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A WARNING TO EQUITY CROWDFUNDING INVESTORS!

You Might Overpay

Bjørn Aase & Håkon Færevåg

Supervisor: Kyeong Hun Lee

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NORWEGIAN SCHOOL OF ECONOMICS

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Abstract

Equity crowdfunding is a relatively new phenomenon that allows non-professional investors to invest in potentially high-value startups. Although some view this as an opportunity to decrease societal inequalities, others are concerned that bloated valuations will leave investors with insufficient risk-adjusted returns. In our thesis, we sought to determine whether equity crowdfunded companies are overvalued. We compared company valuations on two Norwegian equity crowdfunding platforms to valuations in comparable Norwegian venture capital transactions using a Welch's t-test across the two groups in their entirety as well as several t-tests on defined subsets of these groups.

Our results suggest that valuations on crowdfunding platforms are, on average, 44% to 52% higher than those professional investors face. We discuss these results in light of theory on startup valuation and agency theory and find a lack of arguments that could reasonably justify the difference in valuations. Hence, we conclude that crowdfunded companies appear to be overvalued. We suggest these overvaluations might be attributed to potential venture capital discounts and to the fact that startups listing on crowdfunding platforms can choose their own valuation, while the platforms lack incentives to negotiate this valuation on behalf of investors. Although overvalued companies imply that crowdfunding investors will achieve inferior risk-adjusted returns compared to professional investors, further research on performance over time is needed to determine if this holds true.

Keywords: *equity crowdfunding, startup valuation, venture capital, agency theory*

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1 Introduction

1.1 Background and Motivation

Historically, investing in startups has been an activity reserved for professional investors, such as venture capital funds. In turn, access to these funds has normally been limited to wealthy individuals, family offices, and institutional investors. As investments in startups may yield exceptional returns, many have proclaimed that this restricted access represents an unfair advantage for the wealthy members of society (Night, 2018; Stockton, 2019). However, a new phenomenon has emerged in recent years, enabling non-professional investors to participate in the entrepreneurial finance sphere. This phenomenon is called equity crowdfunding.

Crowdfunding is an umbrella term covering many different segments. There are five primary forms, which differ in terms of what the funders receive for their investment (Andersen & Mauritzen, 2016). Donation-based crowdfunding can most closely be described as a charitable donation where the investor does not receive anything tangible in return. In reward-based crowdfunding, investors receive rewards, such as early access or a discount on a product once it launches. Royalty crowdfunding provides the investor with cash flow rights once the firm reaches a certain stage. Debt-based crowdfunding platforms, such as Funding Partner in Norway, offer a credit contract. The last main form is equity crowdfunding, where the investors receive equity shares in the company. In this paper, we focus solely on equity crowdfunding, and hence, we use the term crowdfunding to refer to this specific type.

Equity crowdfunding is a rather new phenomenon that first surfaced with the foundation of the Australian Small Scale Offerings Board in 2007 (World Bank, 2013). In 2012, Barack Obama signed the Jumpstart our Business Startups Act. The act opened up the opportunity for U.S. companies to raise external capital from the general public (SEC, 2017). Since then, equity crowdfunding has had massive growth. Suddenly, everyone with a few dollars to spare could invest and receive a share of the potentially astronomical returns successful companies can provide. From a societal perspective, one could argue that crowdfunding can serve as an important tool for staggering the growing financial inequalities in modern society (Stiglitz, 2015). Furthermore, it allows startups to raise capital while simultaneously receiving feedback that people believe in their product or service offering.

However, some have pointed out several issues in equity crowdfunding. Substantial information asymmetries between startups and crowdfunding investors are heavily debated

(Belleflamme et al., 2014; Moritz et al., 2015; Courtney et al., 2017). Consequently, adverse selection is an issue that arises, where sceptics consider whether the startups choosing to list on crowdfunding platforms are of lower quality than those receiving funding from venture capitalists (VCs; Agrawal et al., 2014; Giudici et al., 2013; Walthoff-Borm et al., 2018a). We elaborate on these agency theory issues in our literature review.

Some successful companies have originated from crowdfunding platforms, one of the most notable being the fintech venture Revolut. Allowing private investors access to these high-potential new ventures simultaneously gives them access to the matching returns. However, financial literature emphasizes the importance of adjusting for risk when comparing investments across different asset classes, and the risk-return profile of crowdfunding has yet to be explored.

One important determinant of investment returns is the valuation at which one invests. On most crowdfunding platforms, startups decide the company valuation themselves, and investors have no way of negotiating this price; they either invest or not. Here, the decision of each individual investor makes little difference in the grand scheme of things. In stark contrast, professional VC funds are arguably better able to both assess a fair value for the company and negotiate an appropriate valuation. Some have claimed that these mechanisms lead crowdfunded companies to be greatly overvalued in equity offerings (Lalacos, 2020; Vasconcelos, 2015).

If crowdfunded companies are overvalued, investing in startups through crowdfunding would, on average, not yield the same risk-adjusted returns as investing through VC funds. Hence, crowdfunding would not represent a novel way for the average investor to attain the superior returns previously reserved for the wealthy members of society. On the contrary, it could merely serve as a channel for poor-quality startups to lure funding from uneducated investors.

The current literature on equity crowdfunding is very limited. On the topic of potentially overvalued crowdfunded companies, we found no prior empirical research. The lack of prior research and its potentially important implications for private investors motivated us to choose this specific topic for our master's thesis.

1.2 Research Question

With the purpose of safeguarding private investors' best interests, the aim of this thesis is to pursue this research question:

Are crowdfunded companies overvalued?

We sought to determine this by comparing the valuations of crowdfunded companies to those of their VC-backed peers. Our research rests on the assumption that startups seeking investments through crowdfunding are similar to those that seek funding from VCs. We aimed to compare companies at the same stage of development.

1.3 Outline

The remainder of the thesis is structured as follows. In Chapter 2, we provide a review of relevant current literature on venture capital, startup valuation, and equity crowdfunding. In Chapter 3, we elaborate on the process of collecting and processing data before describing our statistical approach. The results of our analysis are presented in Chapter 4 and discussed in light of theoretical concepts in Chapter 5. In Chapter 6, we conclude our findings.

2 Literature Review

In the following sections, we first briefly describe the players in entrepreneurial finance. Second, we touch upon current literature on important aspects of startup valuation in general. Finally, we piece together the limited existing literature on equity crowdfunding, emphasizing how differences in market dynamics and investor traits might affect valuations.

2.1 Players in Entrepreneurial Finance

According to the pecking order theory of capital structure, any company would first seek to use internal financing, such as retained earnings, to finance new investments. If these funds are not available or sufficient, the company will issue debt or, as a last resort, equity (Myers, 1984). New ventures often have negative earnings and cash flows, which leave them with no other option than to raise capital from risk-willing investors. The major players in startup investing are VCs and business angels (BAs; Block et al., 2018). VC funds generate profits by selecting ventures with high potential of succeeding, making term sheets that incentivize the entrepreneurs to pursue value-creating activities and providing the support that maximizes the valuation of their portfolio companies (Gifford, 1998).

The partners of a VC firm, also known as general partners (GPs), manage the fund and are responsible for investment decisions and following up on the portfolio companies (Gifford, 1998). Those who invest in a VC fund are called limited partners (LPs). These investors compensate the GPs, usually by paying both a management fee and carried interest. The management fee is an annual percentage of the LPs' committed capital. The carried interest is a performance fee, stating the GPs' portion of the fund's returns after the LPs' initial investments have been returned (Gifford, 1998). The most common fee structure is the '2 and 20', with a 2% management fee and 20% carried interest (Mulcahy et al., 2012).

In addition to selecting and deploying capital to new ventures with high market potential, VCs support startups through value-adding activities. The level of support differs, and Teten et al. (2013) list three distinct categories of VCs based on their level of support – financiers, mentors, and portfolio operators. They found that most VCs fall into the category of mentors. This is in line with the research of Ehrlich et al. (1994), who found that VCs in general have a supporting role in monitoring, serving as a sounding board, and formulating business strategies. On the other hand, investors in equity crowdfunding can be considered financiers, as their only contribution is capital. Some scholars report that VC support has a positive impact on investee

companies (Flynn & Forman, 2001) and that VC involvement is positively correlated with successful exits (Bernstein, 2016). In addition to value-adding activities, having a highly reputable VC firm on the capitalization table can be a value-add itself (Large & Muegge, 2008), as this can provide a signal of high quality.

BAs are another type of investor startups typically target when seeking external capital. BAs are wealthy individuals who invest directly in startups at an early stage (Mason & Harrison, 2015). They invest their personal assets, often accumulated through their own entrepreneurial ventures (Ramadani, 2009). Like VCs, BAs often take an active role by supporting startups as sounding boards and helping to develop business strategies (Politis, 2008). As VCs and BAs are such similar types of investors, we group them together when comparing them to crowdfunding investors under the umbrella term VCs in the remainder of our thesis.

VCs demand high returns for the risk they undertake. From 1960 to 1999, VC investments yielded an arithmetic return of 45% annually with a standard deviation of 115.6% (Baierl & Kaplan, 2002). Cochrane (2005) suggests several reasons why the risk-return ratio differs from public stocks. Other than the uncertainty of returns, he mentions illiquidity and that a larger fraction of total capital is often invested in each company. The latter implies higher risk through lower diversification. The risk-return profiles of different asset classes are depicted in Figure 1. With investment characteristics similar to those found in VC, we should expect to also find the risk-return ratio of equity crowdfunding close to that of VC.

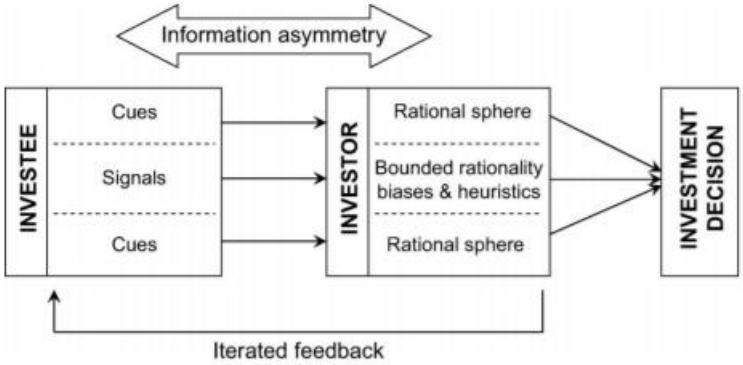
Figure 1: Illustrative risk-return profiles for different asset classes

Venture capital exhibits a power-law distribution of returns (Thiel & Masters, 2014), meaning that relatively few VC deals yield the majority of the returns. Crawford et al. (2015) found fat-tail distributions in many entrepreneurial success criteria. For instance, 0.03% of all new ventures generated 60% of the total jobs in their sample, and they found similar distributions in revenues and growth. A natural symptom of a power-law distribution is that the mean is significantly higher than the median, driven by outliers. Consequently, the power law implies that even though returns may seem attractive on average, the overall probability of success is low and involves great risks. It seems reasonable to assume that returns in equity crowdfunding follow the same distribution.

2.2 Startup Valuation

According to financial theory, the value of any company or investment is the present value of the cash flows it will generate over its lifetime (Brealey & Myers, 2002). Among financial analysts, the dominant valuation techniques are the multiples and discounted cash flows methods (Demirakos et al., 2004). However, startup valuation is a different process, due to greater uncertainties in future outcomes. The traditional valuation methods require forecasts of revenues and costs and assumptions of growth. These assumptions and projections are built on historical accounting information (Ou & Penman, 1989), which new companies lack. Thus, startup valuations can vary greatly based on the evaluators' judgement and are highly driven by hypotheses of what a future world will look like (Miloud et al., 2012). The research of Levie and Gimmon (2008), Dominguez (1974), and Sudek (2007) supports the notion that there is extensive use of gut feeling and intuition among VCs. Hence, these investors might make systematic errors that could lead to over- or undervaluation of new ventures. Therefore, psychological theory (Tversky & Kahneman, 1974) and theories of bounded rationalities (Simon, 1955) are important in startup valuation. Based on previous research and their own qualitative studies, Levie and Gimmon (2008) proposed a model of how VCs execute suboptimal investments due to information asymmetries in the investment process (Figure 2).

Figure 2: Conceptual model explaining suboptimal investment decisions in venture capital markets (Levie & Gimmons, 2008)



Presumably, crowdfunding investors go through the same process, but the information asymmetries are even higher (Ahlers et al., 2015), thus increasing the risk of suboptimal investments. Since cognitive biases are such a prevalent topic in the industry, professional investors might be more aware of systematic errors and, consequently, less prone to be affected by them.

As the most common valuation techniques are ill-suited for startup valuation, new variants have been introduced, such as the VC method and the First Chicago method (Festel et al., 2013). Metrick and Yasuda (2011) refer to the VC method as 'the most common valuation strategy used by venture capitalists' (p. 178). In practice, this method relies on a financial forecast to calculate the future exit value if the venture succeeds. The exit value is found by using either fundamental valuation techniques or, maybe more commonly, multiples valuations of comparable exits. The exit value is discounted by a rate considerably larger than the average cost of capital for public companies. The weighted average cost of capital and capital asset pricing model use risk-free rates, average market return, and a measure of volatility, or beta, to derive the discount rate (Jensen et al., 1972; Miller & Modigliani, 1963). On the other hand, the VC method calculates the discount rate based on an estimated probability of successful exit, the expected time to exit, and the portfolio's overall cost of capital (Metrick & Yasuda, 2011, p. 180–181). If we let p denote the probability of a successful exit, the value of a startup company today should be given by the following equation:

$$Present\ discounted\ value\ of\ exit = exit\ valuation * \frac{p}{(1 + r_{VC})^T} \qquad (1)$$

where r_{VC} denotes the cost of venture capital and $p/(1+r_{VC})^T$ describes the effective discount factor for the exit valuation.

One study found that a startup's product or solution and human capital are the most crucial factors for successful entrepreneurship (Bosma et al., 2000). At an early stage, there might not be a finished product or service to evaluate. This is likely why many scholars find that the founding team's quality is the most important selection criterion when VCs invest (Nunes et al., 2014; Silva, 2004). This criterion is based on the notion that a high-quality founding team can adapt to emerging challenges, hence increasing the startup's probability of success.

2.3 Equity Crowdfunding

The research on equity crowdfunding is still in its infancy. In general, many research questions are left unanswered, as there is a lack of data on the historical performance of crowdfunded companies. In parallel with increased attention on this topic, the accumulation of data from crowdfunding platforms across the globe will lead to a broader and more in-depth understanding of equity crowdfunding and its role in future financial markets. To the best of our knowledge, the direct research on valuations on crowdfunding platforms is virtually non-existent. We therefore review literature on the underlying dynamics of equity crowdfunding and how these might explain differences in valuations between crowdfunded and VC-backed companies.

From the perspective of capital markets, there is an extensive debate on whether equity crowdfunding is a 'market for lemons' due to the information asymmetries between investors and startups (Mochkabadi & Volkmann, 2020). The entrepreneurial finance literature has discussed the challenge of information asymmetries in traditional venture capital for decades (Cumming, 2006; Fiet, 1995; Trester, 1998), and Ahlers et al. (2015) argue that information asymmetries are even greater in crowdfunding. This issue has the potential to cause market failure (Agrawal et al., 2014).

The 'lemons problem' in agency theory is a metaphor for a situation where only the seller possesses information on the product's real value. The buyer, who cannot distinguish between low- and high-quality products, discounts the value of all products. Hence, high-quality products will not receive a fair price and will eventually exit the market, leaving only poor-quality products in the market pool (Akerlof, 1978). Given a situation where both high- and low-quality entrepreneurs utilize crowdfunding, a lemons problem could arise if information asymmetries are so great that unwitting investors flood the market with money. This could

skew valuations so that the high-quality startups cannot distinguish themselves from the low-quality ones (Ibrahim, 2015).

To further support this notion of a market for lemons, the research of Walthoff-Borm et al. (2018b) shows that firms listed on crowdfunding platforms are more likely to have excessive debt levels and are less profitable than comparable firms not listed on these platforms. A partner of a law firm specializing in venture deals wrote in a commentary that startups raising capital through crowdfunding might signal that they have been passed over for investments by VC firms and BAs. Furthermore, he states that previous crowdfunding might deter professional investors later (Roberts, 2015). A qualitative study on entrepreneurs who had used crowdfunding platforms to raise equity supports this statement. Most of the entrepreneurs sought VC funding at first, but after being denied, they moved on to crowdfunding (Langgård & Mostad, 2015). This implies that companies raising funds through crowdfunding are of poorer quality than those who raise through professional investors and should, consequently, have lower valuations. In the same study, respondents claimed that one benefit of equity crowdfunding was that one could achieve a higher valuation. Agrawal et al. (2014) support the idea that some entrepreneurs view crowdfunding as a cheap source of capital.

A central part of agency theory relates to the incentives of different stakeholders. Both the Norwegian crowdfunding platforms have a two-component revenue model; they both charge a fixed campaign cost and a percentage fee of the raised amount (Dealflow, 2020; Folkeinvest, 2020). It is worth noting that neither of these fees depend on the future success of the startup. As the crowdfunding platforms have no incentive to promote only high-quality companies, they face a moral hazard situation where the goal is to achieve funding for the companies regardless of their quality. Their incentives, in other words, do not align with those of investors.

When VCs do their due diligence, they normally meet with the founding team several times. This allows for a thorough assessment of the team and an extraction of comprehensive details on the company. While crowdfunding investors also emphasize the management's motivation and commitment as critical investment factors (Shafi, 2019), they are not able to assess these with the same level of scrutiny as a VC. If the lack of proper due diligence deters investors, this can lead to market failure, resulting in high-quality entrepreneurs not receiving funding. However, the investors might discount the informational asymmetries, leading to a lower company valuation (Agrawal et al., 2014). Since information on the founding team is essential in VC investing, the fact that crowdfunding does not allow for face-to-face communication

limits the investors' understanding of the entrepreneurs' motivation, knowledge, and trustworthiness (Agrawal et al., 2016).

An issue that Tomboc (2013) raises is that entrepreneurs who seek crowdfunding investments may be reluctant to share detailed information about their solution or product due to fear of intellectual property theft. Traditionally, when entrepreneurs pitch to professional investors, the parties sign nondisclosure agreements that prevent or reduce the risk that investors will exploit the entrepreneurs' ideas. Creating these agreements for large crowds is very challenging, both in terms of practical implementation and follow-up.

When researching how information asymmetry affects companies' market value, Agarwal et al. (2016) found that companies with higher quality investor relations strategies and lower information asymmetries are rewarded with higher valuation multiples. As this study is conducted on publicly traded companies, we are careful to draw a close parallel to the information asymmetries related to equity crowdfunding. Although, it seems reasonable to assume that information asymmetries could also negatively impact the valuations of crowdfunded companies. Research on the relationship between information asymmetries and successful exits in VC-backed firms shows that when asymmetries are mitigated, the probability of a successful exit increases (Cumming & Johan, 2008).

Returning to the VC method, there is a question of whether crowdfunding investors have different criteria for returns than professional investors (Belleflamme et al., 2013). Bretschneider and Leimester (2017) found that crowdfunding investors exhibited prosocial investment behaviour. One example of prosocial motivation is community benefits. Belleflamme et al. (2014) argue that crowdfunding investors experience community benefits that increase their perceived value. One can argue that these benefits only apply to enterprises that can create communities for their products, predominantly covering the business-to-consumer segment (Roma et al., 2017). Examples of such companies are Revolut and BrewDog, which both became unicorns. These community benefits might reduce the investors' discount rate, as they gain utility from nonmonetary sources other than investment returns. This will in turn increase company valuations.

The wisdom of the crowd is one argument in support of equity crowdfunding (Polzin et al., 2018). As each investor normally only invests a small amount, a large number of investors must invest for the campaign to be successful. This could imply that information asymmetries are reduced and only the high-quality companies receive funding. However, investors might

take previous funding as a signal of quality and choose to invest for that reason. Agrawal et al. (2014) found that the attraction for investors increases with accumulated capital and that successfully funded campaigns are highly skewed. Hence, the accumulation of investors and funding amounts could have a positive signalling effect leading to ‘group-think’, which, in turn, increases information asymmetries (Tomboc, 2013).

One notable study found no significant relationship between financial potential and successful campaigns (Shafi, 2019). If private investors ignore financial potential when making their investment decisions, they might also neglect to consider the valuation at which they invest.

To synthesize, the current literature on equity crowdfunding highlights several issues concerning the quality of the startups listing on crowdfunding platforms, such as informational asymmetries and adverse selection. If crowdfunded startups truly are of lower quality, they would be overvalued even if they are priced at similar valuations as their VC-backed peers. However, in our analysis, we seek to determine if they attain statistically significantly higher valuations.

3 Method

3.1 Data Collection

To compare valuations of companies that raised funding through equity crowdfunding and those that raised funding through VCs, we had to create data sets for the two groups. In the following, we elaborate on this process.

3.1.1 Crowdfunding Data

We extracted data from 142 crowdfunding campaigns on the websites dealflow.no and folkeinvest.no (Dealflow N = 62, Folkeinvest N = 80). Each campaign provided details regarding the company and the deal proposals, including a pre-money valuation and target amount to be raised through the campaign. The target amount was listed as a range, such as NOK 1–3 million. For the companies that did not meet their campaign's minimum target before the deadline (Dealflow n = 16, Folkeinvest n = 34), the campaign was cancelled. The data from these campaigns was not included in the dataset, as we deemed it wrong to include deals that did not occur. Of the remaining companies (n = 92), where the campaign was successful, we excluded companies that were more than ten years old at the time of the campaign (n = 9). We did this because these companies are no longer considered startups by normal standards. This left us with 83 observations of crowdfunding transactions.

3.1.2 Venture Capital Data – Creating the Benchmark

To create a benchmark of comparable VC-backed startups, we compiled transaction data from a group of BAs and three different Norwegian VCs investing at the pre-seed and seed stages. We received data on a total of 154 transactions (n = 6, 13, 37, 98 from the different funds). We removed observations where the investments were made through convertible notes (n = 46), effectively postponing the valuations of the startups until the next round of funding, often not available in the data. Furthermore, we deleted one observation containing incohesive data. This left us with 107 observations (n = 6, 13, 33, 55 from the different funds). The data was anonymized, revealing only historical data on the VCs' investment amounts, total investment (if more than one investor involved), and equity stakes. From this, we could derive the pre-money valuations used for comparison with the crowdfunding group.

Note that the VCs did not wish to share data on other characteristics, such as industry or product category, as this could enable us to reasonably pinpoint which valuation belonged to each

portfolio company. Hence, giving this information would require permission from each individual company, which most would be reluctant to give. The lack of this information represents a disadvantage, as we cannot control for these variables, which might hide systematic differences between the crowdfunded and VC-backed companies. However, scarcity of data is a known problem in the industry, limiting researchers' ability to be pedantic on this matter.

3.2 The Challenge of Defining Startup Stage Categories

Among the remaining crowdfunded companies in our sample, there was a large range in how much capital the companies had raised prior to the crowdfunding campaign. Data on previous funding was extracted from public accounting reports from proff.no and investment notes on the crowdfunding platforms. Arguably, companies that had previously raised NOK 15 million might not be comparable to companies that had only raised NOK 30 thousand, as these were likely at different stages. The company stage is an important factor, as the younger the company is in its life cycle, the greater the risk and, consequently, the lower the valuation (Ruhnka & Young, 1991).

After 'friends, family, and fools', the first round of professional funding has traditionally been the seed round, prior to series A, which is the first round in the growth phase of the startup's life cycle. However, as the size of seed investments grew, a new funding stage emerged: pre-seed (Kumar, 2017). The lines separating these categories are, however, quite blurry.

Most of the crowdfunded companies (64%) listed their campaign within the first three years of existence and were arguably at an early stage of development. Hence, they are likely to fall into the pre-seed or seed category. However, a number of factors other than funding determine what stage a startup company is at, such as product development stage, whether the company has paying customers, and the number of users. Furthermore, these criteria vary greatly across different industries, as do the capital needs. For example, a software company can launch a minimally viable product without much capital at all, while hardware companies might drain several million in capital just developing a prototype. Consequently, it is impossible to accurately divide startups into pre-seed or seed stage groups based solely on their funding. Yet as we only have data on transaction amounts and valuations, we must make an attempt.

What further complicates the matter is the lack of industry-wide definitions of what characterizes and distinguishes the different stages. A GP at a VC firm we spoke to stated that 'It is a challenge that the industry cannot seem to agree on clear definitions of the different

stages. Different actors in the market use the terms pre-seed and seed at least partially interchangeably, blurring the border between these stages'. This becomes evident when searching for funding characteristics of the pre-seed stage. Some state that U.S. pre-seed rounds typically range between $50K and $250K in investment amount at $1–3 million valuations (Lynley, 2019), while others claim they normally range from $500K to $750K (Kumar, 2017). A prominent Norwegian BA we spoke to said the typical Norwegian pre-seed investment lies around NOK 3–5 million at valuations near NOK 30 million. On the other hand, StartupLab, Norway's largest player in early-stage investments, says on their website that they usually invest NOK 1–3 million at valuations between NOK 10–30 million (StartupLab, 2020).

To achieve accurate results in our analysis, we need to compare companies that are at a similar stage – to compare apples to apples, so to speak. The problem arises when it is nearly impossible to determine whether a company is an apple, a pear, or something in between. Hence, in our analysis, there is no sure-fire way to group the companies. Thus, we ran a total of four tests. In the first two tests, we did not separate the companies into stages but instead tested the full samples. In the last two tests, we defined thresholds between pre-seed and later stages. These thresholds are based on discussions with several VC partners and BAs. We acknowledge the challenges of this simplified approach, but as an optimal approach seems unattainable, we believe it can still reveal valuable insights into this novel industry.

3.2.1 Test 1: All Companies Included

In the first test, we included all the companies from both groups (crowdfunding, N = 83; VC, N = 107). This was to determine if there is a significant difference in valuations prior to alterations in the data set. Although these alterations are intended to improve the quality of the analysis, they are based on the authors' best judgments. Hence, they might be biased – or even simply wrong.

3.2.2 Test 2: Excluding the Top 5%

In the second test, we excluded the observations comprising the top 5% of pre-money valuations in both groups. This left us with 79 observations in the crowdfunding group and 102 observations in the VC group. This was done in an attempt to avoid the (sometimes extreme) outliers one sees within entrepreneurial finance, as these might skew the averages and lead to substantially increased variability. The average pre-money valuation in the top 5% was NOK 82 million in the crowdfunded group and NOK 64 million in the VC group. The reason we observe these high valuations might be due to VC investors sometimes investing outside their

mandate, meaning a pre-seed or seed investor might sometimes participate in a series A round. Similarly, while most companies listing on crowdfunding platform are new ventures, there are a few more mature companies listing as well, skewing the average valuations. We believe excluding these observations leaves us with a more representative sample. Hence, we also excluded them in the remaining tests.

3.2.3 Test 3: Pre-seed I

In this test, we defined a threshold to distinguish companies at the pre-seed stage from those at the seed or later stages. Companies that have not yet raised a pre-seed round are normally funded by the savings of the founders, their families and friends, and smaller governmental grants. For the crowdfunded companies, we set an upper limit of funding prior to the campaign at NOK 1.5 million. It seems reasonable to assume that the vast majority of companies that had raised less than this amount prior to the campaign were at a pre-seed stage. Thus, companies below this threshold are defined as being in the pre-seed category. This was the case for 45 out of 79 companies. For the VC-backed companies, we defined pre-seed rounds as rounds with less than NOK 5 million in investment amount (n = 66). Companies with investment amounts above this (n = 36) were defined as being in the seed or later stage category.

Test 3.1 compares the pre-money valuations in the defined pre-seed groups of crowdfunded and VC-backed companies. Although the companies in the groups above the defined thresholds could be at different stages, we included a supplementary test (3.2) comparing these groups as well. We did this because our defined pre-seed groups are based merely on best judgements. Hence, including a comparison of the remaining observations seemed reasonable.

3.2.4 Test 4: Pre-seed II

As Norwegian startups can receive grants from the governmental organization Innovasjon Norge of up to NOK 1.5M, one might argue that setting the threshold at NOK 1.5 million is too low to encapsulate the entire pre-seed stage. Hence, we also ran tests where we set the threshold higher. We increased the upper limit for prior investments to NOK 3 million for crowdfunded companies. As this likely includes companies at the upper range of the pre-seed stage, we adjusted the maximum investment amount to NOK 7 million for the VC-backed companies to include the upper range of VC pre-seed transactions as well. This increased the pre-seed groups of the crowdfunding and VC groups to 57 and 83 observations, respectively.

Analogous to test 3.1, test 4.1 compares the new pre-seed groups of crowdfunded and VC-backed companies, while test 4.2 compares companies defined to be at later stages.

3.3 Statistical Approach

With the purpose of testing differences in valuations between crowdfunding and VC transactions, we based our analysis on an independent sample t-test. This test helped us in suggesting an answer to whether crowdfunded companies are overvalued.

We conducted a Welch's t-test (Welch, 1938), which is the most robust independent sample t-test in the case of unequal sample sizes or variances within the groups (Zimmerman & Zumbo, 1993). The test provides the same answer as the corresponding test assuming equal variance, though it has a hedge in case the assumption is violated (Delacre et al., 2017).

To derive the t-statistic, we found the difference between the means of the two groups and divided it by the sum of the standard deviations for the two groups.

$$t = \frac{(\overline{x_1} - \overline{x_2})}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}} \tag{2}$$

To determine the degrees of freedom, we used the Welch-Satterthwaite equation (Satterthwaite, 1946). The equation returns the effective degrees of freedom in case of unequal variance between the groups.

$$df = \frac{\left(\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}\right)^2}{\frac{\left(\frac{S_1^2}{N_1}\right)^2}{N_1 - 1} + \frac{\left(\frac{S_2^2}{N_2}\right)^2}{N_2 - 1}} \tag{3}$$

One assumption for the Welch's t-test is normality in variances for both groups. For the purpose of the t-test, we assumed the observations to be normally distributed if skewness is <|2,0| and kurtosis is <|9,0|. Within these limits, the test are considered robust, with a low probability of a type 1 error (Schmider et al., 2010). If the two groups are skewed in the same direction, a violation of the normality assumption is less of an issue (Gignac, 2019).

As power-law distributions are frequently featured in entrepreneurial finance, we might find this relationship within our data samples. Its implication for the Welch t-test is that the probability of a type 1 error, rejecting a valid null hypothesis, increases. However, this issue

has two valid solutions: (i) log-transform the variables to normalize the data, or (ii) use a nonparametric test, which does not require normally distributed observations. We executed solution (i) by logging the observations within both groups (Wooldridge, 2013, p.120), then we retested the normality assumption and repeated the Welch's t-test.

For solution (ii), we used a Fligner-Policello robust rank order test, which is robust to non-equal variance and non-normality (Fligner & Policello, 1981). The test compares the medians instead of the means, but the implications of the test results are equal to those of the Welch's t-test. We employed this test as a supplement to the Welch's t-test in case of any major violations of assumptions.

4 Results

All the following results are denominated in MNOK. In the full sample, **test 1**, crowdfunded companies (ECF; $N = 83$) had an average valuation of NOK 25.577 million ($SD = 20.369$). The full sample of VC-backed companies (VC; $N = 107$) had a smaller numerical valuation ($M = 17.409$, $SD = 13.652$). The assumption of normality in the observations was violated for the full sample VC data, as skewness exceeded the limits of < |2,0| and kurtosis of < |9,0| (Schmider et al., 2010). Therefore, we log-transformed the full-sample variables to normalize the distributions. The full-sample test of the logged variables showed that valuations for crowdfunded companies were statistically significantly higher ($p<0.01$) than the valuations of VC-backed companies, $t(172.62) = 2.73$, $p = 0.004$.

Test 2 excluded the top 5% observations from both groups. Here, crowdfunded companies ($n = 79$) had a somewhat reduced valuation ($M = 22.756$, $SD = 15.659$). A similar reduction was observed for VC-backed companies ($n = 102$, $M = 15.136$, $SD = 8.541$). We note that there was a relatively even reduction in valuation in both groups and that the standard deviations dropped substantially. In line with **test 1**, **test 2** found higher valuations for crowdfunded companies, $t(113.44) = 3.90$, $p = 0.000$ ($p<0.01$).

Both valuations were further reduced in **test 3.1**, where we tried to isolate companies at the pre-seed stage. Crowdfunded companies with prior funding less than NOK 1.5 million ($n = 45$) had an average valuation of 16.949 ($SD = 12.749$) compared to VC transactions smaller than NOK 5 million ($n = 66$, $M = 11.160$, $SD = 5.430$). This test also shows statistical significance for crowdfunded companies being valued higher than comparable VC transactions, $t(54.99) = 2.87$, $p = 0.003$. To check the state of the valuations above the threshold, we did a test on these groups as well. In **test 3.2**, crowdfunded companies also had higher valuations than the group of VC transactions (ECF over1.5 M: $n = 34$, $M = 30.442$, $SD = 15.999$; VC over5M: $n = 36$, $M = 22.424$, $SD = 8.447$). The test was significant ($p<0.01$) with properties $t(49.43) = 2.60$, $p = 0.006$.

Test 4.1, the second attempt to isolate companies at the pre-seed stage, where the thresholds were increased to 3M prior funding for crowdfunding and 7M investment amount for VC-backed companies, also yielded statistically significant results ($p<0.01$). Crowdfunding ($n = 57$) had an average of NOK 18.818 million ($SD = 13.731$) while VC transactions ($n = 83$) showed an average of 13.078 ($SD = 7.144$). The test properties were $t(54.99) = 2.87$, $p = 0.003$.

Test 4.2 also showed that crowdfunded companies had higher valuation than the group of VC transactions (ECF over3M: n = 22, M = 32.959, SD = 16.484; VC over7M: n = 19, M = 24.126, SD = 8.487). These results were statistically significant, $t(32.31) = 2.20$, $p = 0.017$.

The descriptive statistics are found in Table 1, and the results from Welch's t-test are found in Table 2 below.

Table 1: Descriptive valuation statistics

Valuation Statistics in MNOK								
Variable name	N	Mean	Median	Std. Dev.	min	max	skewness	Kurtosis
All Valuation	190	20.977	15.996	17.351	0.882	118.274	2.1	9.1
ECF ALL	83	25.577	20.000	20.369	3.000	118.274	1.6	6.9
ECF ex5perc	79	22.756	19.961	15.659	3.000	62.190	0.8	2.7
ECF under1.5M	45	16.949	15.000	12.749	3.000	55.000	1.1	3.8
ECF over1.5M	34	30.442	26.817	15.999	6.516	62.190	0.4	1.9
ECF under3M	57	18.818	17.746	13.731	3.000	59.268	1.2	4.1
ECF over3M	22	32.959	31.422	16.484	6.516	62.190	0.0	1.9
ECF_unsuccessful	34	26.784	19.281	24.261	2.498	102.460	1.5	4.9
VC ALL	107	17.409	13.500	13.652	0.882	90.000	2.5	11.6
VC ex5perc	102	15.136	13.391	8.542	0.882	46.150	0.9	4.3
VC under5M	66	11.160	10.962	5.430	0.882	24.442	0.2	3.1
VC over 5M	36	22.424	21.696	8.447	9.043	46.150	0.7	3.5
VC under7M	83	13.078	12.000	7.144	0.882	40.000	1.0	4,9
VC over 7M	19	24.126	24.049	8.487	9.043	46.150	0.7	3.1
Inv.Amount ECF	78	2.357	2.061	1.897	0.250	12.396	0.8	2.9
Inv.Amount VC	102	4.365	3.028	4.229	0.200	25.294	2.2	9.4
logECF ALL	83	16.737	16.811	0.854	14.914	18.589	-0.3	2.4
logVC ALL	107	16.407	16.418	0.796	13.690	18.315	-0.9	5.2

Table 2: Welch's t-test

Welch's t-test for independent samples						
Test	|t-stat|	df	p - value	diff in mean	Std. Err.	Cohen's D_3
Test 1: Full sample$_1$	2.73	169.96	0.004***	0.331	0.121	0.402
Test 2: Excluding outliers	3.90	113.44	0.000***	7.720	1.954	0.736
Test 3.1: Pre-Seed I	2.87	54.99	0.003***	5.789	2.015	0.635
Test 3.2: Pre-Seed I (above thresholds)	2.60	49.43	0.006***	8.019	3.089	
Test 4.1: Pre-Seed II	2.94	77.57	0.002***	5.741	1.956	0.498
Test 4.2: Pre-Seed II (above thresholds)	2.20	32.31	0.017**	8.832	4.018	
Supplementary I: Investment amount$_1$	3.81	176.60	0.000***	-0.505	0.133	
Supplementary II: Successful$_1$	0.31	55.91	0.755$_2$	0.057	0.181	

**** = p<0.01 (1-sided test)*
*** = p<0.05 (1-sided test)*
$_1$ = Log-transformed variables, $_2$ = 2-sided test, $_3$ = include only effect size for main tests

We also conducted Fligner-Policello robust rank order tests (Fligner & Policello, 1981). These tests supported the finding that valuations in crowdfunding are higher than valuations for VC-backed companies, $U = 2.795$, $p = 0.003$ for **test 1**, $U = 3.941$, $p = 0.000$ for **test 2**. For the pre-seed isolation tests, we retrieved the properties $U = 2.072$, $p = 0.019$ and $U = 1.681$, $p = 0.046$, respectively. The test suggests that the median is significantly higher for crowdfunding valuations. However, we noticed that the results for **test 3** and **test 4** are somewhat weaker. These are not significant to 1% as they were with the Welch's t-tests. Results can be found in Table 3.

Table 3: Fligner-Policello robust rank order test

Fligner-Policello robust rank order test		
Test	U-stat	1-tailed asymptotic p-value
Test 1: Full sample	2.795	0.003***
Test 2: Excluding outliers	3.941	0.000***
Test 3: Pre-Seed I	1.681	0.046**
Test 4: Pre-Seed II	2.072	0.019**

*** = p<0.01
** = p<0.05

As a supplement, we wanted to test if there were differences in valuations between successful and unsuccessful crowdfunding campaigns ($n = 34$). The unsuccessful campaigns had a mean valuation of 26.784 ($SD = 24.261$). The test showed no statistical difference. We ran a two-sided t-test with test statistics $t(55.91) = -0.31$, $p = 0.755$ (Table 2).

We also wanted to include one additional result aside from our main research question. By running a Welch's t-test on the investment amount per company, we found that the investment amounts in VC transactions ($M = 4.364$, $SD = 4.229$) are significantly higher ($p<0.01$) than investment amounts raised through crowdfunding platforms ($M = 2.244$, $SD = 1.531$) with properties $t(176.60) = 3.81$, $p = 0.000$ (Table 2).

5 Discussion

Our findings show that companies that raise capital through crowdfunding platforms attain higher valuations on average than companies raising through professional VCs. The average crowdfunding valuations were between 44% and 52% higher than the VC valuations in the different tests. In the following sections, we examine possible factors that might be underlying these results. We begin by discussing how crowdfunded and VC-backed companies might differ in relation to the factors affecting startup valuations in the VC method.

5.1 The Different Factors of Startup Valuation

Recall that, according to the VC method, startup valuations are a function of the exit value, the probability of a successful exit, time to exit, and the investors' discount rate (formula below). To justify higher valuations for crowdfunded companies, they would need to, on average, have higher exit valuations, a higher probability of successful exit, a shorter time to exit, or a lower investors' discount rate.

$$Present\ discounted\ value\ of\ exit = exit\ valuation * \frac{p}{(1 + r_{VC})^T} \qquad (2)$$

5.1.1 Exit Valuation

One of the most important factors determining the potential exit value is the target market size. VC firms, in general, like to invest in startups that address large markets, as this increases the potential upside of their investment. Some state a good rule of thumb should be to target markets with a total market size of at least $500 million to $1 billion, with at least $100 million being capturable by the startup in question (Šimić, 2015). Reviewing the crowdfunding campaigns, there is nothing suggesting these companies, in general, target larger markets than their VC-backed peers. On the contrary, we find some companies that arguably would never receive VC funding due to their small target markets. Examples are a local go-kart centre with no stated plans for expansion and a local wine bar. In sum, crowdfunded companies do not seem to target markets that are larger than those targeted by VC-backed companies; if anything, they might be smaller or more local. This suggests that crowdfunded companies should see similar or lower valuations than their VC-backed peers.

There are numerous other factors that impact the exit valuation. Examples are market growth, competition, and profitability. We cannot draw any conclusion as to how crowdfunded

companies' target markets differ from those of VC-backed companies across these variables. However, it seems unreasonable to assume that crowdfunded companies are significantly better at targeting more profitable or less competitive markets. Hence, we would not expect them to attain higher valuations due to these factors either.

5.1.2 Probability of a Successful Exit

A higher probability of a successful exit will, all else being equal, lead to a higher valuation. When reflecting upon this matter, we identified three reasons why crowdfunded companies arguably have a lower probability of success. The first, related to adverse selection, is that many of these companies have first tried to seek funding prior to the crowdfunding campaign but were passed over by all the VCs they approached (Langgård & Mostad, 2015). The CEO of a startup we spoke to during our research cancelled the company's upcoming crowdfunding campaign when they found a willing BA, stating that crowdfunding was 'their last resort'. It seems likely that companies that have been rejected by professional investors have a lower probability of success.

The second reason is that VCs might be reluctant to invest in rounds following a crowdfunding campaign. A VC GP we spoke to said this was due to two main factors. One is that they are suspicious that this company has been passed over by all the investors they approached earlier, as evidenced by their need to resort to crowdfunding. Second, she stated that it was tiresome having to relate to a vast number of other investors, sometimes exceeding 100, 'leaving the capitalization table as a huge mess'. If prior crowdfunding campaigns deter future investors, the company has a lower probability of securing future funding and, consequently, a lower probability of reaching a stage where investors can exit successfully.

The third reason why crowdfunded companies arguably have a lower probability of success is that the typical crowdfunding campaign raises significantly less cash than VC rounds. The average crowdfunding campaign in our data sample raised NOK 2.244M, compared to NOK 4.364M in the VC investment rounds. Running out of funds is the second most important reason why startups fail (CB Insights, 2019). When raising a lower amount of cash, crowdfunded startups have a shorter runway to gain sufficient traction to impress investors enough that they will invest in the next round. Consequently, they are more likely to fail.

However, for a small subset of companies, a successful crowdfunding campaign might be interpreted as a signal of higher probability of success. This applies to business-to-consumer

companies, where receiving a large number of investors might be interpreted as a validation of their products' quality and attractiveness.

Other positive factors may exist, but in sum, it seems the negative effects outweigh the positive, leaving the crowdfunded companies less likely to succeed than VC-backed companies. All else being equal, this should yield lower valuations.

5.1.3 Time to Exit

In our analysis, we assumed that the companies in the crowdfunding and VC groups are at similar stages. We believe this assumption to be reasonable, so there is no reason to suspect a general difference in the time to exit between these groups of companies. Consequently, time to exit is unlikely to have any explanatory power as to the difference in valuations between the two groups.

5.1.4 Investors' Discount Rate

One fundamental difference between equity crowdfunding and traditional VC structures is the distribution of returns. In crowdfunding, investors receive 100% of the returns from successful exits. In contrast, the VC fund's returns are divided between the LPs and GPs, often roughly 80/20. To compensate for this fee, one might think that LPs require higher returns from the VC investments, resulting in a higher discount rate for the VC funds. All else being equal, this should lead to lower valuations in VC deals compared to crowdfunding campaigns. Then again, one might argue that crowdfunding investors fill the roles of both the LPs and the GPs – they both provide the funds and manage the investments. Hence, their efforts should be compensated accordingly, levelling their discount rate with that of the LPs. With similar discount rates, we should not see significant differences in valuations.

Another factor that might affect discount rates is the prosocial investment behaviour and desire for community benefits seen with crowdfunding investments (Belleflamme et al., 2014). There could be several nonmonetary incentives that influence the investors' utility. They might take pleasure in supporting their local wine bar, or perhaps they believe that investing in startups boosts their social status at dinner parties. One could think of many such rewards that would make investors less preoccupied with returns, effectively lowering their discount rate. This would, in turn, lead to higher valuations. However, it seems unlikely that the community benefits some startups provide would reduce the discount rate for crowdfunding investors, as a group, enough to cause the round 50% increase in valuations we observe in our analysis.

Moreover, it seems reasonable to assume that the average crowdfunding investor is not sophisticated enough to take discount rates into account. This notion is supported by research we discussed in the literature review indicating that crowdfunding investors are less conscious of the valuation when making their investment decisions (Shafi, 2019). Furthermore, we ran a test on our data samples and found no significant differences in valuations between the successful and unsuccessful crowdfunding campaigns.

In total, after reviewing the different factors of the VC method, we find insufficient arguments to reasonably justify the difference in valuations we observed in our analysis. Thus, we believe the difference might occur, at least partially, due to factors outside the valuation model. Two such factors might be (i) that VCs face valuation discounts, and (ii) a lack of aligned incentives between the crowdfunding platforms and their investors.

5.2 A Possible Discount for Venture Capitalists

As discussed in the literature review, VCs and BAs support the startups they invest in with more than just money. This support, along with its positive signalling effects, is believed to increase a startup's probability of success. All else being equal, this should increase the valuation of the startup today. However, as this value increase is dependent on the investor, one might argue that the investor should be able to capture at least some of this additional value through a valuation discount. This discount could even reduce the valuation below the company's original valuation while both parties still gain from the arrangement, compared to a situation without the value increase. As this is perhaps counterintuitive, we created a simple numerical example to illustrate this case, shown in Table 4. This example illustrates why startups could be willing to accept lower valuations to gain access to the support of VCs.

Table 4: Numerical example - VC discount

Scenario	**A**	**B**
Original valuation	100	100
VC value increase	0	10
VC discount	0	20
VC investment valuation	100	80
Investment amount	5	5
VC equity stake	5.00%	6.25%
Founders equity stake	95.00%	93.75%
VCs share of final value	**5**	**6.875**
Founders share of final value	**95**	**103.125**

The implication of a potential discount is that VCs face lower valuations than crowdfunding investors and consequently receive higher returns on their investments. Though we believe this factor could play an important role in explaining the observed differences in valuations, we believe an equally important factor resides within the existing incentive structures of equity crowdfunding.

5.3 A Lack of Aligned Incentives

In the common VC structure, LPs invest in companies through the GPs. The carried interest ensures that the incentives of the LPs and the GPs are aligned. The GPs have a stake in the performance of the investments, as these determine the returns of the fund. Hence, by seeking to maximize their own returns, the GPs will simultaneously seek to maximize the returns of the LPs.

In crowdfunding, however, the incentives of the crowdfunding platform are decoupled from those of the investors. We believe this could represent a notable issue. The actor facilitating the investments has no stake in the performance of the investments. Consequently, to maximize returns, at least in the short run, the crowdfunding platforms will seek to maximize the number of successful crowdfunding campaigns. To the platform, a successful crowdfunding campaign is one that raises enough money to reach the minimum target, not necessarily one that will provide risk-adjusted returns to the investors. Furthermore, the platforms have no incentives to perform due diligence to filter out poor-quality startups or to negotiate the valuations on behalf of the investors. Contrarily, they are incentivized to ensure the satisfaction of the startups. This

creates a structure where startups choose their own valuations, which the investors cannot negotiate, while the crowdfunding platforms collect their fees regardless of the future outcome.

Some might argue that an important difference between the VC and crowdfunding structure lies in who holds the decision-making power. In the case of VCs, the GPs make the investment decisions on behalf of the LPs, while in crowdfunding, the investors hold all the decision-making power themselves. Hence, if they perceive a valuation as unfair, they can simply choose not to invest. However, the problem remains if investors take little notice of the valuation when making their investment decisions. One might also assume that novice investors place trust in the crowdfunding platforms, believing they would not facilitate campaigns for poor-quality startups.

Others could argue that if crowdfunding platforms create campaigns for enough poor-quality startups, they will, in the long run, gain negative reputations and have trouble attracting investors. However, it would require a substantial amount of research to prove that crowdfunding startups in general are of poorer quality than their VC-backed peers. This is due to the fact that startup investments are normally quite long-term investments, and they are inherently of a high-risk nature. The platforms could likely hide behind these arguments for quite some time if faced with disgruntled investors.

5.3.1 A Possible Solution

One possible way to solve this problem would be to reorganize the crowdfunding platforms' incentive structures in such a way that they align with the incentives of their investors. An example could be to require that the platform invests a part, maybe 10%, of the campaign's target amount, giving them a stake in the performance of the investment. This would incentivize the platform to perform a more thorough due diligence and negotiate the companies' valuations.

5.4 Limitations

A crucial assumption for our study is that the valuations of crowdfunded and VC-backed companies are comparable. For this assumption to hold, several criteria must be met. First, the ventures must be at the same stage of development. We defined the stage of the crowdfunded companies based on previous funding, which implies a risk of sampling errors. Furthermore, some companies might skip a pre-seed round, going straight to the seed round with a higher valuation. These companies would be miscategorized if sorted based on previous funding.

For the VC deals, we only received anonymized data on investment amounts and valuations. Hence, we had to define the stage of VC-backed companies based on these investment amounts. Ideally, one would define both groups based on the same criteria, but crowdfunding campaigns do, on average, raise lower investment amounts than VC rounds, thus precluding this option. In an attempt to overcome this issue, we ran several tests with different stage definitions. All these tests yielded statistically significant results showing higher valuations for crowdfunded companies.

Furthermore, our approach assumes that the crowdfunded and VC-backed companies are comparable across other important differentiation units. However, there may be systemic differences in industries, product categories, or a range of other factors we cannot control for. If extensive, these systemic differences might invalidate our results. This challenge is very difficult to overcome, as VCs are reluctant to share any information about the companies that could make it possible to pinpoint which valuation belongs to which company. To share data that is not anonymized, they would have to obtain permission from each portfolio company, which few of these companies are willing to give.

Due to the limited data, we focused on the theoretical framework of the VC method throughout our thesis. Although this is a widely acknowledged approach, it would undoubtedly have been beneficial to supplement our analysis and subsequent discussion with other theoretical frameworks if the data allowed.

5.5 Suggestions for Further Research

This study is, to the best of our knowledge, the first comparing valuations between crowdfunded and VC-backed companies. Thus, it would be interesting to see if the results are replicable, especially in other countries where the equity crowdfunding market might be more mature. While the Norwegian crowdfunding platforms, Dealflow and Folkeinvest, were founded in 2017 and 2015, respectively, a UK-based platform, Crowdcube, was founded in 2010 and has more than 1,100 successfully completed campaigns. Hence, we might see different results in the more mature UK market. On the other hand, Crowdcube uses a similar fee structure as the Norwegian platforms, implying that the same misaligned incentives remain (Crowdcube. 2020).

If crowdfunded companies are overvalued, this result is interesting, first and foremost, because it implies that investors will achieve inferior risk-adjusted returns. However, to determine if this holds true, it is necessary with a direct comparison of the actual returns on investing in

equity crowdfunding compared to venture capital. In Norway, the market is still too young to yield data on the development of crowdfunded companies, but this might be possible in more mature markets, for instance, in the UK.

6 Conclusion

In this thesis, we sought to determine if equity crowdfunded companies are overvalued. In our analysis, we assumed that crowdfunded companies are closely comparable to VC-backed companies and should, consequently, have similar valuations. We used Welch's t-tests to compare the valuations in these two groups, both with and without attempts to define the startups as being in different stages.

All our results indicate that crowdfunded companies on average attain higher valuations than their VC-backed peers. The average crowdfunding valuations were between 44% and 52% higher than the VC valuations in the different tests. Throughout our discussion, we have postulated that there is a lack of compelling arguments that could logically explain why we observe higher valuations for crowdfunded companies. On the contrary, we argue that any difference in valuations should likely fall in favour of the VC-backed companies, as these appear to have higher potential and chances of success. Consequently, our analysis and subsequent reasoning lead us to the conclusion that crowdfunded companies do indeed appear to be overvalued.

We theorize that these overvaluations might be due to two main factors. The first is that VCs face a valuation discount, as their support can increase the future value of the startups. The second factor is the dynamics of the crowdfunding platforms, where startups can choose their own valuations and the platforms lack incentives to negotiate this valuation on behalf of the investors. We believe the lack of aligned incentives between the crowdfunding platforms and the investors represents a major, though not unsolvable, problem.

If crowdfunded companies are overvalued, that is not earth-shatteringly interesting in itself. However, the implication that equity crowdfunding might systematically yield inferior risk-adjusted returns as compared to venture capital investments is, arguably, very interesting. If this holds true, crowdfunding does not hold its proclaimed power to reduce societal inequalities. On the contrary, it might prove to be an unfruitful undertaking for naive, unprofessional investors. Though additional research is necessary to support our findings and their implications, the industry-wide scarcity of available data on this topic makes research challenging. Therefore, conclusive results might not be available in the near future. In the meantime, we recommend that crowdfunding investors exert critical judgement and take note of company valuations in their investment decisions. If they do not, they might overpay.

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