Venture Capital during an economic downturn

How VC firms operate during the covid-19 crisis

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Abstract

This study aims to investigate how Venture Capital firms are influenced by the economic effects caused by the covid-19 pandemic, particularly how the screening and investing processes, as well as the management of the portfolio companies are affected. A qualitative research methodology was applied where semi-structured interviews were conducted with Venture Capital firms situated in Sweden. A generalized outcome from the Venture Capital firms concludes that the screening processes are taking longer, there are fewer new investments and the management of the portfolio companies is more active, there is in other words a more frequent communication between Venture Capital firms and their portfolio companies.

The active management of portfolio companies also consists of forming strategies to cope with the new situation, cut costs and establish new financing. Further, the study shows that a few of the VCs are well-positioned to continue investing during covid-19 and aim to make favorable investments due to lower valuations on startups. What distinguishes these VCs compared to the rest is access to capital and forward-looking investment strategies where substantial funds are allocated to follow up investments of portfolio companies.

Keywords: Venture Capital, VC firm, covid-19, startup, investment strategies, screening, portfolio companies, financial crisis, dot-com bubble

Table of contents

Introduction **1**
1.1 Background 1
1.2 Problem description and analysis 3
1.3 Purpose 6
1.4 Delimitations 6

Method **8**
2.1 Research strategy and research design 8
2.2 Theoretical framework generation 8
2.3 Case study 9
2.4 Selection process 9
2.5 Empirical data collection 10
2.6 Data analysis 10
2.7 Validity 11
2.8 Ethical aspects 11

Theoretical Framework and literature study **12**
3.1 Introduction to Venture Capital firms 12
3.2 Screening and investing 12
3.3 Management of portfolio companies and active ownership 13
3.3.1 Contractual control of portfolio companies 15
3.3.1.1 Convertibles 15
3.3.1.2 Board rights 16
3.3.1.4 Redemption clause 16
3.4 Venture Capital during previous crises 17

Empirical Data **20**
4.1 Introduction 20
4.2 Interviews 21
4.2.1 Interviewee A, Co-founder & Partner at Alfven & Didriksson 21
4.2.2 Interviewee B, Senior partner at HealthCap 23
4.2.3 Interviewee C, Investment Manager at Spintop Ventures 26
4.2.4 Interviewee D, CEO at Zenith Ventures 27
4.2.5 Interviewee E, Investment Director at Volvo Group Venture Capital 29
4.2.6 Interviewee F, Investment Manager at Almi Invest 31
4.2.7 Interviewee G, Investor relations manager at GU Ventures 32
4.3 Summary of empirical data 33

Analysis **36**
5.1 Screening and investments 36
5.1.1 The screening process 36
5.1.2 Financing of VC firm 37
5.1.3 New investments 37
5.2 Management of portfolio companies 40
Conclusion **43**
6.1 Method discussion 43
6.2 Discussion of the results 43
6.3 Future research 45
References **46**
Appendix 1. Interview Guideline **50**
Appendix 2. Contacted Venture Capital firms **51**

1. Introduction

This section presents a background to the Venture Capital industry including a problem discussion about previous crises and potential effects of covid-19, as well as the purpose of the study with issues and delimitations.

1.1 Background

The Venture Capital industry has grown rapidly in the last 20 years in terms of investments, where the US stands for the largest amounts invested 2006-2013 with approximately 68% of the world's Venture Capital investments (Vanham, 2015). The US venture capital industry is therefore a good indicator of the global market trends. The first six months of 2019 in the US almost reached the same investment volume through fundraising ($54.6 billion) as in the dot-com high in the year 2000 ($66.4 billion) (Richter, 2019). The Venture Capital industry has evolved in Sweden as well with an increasingly important role in today's economy and stands for approximately 0.8% of Swedish GDP (SVCA, 2019).

The working process of venture capital firms can according to (SVCA, 2019) be divided into four steps. The first step is fundraising which involves finding investors for the VC fund where reputation and past performance of fund managers are some key factors. The second step involves screening and investing which will take about 2-4 years. The fund managers evaluate a lot of companies with large growth potential trying to identify investment cases. The third step is focused on active ownership of the portfolio which usually consists of 10-15 companies. The VC fund managers now have use for their specialized knowledge and network to maximize the chance of investment success. The fourth and last step is about the exit and the realization value which in other words describes the process of VC funds looking for potential buyers in other equity markets. The realized potential and experience then often lead to new start-ups and the cycle repeats itself (SVCA, 2019). The Venture Capital (VC) model involves identifying high-growth- and high-risk startups with the goal to scale the ventures and eventually exit profitably. These high-risk startups are often unlikely to receive

bank credit and are therefore extremely dependent on venture capital financing (SVCA, 2019).

Furthermore, startups experience more risk and unforeseeable uncertainty and therefore need to be more flexible in their management practices (Sommer et al., 2009). They have to find new ways to solve complex problems in ways that larger corporations rarely manage to identify or even try to execute due to the large perceived risk or inability to go beyond their own target market (Bower & Christensen, 1995). Examples of the incumbent's inability to see the potential in new technologies and ideas are numerous.

Even Xerox PARC, famous for developing the laser printer, graphical user interface and ethernet failed to see the value of Postscript, a programming language for digital page description (*Britannica*, 2020). The engineers working with postscript eventually got tired of the lack of support and started their own company which they called Adobe. Today Adobe has a market capitalization of 186.26 billion US dollars (*Adobe Inc. - Yahoo Finance*, 2020) while Xerox only has a market capitalization of 3.38 billion dollars (*Xerox Holdings Corporation—Yahoo Finance*, 2020). Other more recent examples of successful VC backed startups are Airbnb, Uber and Spotify. Hence, we can clearly see the importance of the funding of technological achievements and innovation.

The high uncertainty for VCs associated with investments in startups makes them prone to the installment of control mechanisms that allow them to change the venture's actions in response to unexpected events (Kaplan & Strömberg, 2003). Previously VCs have reacted to unexpected events by trying to lower the perceived risk, for example, after the dot-com bubble VC firms started to invest in later-stage startups with known markets, technologies and management teams (Sommer et al., 2009).

On the other hand, a study by Cumming et.al (2005), suggests that after the dot-com bubble VCs invested in earlier ventures to postpone the time of exit of these portfolio companies in a more distant future since the liquidity needed to exit via IPO was no longer available. However, during the financial crisis of 2008, a study by Conti, et.al. (2019) shows that the VCs experienced liquidity shortage, which made them focus their investments into their core

sectors and they relied more on their sector-specific expertise instead of experimenting with deals in other markets despite the potential they might have had. Further, initial reports on the economic effects of the ongoing covid-19 pandemic estimated a loss of 2,4-3% of GDP in most economies over 2020 (Duffin, 2020). Hence, it is an interesting topic to investigate how the current economic situation due to covid-19 is affecting VCs operations today.

1.2 Problem description and analysis

The venture capital funds are normally funded by institutional investors such as pension funds, banks, insurance, or other endowments. According to Groh & von Liechtenstein (2011), the determining criteria when funding VCs are the expected deal-flow and access to transactions, the track record of the VC, the local market expertise, team reputation, the match between the team members and the investment strategy and the aligned interest between investors and the VC.

Hence, VCs have to maintain a good track record and high expected deal-flow over time to become a successful firm and continue to attract funding. Venture Capital firms invest in private growth equity and are not be able to capitalize on the investment unless the startup is acquired or publicly listed on the stock market. Therefore, it is important that VCs can maneuver different economic environments, which previously have been done by focusing their new investments (Conti et al., 2019) and by investor activism in the portfolio companies (Bottazzi et al., 2008).

The valuation of the startups is only observed when it goes public, in new financing rounds or in case of acquisition, making it a less transparent investment than the stock market (Cochrane, 2005). Further, it is only the best startups that the fund has invested in that will achieve high enough growth to make it possible to either sell or list the company on the stock market (Mason & Matthew, n.d.). According to Ghosh (2011), 70 percent of VC backed startups fail to return the projected return of the investment and 30-40% even needs to liquidate all assets. Hence, it is evident that VCs are dependent on finding the winners that make up for the worse investments and ensure a satisfying return on the portfolio overall. The

most important operative activities to do so, are the screening and investing process, as well as the active management of portfolio companies.

While conducting this study, the global covid-19 pandemic is spreading across the world, causing major disruption on the economy as countries are shutting down, the uncertainty of how long this will continue as well as the effect on the overall economy is high (Menickella, 2020). The VC deal activity for US companies decreased 9% from Q4 2019 to Q1 2020 and 16% from Q1 2019 to Q1 2020 which according to PwC (2020) can be explained by covid-19.

VC firms are dependent on the well-being of startups and a survey has been presented on the topic in Sweden 20 April 2020, by IGNITE SWEDEN in collaboration with other actors. The survey refers to 484 respondents from higher education innovation environments, were 460 run startups with 25 employees or less (IGNITE SWEDEN, 2020). The survey concludes that 40% of the startups will not survive for three months and 34% not for six months due to not having enough cash (IGNITE SWEDEN, 2020). Furthermore, 68,5% of the startups with patents will not survive for 6 months and 66% of startups with patents see that half of their projects will be delayed or canceled (IGNITE SWEDEN, 2020).

Previous financial crises like the 2008 mortgage bond crisis and the dot-com bubble of 2000 were caused by flaws in the economy rather than governmental responses to a pandemic which makes the situation very difficult to predict. In the financial crisis of 2008, there was a liquidity shortage that made VCs invest in what they perceived as less risky investments (Nanda & Rhodes-Kropf, 2013). The dot-com bubble on the other hand was a bubble in the valuations of IT-companies which lead to losses in the stock market for these types of companies as well as failures among VCs portfolio companies (Townsend, 2015). Townsend (2015) also explains that it caused the IPO option as an exit route to close and that VC firms with high exposure to internet companies also made fewer follow-up investments with their other portfolio companies.

Active ownership of portfolio companies by providing knowledge and network as well as picking the winners in the screening and investment phase are two factors that VCs provide unique value with (SVCA, 2019). Active ownership consists of helping the startups setting the strategy, finding talents, minimizing product risk and choosing the best exit strategy, according to the study by SVCA (2019). Previous crises have led to a postponement of exits due to a lack of liquidity (Townsend, 2015). The emphasis in this study is therefore focused on the factors that VCs can control, such as management of their portfolio companies and new investments in the changing economic environment.

Previous studies generally focus on the operations and performance of Venture Capital under normal market environments. There are plenty of studies discussing how VCs operate with regards to control over the portfolio companies, investment criteria, strategies and evaluation of opportunities, etc. A study by Payne et al., (2009) investigated the effects of confidence and control in the deal structuring stage. The control over the portfolio companies is an interesting component to look into considering that a potential recession could imply an increased urge of the VCs to take more control over their portfolio companies.

Further, the likelihood of VCs investing is shown to be increased with the perceived control over the entrepreneur (Drover et al., 2013). Hence, VCs are shown to be proactive in mitigating the agency risk by contractual agreements that allow them to remove and replace the CEO of the startup. General risk management of VC firms has attracted moderate amounts of studies. They mostly focus on specific management tools for risk such as syndicating (Wang et al., 2012) or contracts and incentive structures (Tan et al., 2008). A few studies also focus on single factor risks such as the macro environment (Ning et al., 2015) and the liquidity risk (Cumming et al., 2005).

During the financial crisis of 2008, VC firms changed their investment strategies to focus more on investments within their core area of expertise (Conti et al., 2019). In normal market conditions, VCs can seek investment opportunities outside of their industry by syndicating with other VCs that have the expertise in the field or simply because it is a good investment opportunity, according to Conti et al. (2019). However, when the liquidity crisis of 2008 hit the Venture Capital industry most firms chose to double down on their core sectors rather

than diversifying, which can partly be explained by the non-financial capital that they can contribute within their core investment sectors (Conti et al., 2019).

Moreover, a study has shown that VCs invested less money in their portfolio companies during the dot-com bubble of 2000 if they had losses tied to failed internet-startups in their portfolio (Townsend, 2015). VC firms with high exposure in the dot-com bubble had difficulties raising funds and got less capital which may have contributed to fewer investments in their portfolio companies according to Townsend (2015). VC investments during the last financial crisis of 2008 decreased both in terms of volume and frequency (Block et al., 2010). However, it is important to note that the aforementioned crisis has been connected to liquidity and financial defaults. The covid-19 situation is an external factor affecting an otherwise booming economy. It is therefore interesting to investigate if the same measures will be taken under these new economic circumstances.

1.3 Purpose

The aim of this thesis is to investigate how the operations and business activities of Venture Capital firms are influenced by covid-19.

In order to fulfill the intended purpose with our research, the questions that will be answered are:

1. *How are the screening and investing activities influenced by covid-19?*
2. *How is the active management of the portfolio companies influenced by covid-19?*

1.4 Delimitations

The research is limited to the Swedish Venture Capital industry and the empirical study will therefore be conducted with Swedish firms. However, the venture capital industry is, as many other industries, global and influences from the United States are prevalent due to the longstanding tradition of American VC firms. Therefore, some of the literature frameworks will have an American perspective. The research is also limited to the activities done by the VC firms and not the entrepreneurs or management of the startups. This is interesting since

the VC firms usually are less active in the operational activities of their portfolio companies and therefore may be found to act differently in this study. Furthermore, the study is limited in time and will therefore focus on the ongoing measures and changes. It is unlikely that the best case practice will be possible to present already during this study and it is therefore recommended further research to retrospectively assess which strategies were the most successful during the pandemic. Another limitation is to only focus on the main activities of VC firms, namely fundraising, screening and investing, active management and exit. By doing so we will ensure to capture the most important measures taken by the VC firms that directly affect the main operations of the firm.

2. Method

This section presents which type of research was made to give a further understanding of Venture Capital and which method was used to collect empirical data from Venture Capital firms. Furthermore, it presents how the data was analyzed and what tools/materials were used, as well as the rationale for choosing these methods. There is also an ethical discussion at the end, which touches the topic of how sensitive information should be handled among other aspects.

2.1 Research strategy and research design

There are two types of research strategies, qualitative and quantitative, which differs in the data collection and analysis (Greener, 2008). A qualitative research methodology underlines an inductive method regarding the generation of research and theory. In other words, the data is collected to support theory instead of testing it (Greener, 2008). A qualitative research strategy is used in this study due to difficulties answering the issues with quantitative data. The data collection and analysis are applying an inductive method in order to investigate if the VC firms are acting differently during the covid-19 crisis as before the crisis. An inductive method is used instead of a deductive or abductive due to problems presenting a hypothesis and a lack of precise theory describing VC strategies during pandemics as the covid-19.

2.2 Theoretical framework generation

The theoretical framework was made to get an understanding of relevant topics and historical events, as well as to simply for readers not experienced with terms and expressions used in the Venture Capital industry. The theoretical framework was collected from academic articles, books, public reports, etc, which are secondary sources. This information was mainly collected by using search engines and emails from VC firms and industry associations as SVCA (Swedish Private Equity & Venture Capital Association). The referred studies about Venture Capital strategies during previous crises as the Financial crisis 2008 and dot-com bubble were using quantitative methods and extracted data from databases etc. It seems to be

very few to none studies using qualitative methods in this specific research topic about Venture Capital strategies during crises, which will make this study contribute to different perspectives regarding the issues.

2.3 Case study

The study is exploratory due to investigating a topic that is not researched in the past (Patel & Davidson, 2011). The covid-19 effects on VC firms in a technological environment different from previous pandemics, as well as the short timespan after the covid-19 outbreak, is making this study unique. Case studies are often used in exploratory research, which helps with generating new ideas and are focused on small samples, which are analyzed in detail (Patel & Davidson, 2011).

Another approach would be to implement surveys, which often involves bigger samples with a loss of details compared to case studies (Patel & Davidson, 2011). Surveys are more difficult to use with qualitative research than with quantitative due to the possibility of respondents making different interpretations of the research questions, which could limit the empirical quality (Patel & Davidson, 2011). Surveys have on the other hand a benefit of reaching a lot of respondents in a shorter time span, which could increase the amount of data and potentially cover the researched topics more fully (Patel & Davidson, 2011). A case study is implemented instead of surveys because of complex research questions and a limited amount of Swedish VC firms, quality is therefore prioritized over quantity.

2.4 Selection process

The process of selecting interview objects was based on reaching to as many Swedish VC firms as possible with different sizes, investing in different sectors. Search engines and a list of VC firms, available at the website of SVCA was used to find interview objects. 28 VC firms were sent emails (see VC firms, Appendix 2), which explained the objective with the study and asked if they would like to be apart of it. Seven VC firms accepted the invitation and the rest did not answer after several attempts or did not want to be apart of the study.

2.5 Empirical data collection

The empirical data solely consists of primary data collected through seven semi-structured interviews with investment managers/directors, partners and CEOs from VC firms in Sweden (see interviewees, Table 1). A semi-structured interview method combines a predetermined set of open questions (see questions, Appendix 1) that gives the respondent an opportunity to respond freely and to possibly share a different perspective of our main thoughts (Greener, 2008). These interviewees were selected by their titles within their organizations and expected knowledge about the studied topics.

They were contacted via email and telephone which were stated at their company websites. All interviews were held via video meetings using Zoom, Whereby, Google Meet and Microsoft Teams. The interviews were 20-40 minutes long and in Swedish. They were recorded with permission using an integrated recording function in Zoom, as well as using Voice Memo with an iPhone. The recordings were then transcripted using the transcription website *amberscript.com* and the auto-generated documents were the foundation of the empirical data section. The presented text in the empirical data section was generated by listening to the recordings and reading the transcriptions, which was translated into English using dictionaries such as Google Translate etc.

2.6 Data analysis

The data was analyzed by categorizing the interviews from A-G with the stated changes of the operational and strategic work caused by covid-19 (see Table 2 and 3) and comparing the results to each other to form a connection. The results were then compared to previous studies, presented in the theoretical framework to be able to draw any conclusions about whether the results were reasonable or not.

2.7 Validity

The validity can be divided into *internal validity* and *external validity* (Greener, 2008). The internal validity refers to that the results seem to be consistent by outside observers (Greener, 2008). The internal validity has been increased by making audio recordings of all the interviews, as well as transcribing them, which makes it possible for other observers to review the empirical data. The empirical data was however summarized subjectively by the researchers, which could decrease internal validity in the analysis and conclusions.

External validity describes how well the results can be generalized (Greener, 2008). This study can only be generalized in regards to the Venture Capital industry in Sweden since the interviewed companies are Swedish and may have different prerequisites than VC firms in other countries. Comparisons can not be made to other companies outside the Venture Capital industry due to different business models and working methods.

2.8 Ethical aspects

There are some ethical aspects to take into account when using information given by companies and organizations, especially if it is sensitive. Venture Capital firms are involved with many companies and investors that might not want to share everything about their strategies or ideas. This matter has been taken into consideration by asking the respondents if their information could be used in the study, which was confirmed. The respondents have also been anonymized and the information given has been presented and analyzed as objective as possible.

3. Theoretical Framework and literature study

This section presents an introduction to Venture Capital and describes the working processes of Venture capital firms with an emphasis on screening, investing, as well as management of portfolio companies. Previous studies made about Venture Capital firms during crises as the Financial crisis 2008 and the dot-com bubble are also presented. This to give an understanding of how Venture Capital firms have acted strategically in past crises to possibly find connections to the covid-19 crisis.

3.1 Introduction to Venture Capital firms

Venture capital can be described as a form of private equity and a financial method used to provide startup companies with long-term growth potential. The capital is usually raised from wealthy investors, investment banks, pension funds and other financial institutions. The investment risk is high but often generates above-average returns (Chen, 2019). This type of funding is becoming more and more used which in many cases is essential for newly created companies who lack access to capital markets, bank loans and other debt instruments (Chen, 2019).

A venture capital deal is created and sold to a few investors in exchange for large ownership in a company. The investors create independent limited partnerships (LPs), which means that they don't partake in any managing of the business (Tarver, 2019). A distinction between venture capital and other private equity deals is that Venture Capital focuses more on growth companies, where private equity companies fund larger and more established companies (Chen, 2019).

3.2 Screening and investing

The screening process is a type of due diligence with the goal of sorting out potential investment opportunities from the mass. The chosen investments depend on the VC fund's philosophy, stage and industry sector preferences. The process can be formal and informal, which depends on the number of decision-makers involved. All group members are likely to

be part of the decisions in smaller teams but just one or two partners in midsized funds. Large funds often rely on senior leadership who listens to pitches made by partners when deciding to invest. The deal-flow is another important component regarding the quality of screening, which describes the rate venture capitalists receive investment offers. Securing a high-quality deal-flow is time-consuming and requires efficiency (Austin, 2019).

There are different stages of funding depending on the industry sector and belief among investors. There is something called “seed funding” which involves angel investors who invest through their own equity at the early stages of the startup company (Reiff, 2020). The amount invested often range from 100.000 to 4 million euros and stands for approximately 8% of VC investments in Sweden (SVCA, 2019). Then there is series A-, B- and C funding which often involves startup companies with products to show and possibly some turnover growth (Reiff, 2020).

Series A funding can give opportunities to scale the products across other markets. The partaking investors often consist of more traditional venture capital firms who invest about 4-10 million euros (SVCA, 2019). Series B funding is focused on taking businesses past the development stage and to create growth and meeting demand. The involved companies in this round are well-established and often have high valuations (Rieff, 2020). The money invested is about 10-25 million euros at this point (SVCA, 2019). The last round is called Series C funding which involves already successful companies. They want additional funding to develop new products, expand and sometimes acquire other companies. The investors involved are bigger players such as hedge funds, investment banks and private equity firms (Reiff, 2020), which are willing to invest 25-100 million euros (SVCA, 2019). Some companies use the Series C funding to increase company value in a possible scenario of doing a future IPO, making the company offered publicly at stock markets (Reiff, 2020).

3.3 Management of portfolio companies and active ownership

VC firms often take on an active ownership role in their portfolio companies. Except for the money they invest in the startups they can also provide valuable expertise and knowledge. The two main factors that allow VCs to provide mentorship and guidance is the common

previous entrepreneurial experience as well as specialist knowledge (SVCA, 2019). It not uncommon that former entrepreneurs go into the Venture Capital industry and hence provide insights and network from their former careers. Studies show that 67% of entrepreneurs that have had successful ventures in the past have higher sales in their new ventures (Shaw, 2017). This implies that the operational entrepreneurial expertise can be of high value for the portfolio companies of VC firms.

The specialist knowledge of VCs can also come in terms of sector expertise or in terms of certain skills such as developing business models or even development at the product level. Often, firms investing in sectors such as LifeScience have links to academia and strong technical competence (SVCA, 2017). Moreover, studies suggest that VCs should invest where they have the best potential to contribute to the success of the venture and that this can be done by specializing in an industry (Narayanan & Lévesque, 2014). A study made by SVCA (2017) concludes that the most common activities that the VCs help their portfolio companies with under the active management phase are to find the right strategy and match it with a sound financial plan, minimizing the risk of bringing the product to the market and helping with access to global financial markets and other sources of financing. They also support in bringing in the right competencies and attracting talent, often bringing in the right CEO and board members. They also set the exit strategy and work to execute it. usually through acquisition or IPO (SVCA, 2017).

Furthermore, Venture Capital investors activism has also shown to be positively correlated with the success of the portfolio companies (Bottazzi et al., 2008). The same study by Bottazzi et al. (2008) also concludes that VC managers that have a previous business or entrepreneurial experience are more active in the portfolio companies than their colleagues with background in the financial industry. They are more active in recruiting managers and directors for their portfolio companies, help with fundraising and have more contact with their portfolio companies in general. It is also more common for independent VC firms to be actively involved in startups than VCs owned by corporations, banks or governments (Bottazzi et al., 2008).

3.3.1 Contractual control of portfolio companies

Active ownership in portfolio companies is often regulated contractually between the VC and the startup. VCs that have a higher level of control are more likely to exit through acquisition rather than an IPO (Cumming, 2008). There could be several reasons why an exit via acquisition seems to be more preferred for VCs than an exit via IPO. One likely reason is that in the case of acquisition the price will be negotiated and set. VCs therefore get low levels of uncertainty and do not have to settle for a lower price than they can accept. In the case of an IPO however, the stock market will determine the price which will be out of the control for the VC firm. Selling of the stocks can also take several months and there is therefore an additional macro risk that the stock market as a whole will fall during this period of time.

The control methods that VCs use to determine the way of exiting the venture is usually established in the contractual agreements with the startup. Cummings (2008) shows in a study that common clauses like drag-along rights, tag-along rights, board control and the right to replace the founders as CEOs lead to a 30% increased likelihood of an exit through acquisition. Furthermore, the contracts vary between both investment case, country of jurisdiction and standard in the given market. Studies show that the US-style VC contract leads to fewer failures than other types of contracts, even when adjusting for VC experience (Kaplan et al., 2007). The US contracts commonly consist of more control rights over the startup. Usually, the US contracts include convertible preferred stock to a higher degree than non-US contracts (Kaplan et al., 2007).

3.3.1.1 Convertibles

The convertible preferred stock allows the investor to get the stability of recurring dividends and the characteristics of debt but the option to convert the preferred stocks to common stocks in the case of a successful venture to gain the benefit of the appreciation of the stock (UpCounsel, n.d.). The conversion rate is usually set from the initial issuance of the convertible preferred stock. VCs usually convert at two different occasions, either in the case of an IPO or in the case of an acquisition of the startup. The convertible preferred stock is usually combined with other legal control mechanisms such as liquidity rights.

In Scandinavia however, it is less common with the convertible preferred stocks even if experienced VCs have a tendency to implement the US-style contracts regardless of jurisdiction (Kaplan et al., 2007). An interesting aspect of the differences in contracts is the evidence that the dot-com bubble of 2000 caused a lot of VCs to transition into US-style contracts according to Kaplan et.al. (2007). Future research will tell if the same change will happen in the current crisis when VC firms experience how much control they have over their portfolio companies in practice.

3.3.1.2 Board rights

Furthermore, VCs usually have a large control level over the board and the decisions it makes. This is contractually controlled with board rights. The board of a startup normally consists of the board seats controlled by the VC, the board seats controlled by the founders and the board seat of external stakeholders appointed by the VC and founders. The board rights can both reflect the agreed-upon levels at the financing stage but can also change in the case of the poor performance of the portfolio company. This is usually contractually controlled with adverse board rights which gives a party right to more board seats in the case of reach of poor performance metrics or adverse state, however it is only present in 18% of the cases (Kaplan & Strömberg, 2003).

Moreover, VCs can also leverage their control over the startup and board through contractually agreed upon voting rights. In a study by Kaplan & Strömberg (2003) about 53% of VCs have the majority of voting rights averaging over different stages of the startups. They also show that voting rights are commonly state-contingent which means that voting majority changes depending on state contingencies such as different performance metrics or milestones.

3.3.1.4 Redemption clause

Further, the VC can exercise the redemption rights in case of low performance of the startup. The redemption rights give the VC the right but not the obligation to enforce the company to repurchase the shares that the VC owns (Gordon, 2015). The redemption right is a strong control position that is designed to minimize the risk that the investor gets stuck with a

portfolio company that is not performing without any chance to get out of the investment (Gordon, 2015).

The clause also lowers the risk that the entrepreneur seeks an early exit from the venture but can at the same time drain the startup of its cash flow since the company is forced to pay back the investor. The payment of the redemption rights can either be done in one lump sum or over a period of time depending on the capability of the startup to pay. The redemption rights can either be contractually stated as mandatory or optional. When they are optional the investor can choose when to exercise them, however, they sometimes need the approval of the board. If they are mandatory, the redemption clause is triggered by certain milestones or criteria. This usually occurs in connection to an attempt to sell the company or a failed opportunity to exit (Gordon, 2015).

3.4 Venture Capital during previous crises

When this study is conducted it is still too early to say how the covid-19 pandemic will affect the economy and venture capital industry. However, some clues can be found in how Venture Capital firms have operated through previous crises. During the Financial crisis of 2008 liquidity disappeared for a lot of startups as well as VCs. Prior to the crisis, VCs had diversified their investments into different industries, even outside their core industries where they perceived to have special expertise within (Conti et al., 2019).

However, with a diminishing supply of liquidity VCs focused their investments into their core sectors, according to Conti, et.al., (2019). Said study identifies several reasons for this, firstly the cost and risks of experimenting outside of the core sector were perceived as too high. Further, VCs relied more on their expertise and non-financial capital that they add to their investments under tougher economic environments (Conti et al., 2019). However, the study by Conti, et.al. (2019) suggests that this was only true for more experienced VCs and during the early financing stages where the lack of information is most acute. Less experienced VCs still invested in startups outside of their core sectors.

It is interesting to note that the tendency to go back to the core sectors in times of liquidity shortage indicates a lower risk appetite since the emphasis on information asymmetry and sector expertise becomes higher. This corresponds with a study by Nanda & Rhodes-Kropf (2013), that shows that VCs invest in more risky and innovative startups in hot markets and less innovative startups during cold markets. Nanda & Rhodes-Kropf (2013) are arguing that contrary to the conventional wisdom that states that investments during hot investment markets tend to lead to the financing of fewer quality firms, the increase in available capital results in more experimentation which in turn leads to more business failures, but with more innovation funded and hence the presence of very successful investments. However, it is clear that startups that received their initial financing during hot investment periods are more likely to go bankrupt than startups that get their initial funding in cold investment periods (Nanda & Rhodes-Kropf, 2013).

If the startups are successful, the ones that were funded during a hot investment market have a higher valuation at an exit in general, more patents and cited patents than their cold market counterparts, which indicates that they are more commonly found in the tails of the outcome distributions (Nanda & Rhodes-Kropf, 2013). Indicating that more innovative startups get funded during economic booms and less innovative and risky startup during economic bust periods. Nanda & Rhodes-Kropf (2013) therefore argue that access to capital for VC firms determines how they invest, increased capital leads to riskier and more innovative investment and vice versa.

The amount invested by VCs decreased significantly both at the dot-com bubble of 2000 and at the financial liquidity crisis of 2008 (Nanda & Rhodes-Kropf, 2017). These events had a substantial impact on the American VC industry that made the VC firms change their risk preferences and adjust their strategies (Ning et al., 2015). A study by Ning, et.al., (2015) shows that in response to the sizeable changes in the macroeconomic environment the VC firms adopted to secure fewer deals with a lower amount invested per deal. They also increased their share of allocations to the later financing stages such as the expansion and growth stage and a lower percentage of early-stage and first financing rounds. Further, the same study validated the public market hypothesis which says that superior excess returns from the stock and bond markets also drive up VC investments and have a positive effect on

the VC market. Hence, the NASDAQ Composite index with a lot of technology growth stocks is the best indicator for the VC firm's activeness level (Ning et al., 2015). As this study is conducted, the NASDAQ composite index has recovered well from the initial fall on the market and is trading at +0.47% YTD (CNNBusiness, 2020). The indication of this can be that technology and growth stocks are performing better than the general stock market, however if it still early to draw any conclusions to how this will affect VC's willingness to invest.

Furthermore, during the dot-com bubble of 2000, losses in the portfolio companies of VCs tied to failed internet-startups affected the investments in the other portfolio companies (Townsend, 2015). The losses in the IT sector made the VCs invest less money in their other portfolio companies regardless of their industry and if it was correlated with the dot-com bubble according to Townsend (2015). One factor that led to this is the difficulty in raising new funds that VCs faced after the dot-com bubble, especially the VCs with high exposure to the overvalued dot-com startups (Townsend, 2015).

Hence, an increased amount of failure among portfolio companies can spill over even on successful companies and make the situation worse for both VC and entrepreneur. Moreover, Townsend (2015) discusses the relative advantage that a portfolio company could have if the other companies in the VC portfolio receive a negative shock since it makes their startup more appealing in the case of fixed resources. Although, if the capital in the VC firm is not fixed but actually declines after a failure in a portfolio company then the negative shock can spill over to other portfolio companies as well, as was the case in the dot-com bubble according to Townsend (2015).

VC investments during the last financial crisis of 2008 decreased both in terms of volume and frequency (Block et al., 2010). However, it is important to note that the aforementioned crisis has been connected to liquidity and financial defaults. The covid-19 situation is an external factor that affecting an otherwise booming economy. It is therefore interesting to investigate if the same measures will be taken under these new economic circumstances.

4. Empirical Data

In this chapter, the qualitative study will be presented in terms of the semi-structured interviews that were conducted with industry experts in Venture Capital. The chapter starts with an introduction about the interviewees and their organizations. The interviews are described individually and then summarized in the concluding chapter. Everything that was said in the interviews is not presented, but the most relevant information that could bring value to answering the issues about screening and investing activities, as well as management of portfolio companies.

4.1 Introduction

The majority of the interviews were made with GPs, e.g investment managers, CEOs and Partners of traditional Venture Capital funds. One of the interviews was conducted with GU Ventures a University-based VC firm. Another with Volvo Groups Venture Capital, which is the corporate VC of Volvo group with the mission to invest a share of the surplus its mother company produces. Further, Almi invest is a state-owned VC with the mission to fund innovation and entrepreneurship in Sweden. When it comes to target industries for investments it differed a bit between our interviewees. Health Cap is the only LifeScience investor in this study with a particular focus on therapeutics. Volvo Group VC is investing in companies that can complement their own offering within mobility and transport. The rest of the interviewees invests either in IT and internet companies or mixed in different industries. Further on in the thesis, the interviewees will be referred with their reference between A-G.

Reference	**Title**	**Company**	**Investment Sector**
A	Co-founder & Partner	Alfvén & Didrikson	IT & Fintech
B	Partner	Health Cap	Therapeutics
C	Investment Manager	Spintop Ventures	IT & Tech
D	CEO	Zenith Ventures	Tech

E	Investment Director	Volvo Group Venture Capital	Mobility & Transport
F	Investment Manager	Almi Invest	Mixed investments
G	Investor Relations	GU Ventures	Tech & LifeScience

Table 1: Interviewees with titles, companies and sectors

4.2 Interviews

The interviews will be presented in the order A-F and are based on predetermined interview questions (see, Appendix 1). The information given from the interviews is presented in chronological order.

4.2.1 Interviewee A, Co-founder & Partner at Alfven & Didriksson

Interviewee A started the interview with describing the firm and how they operate. The company that interviewee A represents were described as a VC firm but not a VC fund and 25% of the capital in the company is the founders own money and 75% is external capital. Therefore Firm A has the luxury of being able to think long term in the investments, according to interviewee A. The capital structure was therefore described as a factor that set the firm apart from other firms.

Interviewee A explains that before covid-19 they are investing in startups that usually have the business model in place and a few customers. When it comes to sectors however, everything that is digital is of interest, whether it be podcasting as with Acast or online transactions as with Trustly. As long as the potential portfolio companies fit with the vision of being a fun, purposeful and profitable VC it is worth taking a look at according to interviewee A. Further in a normal screening process before covid-19, typically there were two different options, wither the inbound funnel of startups seeking investments and the proactive outbound process where the VC is looking for investments opportunities according to interviewee A.

Further, interviewee A explained that the most successful investments have actually come from advice from the CEOs of portfolio companies that know someone that has something interesting going on. Moreover, interviewee A states that they like to work with other VCs in

their investments but not in traditional syndicates. Instead, when doing the investments they try to be an attractive company to work with, not only for the startups but also for other VCs. By doing so they can get invited to different deals were other VCs think they can contribute. However, in the screening process in itself, interviewee A does not syndicate, it happens rather as a consequence of other shareholders already being present in the portfolio companies.

After covid-19 hit the markets Interviewee A claimed that they were seeing a possibility to make better investments since there was less competition for the really good startups. Previous to covid-19, when interviewee A started off ten years ago it was possible to make very good deals in Sweden but the competition has hardened since then. Now Interviewee A thinks that the competition will decrease since a lot of VCs will focus on their portfolio companies of primary sectors. For the VC that Interviewee A represents however, they do not have any core sector but invests broadly and thinks that Sweden is too small to focus on certain sectors. The difficulty now lies more in doing a correct valuation of the investment opportunities since there is so much uncertainty surrounding the macroeconomic environment, demand from customers and so on, according to interviewee A. However, no difference in the operative ways of screening has been implemented yet.

Furthermore, interviewee A, who works as a Partner and is the co-founder of a venture fund investing foremost in IT, explained that they normally take an active role in their portfolio companies. This is done with a trojka-model where a tight collaboration is formed between the owner, the chairman of the board and the CEO. The responsible partner at the VC spends approximately one day a week on the portfolio company. The advantages of this include support for the CEO in decision-making, large utilization of the competences in the VC and also a good argument when negotiating investment deals according to interviewee A.

Now after covid-19 interviewee A states that they are more active in their portfolio companies than before. Not only to cut costs or prevent losses but also to advise on new opportunities that may have emerged. Since the VC that interviewee A represents invests in digital solutions, they have portfolio companies that perform really well due to covid-19 and portfolio companies that are struggling. The struggling companies might have a problem with

liquidity while the benefitted companies see an increase in users or customers. For example, interviewee A mentions JointAcademy who provides online physical therapy for arthritis patients and has seen a large inflow of new customers. There the role for interviewee A is more connected to how to strategically can position themselves better for this new reality. Hence, interviewee A explains that they are talking to the CEOs of their portfolio companies multiple times a week and try to help them with both defensive and offensive measures to make sure that they are ready for the interim period that will take place before we are out of the pandemic so that the portfolio companies can rise to become winners once society starts to recover.

When it comes to ways of working the only difference that interviewee A sees right now is that it is difficult to meet physically with startups that are interesting to invest in. Therefore, some investments might be delayed since investments are not likely to take place if a physical meeting is not possible according to interviewee A.

4.2.2 Interviewee B, Senior partner at HealthCap

Interviewee B is a senior partner at a LifeScience VC that has a classic venture model structure with closed ten-year funds with two year settlement periods. Interviewee B explains that before the dot-com bubble of 2000 they had a very broad mandate to invest in a lot of different segments within LifeScience, such as diagnostics, MedTech, health care services and therapeutics.

However, with the dot-com bubble and after evaluating their strengths and performance, HealthCap decided to focus their investments on Therapeutics, which started with funneling down to biotech, pharmaceuticals and MedTech but now solely invests in pharmaceuticals. The reason for this, interviewee B explains, is that they had to adapt to the changing macroeconomic environment and what happened after 2000 was that the IPO window for new growth companies was completely shut. At the same time, big pharmaceutical companies (referred to as big pharma) started to consolidate, the merger between Astra and Zeneca being an example of this, which lead to taking lower risk themselves and looking to invest more in growth companies and new technologies according to interviewee B. This led to changed exit routes which HealthCap then adopted to. However, nowadays IPO is a viable

route again for HealthCap but they do not see it as an exit but rather a way of financing their portfolio companies which they then continue to sit as public owners and continue to work with the company according to interviewee B.

When it comes to screening and investing HealthCap draws some learnings from their aforementioned history. According to interviewee B, they now make sure that they can "control their own destiny" in every investment. That means that HealthCap should never be reliant on third party strategic decisions such as the investment decisions of big pharma companies or the IPO window.

Therefore, interviewee B explains, HealthCap always makes sure that the syndicate that they are part of has the muscles to take the product, typically a pharmaceutical drug in this case, to the market without extra external financing. Since, the old truth still remains, that when a drug is approved for the market, there will always be a buyer since the risk has been minimized and then big pharma pay well according to interviewee B. Further, HealthCap normally invests a third in Scandinavia, a third in Europe and a third in North America. Hence, IPOs are made at Nasdaq, Paris or London and as a way of financing rather than an exit. HealthCap can invest in any phase of the startup, since they take a lot of pride in understanding the biology behind the products and therefore can take earlier bets and sometimes even start companies straight from the lab, hence their philosophy is "late in the lab but early in equity".

Further, the screening and investing process is much slower now because of covid-19 according to interviewee B. HealthCap continues to work in the same way but everything takes longer time and it is difficult to invest if you can not meet the team in person according to interviewee B. As an example, interviewee B stated that Venture Capital is a people's business and if it is not possible to meet face to face it is harder to decide whether to invest, since they invest in the team just as much as the product.

Therefore, the negotiations with the startups are more outdrawn now that they were before for HealthCap. It is also likely that the valuations will come down according to interviewee B even though it has not been seen yet. However, an effect of covid-19 that interviewee B sees

already, is the fact that clinical trials will most likely take longer time now than before since the resources in the medical industry are now focused on the acute situation with the pandemic. Therefore, there is a substantial risk that the portfolio companies will run out of capital before they have the data from the clinical trials which will lead to a peculiar situation for the VCs that then will have to evaluate and decide on future investments without the proof of concept from the clinical trials. Here, interviewee B thinks that HealthCap will have an advantage because of their policy, making sure that the syndicates are able to take the product to the market. However, the potential worry remains that the prolonged clinical trials will force the syndicate to put more capital into the portfolio companies and of course this can affect the ability to make new investments but it is nothing that has happened yet according to interviewee B.

Furthermore, interviewee B, partner at a Life Science VC that focuses on Therapeutics, explained that they are very active in their portfolio companies and always sit on the board of their investments. However, they do not micromanage but take an active role in forming the strategy for their portfolio companies. Moreover, interviewee B informed that they also have venture partners at their VC that actually take an operative role in the portfolio companies and usually sit as CEO or executive chair of the board. However, that is specifically for venture partners. The LifeScience VC that interviewee B is a Partner at is also working actively with talking to business developers at big pharma companies. This to investigate what big pharma is looking for right now, present their company and make sure that their portfolio companies are an attractive acquisition when it is time for that.

After covid-19 the biggest change in the management of the portfolio companies and risk for them is the delay of clinical trials due to the capacity overload in the healthcare sector because of the pandemic. Interviewee B explains that it can lead to a situation where the portfolio companies run out of capital before the clinical trials are completed which leaves the company and investors in bad seats since the uncertainty is very high and it is unlikely that a good valuation will be accomplished. Usually, the results from the clinical trials are used as a value inflection point to seek more financing after the trials at a much higher valuation than before, according to interviewee B. In the case of having to seek more financing in midst of a clinical trial, it is very likely that the portfolio company will get

squeezed on the valuation and this is something that HealthCap wants to avoid. In order to do so they are working even more actively with their portfolio companies, trying to monitor their burn rate and figure out ways of making the money last longer for them, according to interviewee B. The way of working is also different since all meeting now are virtual, a reflection that interviewee B has is that it might be more difficult to get the right information from the portfolio companies as meetings usually are shorter and that you can not read the body language as well, making it hard to know if to ask more on a certain topic. If the new working habits will affect the management of portfolio companies are too early to say for now, according to interviewee B.

4.2.3 Interviewee C, Investment Manager at Spintop Ventures

Spintop Ventures invests in “late-seed” or “early series A” with approximately 350 000 euros to 2 million euros according to interviewee C. They are usually invested in their VC fund for 4 years and are mostly minority owners of the portfolio companies. When it comes to the screening process they look for companies that have launched recently and have customers. They are focusing on the growth market and how the companies will expand to new markets, how long it will take and how much it will cost them, as well as how they will attract new customers and how to make them stay. Furthermore, they look for good startup teams with the right competencies and possibly with some ongoing recruitments despite financial difficulties.

Interviewee C stated that they are a fairly active owner of their portfolio companies, often taking at least one seat at the board and one suppliant seat on the board of the companies. Further, they mostly provide advice and support to the management team and access to their network. They are especially active at the beginning of the investment when the portfolio companies might be in a bigger need of support, according to interviewee C.

Spintop Ventures is working more actively with the portfolio companies due to the effects of covid-19, but the screening process is not affected the same way according to interviewee C. They saw a little drop in the deal-flow in March but it came back to normal levels after a couple of weeks. They have worked more with concrete measures regarding cutting costs for the portfolio companies, lay off employees, and using resources more efficiently. Interviewee

C has however noticed a difference regarding how startup companies argue to secure financing in the screening process. The company valuations are expected to drop due to covid-19 and the startups are using that argument to convince Spintop Ventures to invest cheap and make future profits according to interviewee C. Norwegian startups argue that their currency value decrease to SEK will create opportunities at the moment.

In regards to the investments, Spintop Ventures owns institutional capital which is relatively safe in this current situation according to interviewee C. They have allocated some capital in case of good investment opportunities and are therefore not afraid of making new investments in the current situation. Interviewee C would describe the mentality among VC firms before covid-19 as “fear of missing out” investment opportunities and that it has shifted to “fear of looking stupid”, in other words, a fear that unwise investments have been made in the wrong sector or at bad timing.

4.2.4 Interviewee D, CEO at Zenith Ventures

Zenith Venture does not raise capital from institutional investors but from consumers, according to interviewee D. They have three funds listed at the *Nordic Growth Market* (NGM) and are invested in 18 portfolio companies involved in technology. Interviewee D explains that they sometimes do *special purpose vehicles* (SPV) to raise capital to invest in a single company, while their funds contain more companies and works as a general investment fund.

Interviewee D further said that they have changed their requirements regarding in which phase the startup company must be in before making an investment since Zenith Venture was founded. In the beginning, they only invested a couple of million SEK and did not prioritize scalability among the companies as they are doing now. They used to invest in “seed” but have shifted to more “series A” investing with higher amounts of capital. The startup companies need to have a stable cash flow, scalability opportunities, be involved in technology and be situated in Sweden to be interesting according to interviewee D. Zenith Ventures syndicate with similar VC firms and try to own approximately 20 percent of the companies invested in with 5-25 million SEK.

When it comes to the screening process Zenith Ventures work traditionally according to interviewee D. They have a deal-flow of about 10 requests every week which is analyzed by the investment managers after a set of requirements as stated. That leads to a number of internal rounds involving the board members, which is the investment committee. The entrepreneur of the startup is then invited to the board if there is a potential of making an investment. He or she gets 20 minutes to present the startup and business plan which leads to a discussion among the board members and a decision is worked out.

Moreover, interviewee D states that they are only active as board members and are careful not to run over the entrepreneurs since they are mostly coming from a finance background and might not have expertise in the sector where the startup is operating. Therefore, the VC that interviewee D represents spends a lot of time getting to know the entrepreneur and figuring out how they can work together and not be a liability for the entrepreneur when building the portfolio company. However, it can be a difficult task, in particular since the dilution principle, which means that getting an investment is taking away influence and ownership from the entrepreneur. The technology VC that interviewee D represents usually tries to be helpful in forming the business plan, strategic marketing plan and being creative in the financing rounds. In the financing rounds, the VC can be responsible for figuring out if it is best to do a straight new issuance of shares or to use a convertible, a bond or similar, according to interviewee D.

Interviewee D said that the economic environment caused by covid-19 have changed their processes. They do not make new investments due to difficulties raising capital and they have helped the current portfolio companies with reviewing their cash flows to be able to survive for at least a year according to interviewee D. Zenith Ventures have also been focusing on making the companies more efficient by limiting their geographical markets, applying short-term redundancies and decreased R&D resources. Zenith Ventures is using its liquidity to support the current portfolio companies. Some companies are taking advantage of the current situation and some are highly affected which need extra financing to survive according to interviewee D.

When it comes to learnings from previous crises, interviewee D believes that companies will re-employ less after this crisis due to the current possibilities of working home in a more digital world. In other words, companies will work more efficiently with their human resources. Interviewee D also thinks that the government needs to be more generous with support packages to small- and medium-sized companies in future crises.

4.2.5 Interviewee E, Investment Director at Volvo Group Venture Capital

Interviewee E who works as investment director at a corporate VC that is investing in startups with technologies that can benefit the holding company and its products within mobility and transport. Before the covid-19 crisis, the investments were focused on the transport of goods or people, which for example also can include the infrastructure of charging electric vehicles according to interviewee E.

Furthermore, interviewee E stated that some might think that a corporate VC like Volvo Group VC only focus on the technological benefits of their portfolio companies and do not factor in the financial part, but that is not completely true since they do not invest in companies they don’t believe in financially either. Rather it is a mix of financial and technological potential that drives the investment strategy of Volvo Group Venture Capital according to interviewee E. Usually an investment process takes around three months and involves both financial parts where they evaluate the business model and potential exit roadmap as well as the trends in technology and markets and one part where the benefit for Volvo group as a company is assessed, according to interviewee E. Further, interviewee E explains that they usually syndicate with other VCs and do not necessarily need to be a majority owner but can invest in something between a 5 to 10 percent ownership share in their portfolio companies.

Interviewee E said that the screening and investment process has been affected by covid-19 in the way that a canceled board meeting led to a missed decision opportunity which of course delays certain processes. But other than that interviewee E has not seen a lot of changes in the investment process so far in the covid-19 crisis. Volvo Group Venture Capital has appointed a new CEO during this time and no major adjustments have been made yet except for the fact that the employees at the VC are working from home. However, interviewee E claims that it

would not be surprising if the willingness to invest declined for the corporate VC since it is natural for large corporations to look for any ways possible to cut costs during these uncertain times. Further, interviewee E explains that he has heard about firms that try to be more aggressive now and find good deals since the valuation has been lowered in a lot of startups, however, this is not the case for Volvo Group VC since they have a different mandate to invest than traditional firms and therefore tries to continue with business as usual instead.

The companies in this study are not only different when it comes to investment sectors, organizational structure and how they raise capital, they also have different ways of working with their portfolio companies. Interviewee E, the investment director from the corporate venture capital firm of Volvo Group stated that they are usually not very active in their portfolio companies, but rather take a minority post. They mostly provide capital and network, even though they often have a seat at the board. Further, interviewee E also stated that they are not the type of VC that invests and thinks that they can run the business better than the entrepreneur.

However, sometimes the portfolio companies have collaborations with one of Volvo Groups companies in technology development or other projects. In these cases, the VC firm is not active in management or collaboration for several reasons. One of them being the legal environment where, particularly in the US, it is regulated so that it should not be possible to buy yourself access to technology collaborations. Therefore, Volvo Group Venture Capital is typically not very active in the management of the portfolio companies but sit as advisors on the board and contribute with their, network, knowledge and brand name according to interviewee E.

Furthermore, interviewee E explained that the current portfolio companies have not been that affected by covid-19 yet, much due to their rapid growth which has not slowed down even though the transport sector as a whole might experience a decline in growth, hence the portfolio companies are relative winners so far in the situation. The management of the portfolio companies have not been more active yet and a lot of the portfolio companies have managed to cut costs in and is no therefore not in need of new investments in the near future, according to interviewee E. Some of the portfolio companies were scheduled to seek new

investments in the spring but have lowered their costs to postpone the financing round into the future instead. However, interviewee E stated that the growth in new affairs for the portfolio companies has slowed down when the customers are large corporations in the transport sector, for example, Daimler or Volkswagen. Moreover, if the Volvo Group VC no longer believes in the company, they want the opportunity to sell the shares without a loss which can happen through legal contracts.

4.2.6 Interviewee F, Investment Manager at Almi Invest

Interviewee F explained that Almi Invest is Sweden's most active investor who invests in all sectors, including tech, LifeScience, cleantech, and being a state-owned VC, Almi invests in early-stage startups with the mission of being a bridge to private equity and contributes to a functioning venture capital market in the whole country according to interviewee F. The screening process usually takes around six months and Almi Invest usually invest with a consortium of investors, according to interviewee F.

Almi Invest still does screening and new investments even though the situation with covid-19 has led to a lower willingness to invest and take risks on the market in general according to interviewee F. Further, interviewee F states that the current portfolio companies and their capital needs have a higher priority right now and that they might have to invest more money in the companies that they already have invested in and believe in which affect their ability to make new investments.

Also, interviewee F who is an Investment Director at a state-owned VC states that they take on a medium active role as an investor and usually sit on the board and try to give advice and assess their future capital needs. Especially they are helping their portfolio companies in assessing whether or not to be more proactive with getting more capital or to keep a more organic growth. Further, the VC that interviewee F works for is often syndicating their investments with other VC, and claim that they usually are quite active as well, with the exemption of a few business angels that invest in an earlier stage and perhaps do it more to support the founders than to bring expertise to the table.

Interviewee F stated that they are working more actively with their portfolio companies now and that they especially focus on the portfolio companies that have developed a bit further and are a bit larger than the rest, to not risk the value of these companies, as well as on companies where it is more of a temporary decline to not risk the future growth on these companies. Further, interviewee F states that they see an increased capital need with their portfolio companies which also affects the management of these and an increased allocation of capital to these companies.

4.2.7 Interviewee G, Investor relations manager at GU Ventures

Interviewee G stated that GU Ventures invests in an "Evergreen fund" which is a type of fund where the money invested is incrementally added to the companies to make them avoid growing to fast and fall apart. When it comes to the screening process they want the startups to have a connection to the University of Gothenburg, the offered product or service needs to be unique and sustainable with high growth potential and commercial consensus according to interviewee G. Furthermore it has to be scalable at both national and global level, protectable with patents, as well as possible of an exit for the investors. The screening process takes about 4-6 weeks which is analyzed by 2-3 persons according to interviewee G. GU Ventures invest in "pre-seed" and "seed" with up to 1,5 million SEK per company and often syndicates with business angels. GU Ventures are active as board members in the invested startups and also helping with recruiting new board members and employees.

Interviewee G further stated that covid-19 has affected their management of the portfolio companies, as well as the investment activities. Some investors want to await further investments due to market uncertainties and GU Ventures are focused on prioritizing the current portfolio companies to make them survive. They communicate more frequently with their portfolio companies through video meetings which are working fine according to interviewee G. Interviewee G was asked how GU Ventures will be affected by covid-19 in comparison to the Financial crisis 2008 and stated that their portfolio company values decreased from 400 to 200 million SEK at that time. They see similar tendencies now but that it is too early to say how the outcome will be.

4.3 Summary of empirical data

As described above the covid-19 crisis has affected the Venture Capital industry in different ways for different firms and investment sectors. There is a lot of factors that affect the different actions and opportunities for the interviewed VC firms. For example, interviewee A and, interviewee C stated that their access to capital allows them to proactively look for investment opportunities that may arise with lower valuation due to the increased risk.

On the other hand, interviewee D, have closed all new investments for now and focus solely on their portfolio companies. Interviewee D explained that they have a different financing way than many other VCs since their funds are listed on NGM and open for retail investors. Further, the corporate VC sees a possibility of general cost savings programs affecting the venture arm of the holding company in the future according to interviewee E. Interviewee F and G focus more on their portfolio companies at the moment and less on new investments. Interviewee B is representing a VC that also has a traditional private equity fund raised from institutional investors and with a ten-year mandate. A summary of the different outcomes for new investments for the interviewees is illustrated below.

Interviewee	Policy on new Investments	Key factors for the change in policy
A	- More opportunities - Difficulty in valuing startups due to uncertainty	- Access to capital - Less competition - Not tied to a certain sector
B	- Longer investment process - Larger capital requirements for portfolio companies can affect industry but not likely the VC	- Need to meet to invest. - Clinical trials take a longer time. Risk of refinancing without validation from trials.
C	- Business as usual	- Access to capital, recently raised a new fund
D	- Strictly no new investments	- Focusing on portfolio companies - Uncertainty and different way of financing their firm
E	- Longer investment processes. - Possibility of future cost-cutting on	- Canceled board meetings and working remotely.

	the firm's finances.	- Cost savings programs at large corporations.
F	- Lower risk-taking - Focus on portfolio companies	- Uncertainty in the macroeconomic environment.
G	Focus on portfolio companies but still make new investments.	Uncertainty and lower valuations of portfolio companies.

Table 2: Summary of new investment strategies due to covid-19

Furthermore, there are differences spanning from a passive investor to a very active management of the portfolio companies amongst the interviewees in this study. Most interviewees in the study claimed to be active in the management of their portfolio companies, usually as board members or chairperson of the board. However, interviewee E at the corporate VC and interviewee G at the university VC stated that they had a more passive role and often also a smaller ownership share. Active management of portfolio companies is exemplified by more frequent contact with the CEO and more active engagement in the strategy formulation and cost structure of the portfolio companies. Below is a summary of the management of portfolio companies before and because of the covid-19 crisis according to our interviewees.

Interviewee	Management of portfolio companies before covid-19	Management of portfolio companies because of covid-19
A	- Active with tight collaboration between owner, chair and CEO. - Help CEO with decision-making	- More active - Advice on cost-cutting, opportunities and how to be leading in the interim period
B	- Active owner by sitting on the board and setting strategy. - Venture partners that take on the operative role. - Link between startup and big pharma.	- More active - Advice on lowering costs and making the portfolio companies go through clinical trials - theoretically might need to put in more capital in the future
C	- Sit on the board and contribute with advice, support and network	- More active - Resource allocation and cost savings
D	- Sit on the board but are careful not to run over the entrepreneur. - Support with the business model	- More active - Increase efficiency and save costs

	and getting financing	
E	- Sit on board and provide advice, network and access to the Volvo brand in certain situations.	- The same level of activeness as before - Some portfolio companies have managed to save costs on their own
F	An active owner that provides advice and assesses future capital needs. Usually syndicate.	- More active - Focus on critical companies in terms of size and growth
G	- Help with future capital needs and advice.	- More active - Prioritizing the current portfolio to make the companies survive.

Table 3: Active management of portfolio companies

5. Analysis

In this chapter, the analysis of our empirical data and literature framework is presented. The information given by the respondents is compared to form generalized results, as well as to find differences among the Venture Capital firms regarding how they operate and form

strategies. These results are lastly compared to the presented theory about previous studies made about Venture Capital firms during crises to possibly be able to explain the outcome.

5.1 Screening and investments

The screening and investment process is divided into three sections, the screening process, financing of VC firm and new investments.

5.1.1 The screening process

Our empirical data shows that the screening process now is more time-consuming than it was before covid-19. Interviewee E explained that canceled board meetings and not being able to meet in person prolonged the investment process in multiple ways. Firstly the decision-making opportunity of the board meeting disappeared which prolonged the process of getting to the decision and secondly it is unlikely that an investment will happen without the VC and entrepreneur having met in person prior to that.

Interviewee B also states that personal meetings are necessary to make investments and also speculates whether the digital meetings will lead to lower transparency with the portfolio companies because of the lack of being able to physically see the progress of product development or just that the meetings are shorter and less elaborative when they happen online. On the other hand, Interviewee A states that there are no changes in how they operatively work with the screening process now compared to before covid-19. However, interviewee A also thinks that a personal meeting is necessary to decide on the investment opportunity. According to Austin (2019) the deal-flow, meaning the rate that VCs receive investment offers, is one of the most time-consuming processes in the screening process for VCs. However, given the empirical data, it seems that the screening process has not been significantly affected when it comes to deal-flow but rather the ability to meet in person is what is slowing down the screening process when looking for new investments.

5.1.2 Financing of VC firm

The way of financing the VC firms differs in our empirical data. The traditional VC model with a closed fund for a certain timeframe with capital from institutional investors is practiced by interviewees B and C. Interviewee A is representing a firm that does not raise funds but allocate capital from the company which is 25% owned by the partners and 75% of

external investors. Further, interviewee G represents an Evergreen fund that reinvests all profits into new startups.

Interviewee E gets financing from the corporate owner of the VC and interviewee from the state, EU, Almi företagspartner and other regional organizations. Moreover, interviewee D has a different structure where the funds of the VC is publicly traded on the stock market (NGM) and open for retail investors. The differences in financing and access to capital are important since it is likely to affect the way VCs are able to invest during sizeable market shocks. For example, interviewee D states that they are not doing any new investments and are putting all their focus on the portfolio companies. Meanwhile, interviewees A, B and C are continuing to invest and even believe there are more opportunities to find good deals now than before.

5.1.3 New investments

In previous crises, the amount invested and the number of investments from VC firms have gone down (Block et al., 2010). Further, Conti et.al. (2019) states that when VCs face a decrease in liquidity they have previously invested more in their core sectors and not as broadly as before because of a larger reliance on core expertise. Interviewee B supports that this was the case in previous crisis and that a shift in the possibility to exit via IPO made the VC that interviewee B represents to change their strategy into only focusing on therapeutics since that is where they could still exit via acquisition to big pharma. However, this study showed no support for that this could be the case in this economic crisis as well. For example, interviewee A has a broad investment scope and invests in any sector as long as there is an opportunity that fits the VC. Interviewee A also sees more possibilities with the current situation and many opportunities to make favorable deals, however with a lot of uncertainty in valuation. Interviewee C also thinks the situation can bring good investment opportunities and said that they are lucky to already have raised a new fund before covid-19. The interviewees that have a clear mandate of which sectors they invest in, for example, interviewees B and E will continue with business as usual in their investment strategies according to the empirical data.

Further Nanda & Rhodes (2013), states that VCs usually invest in less risky and less innovative startups during an economic downturn than in an economic boom. Ning et.al. (2015) also showed that VCs invested in fewer deals with lower amounts and in later financing stages in response to significant macroeconomic changes. The empirical data provides some early-stage indicators that fewer deals with lower amounts might be the case in this crisis as well. For example, interviewee E, F and G stated that they will focus more on their current portfolio and invest less in new companies and interviewee D have even stopped making any new investments.

The prioritization of the portfolio companies and the seemingly decreased willingness to invest in new ventures can be an early indicator of fewer deals as well as less risky deals. In that case, it would also point towards a tendency to invest in later stages to avoid taking on more risk which should be a contributing factor to the funding of less innovative startups in cold VC markets. However, it is still very early to draw any of these conclusions and a future study will have to determine whether or not the risk aversion increased during the covid-19 crisis.

On the other hand, interviewee A, B and C claimed that they would either continue as before or even look for more opportunities now since the valuations are likely to go down. This contradicts the studies by Nanda & Rhodes (2013) and Ning et.al (2015) on previous crises. A factor to consider is that the access to capital has not changed for any of these companies since they either have recently raised a closed VC fund from institutional investors or are structured as a private investment company. Hence, as long as there are no bankruptcies or significantly increased capital needs for the companies in their portfolio, interviewees A, B and C should be able to use their capital for new investments and thereby capitalize on the expected lower valuations. When it comes to interviewee D however, the capital markets are likely to be the reason that they have closed their new investment activities and are focusing on their portfolio companies to be able to show satisfying results to their investors.

Moreover, if the public market hypothesis that Ning et al. (2015) validated in their study holds for this crisis as well, it is interesting to note that technology stocks have performed well above average during this crisis with Nasdaq composite index at +0.47% YTD

(CNNBusiness, 2020). This would indicate that the market for VC investments in technology and IT is still hot despite the crisis which also could explain why interviewees A and C, that has a lot of tech companies in their portfolio are more optimistic and prone to look for new opportunities.

Furthermore, Townsend (2015) describes a scenario in previous crises where losses in one portfolio company spill over and significantly lower the probability of new financing for another portfolio company. This is something that interviewee B describes as a possible future risk. Since interviewee B is representing a VC investing in LifeScience, the risk could be that the portfolio companies that they have invested enough money in to make them go through the clinical trials are now running out of money since the trials take longer time due to lack of capacity in hospitals due to covid-19. Then the company that interviewee B represents would end up in a less favorable situation since they would have to decide whether or not to refinance their portfolio companies without any data on their performance and future potential.

Hence, it seems plausible that a long drawn crisis could force VCs, like interviewee B, to take on losses on some of their portfolio companies and that it could spill over and affect the possibility for other portfolio companies to get further investments as well as the limiting the opportunity to make new investments. In the case with interviewee B however, they have a strategy of always making sure that they can take their investments all the way to the market and therefore they are likely prepared for a scenario like this. Also, it still remains to be seen if the IPO window will be completely closed for companies in all sectors or if investors will react differently to LifeScience IPOs and tech IPOs for example. Further, an increased focus on the portfolio companies and making sure that their growth and capital needs are met is displayed from interviewees D, F and G. This can indicate an early sign of what Townsend (2015) described from previous crisis when losses in portfolio companies affected other portfolio companies as well. However, it is still very early to draw any conclusions from the increased support and cost-saving that appears to be a priority for most of our interviewed companies.

5.2 Management of portfolio companies

Management of portfolio companies is a key activity for VC firms. However, how the approach differs between firms. A study by SVCA (2017) states that former entrepreneurs now turned VCs, can contribute a lot to their portfolio companies with their experience and sector expertise. Based on our empirical data interviewee B and interviewee C have specific sector expertise in their investment sectors which they also utilize by working actively with their portfolio companies. Further, Bottazzi et.al. (2008) states that investors that have previous background in finance usually are less active than their colleagues with an entrepreneurial or business background. This is not entirely supported by interviewee A, who despite being a former finance professional practices active ownership in the portfolio companies. However, the empirical data shows that the independent VC firms are more active in their startups than the firms owned by corporations, universities or government, which is also supported by a study from Bottazzi et.al (2008).

Furthermore, interviewee A stated that they do not have specific sectors that they invest in and that they will continue to look broadly for opportunities in this crisis and strive to make to favorable deals due to the decreased valuations that can follow this crisis. Hence, this is a contrast compared to what Nanda & Rhodes-Kropf (2013) found during the financial crisis of 2008 when a lot of VCs started to focus on their core sectors rather than investing broadly which was the case before the crisis. This points towards the fact that this is a different kind of crisis that is difficult to predict how it will affect the financial markets and the VC industry. Interviewee B explained how a change in the possibility to publicly list the portfolio companies made it necessary to change the investment focus as well as an overall strategy to ensure that the portfolio companies are not dependent on uncontrollable outside variables.

When it comes to contractual agreements that regulate the active management of the portfolio companies, the empirical data suggests that few of the interviewees are working actively with it at this point in the covid-19 crisis. Interviewee D is working actively with finding suitable and creative financing options for portfolio companies such as a convertible preferred stock which became more common after the dot-com bubble burst according to Kaplan et.al (2007). However, it is possible that the more complex financing structure of the company that

interviewee D makes them savvier in different financial vehicles and therefore also more prone to use them in their portfolio companies as well. Another legal tool that can be used by VCs to increase their control over portfolio companies is the redemption clause which allows for the right to sell back shares to the company (Gordon, 2015). None of the interviewees have had to do it yet due to covid-19, which is expected since the crisis is still in a very early phase. However, interviewee E stated that they usually want to have this right in the contract, even though they are a long term investor.

This study shows that the majority of VCs, interviewees A, B, C, D, F and G, are more active in the management of their portfolio companies now than they were before covid-19 regardless of their previous activeness level. Depending on the expertise and strategy of the VC firms, they seem to focus on different factors to support their portfolio companies. For example, Interviewee A who have a lot of digital solutions in their portfolio of companies are active in advising not only on how to save cost but also on how to seize the opportunity that this unique situation can provide for some of the portfolio companies so that they gain market shares and expand. Similarly to this, interviewee C also had the perspective that some of the portfolio companies benefit from the situation and some do not, and that the VC now work more actively in supporting the portfolio companies in their specific unique position. Further, all of the interviewed VCs expect the corporate VC are more active in making sure that the startups cut their costs as much as they can.

Ning et.al (2015) states that in response to large changes in the macroeconomic environment VC firms typically adopt to make fewer deals and invest less capital per deal. The empirical data of this study suggest that interviewees B, D, E, F and G will make fewer investments now because of the risk of having to put in more capital in the portfolio companies for them to survive the diminished demand that the covid-19 has brought. For interviewee B however, their investment strategy is to calculate with increased capital need in their investments and ensure that they can control the development of their pharmaceutical products to the market. Interviewee C also allocates a large sum to future investments in portfolio companies.
Hence, it seems like these firms are less likely to be limited in future investments due to the management of their current portfolio companies. On the other hand, interviewee D stated that they work very actively with cost savings with their portfolio companies and that they

are not doing any new investments at all at the moment. Interviewee D did not express increased active management now compared to before covid-19. There are several possible reasons for that. For example, as a passive minority investor, it would be a big structural change of the firm to start managing more actively than before compared with the investors that already have an active management role in the portfolio companies.

6. Conclusion

This section initiates a discussion about the choice of method and its influences on the results. The results are then concluded and respond to the issues about how Venture Capital firms are affected by covid-19 and more specifically how their screening- and investing

processes, as well as management of their portfolio companies changes in this situation. Suggestions for further research about Venture Capital and specifically covid-19 effects on the economy are lastly presented.

6.1 Method discussion

This qualitative study has made it possible to map a small fraction of Venture Capital firms in Sweden regarding their operative activities, as well as their strategic thinking before and during the covid-19 pandemic. This would have been hard to accomplish by doing a quantitative study because of difficulties putting numbers on the data and the lack of databases presenting strategic variables relating to this research topic, which is in a very early stage timewise. To improve the method further, considerations could have been made to contact individuals who would provide the best answers from the interview questions, which however is hard to know solely looking at their titles within their Venture Capital firms. This because interviewees who had a strategic role (CEOs and Partners) gave more generalized answers than the interviewees working more operative (Investment Managers), which answered more specifically. Having structured interviews instead of semi-structured could therefore been an option.

6.2 Discussion of the results

If the results would be generalized regarding how the screening process is affected by covid-19, it shows a more time-consuming process due to not being able to have as many physical meetings as before, which makes it more difficult to review investment decisions. The investing process is affected through fewer deals being made, which is caused by a focus on prioritizing the current portfolio companies to make them survive through the crisis. This observation is in line with the studies made by Nanda & Rhodes (2013) and Ning et.al (2015) about previous crises, which stated that VC firms tend to be more risk-averse during crises.

However, a minority of the interviewed VC firms see investment opportunities because of lower potential valuations of startup companies with high growth potential, which contradicts the observations of the presented studies. Possible explanations for this matter is that some VCs have access to a lot of capital since the fund was raised before covid-19. The empirical

data also suggest VCs have allocated sufficient funds to make follow-up investments on their portfolio companies and still been able to look for new opportunities. This implies that some of the companies our interviewees represent are well-positioned for a future crisis and are able to invest in undervalued companies when the crisis is present. Further, our empirical findings do not indicate a change in the sectors VCs invest in due to covid-19 like previous research have shown after the financial crisis of 2008. Whether if this is because of the learnings the industry did at that time or because we are too early in this crisis is hard to determine. Although some interviewees stated that their firms are making fewer investments now this study does not suggest that there has been any changes in investment preferences for the VCs who still make investments. This contradicts what Ning et.al (2015) showed in their study that VCs invested in startups in later stages as a result of previous crisis. A reason for this could be that VC have adopted stricter investment mandates and strategies to increase their performance.

This study concludes that the management of portfolio companies is more active during covid-19 than before the crisis. Further, the foremost measure that VCs take in their active management is to cut costs to avoid losses. VCs also try to lower the potential risk needing to invest more capital in the portfolio companies at a too low valuation. This can be done through active support and advice on how to increase efficiency and allocate resources in the best way.

However, some evidence also suggests that VC can view the sizeable change in the macroeconomic environment as an opportunity to find favorable deals due to the low valuation that can happen as a result of the changes. The general focus on keeping the portfolio companies alive with cost savings programs and eventual new investments might indicate a decline in new investments for most VCs if the covid-19 crisis goes on for a long time. Another risk is that losses in the portfolio will affect other portfolio companies and their ability to reach further funding. This is highlighted in previous literature by Townsend (2015) but not supported yet from the empirical data. It is still too early to say what consequences covid-19 will have, both on the economy and performance of the portfolio companies as well as the performance of the VCs. However, the empirical data does indicate that many of the VCs are well prepared for an economic downturn since, in terms of access to capital and

foreseeing strategies, where they already have calculated on further capital needs for their portfolio companies.

This study could imply that some of the interviewees have addressed the issues that previous crises have caused on VC investments and tried to proactively mitigate these issues. For example, the learning that the IPO window might be closed in economic downturns and that more money should be available for the portfolio companies in case of a postponed exit. On the other hand, the types of startups that the VCs invest in and how well they are suited to cope with the covid-19 crisis is also a determining factor on how constrained the VC will be. If VC will perform better in this type of crisis than previous ones is an interesting topic that will need to be researched in hindsight to assess properly.

6.3 Future research

The study contributes to the current body of research of venture capital in an economic crisis with a live perspective on how the VCs operate during the covid-19 crisis. It answers the question of how activities such as investing and management of portfolio companies operationally change at the beginning of an economic downturn caused by governmental responses to a pandemic. Interesting future research could be to investigate how the different firms have handled the covid-19 crisis in a few year's time. It would also be interesting to research how the venture capital industry in general adopted to the new situation and which strategies and best case practices can be found in hindsight of a situation that has not been present before in the fairly young industry of venture capital. Furthermore, a study on how covid-19 has affected the overall economy is of course of interest for all stakeholders in the today's modern economy.

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Appendix 1. Interview Guideline

1. Berätta lite om din karriär, hur länge har du jobbat inom Venture Capital branschen?
2. Vad är din roll på företaget?
3. Berätta mer om ditt företag?
4. Vilka faser investerar ni i?
    - pre-seed, seed, series a, series b, series c.
5. Vilka branscher investerar ni i?
    - tekniker, affärsmodeller?

6. Vanligtvis, hur ser en screening process ut för er innan ni investerar?
    a. Strategier?
    b. Vilka faktorer kollar ni på?
    c. Vilka tycker ni är viktigast?
    d. Hur lång tid tar det oftast?
    e. Syndikerar ni eller är ni gärna ensamma investerare?

7. Hur aktiva är ni vanligtvis i portföljbolagen?
    a. Hur har det förändrats i och med Corona?
8. Vad brukar ni främst tillföra?

9. Hur har Corona påverkat er verksamhet vad gäller screening och investeringar?
    - Kan du utveckla
    - Förändrar ni ert fokus i era investeringar?
    - Tror du att ni kommer göra mindre investeringar nu?
    - Kommer investeringsprocessen ta längre tid än tidigare
    - Hur hanterar ni fortsatta investeringar i era portföljbolag?

10. Hur har Corona påverkar er verksamhet vad gäller förvaltning av era portföljbolag?
11. Har ni varit mer aktiva i ert inflytande på portföljbolagen till följd av Corona-krisen?
    a. Tror du att ni kommer behöva avstå från att investera ytterligare pengar i era portföljbolag?
    b. Vilka problem märker era portföljbolag av just nu?
    c. Hur hjälper ni dem att lösa dessa problem?
    d. Har ni juridiska klausuler i kontrakten som riskerar att träda i kraft nu, exempelvis "redemption clause", tag along, drag along, osv?

12. Om ni var aktiva i branschen under tidigare kriser, vilka lärdomar drog ifrån det?

13. *Hur tror du Venture Capital branschen kommer att påverkas på några års sikt mot vad den var innan krisen?*

14. (Presentera syfte med rapporten) Är det någon fråga vi inte har ställt som du skulle vilja ge svar på?

15. Kan du rekommendera någon vi borde prata med?

Appendix 2. Contacted Venture Capital firms

Part of the study

- Alfvén & Didrikson
- Almi Invest
- GU Ventures
- HealthCap

- Spintop Ventures
- Volvo Group Venture Capital
- Zenith Ventures

Not part of the study

- Aqilion
- Backstage Invest
- Brightly Ventures
- Centrecourt
- Chalmers Ventures
- Creandum
- EQT Ventures
- Första Entreprenörsfonden
- GLD Invest
- Hadean Ventures
- Ingka GreenTech
- Innovationskapital
- NFT Ventures
- Nordic Game Ventures
- Northzone Ventures
- Rite Ventures
- Saab Ventures
- Transferator
- Vidici Ventures
- Vostok New Ventures