Yearly growth in turnover – minimum 20 percent over the last 5 years
- Negative growth in operating result the last 5 years (indicating declining profitability)

Based on these characteristics approximately 1800 venture cases and 3500 expansion cases were identified (1 percent of all active companies in each of the stages).

Table 3: Characteristics of companies termed later stage venture and expansion (million NOK in 2007)

	Value added (Median)	Wage cost (Median)	Turnover (Median)	Number of companies
Venture	2	5	15	1837
Share of all	0.2 %	0.8 %	0.3 %	0.9 %
Expansion	53	25	140	3575
Share of all	4 %	4 %	3 %	2 %

GEM- study on demand for early stage capital

The Global Entrepreneurship Monitor (GEM) research program is an annual assessment of the national level of entrepreneurial activity. In 2010, GEM conducted research in 59 economies worldwide. GEM measures entrepreneurship in an early stage with a survey submitted to a random sample of the population between 18 and 64. They are asked about their plans to do entrepreneurship and involvement in early stage entrepreneurial activities. The GEM study also includes an expert survey from at least 36 experts on the business environment for entrepreneurship in Norway. GEM defines a new business – a business which has existed less than 42 months.

The demand for early stage project funding depends on the development of new business cases and ideas. Higher education level in the population increases the chances of establishing a high growth enterprise.

The environment for entrepreneurship in Norway – demand

Despite of an economy based on raw materials and production of oil and fish, Norway has an innovation driven economy. The innovation driven economies are mostly represented by other Western European countries, U.S., Japan, South Korea, Hong Kong and Arabian Emirates. In an innovation driven economy - no one starts a business because they have to, they do it because of a business idea they want to carry out.

The GEM study shows that a considerable share of the population (250.000 inhabitants) in Norway is involved in early stage entrepreneurship activities. The highest entrepreneurial activity is found within consumer markets follow by corporate markets and industry. The GEM report suggests that it would be a good strategy for Norway to focus more on companies of a certain size and more advanced service companies.

Generally, the ambition level for newly established businesses in Norway are lower than in comparable countries. Thus, GEM suggests that it is important to stimulate ambitions for higher growth. Moreover, one should stimulate the development of new technologies for the business market and new ideas for internationalization. There is a systematically stronger need for external funding among project that operates with such ambitions.

GEM contains some information on entrepreneurial finance relating to firm survival. According to GEM, in 2009, 3.7 per cent of the early stage firms closed down due to financial difficulties. 24 per cent of these closures came as a result of financial losses, while 11 per cent closed down due to lack of project funding.

2.2. DEAL FLOW APPROACH

In the deal flow approach to mapping demand for early stage risk capital, we focus on the growth and development of prospects presented to profession incubators, investment funds and alike. This part of the report is based on data from an electronic survey conducted in August 2011.

We have also added information on the number of start-ups identified in the portfolios of Norwegian technology transfer offices (TTOs), incubators, research parks and industrial parks. The number of start-ups and projects linked to such agencies may indicate the volume of firms with a high growth potential which search for capital. Notice though that the number of project linked to incubators and industrial parks is large and they are highly heterogeneous, indicating that not all are potential high growth companies.

2.2.1. DEAL FLOW – SURVEY DATA

In our survey, investors and venture funds were asked about their deal flow. The deal flow may illustrate the equity gap situation measured in terms of the gap between considered cases and investments. As shown in table 4, the reported flow of new business cases in during the last year sums up to almost 5.000 cases. Managers of venture capital funds faced that largest deal flow. There are several reasons for this. First, they are slightly overrepresented in our survey. Secondly, many of them are relatively large in terms of capital under management. Hence, entrepreneurs know these funds better. Finally, the other types of respondents (TTOs and incubators) have a more exclusive or limited deal flow. Notice that compared to the amount of available capital for investment, seed fund managers face the largest supply of business cases.

Table 4: Deal flow – Supply of business cases in one year

	Sum	Mean	Median	Respondents
TTO	360	72	60	5
Industry incubator	309	28	15	11
Incubator	737	61	50	12
Seed investment manager	720	90	95	8
Venture investment manager	2575	151	100	17
Total	4701	89	60	53

The supply of business cases tells us something about the number of companies wishing to receive project funding, but less about the quality of the deal flow. Therefore the managers were asked to also report the amount of business cases they considered in more detail, initiated negotiations with and in the end invested in. Table 5 describes the difference from the large overall deal flow, all the way down to the number of actually invested cases.

Table 5: Deal flow – From supply of business cases down to invested cases one year

	Available	Considered	Negotiated	Invested
TTO	360	240	108	84
Industry incubator	309	151	26	17
Incubator	737	442	111	54
Seed investment manager	720	285	63	31
Venture investment manager	2575	726	179	71
Total	4701	1844	487	257

Out of the 4.700 business cases forming the deal flow, approximately 1.800 were considered². This brings the deal flow down by 60 percent. When negotiations were initiated the deal flow was reduced to approximately 10 percent. Investments were made in approximately 5 percent of the cases representing the full deal flow. It is important to notice that the share of the deal flow achieving investments is even smaller in the seed and venture funds. Here we are facing a ratio of 2 to 3 percent.

2.2.2. DEAL FLOW – NUMBER ESTABLISHMENTS IN NORWEGIAN TECHNOLOGY TRANSFER OFFICES

In Norway, there exist several public support programs for the development and commercialisation of innovations. The FORNY program is one example. The FORNY program funds Norwegian Technology Transfer offices (TTOs) at universities and large hospitals, thus enabling them to develop research based business idea into companies and licencing contracts. In addition, FORNY is particularly focusing on supporting the work to

² Considered - used at least one day to consider investments

establish proof-of-concept³. In the year 2008, The Forny program contributed to the establishment of 70 approved commercialization, which generated 26 licence agreements and 34 start-ups.

Overall, during the period 1995-2008 approximately 300 companies were established in TTOs with funding from the Research council of Norway (FORNY-program). These firms are normally technology intensive and require substantial supply of capital in order to succeed commercially. LEN (Leiv Eiriksson Innovation) in Trondheim, Oslo Innovation Centre, Bioparken (The innovation centre at Aas) and Campus Kjeller are the TTOs with the highest numbers of start-ups during this period.

Notice that TTOs do not have significant funds available to back the start-ups with sufficient capital during the years following the establishment. Most of these start-ups are short on funding primarily due to the fact that their links are to public universities and colleges, and not industrial players. Hence, most of these companies typically demand considerable amounts of capital in order to survive.

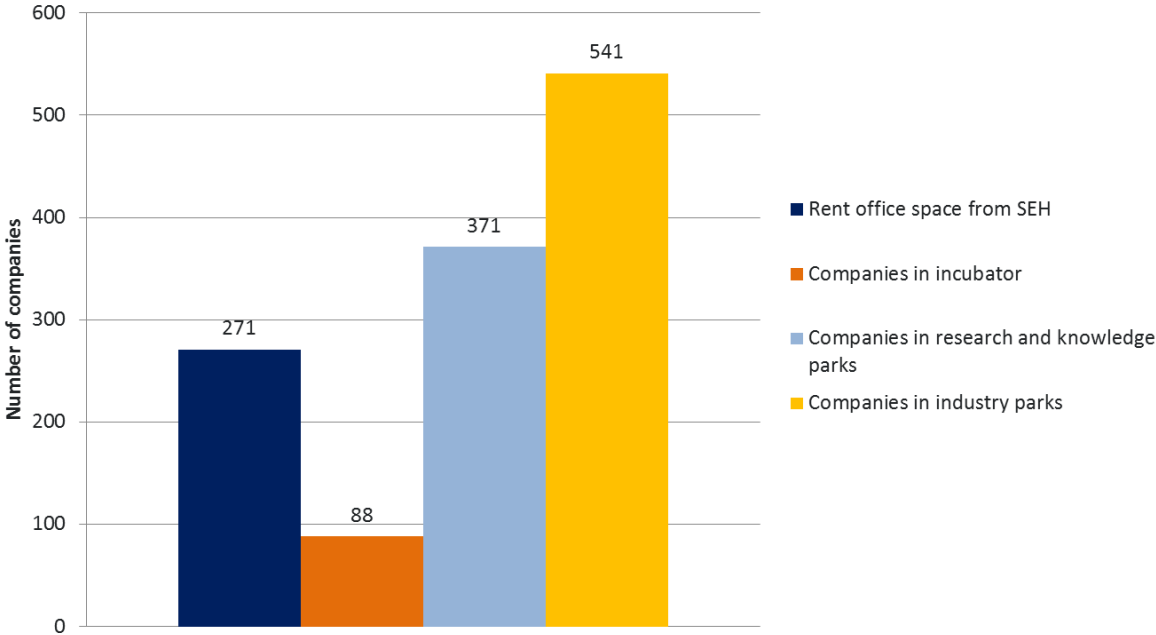
Deal flow - Companies connected through SIVA (The Industrial Development Corporation in Norway)

The Industrial Development Corporation of Norway (SIVA) is a governmental corporation and a national instrument to develop regional and local industrial clusters through ownership in infrastructure, investments and knowledge networks as well as innovation centres. SIVA's goal is to improve national infrastructure for innovation and contribute to achieve the Norwegian government's policy goals in remote areas. In addition, contribute to unleash innovation capability and increase wealth creation in all parts of the country. The SIVA Corporation has ownership in 150 companies that include subsidiary companies and associated companies.

Figure 2 describes the number of companies connected to SIVA sorted according to type of relationship in 2009. The number of companies connected to SIVA differs from year to year; in 2009 the total number was 1238. Almost half of the companies are located outside the regional policy arena (NIBR 2011, SIVA evaluation).

³ Commercialising an R&D-based idea often requires that the technology be tested and proven functional before being marketed. The aim of the FORNY2020 Proof-of-Concept (PoC) scheme is to reduce technological and commercial risks to such an extent that existing industry and/or venture capitalists are willing to buy into the project and bring it to fruition.

Figure 2: Companies connected to SIVA Source: NIBR (2010) "The SIVA evaluation"⁴



As mentioned above, projects that have a link to incubators, research parks and industrial parks in Norway form a highly heterogeneous group of companies and a large share of them is not necessarily potential high growth companies. Nevertheless, many of these companies form a central part of the dynamic system feeding innovative companies with a growth potential into the economy.

Changes in demand since 2007

The demand for early stage project funding is strongly affected by the stage in the business cycle. High economic growth triggers a larger number of start-ups while start-up activity is strongly dampened in periods of recession. For instance, from 2007 to 2008, the number of potential high growth start-ups fell by 25 percent. At the same time, companies starting up in periods with low growth often tend to demand more external capital since own capital resources from entrepreneurs are more limited. Consequently, the overall demand for external capital among early stage projects may not be reduced although the number of cases fell.

⁴ SIVA (SIVA- Eiendom Holding)

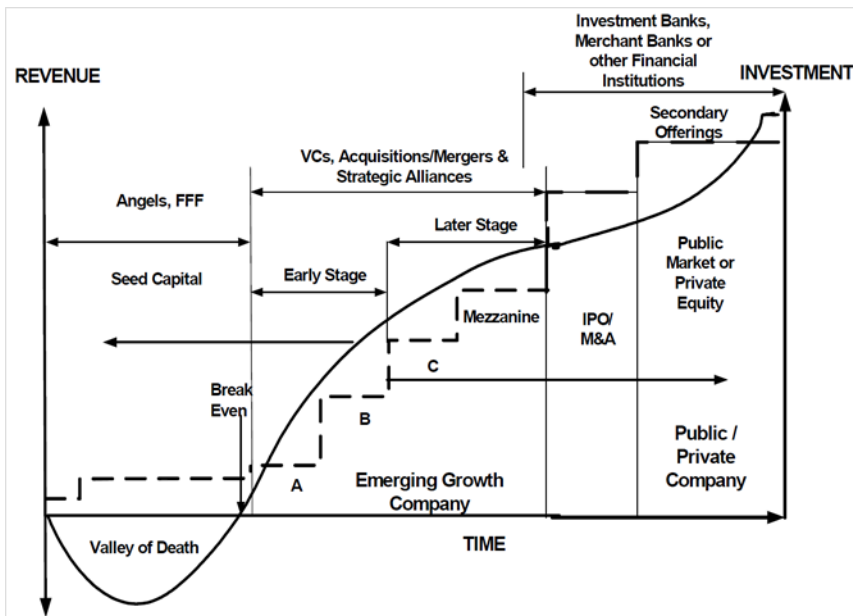
3. SUPPLY OF EARLY STAGE RISK CAPITAL IN NORWAY

In this chapter we investigate the role of alternative sources of equity capital, loan capital and government funding in the Norwegian market for risk capital, covering entrepreneurial capital, business angel capital, equity capital through seed and venture funds, capital supply through professional investment companies and larger corporations (corporate venture capital), credits and loan capital as well as government grants and loans.

In order to consistently focus on the structure of capital supply to early stage projects with a high potential, we have chosen to focus on the funding structure in companies that are identified as companies in the seed population of approximately 1600 companies through our population approach in chapter 2. This way, we construct a consistent picture of how capital demand in such companies is met by different forms of capital supply. To keep the discussion as compact as possible, we have chosen to leave out a population based discussion of capital supply to later stage venture and expansion companies

The figure below illustrates business development path from start-up to a mature company, describing relevant investors and suppliers of capital in the different phases. The early stage of development, also called “The Valley of Death”, is the most critical period as capital is hard to find. In this stage innovative start-ups often face high development costs, yet few are willing to invest in a company that has not yet proven able to generate income. Business Angels, closely related corporations, seed capital, friends, family and entrepreneurs are the most common investors in this early business stage.

Figure 3: The business growth and financing pathway



We have split the early stage capital supply in Norway into three groups: Equity capital, loans and government support. As to the last group, government support schemes may overlap with both since the government offers support through supply of subsidized loans and subsidized seed funds (although they’re emptying). The three categories are further discusses in the text below:

3.1. SOURCES OF EQUITY CAPITAL SUPPLY

3.1.1. ENTREPRENEURS

The entrepreneur is the most important source of capital for early-stage companies. They invest in their own project and are thus often better informed as to how to calculate the risk in an early stage of development.

The equity a company holds the first year of operation is in most cases equity invested by the entrepreneur and is therefore identified in this study. It does not exactly illustrate the amount invested because the company may have earned or lost money the first year, affecting the size of equity holdings in the balance sheets of the company. Because there is no register of actual equity investment for start-ups, the equity level in the end of first year of operation is considered the best approximation to the entrepreneurial capital.

Table 6 presents the holding of equity capital in the end of the first year of operation. Some of the companies have not reported equity capital. Furthermore, due to large variations on the equity structure of these companies, we have left out the bottom 5 per cent and the top 5 per cent observations with respect to equity size. This way, we provide a more robust picture of the role of entrepreneurial equity capital in such firms.

Table 6: Summary statistics for first year of companies - equity invested by entrepreneurs (NOK)

	Average	Median	Min	Max
Equity	3 575 912	248 000	-1 530 000	75 157 000

The table above provides summary statistics for equity capital for the close to 1600 businesses with a registered equity in the end of the first business year. Among the start-ups that we have identified as potential high growth companies, entrepreneurs provide a substantial amount of capital as start-up capital (median = 250.000 NOK). The average level illustrate that there are some companies with an extraordinary high level of equity and this pulls up the average (even after leaving out the top 5 percent of the distribution).

3.1.2. FFF (FRIENDS, FOOLS AND FAMILY)

This group includes private investors with limited investor experience and preferably strong family or friend-related association. Like the entrepreneur, this group is difficult to identify because the type of relationship is not registered in our database. In some cases, however, this group is overlapping with business angels. This illustrates how the boundaries between categories are not always clear.

In this study the group is considered a residual group of investors and the amount of investments from this group is not possible to identify in the sample data.

3.1.3. BUSINESS ANGELS⁵

There is no accurate definition of business angels. The European Trade Association for Business Angels (EBAN) defines business angels as “private individuals who invest their own money in potential high growth start-ups in exchange for a share in the company. The business angels contribute with their expertise in business management and their personal network of contacts. Angel investors typically invest at an earlier stage of

⁵ Menon (2010): Forretningsengler i Norge – omfang, betydning og behov for offentlig involvering, see www.menon.no

growth and are believed to provide more business guidance and advice than venture capital investors. Therefore, angel investors are believed to be key players in generating high-growth companies. According to EBAN, the average amount invested per business angel in Europe is between 80.000€ and 250.000€, these amounts can increase when business angels co-invest with other angel investors or through a co-investment fund or through a business angel network.

Our mapping of the role of business angels is based on MENON (2010) where a more strict and operational definition of a business angels is applied, as compared to the EBAN definition. The identification of business angels in MENON (2010) is once again based on a population approach, and to our knowledge this is the first time such a population based business angel study is conducted worldwide. Here, a business angel must hold ownership in at least two portfolio companies. The portfolio companies must have at least 100.000 kroner in labour costs. Furthermore, the business angel must be a board member in at least one of her portfolio companies. Companies where the business angel is the same person as the general manager are excluded. Moreover, the business angel must own less than 50 per cent of the portfolio company. Many companies in Norway are owned by other companies or holding companies. If the first owner is a company – typically a holding company, we require that the company has less than 800.000 kroner in labour costs. This criterion is applied in order to exclude professional investment companies with a staff of investment managers.

A business angel invests in companies for several reasons, and we apply a wider set of business angel motivations than what is covered by EBAN. We divide business angels into three groups:

- Business Angel investments based on family fortunes and income from businesses which invest in related companies often with a lower growth potential.
- Business angels with background from management consulting or financial advisors which have earned ownership rights in the companies they have worked close with.
- The elite angels – many of them have previously started their own technology based enterprises with a large growth potential (serial high tech entrepreneurs). They use their knowledge and experience in new projects with a high growth potential, without being an entrepreneur. In MENON (2010) it is estimated that approximately 10 per cent of all business angels (approximately 250) in Norway fall into this group.

MENON (2010) identified approximately 2500 business angels who have invested in 4500 companies in Norway. Business angels have an 18 per cent average ownership share in the companies where they invest, which should be considered as a substantial share. The share is not much different from the average ownership shares for seed and venture funds.

Among the 1600 high growth companies we have identified in chapter 2, only 5 percent had funding from business angels. Compared to the share of early stage high growth companies with seed fund investments (2.3 per cent), business angels actually represent a more important source of capital than venture capital funds in such an early phase.

3.1.4. SEED, START UP AND LATER STAGE VENTURE FUNDS

Venture capital funds are investment funds which invest in non-listed companies in an early growth stages. The funds raise capital from external investors (so-called limited partners, such as pension funds, banks, insurance companies, private investors, government agencies etc.). These capital funds are then distributed to portfolio companies through initial and follow-on investments.

Venture funds are normally categorized according to how early they invest in a project. However, it is important to notice that most venture funds tend to spread out when it comes to investment profile. Several funds that predominantly focus on start-up and later stage ventures, also involve in some seed cases. Furthermore, as seed companies mature, they grow into the start-up phase or the later stage venture phase. Hence, seed funds also have investments in later stage companies. Consequently, the European Venture Capital Association has chosen to apply a slightly different classification of funds as compared to the classification of portfolio companies. This adjustment is only relevant when reporting fund raising activity and capital under management. The EVCA classification of funds is described in the table below.

Table 7: European Venture Capital and Private Equity Association’s definition of fund phases

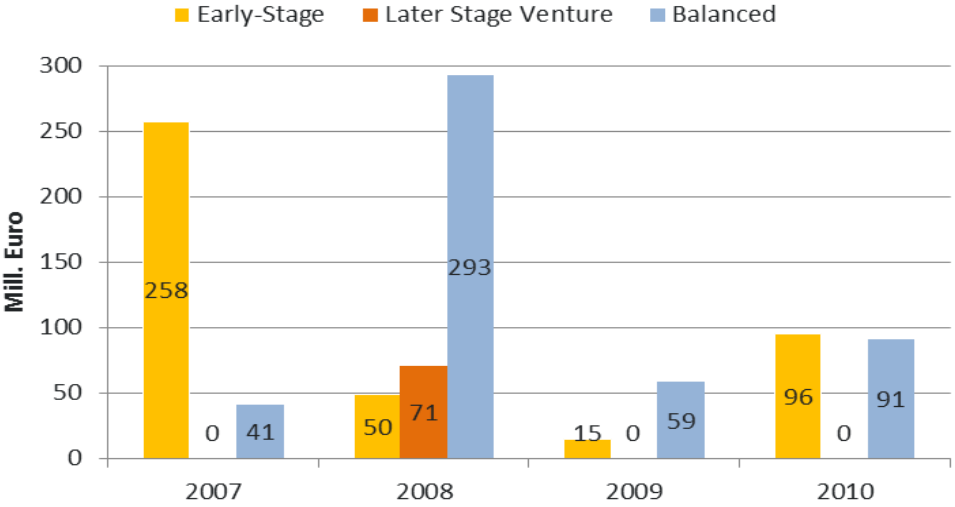
FUNDS PROFILE/STAGE FOCUS – FUNDRAISING	
Early Stage Fund	Venture capital funds focusing on seed and start-up
Later Stage Venture Fund	Venture capital funds focusing on later stage venture and expansion companies
Balanced Fund	Venture capital funds focused on both early stage and later stage investments

Early and later stage venture funds in Norway cover funds like the 9 government seed funds with state co-funding, Spring-fondet, Northzone Ventures, Verdane Capital, Teknoinvest, Viking Venture, Energy Ventures, Incitia Ventures, Skagerrak Venture, BTV-funds⁶ etc. Both seed and start-up funds sort under early stage venture funds, yet normally they tend to supply capital to firms that are slightly more mature than the absolutely youngest ones. In the case of Norway, much of the fundraising in the category “Balanced Funds” are for later stage venture investments made by for instance Verdane Capital Advisors.

There are two central indicators of supply of risk capital through venture funds: the amount of capital or funds raised, and the number/amount of capital investments by these funds. Below, we present the development in these indicators for Norway from 2007-2010.

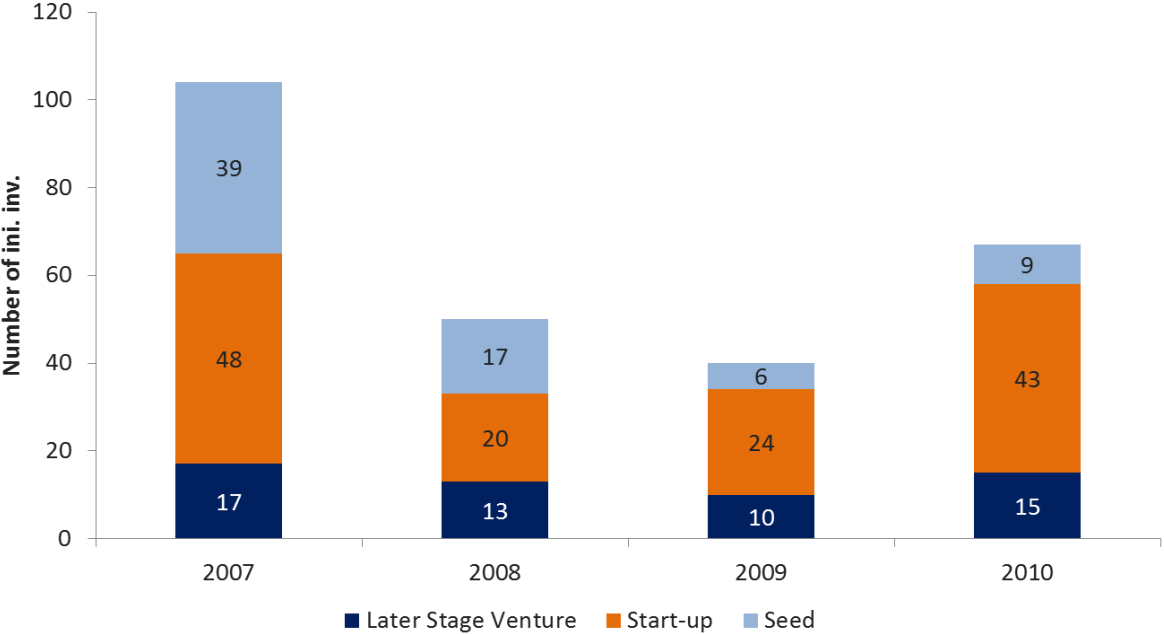
⁶ See MENON /NVCA (2010): NVCA årbok 2010, Oslo for a thorough introduction to the funds' activities and stage focus.

Figure 4: Development of fundraising in Norway by phase 2007-2010
 Source: NVCA/PEREP Analytics



The level of fundraising the last two years has been at a very low level. The 2010-level was 40 per cent lower than level in 2007 for early stage capital fund raising. The level was even lower in 2009 with only 15 million EUR raised for early-stage investments. The low levels of fundraising the last couple of years gives no indication of improvements, and our survey data gives reason to expect a sluggish fund raising climate for this segment over the next years.

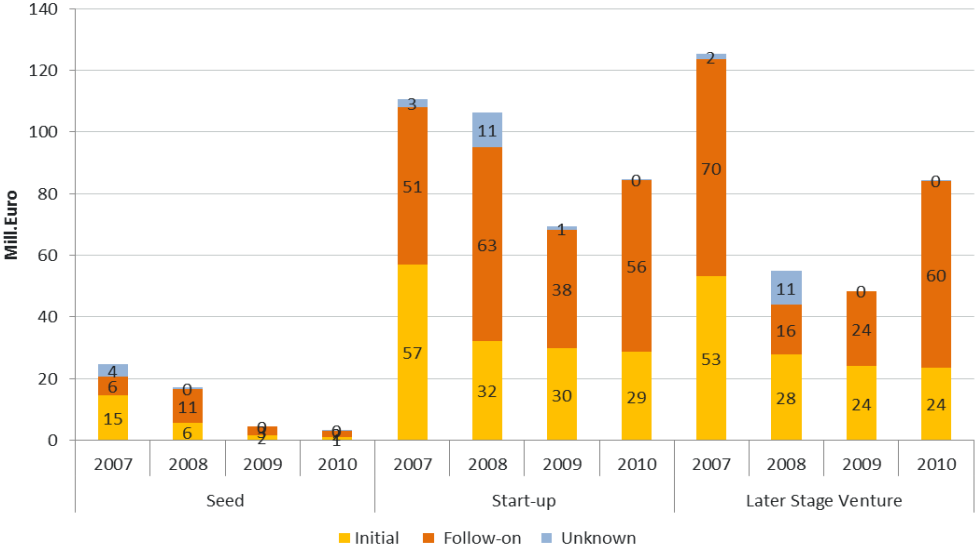
Figure 5: Number of initial investments by phase from 2007-2010
 Source: MENON Business Economics and PEREP Analytics



The figure above shows the number of initial (new) investments from venture capital funds from 2007 to 2010, sorted according to the phase of the portfolio company. Here we are able to distinguish between seed and start up since we focus on investment in portfolio companies. From 2007 to 2009 there was a sharp fall in

initial investments, especially for seed. It looks like start-up and later stage venture investments are starting to recover from the financial crises, but the seed investment level is still at an extremely low level.

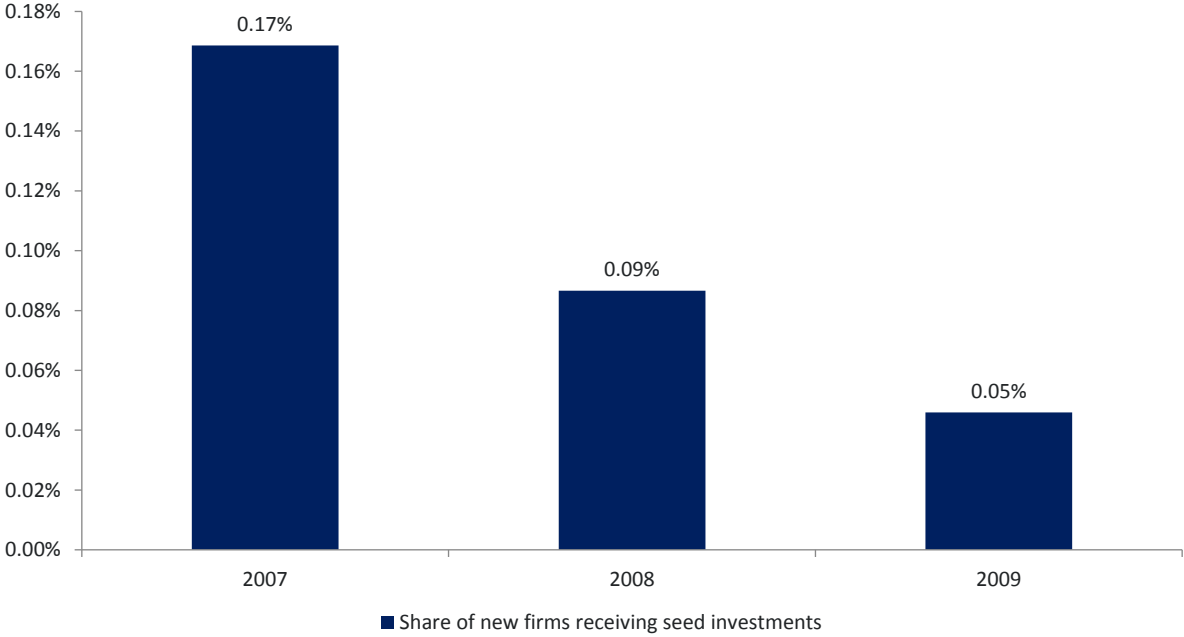
Figure 6: Market venture investments by phase in Norway from 2007-2010
 Source: NVCA/PEREP Analytics.



The figure above depicts the amount of venture investments by phase (seed, start-up and later stage) in Norway during the period 2007-2010. Here, we report market investments, covering investments in Norwegian portfolio companies conducted by both Norwegian venture funds and foreign venture funds. We have split between initial investments (first time investment in a company) and follow-on investments (covering investments in these companies that come later). The far left of the figure covers seed, start-up investments are reported in the middle, while later stage venture investments (expansion) are described to the right. All initial investments for all phases fell from 2007 to 2010. Follow-on investments have recently been catching up for start-up and later stage venture, but seed has not shown signs of recovery after the financial crises in 2008-2009. In 2010 only one initial seed investment is reported, compared to 15 initial investments in 2007.

In the figure below, the percentage of all new companies (not only potential high growth companies) in the economy receiving venture capital is estimated by matching the EVCA/PEREP Analytics database with our the MENON company database.

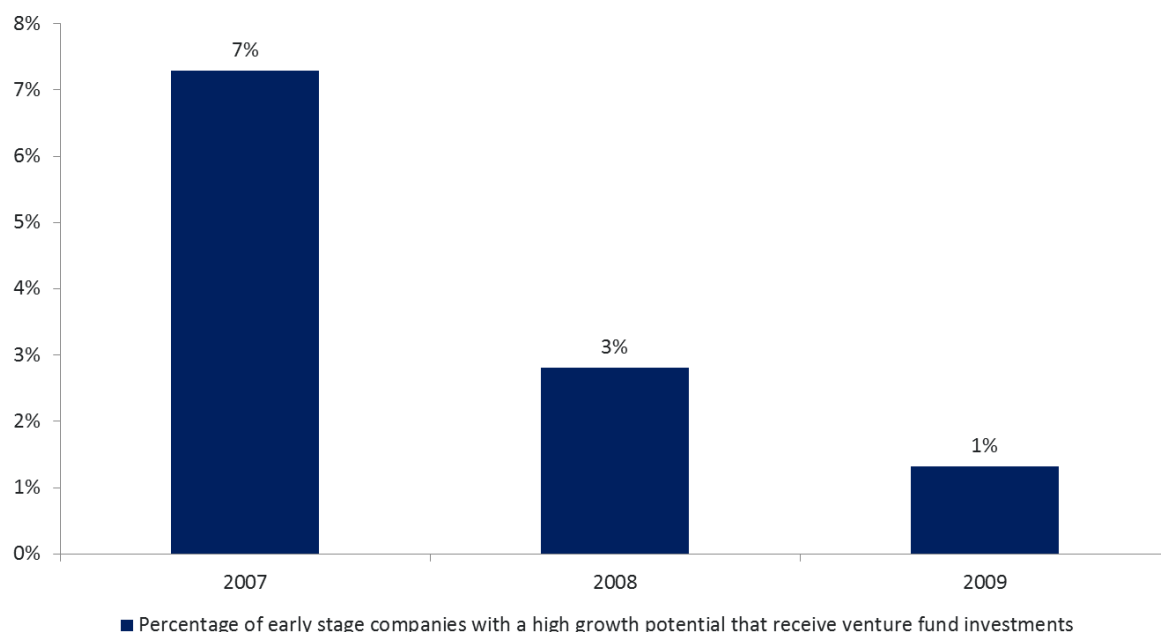
Figure 7: Percentage of new start-ups in Norway receiving seed investments
Source: MENON Business Economics and NVCA/PEREP Analytics



The figure shows that out of the potential early stage high growth companies, 0.17 per cent of the companies received seed investments in 2007. The figures show that a very small proportion of all new companies receive funding from venture funds. In 2009, this number was only 0.05 per cent. The figures illustrate that the probability of receiving early stage capital from venture funds has fallen considerably.

The figure below contains a further attempt to illustrate the role of seed investment for new high growth start-up companies. Instead of looking at all start-ups and initial investments one year, the figure shows the share of the population of approximately 1600 companies from chapter 2 that received capital from venture funds.

Figure 8: Percentage of early stage companies with a high growth potential that receive venture fund investments
Source: MENON Business Economics and PEREP Analytics



The share of such firms receiving venture fund investment in 2007 was as high as 7 per cent for start-ups with establishing year in 2006. This number fell to 3 per cent for start-ups from 2007. For established businesses in 2008, the chance of receiving was only one per cent. Once again, this illustrates how capital supply from early stage venture funds has been dramatically cut during the last years.

Corporate venture and professional investment companies

This is a group of investors and owners that look like a combination of business angels and private equity funds. They have established professional investment and management organizations that maintain and develop investment portfolios. Funding is often derived from individual or corporate fortunes, and the investments are often relatively well distributed among start-ups in different industries. Notice however, that these investment companies do not manage capital for other investors. This property distinguishes the companies from venture funds. Furthermore, the investment companies do not operate with a specified termination date. They are mostly set up as evergreen investment vehicles. Examples of Norwegian professional investment companies are: IKM invest (Ståle Kyllingstad), Scatec (Alf Bjørseth), Hitec (Jon Gjedefo), UMOE (Jens Ultveit Moe), Canica (Stein Erik Hagen), Ferd (Johan H. Andresen), Rasmussen Gruppen, Braganza (Braathen), Blystad Invest, Glastad Invest, Hafslund Venture, LNI and Agder Energy Venture.

An even more important supplier of equity capital to early stage companies with a high growth potential is the large group of corporations that also focus on venture activity. This kind of investors is often termed corporate venture agents. The investment strategy is often related to the core activity of the corporation or mother company. As opposed to the professional investment companies, the corporate venture investors usually operate without a separate investment management company. Early stage investments are to a larger extent integrated into the management of the mother company.

In the box below, we have described central characteristics of such investment companies.

Professional investment companies:

- Often based on private wealth arranged in a competent investments company (often called holding companies).
- Ownership in many companies – dispersed into different industries.
- Perform active ownership
- Differs from corporations as they manage the invested company financially and strategically, but do to a less extent involve in direct operational management.

Corporations (corporate venture):

- Perform active ownership
- Utilize potential synergies with the invested company (branch company)
- Less diversified ownership portfolios than corporate professional investment companies

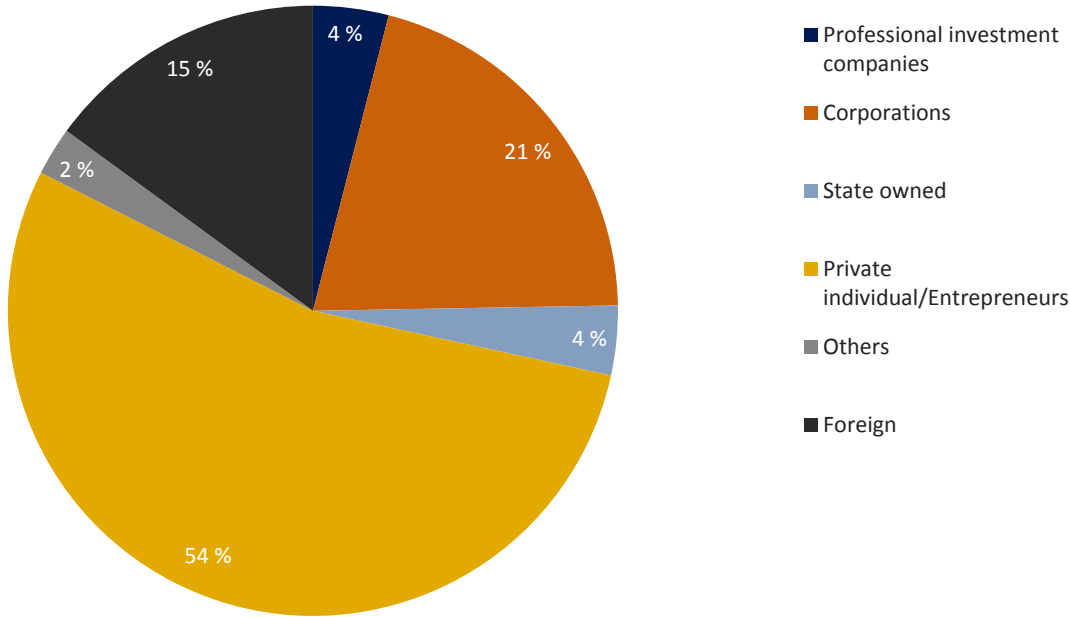
This group of corporate venture and professional investment companies was identified by MENON in NHO (2011)⁷. Out of 168.699 active companies identified in Norway in 2009, 12.520 (7.5 per cent) of the companies had corporate venture or professional investment companies as owners.

To identify the role of these investors in the supply of risk capital to early stage high growth companies, we have merged the data base mapping firms with such owners with the population of early stage high growth potentials in chapter 2. It shows that approximately 4 per cent had *professional investments companies* as the largest owner, while 21 per cent had *corporations or corporate venture* as the largest owner. Notice that with a total of 25 per cent, this group of owners has a considerably higher representation in the sample than in the population of all firms. This is probably because the group of potential high growth start-ups is a selection of companies with higher external capital need than the average business in Norway.

In the figure below, we present the identity of the largest owners in the early stage companies with a high growth potential. Slightly more than 50 per cent have an entrepreneur/private individual as the largest owner. A corporation is the largest owner in approximately 20 per cent of the companies. 15 per cent are foreign owned (may be either personal or corporate ownership) and 7 per cent have or government or others as the largest owner. In this group we find the 1 per cent covered by the venture funds.

⁷ NHO (2011) "Private eierskapsberetning". Study conducted by Menon Business Economics

Figure 9: Type of largest owner in early stage companies with a high growth potential (2009)



3.2. LONG TERM CREDITS AND LOANS

Start-ups may also finance investments through credits and loans. To what extent start-ups have debt financing varies a lot. As discussed in the introduction to this chapter, growth companies in the start-up phase mostly have a low level of long-term debt because financial institutions typically do not offer loans to companies without substantial collateral or positive cash flow.

Among the potential high growth companies, approximately 60 per cent had long term debt the second year in operation. We were surprised by the large share of such firms that actually achieve such funding; however the size of long term debt in such companies is mostly relatively limited.

Table 8: Long term debt level in 2009 (NOK) – sample data

	Mean	Median	N
100 % of sample	36 785 000	766 000	1327
75 % of sample	903 000	0	995

The median long term debt level in 2009 was 36.8 million kroner, but this figure is not at all representative for such companies. The mean long term debt level is 900.000 if we remove the top 25 per cent of the distribution, yet this is still a relatively high debt level, considering the amount of capital channelled to the companies through entrepreneurial equity. In the middle of the financial crises (2009) the median long term debt level for start-ups in 2008 was 401.000 kroner, falling with 80.000 from 2007, indicating a tighter credit market.

Debt ratio: Share of loan capital in total assets

In order to grasp the structure of capital in these early stage companies with a high growth potential, we have mapped the share of long term debt in total assets (the debt ratio) for the early stage companies with a high growth potential.

Table 9: Debt ratios in categories of companies (from 2006 to 2008)

Potential high growth companies			All companies in high growth industries			All companies		
Mean	Median	N	Mean	Median	N	Mean	Median	N
30 %	12 %	691	20 %	0 %	23601	23 %	0 %	57723

The first group contains our potential high growth companies. The second group covers all start-ups sorting in the industries where we identify high growth companies, while the last group covers all start-up companies during the period. Due to missing observations, the number of companies entering each group is more limited than previously reported. The table shows that when comparing the level of debt, the group of potential high growth companies has the highest debt ratio, both in terms of mean and median figures. The figures are high, but as illustrated above, they are dominated by the highly skewed distribution of debt levels among these start-ups.

3.3. GOVERNMENT SECTOR FUNDING SCHEMES

Government funding as a source of capital may play an important role for many early stage companies with a high growth potential. It is therefore examined to which extent companies in various stages are receiving public funding. This exercise covers support and funding from the government agencies Innovation Norway, the Research Council of Norway (primarily through the FORNY-program), and SIVA. We have not been able to cover funding on the company level through research programs, municipalities and other government programs.

Såkornordningen – The Norwegian Seed Fund schemes

There are basically three programs in which Norwegian government funds are channelled into the early stage risk capital market. The first program is the government fund in fund called Argentum which invests government capital in venture capital and private equity funds from start-up to buyout. The second program is the investment firm Investinor which invests equity directly into companies in the start-up and later stage venture phase. The third is the seed fund program in which state capital is provided as loans with a risk relief element to seed funds. However, out of these three vehicles, only the seed fund investment program (Såkornfondordningen) qualifies as a government *aided* investment program in terms of mitigating risk for private investors. The other two public investment programs provide capital on equal terms as private capital and contain no element of subsidy.

Såkornordningen is administered by Innovation Norway and is intended to contribute to competitive growth companies by increasing the access to competent capital. The scheme is supposed to correct for market failures that potential growth early stage enterprises may face. Today the 9 government backed seed funds schemes are administrated by Innovation Norway and managed through separate seed funds. Four of the funds are nationwide, while the other funds are focusing on peripheral regions. In the seed investment program state capital is provided as loans capital to the venture funds. The loan capital amounts to half of the funds' size with the remaining capital being equity from private investors. The public risk mitigation is provided through a *loss*

fund which is the size of 25 per cent of the loan capital, or 12.5 per cent of the fund's total size (the loss fund is larger for the regional seed funds). Given that the funds tend to last for 10-15 years the level of risk mitigation is calculated to amount to a yearly rate of no more than 1 per cent.

The funds are established as limited companies and are owned by private investors through a limited partner structure. The funds invest in portfolio companies by providing equity capital. The funds are managed by external management companies that charge a fund management fee for their services. In MENON (2009), approximately 230 companies were identified as portfolio companies supplied with equity capital from such funds during the period 1998 to 2008.

Among our group of high growth companies, 17 out of the 1595 companies have received equity capital from these seed funds.

Other early stage programs under Innovation Norway

Innovation Norway manages a large pool of support and loan schemes which businesses may apply for. Some support schemes are more relevant than others for early stage high growth firms, like establishment grant schemes, research and development contracts (IFU/OFU), support through the Seed forum Norway network and the already mentioned seed funds.

Innovation Norway's entrepreneurship grants

A large share of the research based start-ups receives entrepreneurship grants from Innovation Norway. Grants can be directed towards innovation for new products, services, production processes and organizational structure that don't exist in the market. The business has to be less than five years old. There also exist special grants for new establishments in rural areas outside primary industries.

IFU/OFU

The Industrial and Public Sector R&D Contract Programmes (IFU/OFU) stimulate innovative development cooperation, between a demanding customer in the private sector or a public sector organisation and one or more supplier companies.

Innovation Norway provides knowledge of international business development and financing in the form of grants in order to mitigate risk and encourage the start-up of demanding development projects. The ambition is to increase the international success of the projects financed by the programme. In 2011, Innovation Norway invests nearly NOK 300 million in such R&D contracts.

The schemes have main focus on small and medium-sized Norwegian suppliers who have expertise, resources and capacity to develop new products, services or solutions for demanding customers in the private or public sector. It is also possible under special circumstances to support key strategic projects headed by larger companies if smaller companies are included as sub-suppliers or if the projects contributes to an improved national infrastructure beneficial to smaller companies. Innovation loans

Innovation Norway awards risk loans to companies that are not able to finance innovative development projects on regular terms for loans through banks. By covering risk for a share of the loan, Innovation Norway enables banks to offer credits to more risky projects. Such risk loans are normally offered to slightly more mature companies, yet start-ups may also benefit from this scheme. Innovation Norway offer both nationwide risk loans and regional risk loans that are limited to more peripheral areas of Norway.

In our group of potential high growth companies for the period 2006-2009, 191 (12%) of the companies received support from different support schemes in Innovation Norway. A total of 441 different awards with a value of 131 million EUR were provided to the companies.

The most important programs are listed in the table below.

Table 10: Sample data - loan, warranties or support from Innovation Norway (billion EUR)

	Number of firms	Number of grants	Innovation Norway code
Loan - low risk	27	9	GFL-flåte
Loan - low risk	21	20	LAV
Loan - National risk loan	21	29	LRL
Loan - Regional risk loan	14	31	DRL
Support - IFU/OFU	8	11	IFU+
Support - Regional development	8	39	D-IVT
Warranties	6	8	LGA-DRIFT
Support - IFU/OFU	5	43	IFU-T
Regional development	5	69	D-BU
Support - IFU/OFU	4	5	OFU+
National establishment grant	3	25	UT-ETABSTIP
Establishment grant	2	53	ESTIP
Regional development	1	11	D-NYVEKST
Establishment grant	1	24	ESTIP-INK
Others	5	64	
Total	131	441	

The FORNY and FORNY2020 programs

The FORNY program is a programme dedicated to commercialising research, and has been operational since 1995. The FORNY program ended in December 2010 and from January 2011 FORNY2020 will be in charge of funding the Norwegian technology transfer offices (TTOs) and projects in need of proof-of-concept.

Since the start in 1995 FORNY has generated approximately 300 start-ups. Today, these firms report a total of 900 MNOK in turnover and an employment of approximately 700. These figures are strongly dominated by a few companies like Opera Software. The median firm turnover is around one million and its value added and employments are close to zero NOK and one employee respectively. In 2006 and 2007 the FORNY programme registered 28 and 22 start-ups respectively, as well as 32 license agreements both years (Evaluation of the FORNY programme 2009).

MENON holds a database covering companies that have received public support from The Research Council of Norway through FORNY in 2006 and 2007. Out of all potential high growth start-ups, seven in 2006 and four in 2007 were establishments from the FORNY programme.

SIVA

SIVA (The Industrial Development Corporation of Norway) is a governmental corporation and national instrument that aims to develop strong regional and local industrial clusters through ownership in infrastructure, investment and knowledge networks as well as innovation centres.

SIVA holds equity of 821 million NOK in 2011. Most of their investments are made in incubators, real estate activity and funding of their research, knowledge and industry parks.

SIVA's investment companies

To improve access to risk capital to regional businesses, SIVA, along with various public and private partners, are involved in the development of regional investment companies (seed and venture capital companies). SIVA's investments have been indirect, through seed and venture funds and as part owner of companies that invest in individual companies. This activity is however, reduced in recent years, in accordance with guidelines in the annual budget proposals by the government.

Other government funded support schemes

SkatteFUNN

Under the SkatteFUNN program, business enterprises engaged in research and development activity on their own or in collaboration with others may apply for a tax deduction. The scheme is rights-based and regulated in the statutory framework, and is open to all branches of industry and all types of companies - regardless of size. To be eligible for a tax deduction, business enterprises must be subject to taxation in Norway, although they do not have to be currently liable for taxation in terms of taxable operational results. From 2002 to 2010, 8559 businesses have received tax reductions based on their R&D activities. 1597 received SkatteFUNN in 2010.

The SkatteFUNN scheme is an indirect funding scheme. Support takes the form of a tax deduction up to 20% of the costs related to R&D activity. Expenses must be documented and recorded in the project accounts. The tax deduction is awarded on top of the ordinary deductions. Tax deductions under the SkatteFUNN scheme are based on the following limitations per project per company:

- Maximum NOK 5.5 million in R&D conducted by the company (internally or in collaboration with others). 20 % deduction = maximum NOK 1.1 million for SMEs and 18 % for larger companies.
- With a budget over NOK 5.5 million (and maximum NOK 11 million), all expenses between NOK 5.5-11 million must be related to the procurement of R&D services from an approved R&D institution.

Only projects that have been approved by the Research Council (the SkatteFUNN scheme) are eligible for tax deductions.

User-driven Research based Innovation (BIA) and User-Driven Innovation Projects (BIP)

BIA and BIP represent parts of the portfolio of research grants provided by the Norwegian Research Council. The programs finance parts of industry-oriented research activities and have no thematic restrictions. This broad-based programme supports high-quality R&D projects with a strong business and socio-economic potential.

The BIA programme is targeted at industry and has a budget for 2011 of approximately NOK 355 million. Companies may apply for partial funding of R&D projects which are based on their own strategies and challenges, regardless of branch of industry or thematic area. The projects must result in substantial value

creation for the companies as well as for society-at-large, and must take an international perspective. The projects are organised in consortia whereby companies and R&D communities cooperate on achieving results.

The BIA programme is intended to complement the Research Council's other industry oriented funding instruments and provide support to projects that cannot be realised under the SkatteFUNN tax deduction scheme or specific (thematically-based) research programmes at the Research Council.

User-driven Innovation Projects (BIP) and Knowledge-building Projects with User Involvement (KMB) are project categories that to a large degree involve private businesses with a R&D-project. Such projects form the key instruments employed by the BIA programme, and funding is awarded to ambitious projects that place large demands on the implementation capacity of the project participants. Importance is attached to encouraging cooperation among companies and between companies and research groups, both nationally and internationally.

Seed Forum Norway

The Seed Forum concept was created in Norway spring 2002 in the Campus Kjeller Science Park, and the Seed Forum Norway Foundation was founded in March 2003. The activity of the Seed Forum Norway Foundation is from 2005 concentrated on developing the Seed Forum process in all regions of Norway in co-operation with Innovation Norway, the Industrial Corporation of Norway (SIVA), the DnB NOR bank and many other partners.

Seed Forum aims to connect commercialization projects with various types of investors. Their concept is to assist new technology companies in the process of obtaining access to capital, expertise and networks (regionally, nationally and internationally). The main focus is on how an entrepreneur should prepare to make the company attractive to external investors and how to approaching the various investor groups.

Other sources of information about the supply side of early stage capital – GEM study

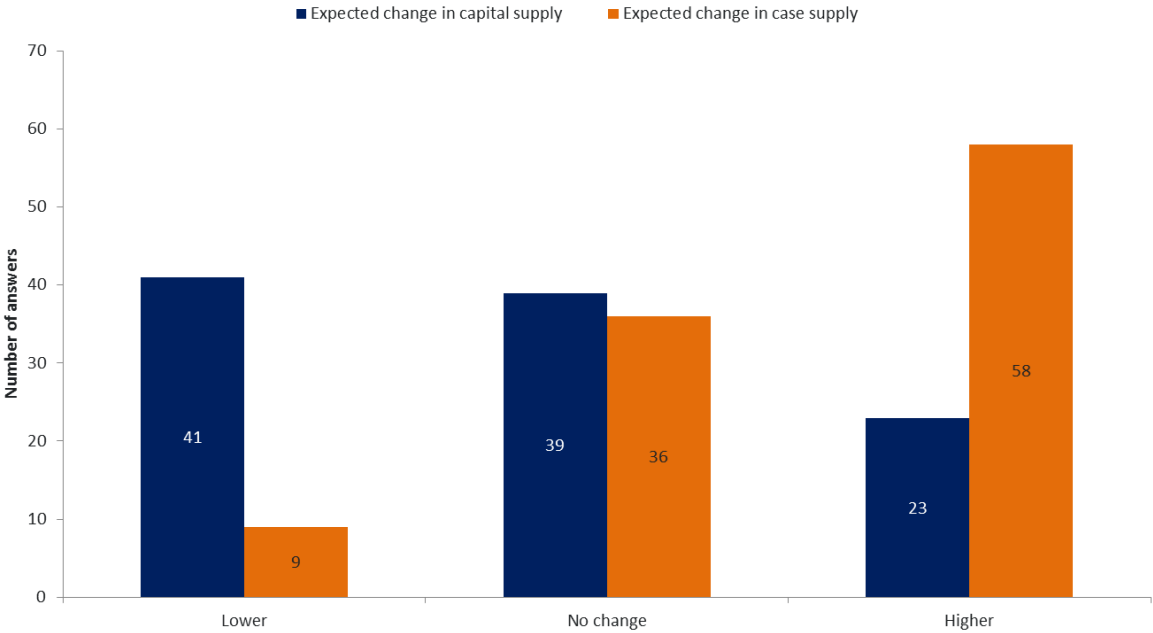
According to the GEM study of Norway, the supply of funding for entrepreneurship has worsened the last years, especially within the access to equity and loan for new established and growing companies. The experts interviewed think that some of the largest problems for Norwegian entrepreneurs are the lack of a sizeable home market, shifting political priorities, bureaucracy and access to early stage risk capital funding.

The GEM study claims that 6 per cent of the population in Norway are informal investors in early stage companies, but the total amount of their investments (12 billion NOK) is low compared to other countries. The venture capital market is reported as important but few companies get investments from this kind of capital source, at least when compared to the U.S where 1 per cent of new businesses receive investments from the venture capital industry. Experts interviewed in the GEM study point out that in the long term, venture capital is an important source of capital.

4. EXPECTED DEVELOPMENTS IN THE MARKET FOR EARLY STAGE RISK CAPITAL

In the survey we ask the respondents about their expectations for future developments in the market for early stage risk capital, focusing on the next one to three years. In the figure below, we report expectations for capital demand in terms of new cases or companies, and the expectations on future risk capital supply for early stage ventures.

Figure 10: Expectations about the next years (1-3 year perspective)



The figure shows that respondents expect a higher supply of business cases while they have lower or unaltered expectations to supply of capital. This confirms the picture of gradually deteriorating supply of early stage risk capital. The investment managers and especially the seed investment managers are most negative with respect to future capital supply. A total of 88 per cent of the seed investment managers expect the supply of capital to be lower over the next 1-3 years. Only 10 per cent of the industry incubators expect the supply to fall. Overall 22 per cent of the respondents expect capital supply to grow, 38 per cent expect no change and 40 per cent expect a fall in supply. In the case of capital demand (measured in terms of new cases coming up) 56 per cent expect a higher supply, 35 per cent no change and only 9 per cent expect a fall in the supply of business cases.

The survey also asked whether there is a need for more early stage capital in the future. A dominating share of 91 per cent answered that there is a need for more capital available to investments in innovative early stage businesses. Respondents were given the opportunity to elaborate freely on the risk capital market conditions. Some argued that it is especially important to establish new seed funds because the existing funds are fully invested or close to be fully invested. The respondents claimed that in addition to the uncertain economic situation, the lack of seed funds ready for investment in new cases makes the situation for early stage investment critical.

PART TWO

This part of the study contains a separate analysis of the market for early stage risk capital in Norway, mapping the conditions that are specifically emphasized in the EU guidelines on state aid to promote risk capital investments in small and medium sized enterprises. We present a detailed discussion of the questions covered by “State aid to Promote Risk Capital Investments in Small and Medium-Sized Enterprises” in paragraph 5.2.1 and 5.3.1.

Many of the subjects covered by these guidelines are overlapping with the subjects we have covered in part one. Consequently, some of the sections in this part may display strong similarities with part 1.

5. STATE AID TO PROMOTE RISK CAPITAL INVESTMENTS IN SMALL AND MEDIUM-SIZED ENTERPRISES

5.1. PARAGRAPH 5.2.1

The numbers and values in this section are based on data from Norwegian Venture Capital Association (NVCA)/PEREP analytics in collaboration with the European Venture Capital and Private Equity Association (EVCA) Statistics Unit. Reports from the European countries we have used are therefore fully comparable to each other. Notice that we have chosen to not present figures for UK since UK is not a member of the EVCA statistical cooperation. This leads to underreporting of early stage activities in the UK figures from PEREP/EVCA. The numbers and values presented are based on voluntary reports from the venture capital and private equity companies located in Norway and other European countries. The reports from the US are based on public information presented by National Venture Capital Association.

The number and amounts of investments are mostly presented using the market *approach*. The marked approach is calculated based on data for all investments made in portfolio companies in one specific country (both made by national and foreign venture funds). Alternatively, one may apply the industry approach, covering all investments made by venture capital funds that operate in a specific country. These funds may however invest a large share outside the country where they are physically located. Although we primarily focus on the market approach, we also report for the industry approach in selected cases.

Paragraph 5.2.1 requires answers to the following issues:

A study showing the level of the “equity gap” with regard to the enterprises and sectors targeted by the risk capital measure and sectors targeted by the risk capital measure. The relevant information concerns the supply of risk capital and the fundraising capital, as well as the significance of the venture capital industry in the local economy. It should ideally be provided for periods of three to five years preceding the implementation of the measure and also for the future, on the basis of reasonable projections, if available.

To estimate the level of “equity gap” in early stage capital we have chosen to compare Norway’s level of investments and fundraising with other comparable countries in Europe. First Norwegian investment activity is presented, followed by comparisons with other European countries and the United States.

Definitions regarding investment stages or phases are presented and discussed in chapter 1.2 of this report.

Figure 11: Venture investments by phase in Norway from 2007-2010
 Source: NVCA/PEREP Analytics.

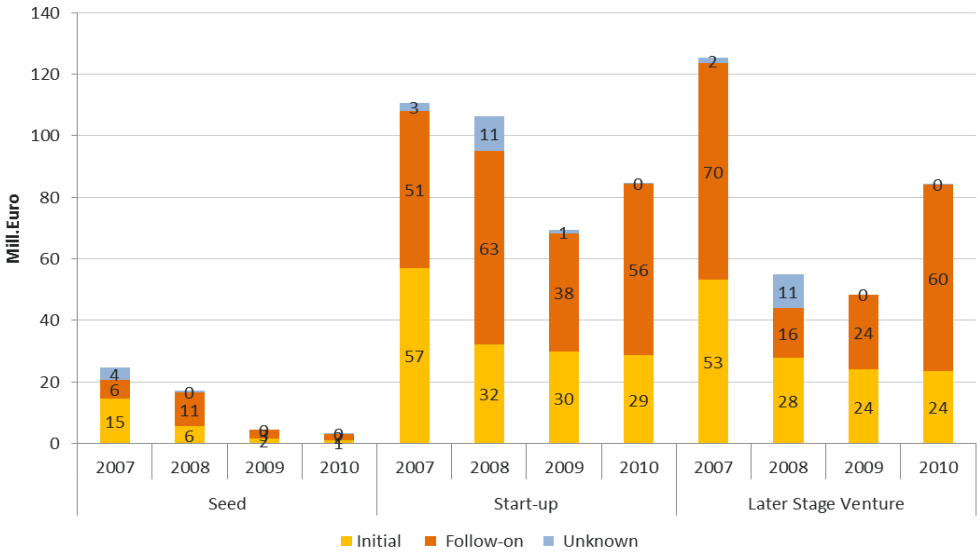
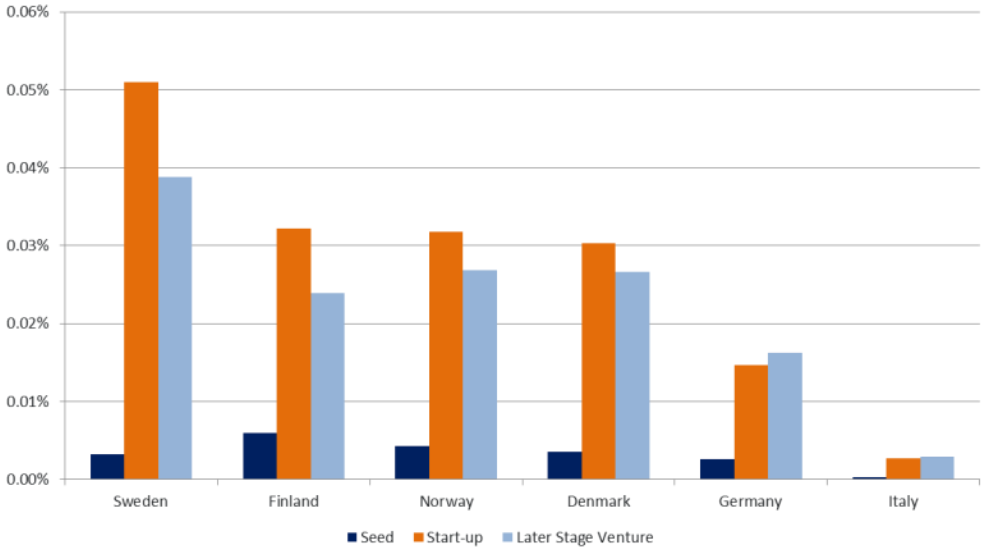


Figure 11 shows the level of venture investments by phase (seed, start-up and later stage/expansion) in Norway during the period 2007-2010. We have split between initial investments (first time investment in a company) and follow-on investments (covering investments in these companies that come later). All initial investments for all phases fell from 2007 to 2010. Follow-on investments have recently been catching up some of the loss for start-up and later stage venture, but seed has not shown signs of recovery after the financial crises in 2008-2009. In 2010 only one initial seed investment is reported, compared to 15 initial investments in 2007.

Figure 12: Total venture market investment 2007-2010 per GDP by phase Source: NVCA/PEREP Analytics



The level of total venture investments from 2007 to 2010 in per cent of GDP by phase in selected European countries is presented in the figure above.

The level of seed investments is low in all the six countries. Finland has the highest level of seed investments, 0.006 per cent of GDP. The seed level in Norway is 0.004 per cent of GDP. The start-up level is – as expected - significantly higher than seed investments, 0.03 per cent of GDP in Norway. Sweden has the highest level for start-up and later stage venture investments. The start-up figures for Sweden are somewhat surprising since the overall perception of the venture industry in Sweden is that the activity has been extremely weak during the last two years. Below, we look further into the details.

Table 11: Level of investments by phase in U.S Source: PricewaterhouseCoopers/National Venture Capital Association and OECD

per cent of GDP	Seed	Early Stage	Expansion/ Later Stage
2007-2010	0.012 %	0.038 %	0.065 %

The U.S. level of investments shows that the European level of seed investments is considerably lower than the U.S. level. Table 11 shows that the level of seed investments in the U.S. is 0.012 per cent of GDP. Compared to Norway’s level 0.004 % (Market)/0.0054 per cent (Industry) the American level of seed investments is three times larger. Notice however, that several experts point to a pattern where seed investments in the US are systematically directed towards slightly more mature companies. If this is the case, some of the differences between the US and Europe may vanish.

Figure 13: Average annual growth rate 2007-2010 for all venture market investments Source: NVCA/PEREP Analytics

In the figure below the annual growth rate between 2007 and 2010 is calculated. This is calculated by looking at the annual growth between 2007 and 2010 $((\text{sum of investments in 2007}/\text{2010})^{1/3}-1)$.

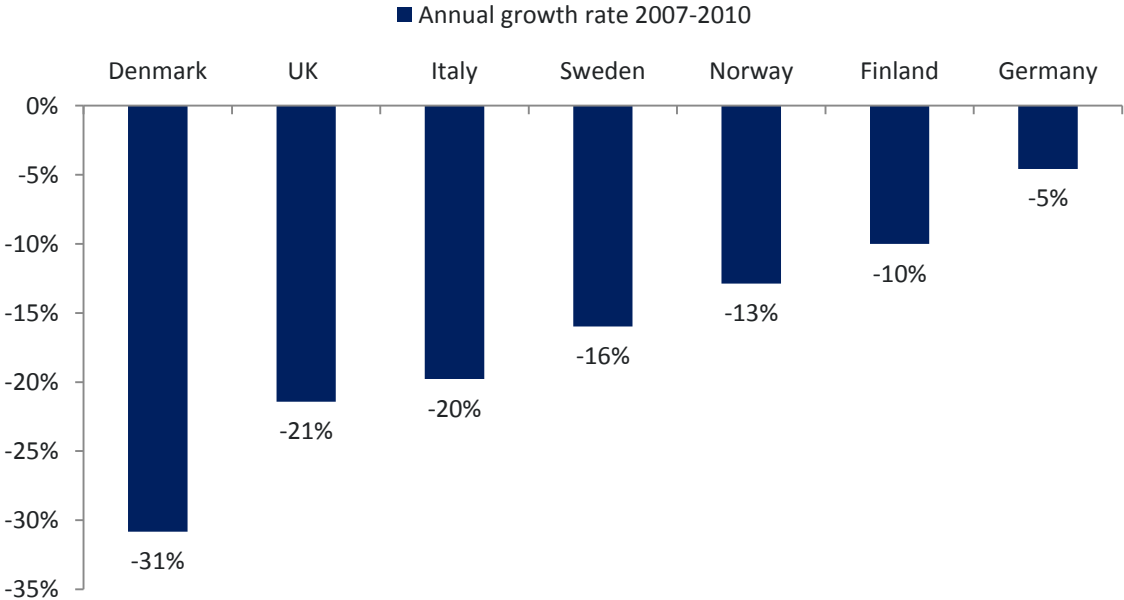
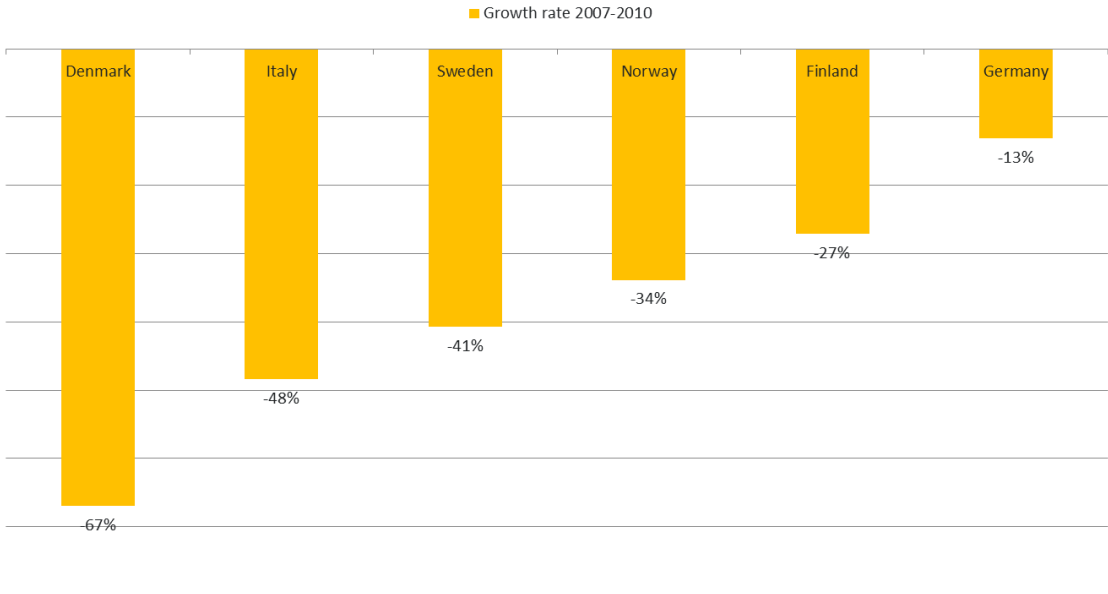


Figure 13 shows the average annual growth rate from 2007 up to 2010 for yearly venture investments in selected countries. The growth from year to year in the periods from 2007 to 2010 has a negative average value for all countries except Germany. Norway is the best performer among the Nordic countries, and this is primarily a result of the improved investment activity in the later venture stages.

Figure 14: Growth rate from 2007-2010 Source: NVCA/PEREP Analytics



To enrich this picture further, we have mapped the growth rate comparing only the investment levels in the years 2007 and 2010. This shows that the level of investment in all countries is still far below the investment level of 2007. As shown in the figure above, Denmark, Italy, Sweden and Norway all experienced a level of investment in 2010 more than 30 per cent lower than in 2007. The growth rate in the US was -23 per cent.

The evidence submitted could also include the following elements:

- a) development of the fundraising over the past five years, also in comparison with the correspondent national and/or European averages;

Fundraising is the capital raised by fund managers from all sorts of investors. These funds are then distributed to portfolio companies through initial investments and follow-on investments. Based on data on fundraising from PEREP analytics for selected European countries, it is possible to describe the level of Norwegian fundraising in a comparative perspective.

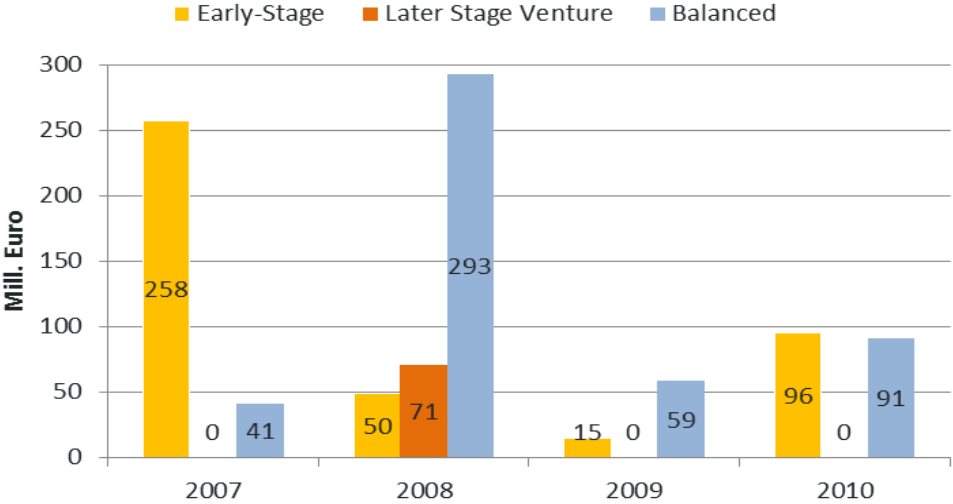
Venture funds are normally categorized according to how early they invest in a project. However, it is important to notice that most venture funds tend to spread out when it comes to investment profile. Several funds that predominantly focus on start-up and later stage ventures, also involve in some seed cases. Furthermore, as seed companies mature, they grow into the start-up phase or the later stage venture phase. Hence, seed funds also have investments in later stage companies. Consequently, the European Venture Capital Association has chosen to apply a slightly different classification of funds as compared to the classification of portfolio companies. This adjustment is only relevant when reporting fund raising activity and capital under management. The EVCA classification of funds is described in the table below.

Table 12: European Venture Capital and Private Equity Association’s definition of fund phases

FUNDS PROFILE/STAGE FOCUS – FUNDRAISING	
Early Stage Fund	Venture capital funds focusing on seed and start-up
Later Stage Venture Fund	Venture capital funds focusing on later stage venture and expansion companies
Balanced Fund	Venture capital funds focused on both early stage and later stage investments

Early and later stage venture funds in Norway cover funds like the 9 government seed funds with state co-funding, Spring-fondet, Northzone Ventures, Verdane Capital, Teknoinvest, Viking Venture, Energy Ventures, Incitia Ventures, Skagerrak Venture, BTV-funds⁸ etc. Both seed and start-up funds sort under early stage venture funds, yet normally they tend to supply capital to firms that are slightly more mature than the absolutely youngest ones. In the case of Norway, much of the fundraising in the category “Balanced Funds” are for later stage venture investments made by for instance Verdane Capital Advisors.

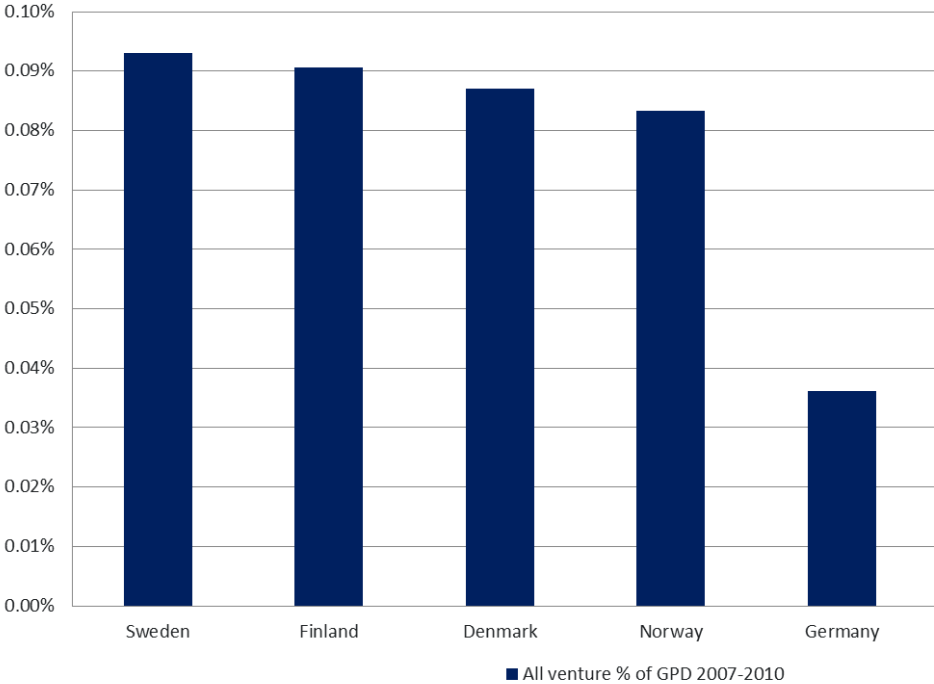
Figure 15: Development of fundraising in Norway by phase 2007-2010 Source: NVCA/PEREP Analytics



The level of fundraising the last two years has been at a very low level. The 2010-level was 40 per cent lower than level in 2007 for early stage capital fund raising. The level was even lower in 2009 with only 15 million EUR raised for early-stage investments. The high early stage fund raising activity in 2007 was partly driven by the establishment of the new district focused seed funds with government loan capital, and partly by the fundraising activity of fully private venture funds (yet none of these are focusing particularly on seed investments). The low level of fundraisings the last couple of years gives no indication of improvements, and our survey data gives reason to expect a sluggish fund raising climate over the next years.

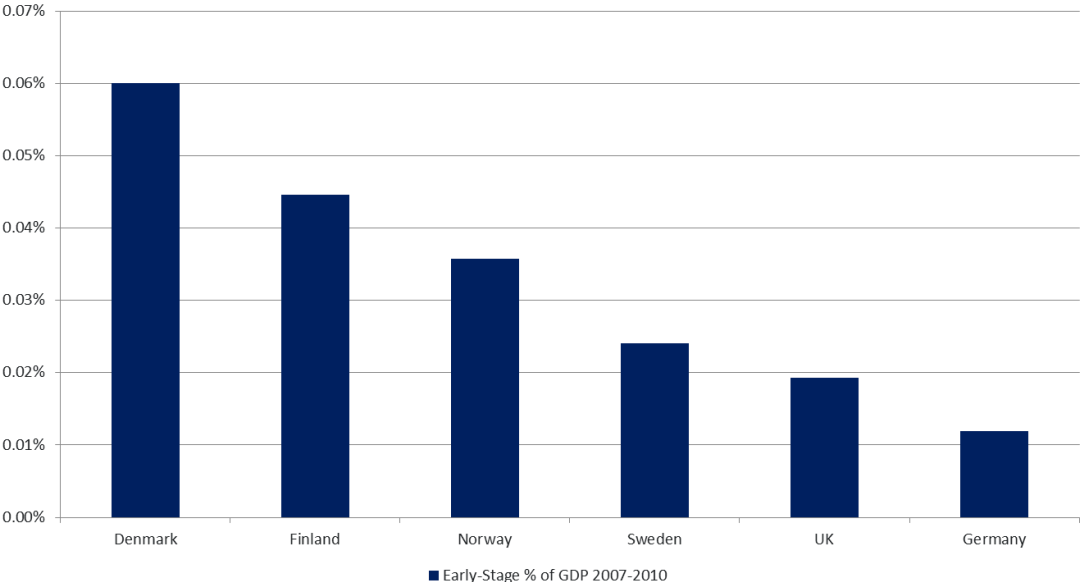
⁸ See MENON /NVCA (2010): NVCA årbok 2010, Oslo for a thorough introduction to the funds' activities and stage focus.

Figure 16: All venture fundraising (period 2007-2010) in per cent of GDP Source: NVCA/PEREP Analytics



The overall venture fundraising level in European countries is described in the figure above and show that the level in Norway is a slightly lower than the levels than the other Nordic countries. Compared to U.S., where fundraising represents 0.15 per cent⁹ of GDP, the levels in Europe are much lower.

Figure 17: Early-Stage fundraising in % of GDP 2007-2010 Source: NVCA/PEREP Analytics.

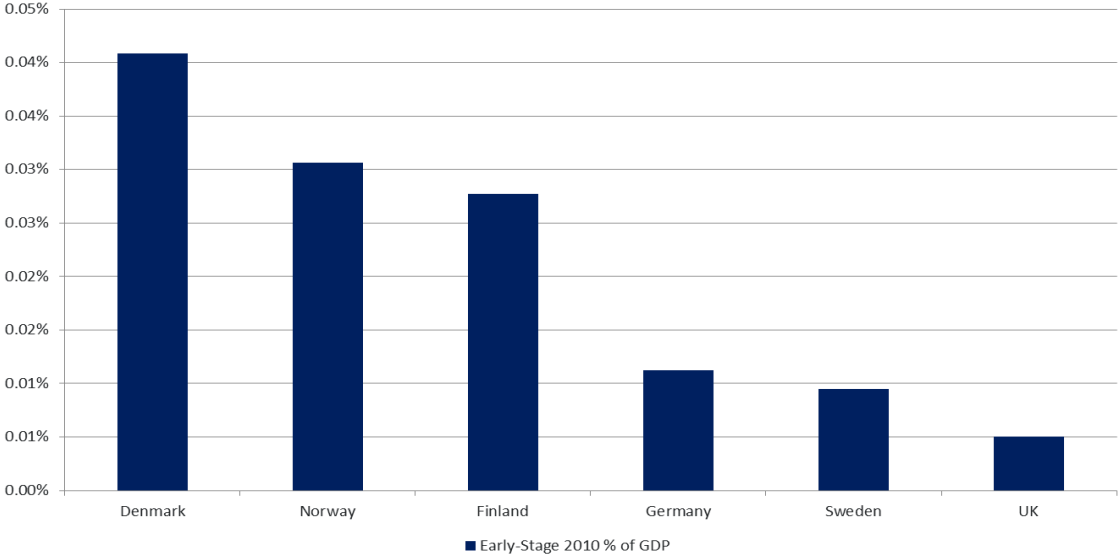


In figure 17, we focus solely on fund raising in the early stage venture segment for the whole period 2007-2010. Here, Norway falls into the mid-category, yet the general picture is of a low activity climate. Less than half of the venture fundraising was aimed towards the early stage segments. In figure 18 below we look only at 2010.

⁹ Source: Thomson Reuters and National Venture Capital Association

As share of GDP, early-stage fundraising was considerably below the overall level for the whole period 2007-2010.

Figure 18: Early-Stage fundraising in % of GDP in 2010 Source: NVCA/PEREP Analytics.



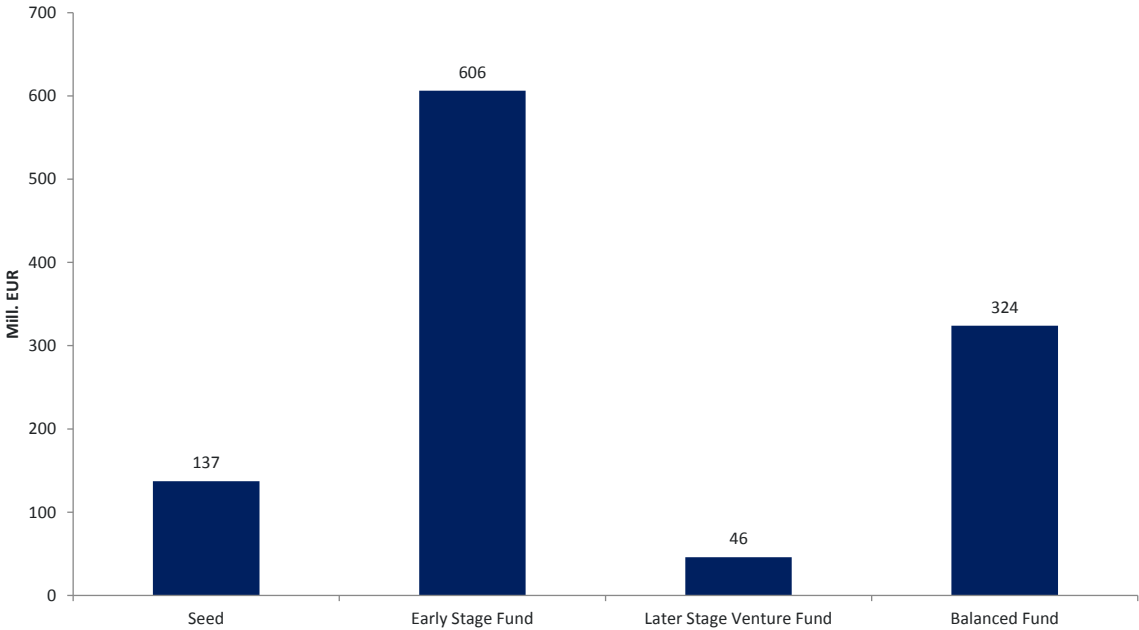
b) the current overhang of money;

Based on reported fundraising and investment figures over time it is possible to provide an estimate of the remaining capital for investment in existing venture funds. In the graph below we have split the amount of capital available into fund stages. As shown in the section above on fundraising, in the venture stage EVCA only operate with three phases of fund focus: early stage venture fund, later stage venture funds and balanced funds. In order to focus more on funds with a very early investment focus, MENON has generated an additional “seed” fund category in order to separate those funds primarily focusing on seed companies from those focusing more on start-ups.

The current overhang of money is estimated based on the assumption of an annual administration fee of 2.5 per cent of committed capital. In addition, to avoid overestimating the current overhang of money we have adjusted the investment figures with a factor of 1.15 to control for the fact that not all venture investments are reported by the funds. Notice that estimating the overhang of money is a complex task, and there are very few examples of similar estimates in the literature covering this investment class. Our estimates must therefore be regarded as pioneering work, and we expect that our calculation standards will develop further as other researchers involve in similar studies.

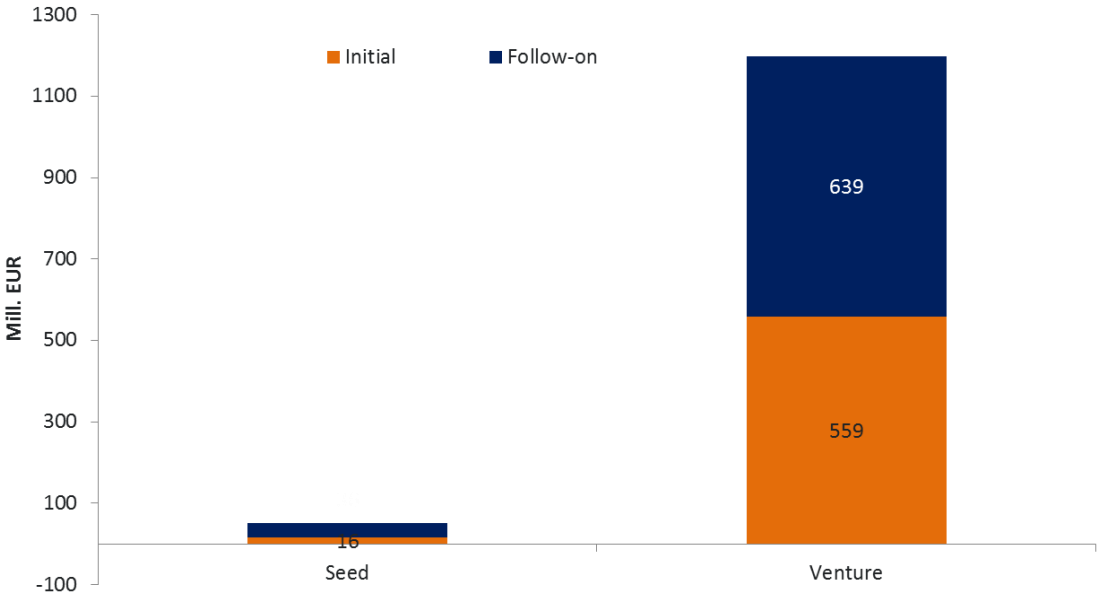
All together the amount of venture capital free for investment in Norway is estimated to be 1.1 billion EUR. This represents 34 per cent of the currently committed venture capital. The figure below shows the current overhang of venture capital split into the different phases.

Figure 19: Estimated amount of venture capital available for investment split on phase focus, mill. EUR. Source: MENON Business Economics and NVCA/PEREP_Analytics



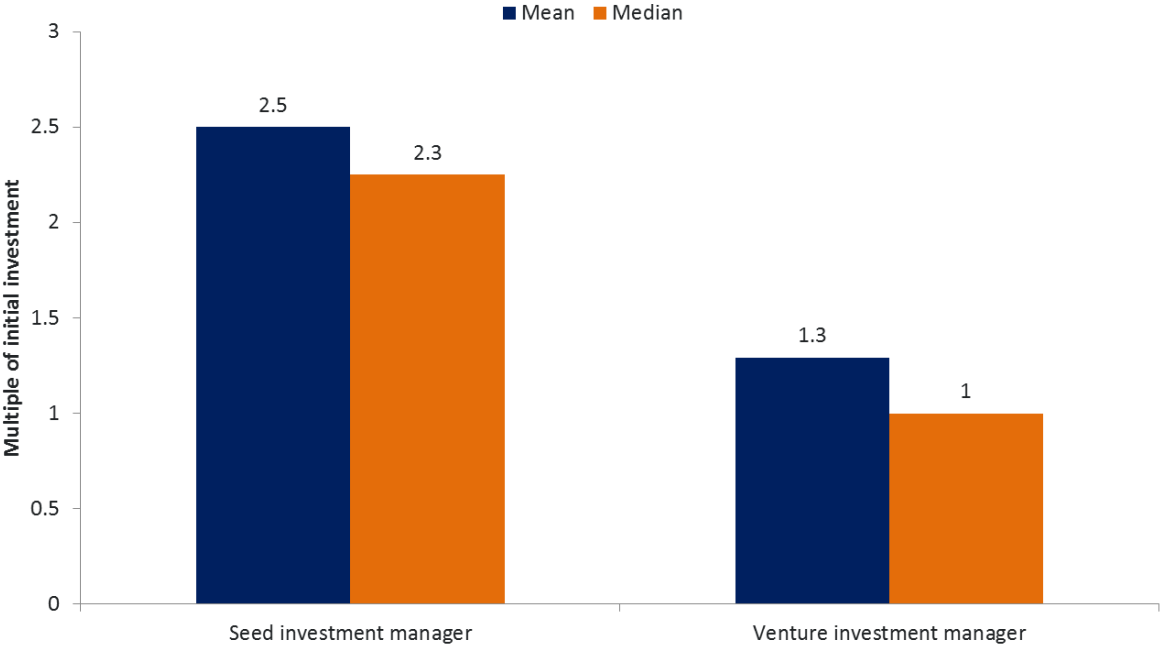
The figure below shows that all venture phases have less than 50 per cent of the originally committed capital free for investment. The seed stage is estimated to have about 39 per cent of the capital free. The figure clearly shows that the total amount of capital allocated to the seed segment is considerably smaller than the amount allocated to the more mature venture segments. According to NCVA (2011), the seed segment manages 12 per cent of the capital managed by start-up and later stage funds.

Figure 20: Available capital for future investments – Survey data



It should be noticed that almost all of the capital in all these funds will now be applied for follow up investments on companies already in the funds’ portfolios. In other words, there is not much room for new initial investments, neither in the seed nor the start-up and later stage venture segments. To illustrate this point further, the figure below presents the share of funds normally uses on follow-on investments. The figures are collected through a survey directed towards fund 160 managers and investors (response rate of 69 per cent). A multiple of 1 implies that initial investments are expected to be of the same size as follow-on investments. A higher multiple requires higher follow-on investments.

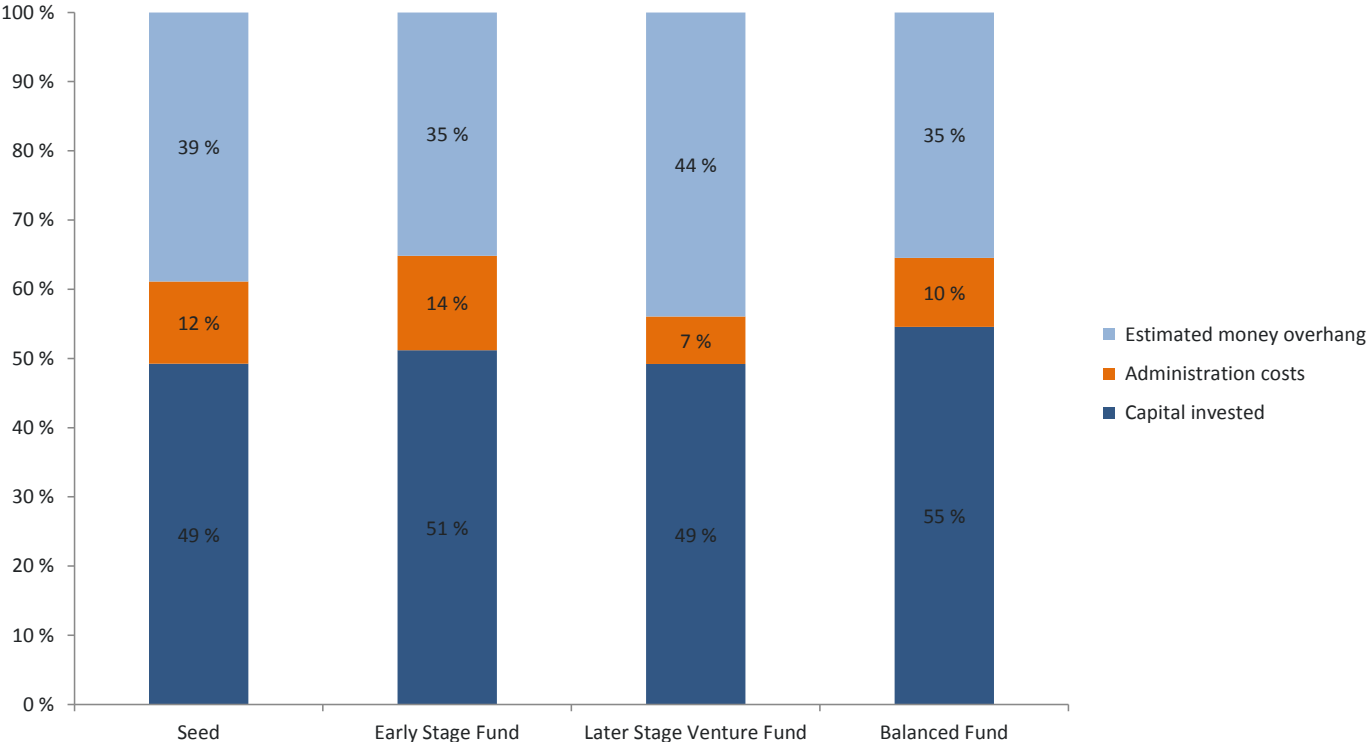
Figure 21: Follow-on multiple in seed and venture



Seed investment managers expect the highest level of follow-on investments, with an average of 250 per cent and median almost at the same level 225 per cent. Investments managers in more mature investment classes expect a considerably lower level than for seed, and they have a mean level for follow-on investments that is just only 1/3 higher than the initial investment. The median level shows that the level of follow-on is the same as initial investment.

This pattern is of high importance for policy makers. It suggests that investment in seed funds require substantial investments in each case, although the initial investment may be small. This pattern is highly consistent with the observation showing that seed funds are normally spending a long time as investor in each case, and that seed funds rarely are able to exit a case before the case has reached far in terms of size and maturity. Although new investors often arrive along the investment path, seed funds are normally locked in as investors for a long time, which requires substantial follow-on investments in order to not be minimized as investor over time. Moreover, seed funds tend to invest in portfolio companies through a large number of smaller investments. This is optimal due to the large risk in each project. Hence, the initial investment tends to be small as compared to the accumulated follow-on investments.

Figure 22: Committed venture capital split on share of capital already invested, administration costs and capital free for investment. Source: MENON Business Economics and NVCA/PEREP_Analytics



c) The share of government aided investment programs in total venture capital investment over the preceding three to five years;

There are basically three programs in which Norwegian government funds are channelled into venture capital. The first program is the fund in fund called Argentum which invests government capital in venture capital and private equity funds from later stage venture to buyout. The second program is the investment firm Investinor which invests equity directly into companies in the later stage venture phase. While the third is the seed fund program in which state capital is provided as loans with a risk relief element to private equity funds focusing on early stage venture capital investment. However, out of these three vehicles, only the seed fund investment program (Såkorfondordningen) qualifies as a government *aided* investment program in terms of mitigating risk for private investors. The other two public investment programs provide capital on equal terms as private capital and contain no element of subsidy.

In addition to these investment vehicles, the government provides support to potential high growth early stage companies through a series of grants and loans channelled directly to the companies. These instruments are discussed in more detail in chapter 3.3 of this report.

In the seed investment program state capital is provided as loans capital to the venture funds. The loan capital amounts to half of the funds' size with the remaining capital being equity from private investors. The public risk mitigation is provided through a *loss fund* which is the size of 25 per cent of the loan capital, or 12.5 per cent of the fund's total size (the loss fund is larger for the regional seed funds). Given that the funds tend to last for 10-15 years the level of risk mitigation is calculated to amount to a yearly rate of no more than 1 per cent.

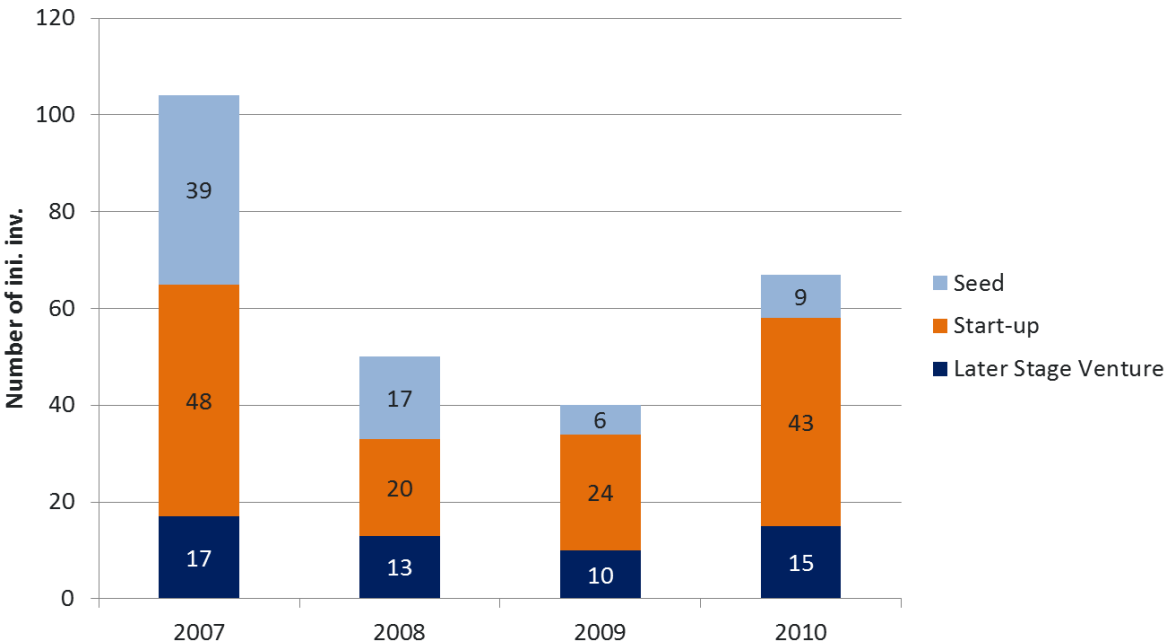
In the period 2007-2010 the share of total venture investments made by government aided investment programs in the total venture capital investment was 12.3 per cent which equals EUR 113 million. This includes investment in companies from the seed phase and all the way to late stage venture¹⁰. The earlier the stage the more important is the government aided investment program. In terms of the number of Norwegian companies receiving venture capital for the first time over the period, 42 per cent of the venture investments (incl. seed to late stage venture) were backed by government aided funds. Looking solely at companies in the seed stage, 68 per cent of the initial investments were made by the government aided funds.

d) The percentage of new start-ups receiving venture capital;

The percentage of all new start-ups in the economy receiving venture capital are estimated by using the MENON *company database* covering all companies in Norway that are obliged to report accounts to the central accounting registry. This database is then linked to the NVCA/PEREP Analytics database of companies that received venture financing by merging the organization number of firms. Hence, we are able to calculate the proportion of all start-up companies that have received such funding. MENON has applied routines and definition for identifying start-up companies (seed, start-up and expansion). These routines are described in chapter 2 of this report.

In figure 23 below, we report the number of initial investments venture capital funds by phase from 2007 to 2010 below. The amount of initial investments has increased some in 2010 after a strong downturn in investments in 2008 and 2009.

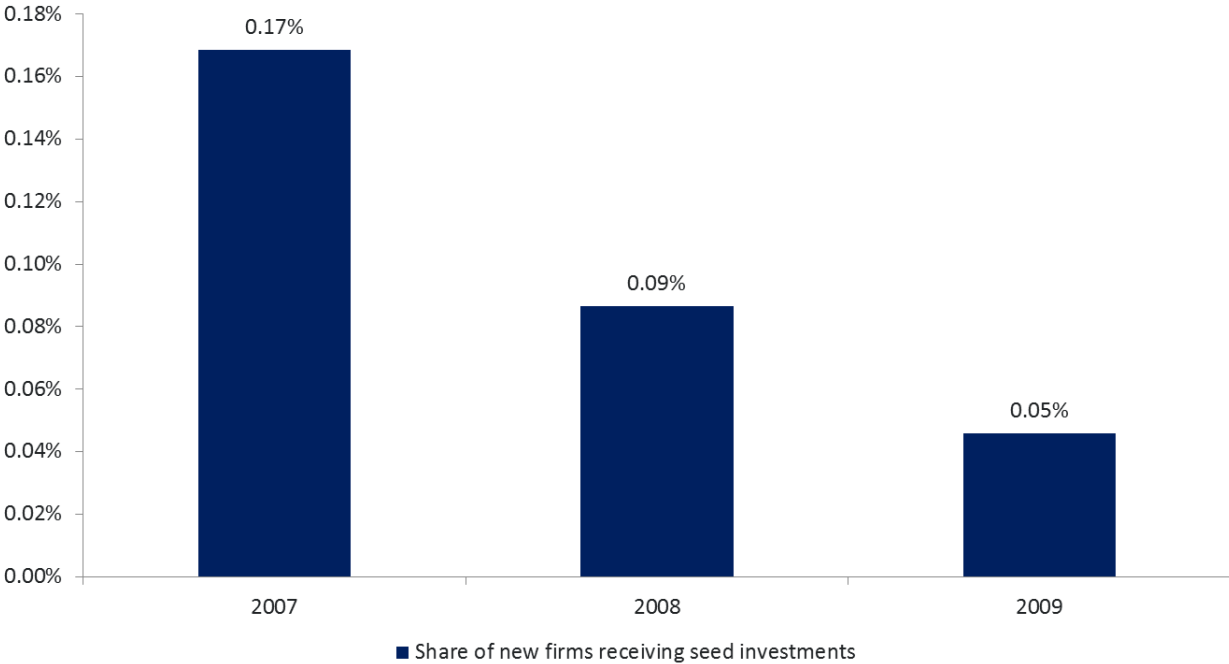
Figure 23: Number of initial investments by phase from 2007-2010 Source: MENON Business Economics and NVCA/PEREP Analytics



¹⁰ The amount in EUR is calculated using an average exchange rate of 8 NOK per EUR.

In figure 23, it is evident that there has been a revitalization of investments in the start-up stage, yet in the seed stage, the effect of the financial crisis and the lack of new government supported seed funds is keeping the number of new investments low. The number of investments from the figure above is used to calculate the percentage of all new start-ups receiving venture capital investments of all start-ups that specific year.

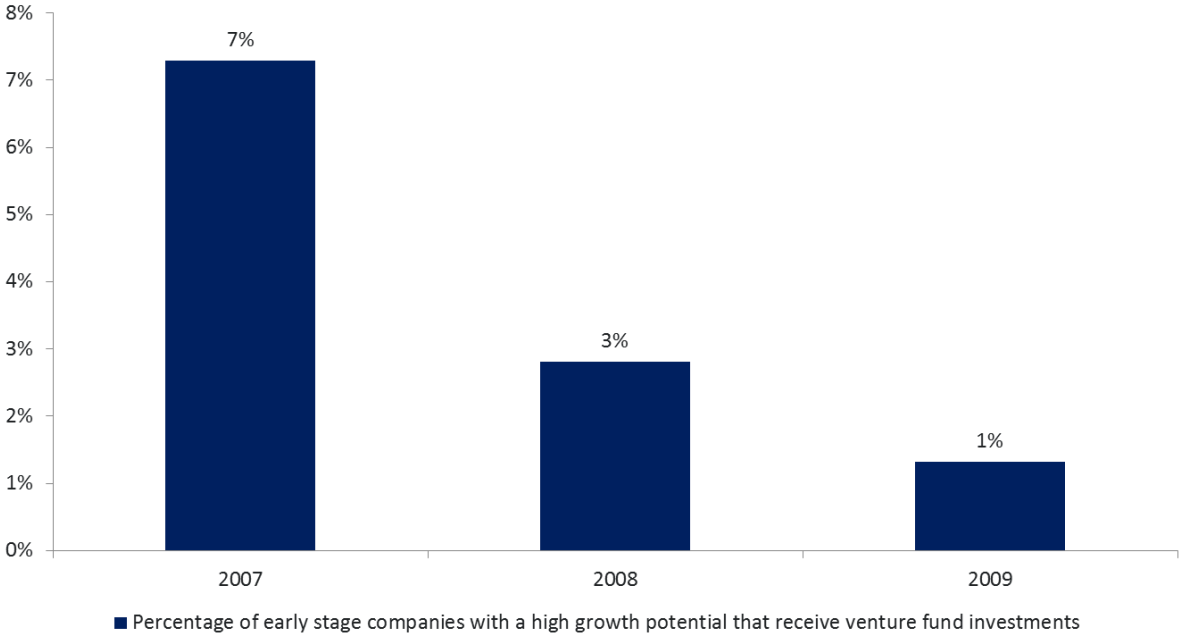
Figure 24: Share of new firms receiving seed investments Source: MENON Business Economics and NVCA/PEREP Analytics



The figure shows that of all start-ups in 2007, 0.22 per cent of the companies received seed investments. In 2009, this number was only 0.05 per cent. The figures illustrate that the probability of receiving early stage capital is miniscule.

The figure below contains a further attempt to illustrate the role of seed investment for new start-ups. Instead of looking at all start-ups and initial investments one year, the figure related to the overall number of early stage companies with a high growth potential that require substantial investments (see chapter 2 for more on this definition).

Figure 25: Share of early stage companies with a high growth potential receiving seed investments



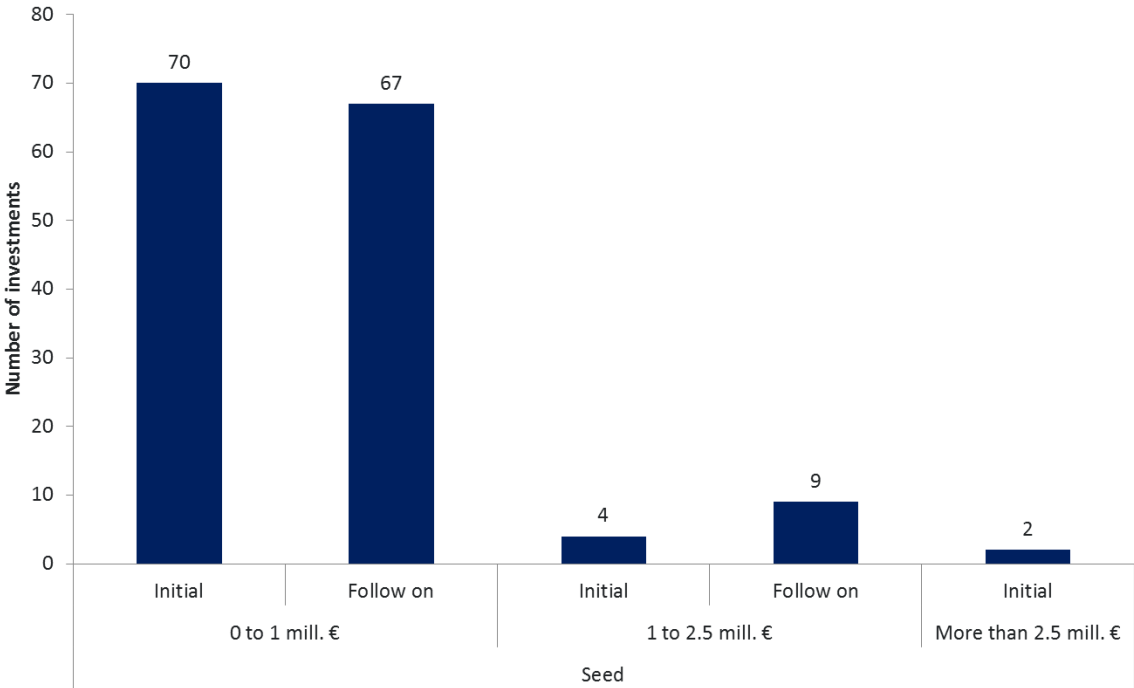
The share of such firms receiving venture fund investment in 2007 was as high as 7 per cent for start-ups with establishing year in 2006. This number fell to 3 per cent for start-ups from 2007. For businesses established in 2008, the chance of receiving was only one per cent. Once again, this illustrates how capital supply from early stage venture funds has been dramatically cut during the last years.

e) The distribution of investments by categories of amount of investment;

To illustrate the distribution of investments by amount of capital invested, the investments have been divided into both investment phase, size of investments and whether they are initial or follow-on.

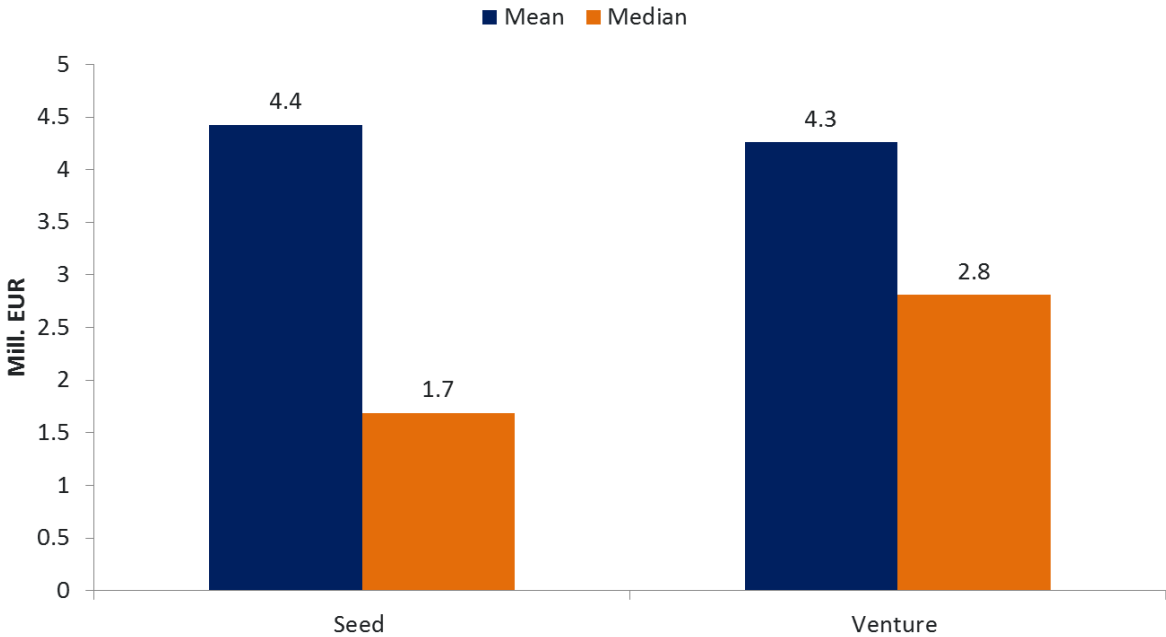
The European Surveillance Authority (ESA) operates with a cap on seed investments directed towards one company of 2.5 million EUR. Consequently, we have used this figure as a split for investment categories. In addition, we introduce a split at 1 million EUR. It is unfortunately not possible to accumulate investments (add initial and all follow-on investments together) based on the data material available, because the time series are not long enough. To map all follow-on investments in each case we need to follow the investment history further back in time.

Figure 26: Seed investments from 2007 to 2010, separated into groups according to investment size: Source: MENON Business Economics and NVCA/PEREP Analytics



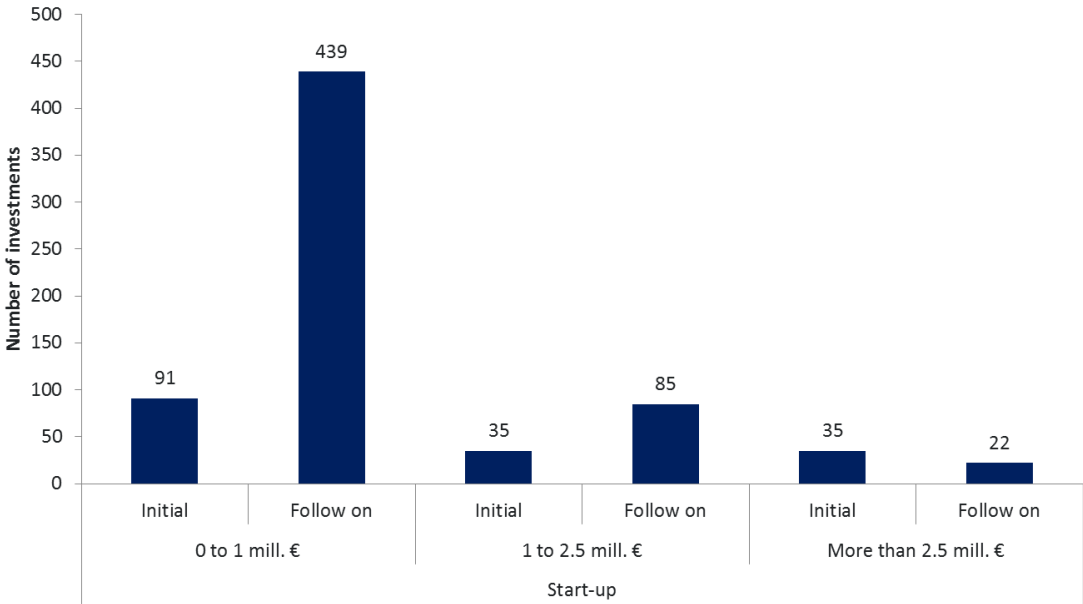
The figure above shows that most seed investments, both initial and follow-on investments, amount to less than 1 million EUR. 70 out of 76 initial investments in the seed segment amount to less than a million. Follow-on investments show almost the same picture with 67 out of 76 investments.

Figure 27: Average size of an investment – both initial and follow-on investment Source: Survey



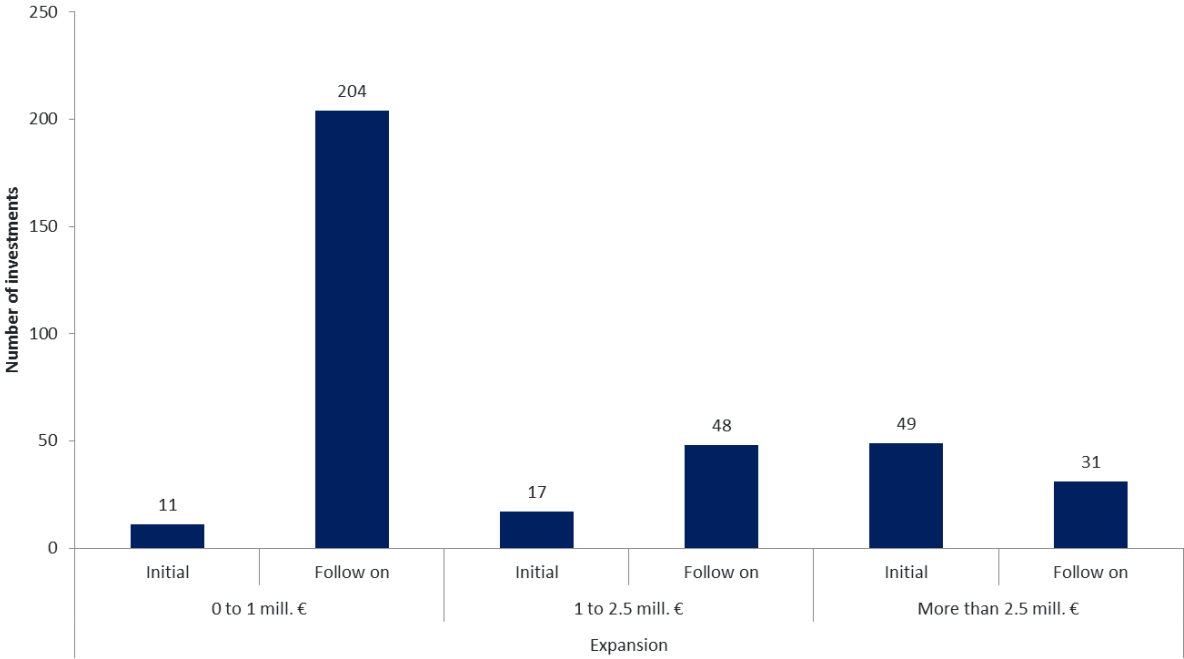
The figure above shows the typical deal size as reported from the survey directed towards investment managers. Seed investment managers report high average deal size values, reaching 4.4 million EUR. This figure is however strongly affected by some large investments. Hence, it is more relevant to map the median investment level, reported to 1.7 million EUR. The reported figures from the survey clearly exceed the figures covered by the EVCA/NVCA/PEREP Analytics data, and may reveal that managers report higher investment figures than what is actually made. We expect that the reported figures from the survey are dominated by the portfolio companies where the fund managers see a clear potential for successful developments and future exits. In these cases, investments will be considerably higher than in the large group of companies that do not succeed. Nevertheless, the reported figures illustrates an important aspect of seed investments: Those relatively few portfolio companies that represent the successful cases clearly require substantial investments, not much different from what we see in the venture funds focusing more on the start-up phase. Hence, if government programs directed to such funds carry limitations on investment size, these limitations will predominantly affect the ability to follow up the successful cases, clearly contributing to lower returns in the funds.

Figure 28: Start-up investments from 2007 to 2010 separated into groups according to investment size: MENON Business Economics and NVCA/PEREP Analytics



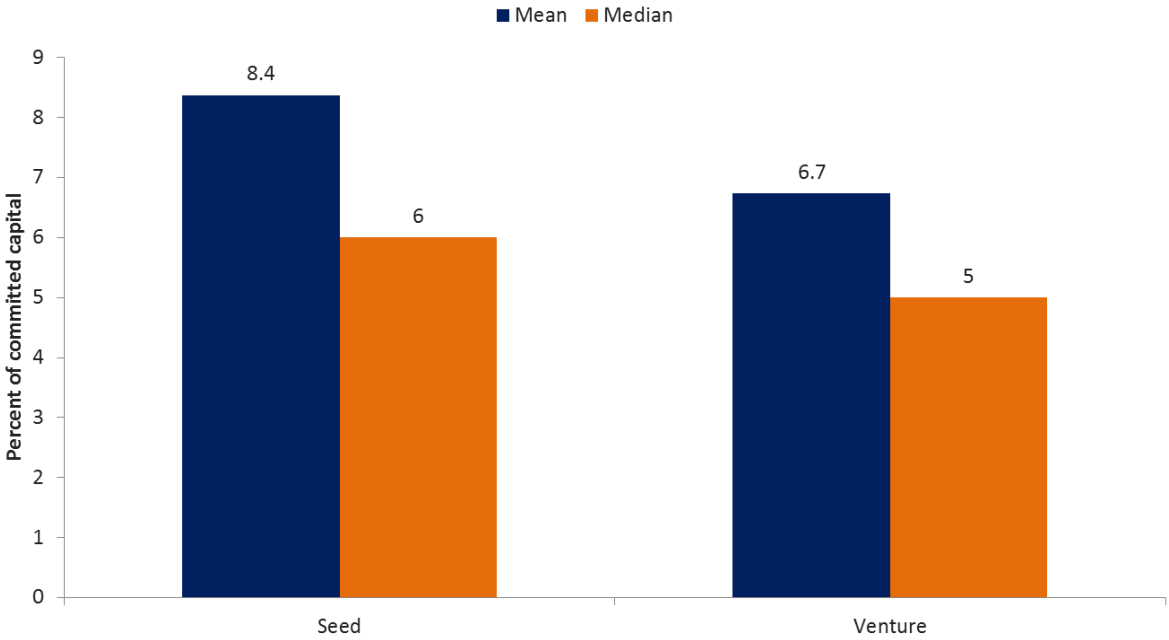
Start-up investments clearly follow a different investment pattern, compared to seed. The number of investments, 707 investments in total, is not surprisingly much higher than seed’s 152 investments. Also here, most of the investments made are less than 1 million EUR, yet the proportion of larger investments is substantially higher. Once again, the small investments are probably linked to cases that do not succeed over time, at least the smaller follow-on investments. Once again, notice that according to the investment manager survey, the size of initial and follow-on investments do not differ much from those reported by seed funds managers. The median investment in portfolio companies (initial and follow on combined) is reported to be 2.5 million EUR, compared to 1.7 million EUR in the seed segment.

Figure 29: Expansion investments from 2007 to 2010 separated into groups according to investment size Source: MENON Business Economics and NVCA/PEREP Analytics



In the expansion phase there have been a total of 360 investments. The number of small initial investments in this category is small, yet follow-on investments remain relatively small, also for this more mature segment.

Figure 30: Average investment in a single portfolio company, in per cent of committed capital



In the survey the respondents were asked whether their fund operate with a maximum level of investment in one single portfolio company. 6 out of 28 which answered this question had no maximum limit on investments. Others had a limit on 10 per cent of committed capital. The average maximum level is illustrated in the figure above. Notice that the seed fund managers report a higher maximum share of the capital available in the fund

than what we find in venture funds. The maximum rate in the seed funds is probably affected by the regulations in the funds supported by government capital. Moreover, the lower maximum level in the venture funds may also reflect that venture funds in general are larger in terms of committed capital. The patterns described in the figure above are important from a policy perspective. If funds with government support are small, the limitation on share of committed capital allocated to one portfolio company becomes more limiting, potentially affecting the ability to follow the successful cases that require substantial investments.

f) A comparison of the number of business plans presented with the number of investments made by (amount of investment, sector, round of financing, etc.).”

In our survey, investors and venture funds were asked about their deal flow. The deal flow may illustrate the equity gap situation measured in terms of the gap between considered cases and investments. As shown in the table below, the respondents have reported for the flow of new business cases in a year, summing up to almost 5000 cases. Managers of venture capital funds face the largest deal flow. There are several reasons for this. First, they are slightly overrepresented in our survey. Secondly, many of them are relatively large in terms of capital under management. Hence, entrepreneurs know these funds better. Finally, the other types of respondents have a more exclusive (TTOs and incubators) or limited deal flow. Notice that compared to the amount of available capital for investment, seed fund managers face the largest supply of business cases.

Table 13: Deal flow – Supply of business cases in one year

	Sum	Mean	Median	Respondents
TTO	360	72	60	5
Industry incubator	309	28	15	11
Incubator	737	61	50	12
Seed investment manager	720	90	95	8
Venture investment manager	2575	151	100	17
Total	4701	89	60	53

The supply of business cases tells us something about the amount of companies that wish to receive project funding, but less about the quality of the deal flow. Therefore the managers were asked to also report the amount of business cases they considered in more detail, initiated negotiations with and in the end invested in. The table below describes the difference from the large overall deal flow, all the way down to the number of actually invested cases.

Table 14: Deal flow – From supply of business cases down to invested cases one year (given new investments that year)

	Available	Considered	Negotiated	Invested
TTO	360	240	108	84
Industry incubator	309	151	26	17
Incubator	737	442	111	54
Seed investment manager	720	285	63	31
Venture investment manager	2575	726	179	71
Total	4701	1844	487	257

Out of the 4700 business cases forming the deal flow, approximately 1800 were considered¹¹ with some interest. This brings the deal flow down by 60 percent. When negotiations were initiated the deal flow was reduced to approximately 10 percent of the original cases. Investments were made in approximately 5 percent of the cases forming the full deal flow. It is important to notice that the share of the deal flow achieving investments is even smaller in the seed and venture funds. Here we are facing a rate of 2 to 3 percent.

5.2. PARAGRAPH 5.3.1

"In addition, EFTA States will have to provide evidence to show that there is no risk of crowding-out, specifically concerning the targeted segment, sector and/or industry structure. The following elements may be relevant:

The issue of a potential crowding out effects is a complex matter. Partly government backed seed and venture funds may compete with private investors for the best investment cases. But according to our survey, several private investment managers stress the importance of government backed funds as co-investors, enabling private investors to join an investment case that requires more capital than what the private fund has available. This response is probably strongly affected by the fact that government backed seed and venture funds are limited with respect to how large shares of the company they are allowed to hold. Previous funds are not allowed to hold more than 49 per cent of the shares, and very few investments involve more than 30 per cent, allowing private funds and investors to coinvest actively.

Moreover, the question of crowding out effects is strongly linked to the overall condition of the economy. In a recession, the competition for investment cases will be limited, while under more normal conditions, competition may be more pronounced. Yet, in the survey only 2 out of 12 seed fund managers reported to have been in competition with public seed funds. Moreover, 5 out of 15 venture fund managers have experienced to compete with public investment capital (Investinor). Yet this fund is not investing subsidised government funds and is solely co-investing with private investors, both in terms of initial investments and follow-on investments. Consequently, there is limited evidence pointing to a crowding out effect through government supported early stage funds in Norway.

a) the number of venture capital firms/funds/investment vehicles present at national level or in the area in case of a regional fund and the segments in which they are active;

Below, we present an overview of the venture capital management companies in the Nordic countries. The overview is based on the registry of members in the national venture capital associations in different countries.

¹¹ Considered - used at least one day to consider investments

Table 15: Venture capital management companies in the Nordic countries

	Seed	Seed/Start-up	Start-up/Late stage venture	Total
Denmark		3	8	11
Finland	1	9	3	13
Norway	9		22	38
Sweden	9	37	31	77
Nordic countries		1	3	4
Total	26	50	67	143

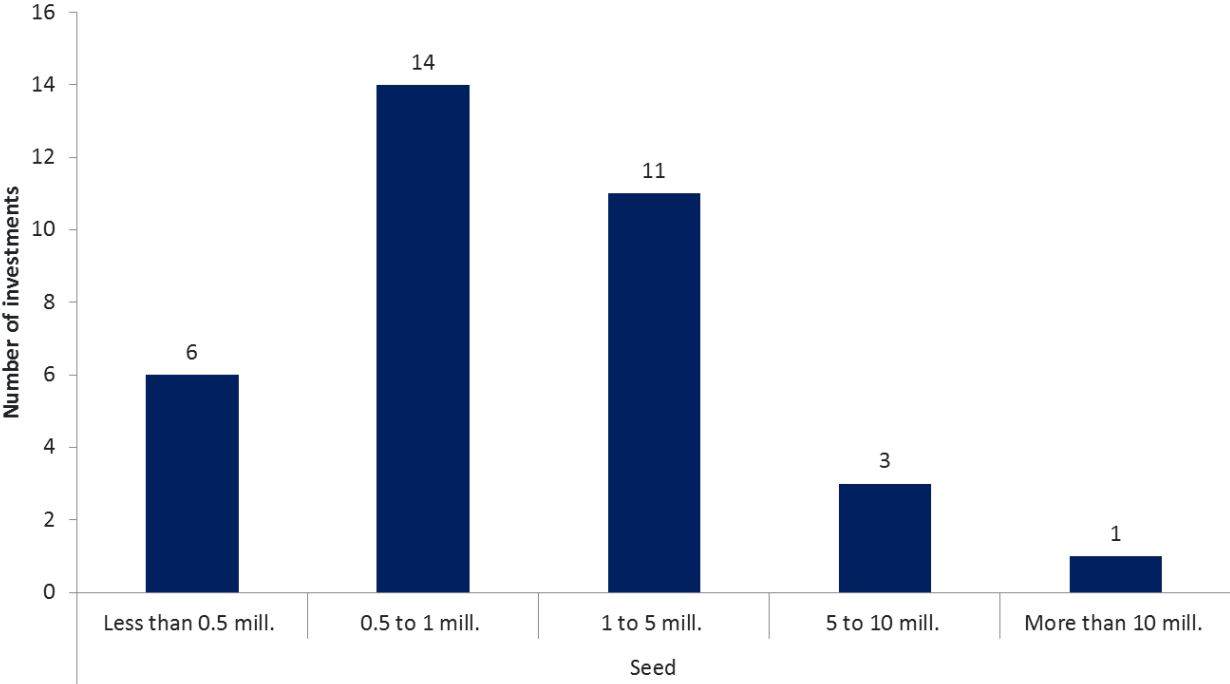
A comparison between Nordic countries with respect to the number of venture funds is complicated by the way funds are registered by the national venture capital associations. In Denmark and Finland, there is no clear split between seed and start-up. Moreover, the early stage fund structures with government support vary a lot between countries. In Sweden, Almi Invest is actually a collection of regional funds, but registered as one fund, whereas the seed funds in Norway are reported as members one by one. Also, the associations do to not really register funds, but rather management companies. One management company may administer several funds, leading to underreporting of funds in that specific country. Consequently, we find it hard to provide a comparable list of the number of early stage venture capital funds that serves the purpose of being a measure for comparison. As an alternative, we suggest that the reader turns to the measure of early stage capital under management or accumulated fundraising as discussed above.

b) The targeted enterprises in terms of size of companies, growth stage, and business sector;

To identify the size and growth stage of targeted enterprises, MENON Business Economic has utilized the aforementioned database of companies which have received financing from venture funds. The database gives the name of the company and business phase. This information is then linked and matched to MENON’s company database which contains accounting data covering the size of companies (turnover, employment, etc.).

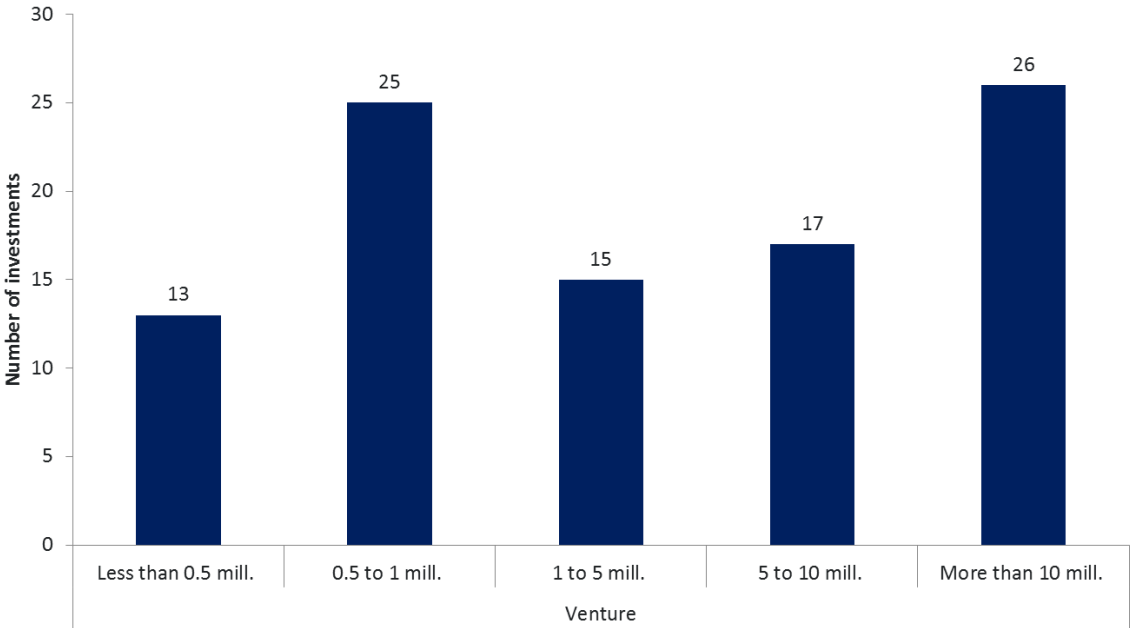
The following figures report targeted enterprise turnover by phase, followed by employment by phase.

Figure 31: Turnover i mill NOK. for companies receiving seed investment in 2007-2009 Source: MENON Business Economics & NVCA/PEREP Analytics



Most companies in the seed segment had a turnover when receiving initial investments between 0.5 million and 1 million NOK. Only one company reported turnover above 10 million NOK at this stage. Notice that according to the seed definition applied by the EU, most seed companies in the existing portfolios are actually more mature. As discussed in chapter 2, the seed definition applied by the EU is probably more in line with what investors and experts term pre-seed, where a company is not yet established and no management team is operational. We believe that this aspect is of high importance for policy development. It is necessary to realize that definitions are in line with what private investor definitions. This is especially important when policy aims to increase the amount of private capital channelled to the early stage risk capital market. If government programs focus on a too early stage, private investors will not respond as expected to government stimulus.

Figure 32: Turnover i mill NOK. for companies receiving venture investment in 2007-2009 Source: MENON Business Economics & NVCA/PEREP Analytics



In the venture segment, the size distribution is quite different, with a wider spread of turnover size. As mentioned previously, funds investing in the start-up and later stage venture segments are rarely involving in companies that do not generate revenues. In our database, a very small proportion of these portfolio companies were so-called pre revenue cases.

In the figures below, the differences between seed and venture portfolio companies is confirmed. For seed, the vast majority of the companies have less than 5 employees, whereas for venture companies, the proportion of larger firms is higher. Nevertheless, many venture backed companies are still small.

Figure 33: Number of employees in companies receiving seed fund investments in year 2007-2009 Source: MENON Business Economics & NVCA/PEREP Analytics

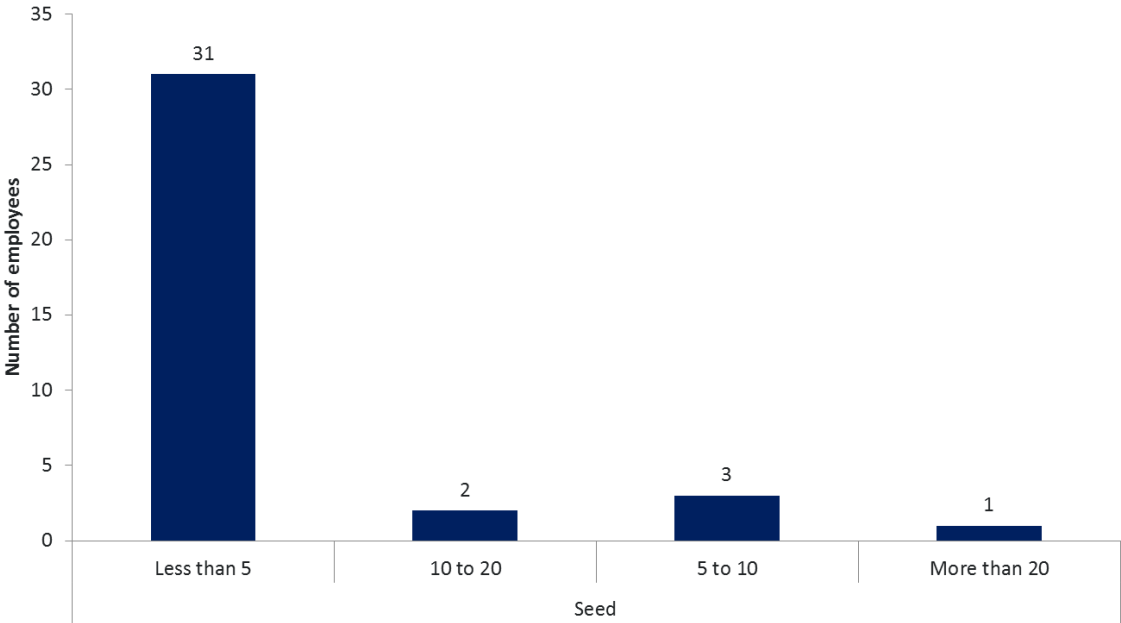
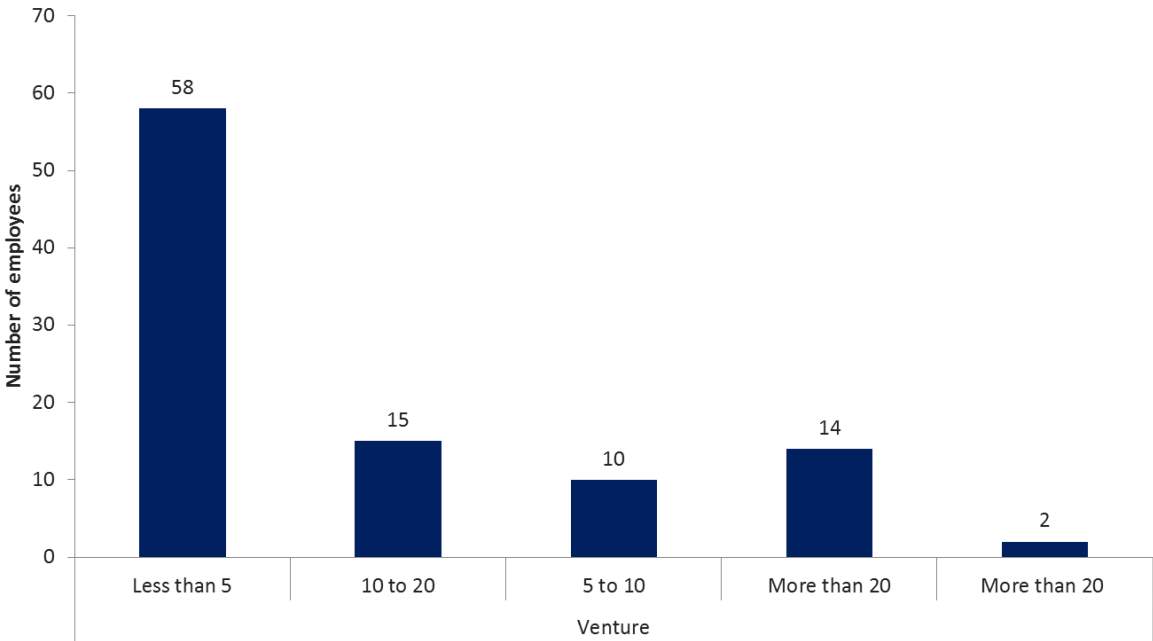


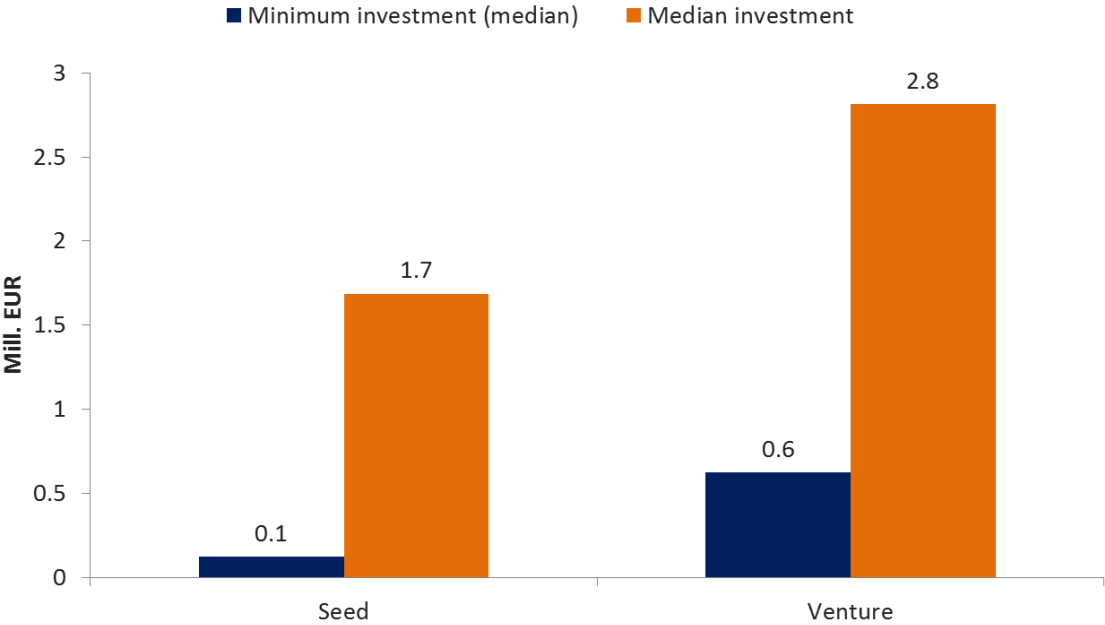
Figure 34: Number of employees companies receiving venture fund investments in year 2007-2009 Source: MENON Business Economics & NVCA/PEREP Analytics



c) the average deal size and possibly the minimum deal size the funds or investors would scrutinize;

In our mapping of the size distribution of investments under point e) above, we have described the average deal size and the distribution of initial investments in the different segments and phases of the venture capital industry in Norway. Below, we briefly report the results from the investment manager survey with respect to reported minimum investments

Figure 35: Minimum initial investment size



In the figure above, it is evident that the minimum investment size for seed funds is rather small. To a certain extent, there is no minimum deal size, but rather a question of price relative to expected future earnings. Hence, several managers have replied that this question is not really a relevant question. Nevertheless, we have identified that seed funds undertake initial investments as small as 100.000 EUR, while the venture segment hardly enters cases where the capital required is smaller than 500.000 EUR. For illustrative purposes, we have displayed the median investment size, as reported in the section above. This shows that there is a wide gap between the most representative investment size and the minimum size.

PART THREE - CONCLUSION

6. THE NEED FOR GOVERNMENT INTERVENTION IN THE MARKET FOR EARLYSTAGE RISK CAPITAL

6.1. ARGUMENTS FOR GOVERNMENT INTERVENTION IN THE MARKET FOR EARLY STAGE RISK CAPITAL

To merely map the demand and supply of early stage risk capital is necessary but not sufficient in order to identify whether there is a need for government intervention in this market. The argument for government intervention in the market for early stage capital rests on the existence of market imperfection. In other words, there must be structural weaknesses in this market so that the market itself is not able to provide the correct amount of capital. The main reasons for imperfection in the market for early stage risk capital are:

- **Asymmetric information:** It is systematically complex for investors to assess the quality of a project that is in its earliest stages. Also, the entrepreneur has strong incentives for presenting the project more favorably than what is reasonable. Hence, investors tend to avoid the earliest stages.
- **Knowledge externalities:** Innovative companies that invest large amounts of capital and other resources into costly R&D projects most often contribute to the further development of a common knowledge pool that other firms and institutions may gain from over time, without necessarily paying for using the knowledge. Such spillover effects are normally termed positive knowledge externalities and may contribute substantially to economic growth, although the investor himself does not gain from it in terms of private revenues. Because externalities provides society with gains that are not accounted for by private investors, the government has an incentive to support such activity, regardless of whether the innovator is an early stage company or a large corporation.
- **Risk aversion:** Private investors don't like risk. If it is risky, they require substantial compensations in terms of expected returns on the investments. Strong risk aversion means that many early stage projects are not funded, due to risk. Consequently, many projects that may be profitable both for investors and society as a whole will not see daylight. The government however, may not worry much about risk as long as the expected returns on the whole portfolio of government investments carries a sufficiently large expected return.
- **Recessions and flight to safety:** During recessions, the most risky asset classes always suffer the most since investors become increasingly risk averse. This pattern is notoriously affecting the early stage segment, and although the demand for such capital is dampened in periods of low growth, demand is by no means matched by sufficient amounts of capital supply. Hence there is a strong argument for government intervention during business cycle troughs as market imperfections are strengthened during these periods.

6.2. PREVIOUS EMPIRICAL STUDIES ON THE SHORTAGE OF CAPITAL IN EARLY STAGE BUSINESSES IN NORWAY

In addition to our own study of the need of public intervention, we have screened the existing literature on capital supply and market failure in the early stage capital market in Norway.

A survey on "Capital market for entrepreneurs (new establish businesses)" conducted by the Ministry of Trade and Industry (2002) focus on the capital market for groups of entrepreneurs with a large growth and value added potential. The study describes both the supply and demand in Norway, together with references to

international studies on this field. In the study the SMB market is described as followed: “Firstly, the market is characterized by asymmetric information. The supply and demand side has different information about a company’s change of success. Secondly, the majority of SMB’s do not have access to a market place for risk capital instruments. This leads to a larger information problem in the primary market and low liquidity/money supply in the secondary market. Both the two mentioned situations may give rise to misallocation of capital in a socio-economic setting.

Hvide and Mjøs (2007) found that the most important factor for an entrepreneur to receive external early stage equity, relates to how well off the founder is. The entrepreneurs with external equity were less wealthy than those without. The external equity does not compensate fully for internal wealth, and the companies with external equity are significant smaller than those without. The interpretation of this is that businesses with external equity experience a limitation on the access of equity and credit.

Stamland, Rud and Mjøs (2008) studied geographic differences in the need and supply for capital in SMEs. Businesses located in regional areas have lower debt ratios than businesses in central areas, and it may be so that access to funding is weaker in more peripheral regions. Based on a survey, the study indicated that SMEs have more challenges getting access to equity than borrowed capital. This also indicates that if it is a shortage of borrowed capital, there will be shortage of equity capital.

Sørheim and Isaksen (2008) looked at the funding of new established businesses. The study shows that the self-proclaimed growth companies are actively seeking loan capital and external equity, and are more likely to be offered and receive loan and equity capital. Based on the results they conclude that there is no national or regional equity gap for entrepreneurs in Norway.

Reitan and Sørheim (2002) conducted a survey to 269 SMEs, on the supply of financial capital. They observed that a larger number of companies in the development, establishment and growth phase got external investments the last three years. Still, the access of capital is still lower for early stage businesses compared to later stages. The reason for this is a higher capital need in early stage businesses. The authors concluded that there is a need for more external owners with experience and expertise in the Norwegian market for early stage risk capital. More precisely, there is a lack of “competent capital” in this market.

In MENON (2009), the Norwegian seed funds were thoroughly evaluated according to a large series of objectives and quality criteria. The evaluation also contained a consideration on the efficiency of the early stage risk capital market, partly based on earlier literature and partly on several empirical mappings and interviews. The report claims that although it is hard to provide clear proofs of a need for government intervention in the market for early stage risk capital, the absence of professional and organized capital supply to this investment segment is pronounced. The report claims that unless the government contributes with capital and risk alleviation, the access to capital will be sub optimal in Norway, seen from an economics perspective.

In MENON (2010), a thorough study of the short term measures applied to counteract the effects of the financial crisis in 2009 was conducted, focusing on three government support programs; nationwide entrepreneurial grants, IFU/OFU grants (see chapter 3) and nationwide risk loans. In 2009, these programs were boosted in terms of capital available to firms in central locations in Norway. Before 2009, this type of firms did not receive funds of any significance. The study provided proofs identifying lack of funding and market imperfections in the more central regions of Norway.

In MENON (2009b), firms in the venture and expansion segments were studied in terms of growth in value added and turnover. The study showed that venture firms with access to long term credits had a considerably higher growth rate than firms without access to such capital. For firms in the expansion segment however, this correlation was not significant. In the table below, we briefly report the findings.

Table 17: Company growth 2003-2007 given supply of external equity in 2003-2005 Source: MENON Business Economics (Argentum study 2009)

	Value added		Turnover/annual sales	
	With	Without	With	Without
Venture	478 %	189 %	30 %	36 %
Expansion	5 %	7 %	23 %	13 %

6.3. ADDITIONAL EVIDENCE FROM THIS STUDY

Overall, the thorough empirical evidence presented in this study indicates that the market for seed capital in Norway suffers from severe shortage of capital. There is a clear ingredient of business cycle effects driving this shortage, yet experience points to a long lasting withdrawal of capital from this investment class following an economic crisis. This effect is confirmed by the survey, showing that expectations relating to future capital supply (up to 3 years from now) are meagre. The seed segment does not appear to recover, and there is no reason to expect that other sources of capital supply are able to fill this void.

In the segments for later stage venture investments, access to capital is better, and the Norwegian investment industry focusing on this segment is also better developed. The Norwegian venture capital industry focusing on these later stages is relatively well developed and shows a clear pattern of recovery after a severe slump during the financial crisis. Hence, it is not similarly obvious that market imperfections affect this part of the market sufficiently hard to justify further government interventions.

The analysis in part two and three of this study has proved that the Norwegian market for early stage risk capital is strongly affected by the economic down turn due to the financial crisis. This is especially so for the earliest stages, where the seed segment shows no sign of improved access to capital. At the same time, the number of new investment cases is slightly reduced. However, compared to the cut in capital supply, the slowdown in demand is small. This is a clear indication of stronger marked imperfections driven by economic slowdown and flight from risky asset classes. Referring to figure 1 in the introduction, such a development contributes to increase the number of companies that fall into group 2. Consequently, if government measures are designed correctly, there is a strong potential for correcting market imperfections by stimulating investment in this kind of firms, especially in times of slow economic growth.

In our survey covering investment managers and leaders of TTOs and incubators, we explicitly asked for how they would change their portfolio of investments if available capital was doubled. Among those operating in the earliest stages, respondents replied that they would increase the number of portfolio companies considerably. In the table below, we have reported the hypothetical number of portfolio companies given a doubled size of their capital base. The earlier the stage, the larger the number of new portfolio companies. In the most mature segments, there was a more mixed reply, and several later stage venture investors claim that the amount of funds is now large enough to supply the market with sufficient amounts of capital.

Table 16: Deal flow, investments, and number of investments in a hypothetical world where funds were doubled.

	Considered	Negotiated	Invested	Hypothetical ¹²
TTO	240	108	84	107
Industry incubator	151	26	17	33
Incubator	442	111	54	121
Seed investment manager	285	63	31	39
Venture investment manager	726	179	71	71
Total	1844	487	257	363

In addition to this exercise, respondents were asked whether they experience a shortage of capital in the market for capital in the earliest stages. All respondents confirmed that there is a shortage. On this background, it is the conclusion of this report that new government initiatives towards the earliest phases of the early stage risk capital market in Norway is needed. This is especially relevant in an economy that is hit by a global slowdown that appears to last for some time.

6.4. DESIGNING GOVERNMENT MEASURES TO ENHANCE EARLY STAGE INVESTMENT RETURNS

Although there is clear need for government support correcting for market imperfections in the market for seed stage capital in Norway, there are significant problems relating to how programs are to be designed in order to solve the market imperfections. The track record of Norwegian as well as European seed funds with public support has so far not been convincing, at least in terms of returns, hardly reaching positive returns on average (see table 17 below and MENON 2009 for a study of the returns on investments in seed funds). The returns on investments are clearly falling sharply with how early you start to invest. Actually, as returns fall, risk (both systematic and unsystematic) is increasing. A recent paper by Driessen, Lin and Phalippou (2011) confirms this pattern based on studies of approximately 1000 funds over a long period of time.

Table 17: European Venture Capital and Private Equity funds: Annual returns: Pooled IRR over X number of years

Fase	3 years	5 years	10 years	20 years
Seed	2.3	-4.7	-1.1	0
Start-up and later stage	6.9	1.2	7.1	8.5
All venture	4.4	0.9	1.8	4.6
Buyout	21.9	15.9	16.6	16.2
All Private Equity	17.1	11.5	11.5	11.9

Source: EVCA og Thomson (2008)

Hence, unless one is able to design government support schemes that systematically favor characteristics and practices in funds that show success, the government will fail in its aims for correcting the market failures.

In MENON (2009) we identify that much of the under performance in seed funds can be explained by how the funds are structured and designed. We point out that previous seed funds in Norway to a certain extent lack

¹² Hypothetical – if the investment capital doubled, how many cases would they potentially invest in

the ability to satisfy three core criteria for success. Some of the problems appear to be related to restrictive mandates for investment strategy.

Three core criteria for success:

Ability to follow the ventures all the way to exit. Early stage investment vehicles always experience that the few successful cases they invest in, require long and costly investment paths. Consequently, the investment mandate cannot be too rigid with respect to how much one can invest in one specific case. Too strict limitations on the allocation of capital to each portfolio company will reduce the fund's ability to follow up projects that often require substantial investment in the later stages. As a consequence, the funds will obtain a reduced earnings potential, driving down the attractiveness of private investments in the fund. This aspect has been thoroughly documented in this study, showing that funds focusing on seed investments to a large extent have the same investment needs as a start-up fund. Partly, this is a result of seed funds not being able to hand sell equity before a complete exit or an IPO is reached. Most funds of this type experience that new investors require that the fund remains in the portfolio company as an owner equally long. Partly, this problem can be solved by establishing larger funds that allow more capital behind each successful case. Funds in Norway that report high returns and at the same time focus on seed investments are often operating in several segments, allowing for both seed and start-up investments. This way, funds establish a healthy combination of maturities in the portfolio, which also appears more attractive to private investors. This brings us to the second criterion.

Attracting professional private co-investors: The ability to successfully select good early stage cases as well as the ability to follow up the ventures and finally exit them, is strongly linked to the quality of co-investors. Most notably, it appears to be important to bring in industrial players that know the technology, the market and the potential new owners of a venture. The ability to attract such owners as limited partners in seed funds is strongly related to the fund's ability to alleviate risk through government risk absorption. Present programs for risk reduction in existing seed funds appear highly moderate, amounting to no more than 1 percent of potential losses per year. Hence risk reduction must be designed in order to attract such investors.

Competence of investment team: The investment manager teams must cover a large set of specialties: Selection competence, financial competence, industrial competence, entrepreneurial competence and exit competence. Experience from research shows that larger and more experienced teams tend to outperform smaller and less experienced teams. In order to ensure sufficient investment competence, it is required that funds are sufficiently large and significantly larger than what we have seen in previous seed funds in Norway with government support. Larger funds are able to raise a larger and more experienced staff. Also, funds that may invest in both seed and start-up may appear more attractive for experienced fund managers, raising the probability of positive returns and attracting more private investors.

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APPENDIX

Spørreundersøkelse gjennomført august 2011

Investeringsadferd

Hva er ditt fonds maksimumsgrense for totale investeringer i et selskap?

Maksgrense i norske kroner _____

Kan du eventuelt utdype hvorfor ditt fond har valgt denne maksimumsgrensen

Hypotetisk: Hva ville vært optimalt for ditt fond, gitt at du ikke hadde begrensninger fra ESA?

Dersom relevant, hva er ditt fonds minimumsgrense for totale investeringer i et selskap?

Minimumsgrense i norske kroner _____

Investeringsadferd

Hva vil du si er en typisk størrelse på totale investeringer i et porteføljeselskap hos dere?

i norske kroner _____

Hvor stor del av den totale investeringskapitalen til ditt fond er vanlig å investere i et case?

i % _____

I et gjennomsnittscase, hvor store er oppfølgingsinvesteringene sammenlignet med den initielle investeringen?

i % _____

Hvor mye kapital har du som forvalter tilgjengelig til fremtidige investeringer

totalt (NOK)? _____

til nyinvesteringer (NOK)? _____

Crowding out

Har du opplevd at ditt fond har konkurrert med offentlig subsidiert kapital (såkornfond) om plass i emisjoner?

a) JA? _____

b) NEI? _____

c) Vet ikke? _____

Har du noen supplerende kommentar til konkurranse med statlig subsidiert kapital (såkornfond)?

Har du opplevd at ditt fond har konkurrert med offentlig investeringskapital ellers (Investinor)?

- a) JA? _____
- b) NEI? _____
- c) Vet ikke? _____

Har du noen supplerende kommentar til konkurranse med offentlig investeringskapital ellers?

Dealflow

Hvor mange business case kommer dere i kontakt med i løpet av et år? (Her tenker vi på et år der dere driver med nyinvesteringer)

Hvor mange business case kommer dere i kontakt med løpet av et år?

Hvor mange av disse business casene

har dere brukt betydelig tid på å vurdere (minimum en dag)? _____

har dere innledet forhandlinger om investeringer med? _____

har dere valgt å investere i? _____

ville dere ha investert i dersom dere hadde dobbelt så mye kapital tilgjengelig? _____

Har du noen supplerende kommentarer til dealflowen?

Vurdering av tilbud og etterspørsel i markedet for tidligfasekapital

Om lag hvor stor andel av etableringene i inkubatoren/TTOen/forsknings/kunnskapsparken har fått tilførsel av kapital gjennom?

- a) såkorn- og venturefond _____
- b) annen ekstern egenkapital _____
- c) fremmedkapital _____
- d) tilskudd og lån _____

Har du noen supplerende kommentarer til om tilførselen av kapital har vært tilstrekkelig?

Hvor mange bedrifter

har vært knyttet opp til din organisasjon gjennom de siste tre årene? _____

som dere har vært involvert i, vil du betegne som forretningsmessige suksessfulle foretak? (Det vil være en flytende definisjon på dette, men helst med en omsetning på over 10 mill. kroner og driftsmargin over 10%, evt. solgt med _____

betydelig gevinst).

Har du eksempler på foretak som du tror ville blitt forretningsmessige suksesser dersom selskapene fikk tilført ekstern tidligfasekapital? Nevn navn

Forventninger om utvikling i markedet fremover: etterspørsel og tilbud

Basert på din erfaring, hva er din forventning om tilgangen på kapital til innovative tidligfasebedrifter de neste 1-3 årene,

	Høyere	Uendret	Lavere
sammenlignet med nivået i dag?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>

Basert på din erfaring, hvordan forventer du at tilgangen på relevante investerings-case blir de neste 1-3 årene,

	Høyere	Uendret	Lavere
sammenlignet med nivået i dag?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>

Vil det være behov for ytterligere subsidiert kapital til investeringer i innovative tidligfasebedrifter

	Ja	Nei	Vet ikke
i tiden fremover?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>

Vennligst begrunn svaret ovenfor. Eventuelt spesifiser hva slags type offentlige kapitalvirkemidler du ser for deg.

Forventninger om utvikling i markedet fremover: etterspørsel og tilbud

Hvilke næringer forventer du at behovet for subsidiert tidligfasekapital vil være stort de neste 1-3 årene? Nevn næringene og kommenter under

Med tanke på dagens (august 2011) spesielle situasjon med stor økonomisk usikkerhet i store deler av den vestlige verden,

	Høyere	Lavere	Uendret
forventer du en høyere/lavere/uendret situasjon i tilgangen på kapital i årene fremover enn du gjorde tidligere (våren 2011)?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>

Har du eventuelle kommentarer til forventninger om utvikling etterspørselen og tilbudet etter tidligfasekapital?

Investeringsadferd

Hvor mye kapital har dere tilgjengelig for investering/støtte i selskapene

totalt (NOK)? _____

til nyinvesteringer (NOK)? _____

IRR - Internal rate of return

Hva er ditt fonds IRR? (forutsatt at fondet har eksistert i mer enn to år)

IRR _____

Ytterligere kommentarer

Har du ytterligere kommentarer til tilgangen på tidligfasekapital eller kommentarer til denne spørreundersøkelsen?