# Valuing growth:
# How to value young growth companies and start-ups

A master thesis within business economics by Thor Andreas Thorsen

*Using valuation tools made for mature companies on young growth companies is like trying to do brain surgery with a hammer.*

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# Preface:

This paper is conducted as a part of the curriculum in my master's degree in Business and Administration at the University of South-Eastern Norway and counts for 30 ECTS.

There is no lack of basic valuation as a theme for master thesis at Norwegian business schools. However, I find it intriguing to make a deeper dive into how to value the companies that are the hardest to value. These companies are in a non-stable state with a lot of revenue growth, and little or no earnings, referred to as the dark side by Damodaran.

My major field of study is business economics, where the understanding of the value regarding businesses and business units are important. I also wrote a basic valuation thesis for my Bachelor thesis. I would say that it reflects my ongoing obsession with market and valuation in general. Therefore, I am familiar with a lot of the traditional valuation methods and theories. However, prior to this thesis I was not as familiar with venture investing and early-stage investing.

The particular direction of my valuation research has been chosen and developed through thorough discussion with my supervisor Odd Birger Hansen. The reason I chose this topic was due to the transformation of dominating types of businesses through the last two decades. Another factor that strengthened my choice was the lack of understanding and research within the field. Personally, what I consider as the leading theory from academia is Damodaran and Koller. Therefore, most of the theory related to my paper is based on their works.

In this thesis I have interviews of people with experience as practitioners in valuation of businesses. Particularly businesses that are in their earliest life stages where they have made investments with real skin in the game.

Furthermore, I would like to thank Odd Birger Hansen, my family, and friends who has contributed strongly to the thesis through help and discussion.

Drammen, 01 June 2020.

## Executive summary:

This thesis focus on the valuation of young growth companies and start-ups. The research concerns the methods used, the drivers of value when applying those methods, and how to validate the drivers of value. Furthermore, the thesis provides a review of leading theory, recent research, and creative and non-traditional methods to value businesses in the earliest life stages.

The research has been conducted by interviewing Norwegian venture capitalists, a private full-time investor, and a private part-time investor. Those interviewed are all relevant due to their investments in applicable businesses. The interviews were carried out to gain clarity into the methods of practitioners to compare it with previous research and theory applicable for young growth businesses and start-ups.

The results are comparable to similar research where respondents describe a highly qualitative approach when assessing drivers of value. However, they diverge from leading theorists. This due to none of the respondents using the discounted cash flow method favored by leading theorists such as Damodaran and Koller. The analysis shows that venture capitalists often price start-ups with the five times the raise method and young growth businesses on price to sales.

However, the drivers of value applying these methods are where the real challenge lies. According to both the respondents and the comparable research highlighted in this thesis, human capital is the most important driver. In addition, other key drivers for estimating value are the size of the total addressable market, the product, and the business model.

To validate human capital the process gets abstract, approximate, and “fluffy”. However, it is based on the investors’ accumulated experience and training of continuously performing such assessments. Although, when the business matures into a young growth company the growth rates of sales and/or users serve as validation of the human capital and the business.

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## 1.0 Introduction:

Society and humanity are dependent on starting innovative new businesses to prosper. Moreover, innovation can be looked at as a tool to strengthen and grow the economies and societies in which the businesses operate within. Growing, innovative businesses are crucial to economic growth and employment, which improves the lives of people living in those societies (Vullo, 2017).

Accordingly, entrepreneurship and innovation are the backbone of progress for society and humanity. As innovative technologies that push society forward often comes from new ventures (Thiel, 2014) valuing these businesses becomes an interesting theme. This thesis focuses on how to value these innovative and emerging businesses.

The theme of valuing this business is important for private firms considering an acquisition, private equity, venture capital and relevant stock market participants, as well as the entrepreneurs giving up ownership in their business. Also, in a broader picture efficiently distributed capital and other resources are the key to a well-functioning and progressive society.

Many new companies need external financing. To be able to efficiently allocate capital to these businesses it is important to have tools and theories about how to value their equity (Miloud, 2012). The chances of failure are high, and thereby it is important to appropriately evaluate the risk and possible reward of investments in new fast-growing businesses.

While there is no entrepreneurship without creative founders, entrepreneurs do not create new businesses out of thin air. Therefore, it has long been argued that various changes to the business environment create important opportunities for entrepreneurs. Accordingly, studies address how new technologies (Grégoire, 2012) creates opportunities for entrepreneurial ventures.

Around the end of the last century, we saw a boom of new started businesses in an entirely new industry with the “DOTCOMS”. The internet gave rise to a lot of new companies and serves as an excellent example where new technologies create opportunities for entrepreneurs. Most of them famously ended with tears, but the survivors however rise to

become some of the biggest companies in the world. Amazon and Alphabet serves as good examples of that.

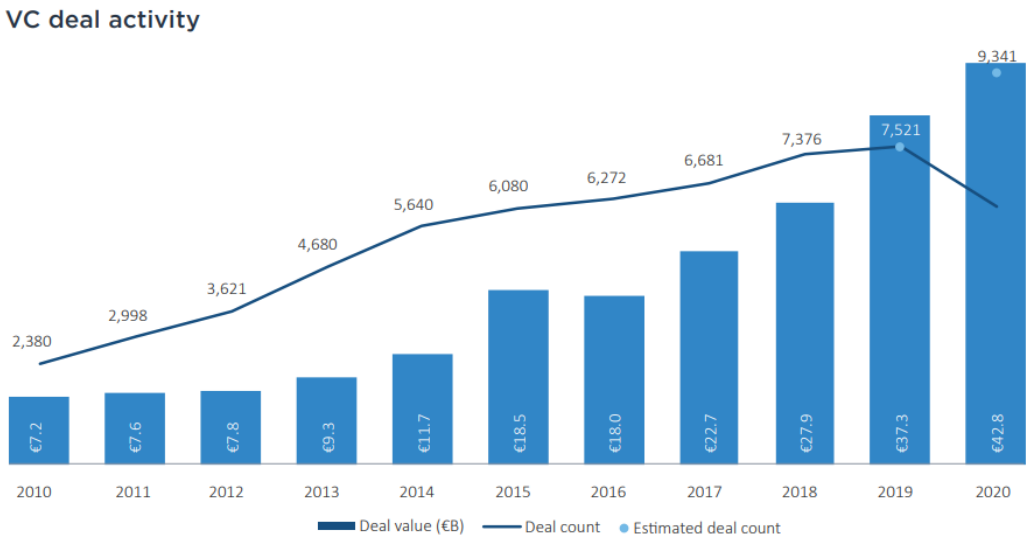


*Figure 1: VC deal activity 2010-2020 (Pitchbook, 2020).*

Today we see a similar uprise of new businesses within green technology and software as a service (SaaS). Many of these companies have gone public lately and especially in 2020, which was a record-breaking year for capital raised on the Norwegian stock exchange (Bøhren, 2021). With the trend continuing with full steam into 2021.

The same holds true for venture capital (VC) deal activity in Europe which in the last 10 years has quadrupled and almost doubled in the last six (Pitchbook, 2020). The wave off new businesses raising capital actualizes the issue of how to value these businesses.

New businesses and innovations have limited historic information about profit potential, market opportunity, and industry profits (Kumar, 2015). These are some of the reasons they might not fit into traditional valuation theory and why there so far are little written about how to deal with the valuation of these businesses.

Today, valuation of these businesses is seen as undefinable alchemy and guesswork from the outside and has been a struggle for generations. Therefore, it is an interesting theme to explore to gain clarity and understanding about the best practices of today (Miloud, 2012).

## 1.1 Purpose and background:

The transition of societies from manufacturing based to service-based businesses might also suggest that valuation theory must change with the new types of business in new industries

(Damodaran, 2012). This is due to often more capital efficient, viral, global, and scalable businesses. Damodaran (2018) also suggest that due to new technology and more global markets the corporate life cycle has shortened for most businesses. This as both new businesses rise faster to become substantial in their market, but also becomes obsolete in a much faster manner than before. Therefore, it intuitively makes sense to use different valuation tools to value businesses like Equinor or Entra compared to how you would value Kahoot and Airbnb.

Another reason for the chosen field of exploration is that it is considered an under researched theme (Miloud, 2012), which I find remarkable considered the importance of valuing the businesses that are necessary to drive society forward.

Venture and early-stage investments makes for a lot of myth and stories of successful investors who has had tremendous success. Hopefully, this thesis could give some answers about how these investors who take my problem statement to its most extreme think and operate.

As I will dig deeper into later, accounting standards in some domains has not followed the shift in value drivers. The question however is if practitioners of valuation has adapted? Therefore, the purpose of this thesis is:

> *Explore ways of valuing young companies with little or no historic data, with a special focus on new industries and/or business models which have big growth prospects and that might not fit into today's accounting practices. Initially the goal of the thesis is to develop a theoretical framework to compare against the methods of practitioners of valuation and thereby contribute to the valuation field through insights from my respondents.*

## 1.2 Problem Statement and research questions:

The initial idea regarding my master thesis was to explore how to value new businesses in new industries. After assessing the current literature on the subject, I found it interesting to investigate which valuation tools that are used by professionals with skin in the game[1] valuing equity of young firms. I find it particularly interesting to examine the eventual

[1] Skin in the game as the expression popularized by Nassim Talebs book" Skin in the game" which refers to decision makers that have direct exposure to both positive and negative outcomes of their decisions (Taleb, 2018).

differences between the literature and different types of professionals applying valuation tools or techniques.

Further, I have found it necessary to clearly define which businesses that apply to this thesis and the purpose of the paper. For that I find the corporate life cycle from Damodaran (2018) useful. The stages that relate to my purpose is the startup stage and the young growth stage. I will also define the next stage in the life cycle, namely high growth for clarity on where a business is considered to mature for this thesis.

Start-up defined as a business that is mostly an idea and/or a product that is pre revenue or has started recently to generate revenues. Examples of these types of businesses are Miraiex, Portalone and Solgt.no.

Young growth business defined as the stage where the business has started to generate revenues from its product/service and showing high percentual growth rates. In the later stage of young growth, the businesses start to show signs of profitability. Examples of these types of businesses are Airbnb, Uber and Kahoot.

The next stage in the life cycle, which do not apply, is the high growth businesses where growth rates of revenue is still high, and the business has started to generate profits. In this stage the business proves its scalability and enjoying economics of scale. Examples of these types of businesses are Netflix, Nvidia and Autostore.

Another aspect worth discussing, is if I should focus entirely on public business or if I also should consider private businesses. In the thesis I will not have a focus on these differences as it is not within the purpose of this thesis and thereby will not be given too much attention. I acknowledge that pricing is higher in public companies due to liquidity which again leads to increased risk premia as I will come back to in a later chapter. There are also businesses that need to go public in earlier stages, often as they need to raise more capital than would have been possible or practical as a private business.

With these considerations in place, I would like to provide the following problem statement:

*How to value start-ups and young growth businesses?*

In addition to further position what is explored in this thesis I will present my research questions that will serve as guidelines throughout the thesis.

1. Which methods are used by practitioners to value start-ups and young growth businesses?
2. What are the drivers of value when applying those methods?
3. How do you asses and/or validate the drivers of value?

### 1.3 Delimitations and structure:

To summarize the delimitations of this thesis the focus is on methods of valuing start-ups and young growth businesses as defined.

Drivers of the value includes the most important factors that determines the valuation of the businesses. Validators is about how to calculate and measure the inputs that drive value in a chosen method. The respondents are venture funds and private investors who has invested in a business as early as the start-up stage and in young growth businesses.

Further in this thesis I will explain the methodology of the research and present the respondents, then historically influential works on valuation and discuss the difference between pricing and valuation. Then describe existing literature and research on different valuation methods that are relevant to the businesses, thereafter I will present the results of the interviews and in the following chapter discuss and analyze those results.

The thesis will follow a categorical structure where the categories from the existing literature chapter will be repeated in the results and discussion chapter if there where findings worth presenting.

## 2.0 Valuation:

The goal of this chapter is to explore ways of valuing young businesses based on research and leading theory. Firstly, I will look at historical literature and the influence of classical contributions to valuation.

In the following chapters I will start by describing the three most used ways of valuation and how useful they are to my problem statement. I will include theory from Damodaran (2000) and Koller et.al. (2020) regarding these different ways of valuing the businesses in question. In addition, I will season the theory with writings and research on start-up, growth and SaaS valuation.

## 2.1 Influential works of valuation:

There is written a lot about how to value businesses in the traditional way either through option pricing, cash flows or/and multiples. In this section of the paper, I will look at historic contributions to investing.

Ben Graham laid much of the foundation for valuation in the 1930's and 1940's with his books Security Analysis and The intelligent investor that are still very popular. The approach described was a very quantitative approach often referred to as the "cigar butt" which were built around valuation on the basis of observable accounting values (Graham, 1932; Graham, 1949).

Also, in the same decade as Security analysis was written the theory of investment value was written based on John Williams's Ph.D. thesis. The book introduced present value and the discounted cash flow (DCF) method which has been widely used for valuation since (Williams, 1938).

Thereafter in 1958 Phillip Fisher published Common Stocks and Uncommon Profits. Fisher's work has been viewed as highly influential and is considered gospel within quality and growth investors communities. Fisher's approach was highly qualitative, and he is known as the father of the "scuttlebutt" approach. The "scuttlebutt" approach refers to going out and talk to competitors, suppliers and customers of a business to find out how an industry or company really operates (Fisher, 1958).

Further in the 1960's the capital asset pricing model (CAPM) was developed. The model describes the expected return and systematic risk of an asset. The model went through a lot of testing during the next 15 years by financial researchers. This research revealed clear weaknesses by consistently misestimating returns for classes of businesses (Damodaran, 2020).

In 1973 the initial Black Scholes equation got introduced in the paper called "The pricing of options and corporate liabilities" in the Journal of political economy. The model which was developed by Fischer Black, Robert Merton and Myron Scholes is still widely used today. It is commonly regarded as one of the best ways to price options. In 1997 Scholes and Merton received the Nobel prize for their work. The input to the model is current stock prices,

expected dividends, the option's strike price, expected interest rates, time to expiration, and expected volatility (Investopedia, 2021).

The value effect was a highly influential addition to the valuation discipline from the classic works of Fama & French (1993). In their work where they created the 3-factor model, they found superior returns from the value effect which value companies by their book value.

These approaches are all influential to this day. The cigar butt approach has by market participants like Joel Greenblatt and Toby Carlisle been tweaked but are inspired by the original valuation methods of Ben Graham.

The DCF from the theory of investment value is today also highly relevant and widely used. The 3-factor model which later became the 5-factor model has given rise to the industry of factor investing which usually sort stocks by accounting values, stock movements or size.

In addition, the Black-Scholes formula is the most commonly used method to price options. Also, Ben Grahams and Fisher's work has been highly regarded especially by Warren Buffett and other famed investors.

What I want to further explore in this paper is how to value younger businesses. Many of the aforementioned approaches are heavily reliant on todays or historic data, which make them more useful for valuing mature businesses. The young businesses historic data would be non-existing or give little information about future value.

The DCF and Fishers approach is the exception here and could possibly be applicable to young businesses. However, most of the value from these companies lies in the future and thus the task of valuing becomes an exercise in forecasting future cash flows. This is the core of the problems I want to explore.

## 2.2 Valuation vs Pricing:

To further position this thesis and clarify the research I would like to discuss the difference between valuing an asset and pricing an asset. At first sight this chapter might sound like a trivial detail. However, it is in my opinion important to be aware about what separates the process of estimating intrinsic value and what a company could be priced at a specific point in time.

Put simply, pricing of a company is figuring out at what price it is possibly to sell a company for given the circumstances at that time. Regardless of how simple it is to establish price, the factors that drive price are usually opaque, consisting of an almost infinite range of potential factors, both rational and irrational (Rooney, 2019).

For practitioners pricing is usually associated with relative valuation as I will go more into in a later chapter. Pricing through relative valuation for the everyday non-investor/non-professional could be recognized from buying a house. Usually, houses are priced based on recent transactions on comparable houses and/or the market sentiment in a specific region. Or put in even simpler terms the price is what the highest bidder is willing to pay.

> *"The correct price of any asset is what someone else is willing to pay for it because all asset prices rely on subjective assumptions about the future. And like a blind man who doesn't know where a wall is until he bumps into it, markets cannot know exactly how much people are willing to pay until they go a little too far."*
> *(Housel, 2021)*

Value in contrast to pricing is the process of finding the "correct" price of an asset based on fundamental factors. Value decreases as a result from lower expected returns or increased risk. In theory, shifts in moods and momentum which have such an impact on price should not impact value (Rooney, 2019). Value is, however, much harder to estimate as it requires a lot of input and requires explicit forecast of the future.

The proposition that there could be significant temporary divergence between how assets are priced, and the underlying value of assets contradicts the semi-strong and strong Efficient market hypothesis (Malkiel, 1989; Fama, 1970). The lack of faith in parts of the Efficient market hypothesis should be considered an underlying assumption for this thesis. However, as it is not the theme of this thesis there will not be spent much time arguing either for or against the Efficient market hypothesis.

Nevertheless, to acknowledge that market sentiment can create significant divergence between how assets are priced, and the long-term intrinsic value of those assets due to factors as market sentiment seems like a reasonable assumption. This should be especially reasonable in 2021 with extreme speculative behavior.

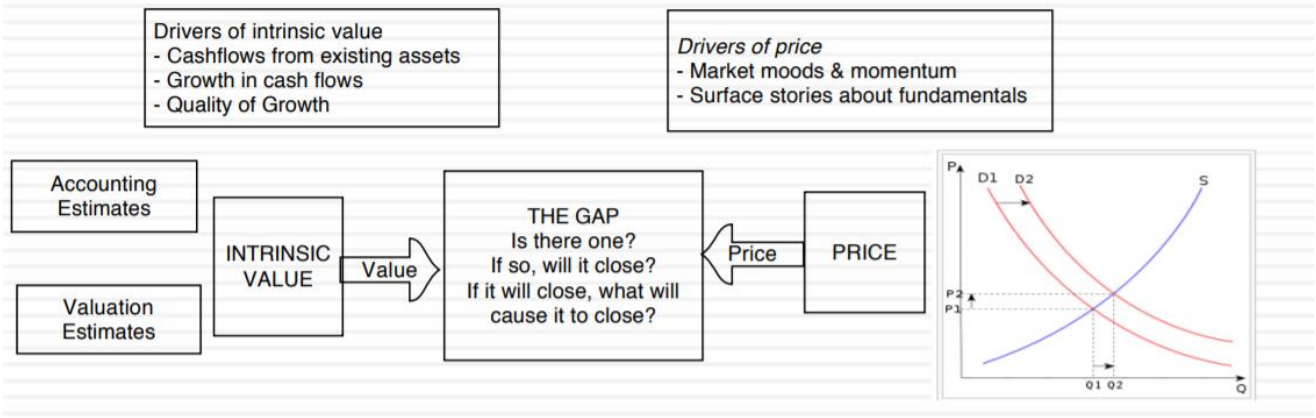


*Figure 2: Intrinsic value vs price (Damodaran, 2014).*

As illustrated by the figure 2 value and price has different drivers. For the business in question in this thesis the main driver of value is growth in cash flows and the quality of that growth as shown above. This due to the fact that they by definition do not have cash flows from existing assets.

As for the pricing of these businesses market sentiment and group thinking can be extreme drivers as illustrated by the DOTCOMs. These drivers could also in periods of time have an even stronger effect on the types of businesses described in this thesis. This is due to all of the value lying in the future and is hard to estimate. Therefore, these businesses can become what is often referred to as story stocks, at least this applies to the listed ones. It is much easier for market sentiment to blow up the valuation of a stock based on a compelling story about the future rather than a business with cash flows from existing assets and a long history.

The importance of value of a business vs price movement due to sentiments is defined by the time horizon being discussed. What drive price of businesses in the short run is to a large degree driven by market moods and at times speculation. However, the longer time horizon the fundamentals drivers of value matters more.

As investing and valuation is about predicting future cash flows expectations of those future cash flows is what drives price. Time will ultimately prove or disprove those expectations and fundamentals will in the long run drive the value of a business. Or as Warren Buffett says:

> *"In the Short-Run, the Market Is a Voting Machine, but in the Long-Run, the Market Is a Weighing Machine."*

## 2.3 Valuation methods:

In this chapter I will look further at different valuation methods I think is useful for the businesses in question and their drivers. I will describe the three main ways of approaching valuation (Damodaran, 2011). In addition, I will look at less conventional ways of valuation from the venture world and the value of human capital:

1. Intrinsic valuation.
2. Relative valuation.
3. Option pricing.
4. The value of human capital.
5. Five times the raise.

### 2.3.1 Intrinsic valuation:

The intrinsic value of a business is commonly accepted to be all the future cash flows discounted back to present value. The most common method to estimate this intrinsic value is the DCF or discounted cash flow method.

In the DCF one estimates future cash flows based on expected growth, the need for reinvestments to achieve that growth and expected margins. Then these cash flows are discounted back to today's value by the business average cost of capital (WACC). These discounted cash flows get estimated until the business reaches "steady state"/maturity. Then the investor calculates terminal value where the growth rate due to the business maturity now is constant.

The intrinsic value of a business put in formular terms:

$$V = FCF/(WACC - G)$$

*Where V=value, WACC= Weighted average cost of capital, G=growth.*

According to Damodaran (2011) advantages to the DCF valuation is that because the inputs are based on the assets fundamentals it is less exposed to market moods and/or perceptions than other valuation methods. However, as the fundamentals will change so will the inputs and thereby the valuation.

An DCF forces the evaluator to think about underlying characteristics of the asset and understand the fundamental drivers of the assets value. The argument for using the DCF is

that the core principles of economics and finance apply also when there is significant uncertainty (Koller, 2020).

According to Gompers et.al. (2021) while large companies generally use discounted cash flow (DCF) analyses to evaluate investment opportunities, few VCs use DCF or other standard financial-analysis techniques to assess deals. Instead, by far the most used metric is cash-on-cash return or, equivalently, multiple of invested capital—simply the cash returned from the investment as a multiple of the cash invested.

Also, in the same research it was found that 9% of the respondents in the survey did not use any quantitative deal-evaluation metric and that 20% of all VCs and 31% of early-stage VCs reported that they do not forecast company financials at all when they make an investment (Gompers, 2021).

According to Damodaran (2011) the DCF has some disadvantages. Since it is an attempt to estimate true intrinsic value, it requires a lot more input and information than the other approaches. These inputs and information are hard to estimate and easily manipulated. For many practitioners with unhandled biases, it is very easy to tweak the input in such a way that it gives the desired output the evaluator seeks.

Therefore, the main objective of the DCF in my opinion is to have a framework to think about fundamental drivers for the businesses. However, this is not the approach of the VCs, later in this thesis I will come back to what research suggest is the preferred methods of VCs.

The quality of these assumptions and estimates determines the value of the valuation. In the next sub-chapters, we will look at how to think about the drivers of value and how to validate those factors as of the research question.

#### *2.3.1.1 Sizing up the market:*

Both Koller et.al (2020) and Damodaran (2012) suggest that the ideal way to start when valuing high growth businesses is to start by sizing up the addressable market. Total addressable market or TAM is a number often presented in slide decks for new tech businesses.

For some businesses sizing up the TAM should be easier than others. For instance, when valuing Tesla, it makes sense to look at the total car market and then calculate a realistic growth rate for the industry as well as a realistic market share.

A hard exercise when sizing up the TAM would be to calculate the market for newer businesses as providers of hydrogen solutions or carbon capture. To calculate the market for hydrogen solutions it would be required to define the possibility for different use cases of the hydrogen from cars to ships to airplanes. From there the evaluator needs to assume the market share for hydrogen vs other types of fuels in the different use cases. After the search for use cases and market share for hydrogen the evaluator must assume the market share for the business in question in the newly establishing market.


*Figure 3: Ubers first pitch deck (Jaipura, 2021).*

However, to illustrate the difficulty of estimating the TAM I have a slide from Ubers first pitch shown in figure 3. Uber when pitching to VCs and other investors targeted the taxi and limousine market in the US which they estimated to 4.2 billion USD. If we compare this against Ubers 2020 bookings, as shown in figure 4 which amounts to almost 58 billion USD, the difference between the initial TAM and the recorded bookings must be considered

significant. However, it must be noted that this is a combination of growing the home market for mobility through providing better and cheaper services as well as global expansion and going into new business areas as delivery and freight (Uber Technologies, Inc., 2021).

| | Year Ended December 31, | | | | | |
|---|---|---|---|---|---|---|
| *(In millions, except percentages)* | 2018 | 2019 | 2020 | 2018 to 2019 % Change | 2019 to 2020 % Change | 2019 to 2020 % Change (Constant Currency [1]) |
| Monthly Active Platform Consumers ("MAPCs") [2], [3] | 91 | 111 | 93 | 22 % | (16)% | |
| Trips [2] | 5,220 | 6,904 | 5,025 | 32 % | (27)% | |
| Gross Bookings [2] | $ 49,799 | $ 65,001 | $ 57,897 | 31 % | (11)% | (9)% |
| Revenue [4] | $ 10,433 | $ 13,000 | $ 11,139 | 25 % | (14)% | (13)% |
| Net income (loss) attributable to Uber Technologies, Inc. [5] | $ 997 | $ (8,506) | $ (6,768) | ** | 20 % | |
| Mobility Adjusted EBITDA | $ 1,541 | $ 2,071 | $ 1,169 | 34 % | (44)% | |
| Delivery Adjusted EBITDA | $ (601) | $ (1,372) | $ (873) | (128)% | 36 % | |
| Adjusted EBITDA [1], [2] | $ (1,847) | $ (2,725) | $ (2,528) | (48)% | 7 % | |

*Figure 4: Uber bookings 2020 (Uber Technologies, inc., 2021).*

Another challenge when sizing up the market are businesses that expands their lines of business. An excellent example of this type of development could be Amazon which started selling books online and expanded from a niche online store to provide all types of online sales, as well as Amazon web services which now accounts for 52% of the operating income (Amazon, 2021).

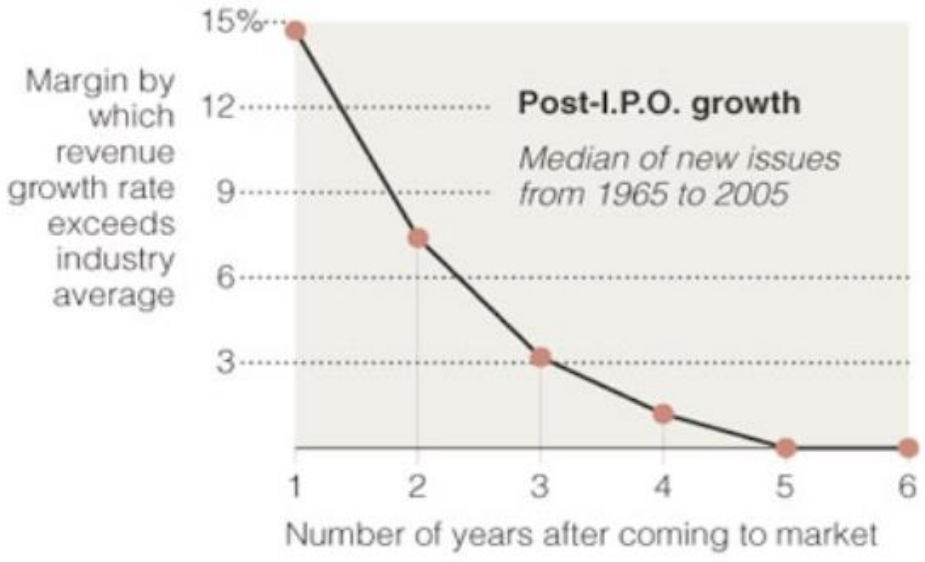


*Figure 5: Scaling in existing markets (Damodaran, 2012).*

Lastly when handling young fast-growing business, it is a limit to how long a business can outpace the growth of its industry as seen from figure 5. Figure 5 shows that business usually IPO when they have a growth rate that significantly outpaces their industry, but that the median business from 1965 to 2005 quickly started to grow more in line with their industry.

I believe that fact makes sense as business usually has the incentives to go public at advantageous moments in time, and that most business cannot outgrow their industry for too long due to constraints on becoming too big relative to their market and the competitive nature of business. This is especially true for type red ocean businesses but should be less of a concern for the blue ocean type businesses which creates new markets and demand (Mauborgne, 2004).

#### *2.3.1.2 Margins, return on capital and reinvestment:*

When the evaluator has calculated the market opportunity and thereby the revenue, the next challenge is calculating a sustainable operating margin for the business in question. Approaching the margins of a business could be done similarly as with revenue by having industry standard as a starting point.

For the new businesses in new industry's this approach makes as little sense as when trying to calculate the TAM. Damodaran (2000) suggest deconstructing the firms' current income statement to find a truer measure of its operating margin. By this Damodaran primarily points at categorization of R&D as an expense instead of an investment. It is a hard exercise to determine how much of R&D should be capitalized instead of expensed. However, considering the divergence between market value and book value of some of the biggest firms in the US and elsewhere it is possible to argue that the general accounting is conservative when it comes to capitalizing expenses. More one this later in the paper.

According to Koller (2020) one should try to find as similar businesses as possible but highlights the importance of judgement when adjusting for the inevitable differences.

Another important factor when trying to calculate margins is to assess the scalability of the business. Many of the new businesses today especially within software as a service (SaaS) have limited unit cost and therefore would have a substantial margins expansion as it grows into profitability. Examples of these types of businesses could be Facebook, Spotify and Google.

Next in line is the return on capital and reinvestment rate which is closely related. The higher the return on capital thus lower need of reinvestment for a given growth rate. Many of the businesses as mentioned has relatively low capital needs to grow; however, this varies wildly between many of the new business one sees today. Put in clearer terms:

$$Expected\ reinvestment\ need\ =\ Expected\ growth/\ Return\ on\ capital.$$

SaaS and other tech business usually have higher returns on capital and therefore need less capital to grow its business than traditional businesses.

A different type of new business we see many of in today's environment are clean tech or ESG business that generally looks more like traditional/industrial businesses that due to their capital intensity needs lots of capital to grow. Examples of these businesses could be solar panel producers, hydrogen, solar and wind farm businesses. The TAMs could potentially be huge but so is also the need for capital.

Both Damodaran (2002) and Koller (2020) suggest using industry averages as a reference point when computing these inputs, however both follow up in their writings with examples where they use their judgement to find realistic inputs in their examples.

#### *2.3.1.3 Capitalizing expenses:*

An increasing portion of the world's biggest companies derive most of their value from intangibles. This comes from a transition in society from manufacturing to service-based economies.

According to Damodaran (2009) accountants routinely miscategorized operating and capital expenses, when firms invest in intangible assets. Different types of investment in intangibles could be R&D spending, brand building initiatives, customer acquisition cost, recruiting and so on.

The reason for including capitalizing of expenses as a part of this paper is that a lot of the fast growers we see today, does most of its investing and derives most of their value from intangibles. Therefore, it is critical to have a framework on how to treat these investments in a valuation process. To calculate reinvestment rates, ROIC and margins it is fundamental to understand what's really investments and what's operating expenses.

> *"Sales and marketing expenses are recognized upfront, while revenue persists over many years. This "lag" makes new customers unprofitable in the short term, even though they clearly will be profitable over their lifetime. If a SaaS business is growing quickly, there are a lot of new (temporarily unprofitable) customers making net income negative. This is true even though the business could stop growing and it would immediately throw off cash" (SaaS Capital, 2019, p. 3).*

The main issue to consider when capitalizing operating expenses like R&D is to determine amortizable life of the assets gained. For instance, research assets for a pharmaceutical company and software company should be treated very different because of the divergence in expected product life. Therefore, the software firm should have a more aggressive amortizable profile.

The other adjustment that needs to be done when capitalizing investments in intangibles is adjusting the operating income. We have to add back these years R&D expense to the operating income. We also need to subtract the amortization of historic investments. For growing firms this will in general increase both book value and operating income (Damodaran, 2009).

Consequences:

- Earnings: As mentioned, the earnings will be affected by these adjustments and often to the upside. This is based on the assumption that the investments are of a growing size. However, if the investments are at a constant size the earnings will be unaffected.
- Reinvestments: The effect of reinvestment is the same as the effect on earnings. Reinvestments will be increasing or decreasing at the same size as earnings.
- Reinvestment rate: In general, the reinvestment rate increases if reinvestments and earnings increase as a consequence of the capitalization.
- Capital invested: Because the investments are treated as an asset and not an expense it ads to equity and total capital. The magnitude of this effect is determined by the aggressiveness of amortization profile.
- ROE: When both earnings and book equity are affected, the effect is unpredictable. If ROE increases in a given example, it indicates that the R&D or brand building investments have a greater return than other investments that the business makes.

- Expected growth rate: Because the expected growth is a result of return on capital and reinvestment rate and both are affected by the capitalization, the growth rate should also change.

#### *2.3.1.4 The discount rate:*

The discount rate by which we discount the cash flows of businesses being valued is the weighted average cost of capital (WACC). As the name suggest is the cost of equity and debt weighted by their share of the capital structure.

The reason to implement this as a part of the thesis is the fact that young growth businesses and start-ups are duration assets. This due to cash flows and earnings usually being long into the future. This dynamic makes these types of businesses more sensitive to changes in discount rates than businesses with cash flows and earnings today.

Usually, businesses in the start-up and young growth phases of the life cycle should have little debt due to the lack of cash flows to service the debt. However, when forecasting future financials in a DCF this should change as the business matures. Due to this fact, the main focus of this chapter would be on the cost of equity.

The cost of equity consists of three parts. First the risk-free rate which we will discussed further, secondly systematic risk and lastly market return.

$$Re = Rf + B * (Rf - Rm)$$

$$Where\ Rf = risk - free\ rate, B = beta, Rm = market\ return.$$

Beta is a measure of how much the price of something correlates with market movements. A beta below one implies less risk as the business is less volatile than the market. On the opposite side, a beta above one implies more risk as the business is more volatile than the market. Risk premia (beta*risk premium) should be high due to the risk associated with these types of businesses.

How high is hard to estimate. Damodaran (2000) suggest one should look at the averages for comparable firms that have been listed for two or more years. Then there should be done adjustments for differences in life cycle stage, operating leverage, financial leverage, and other differences.

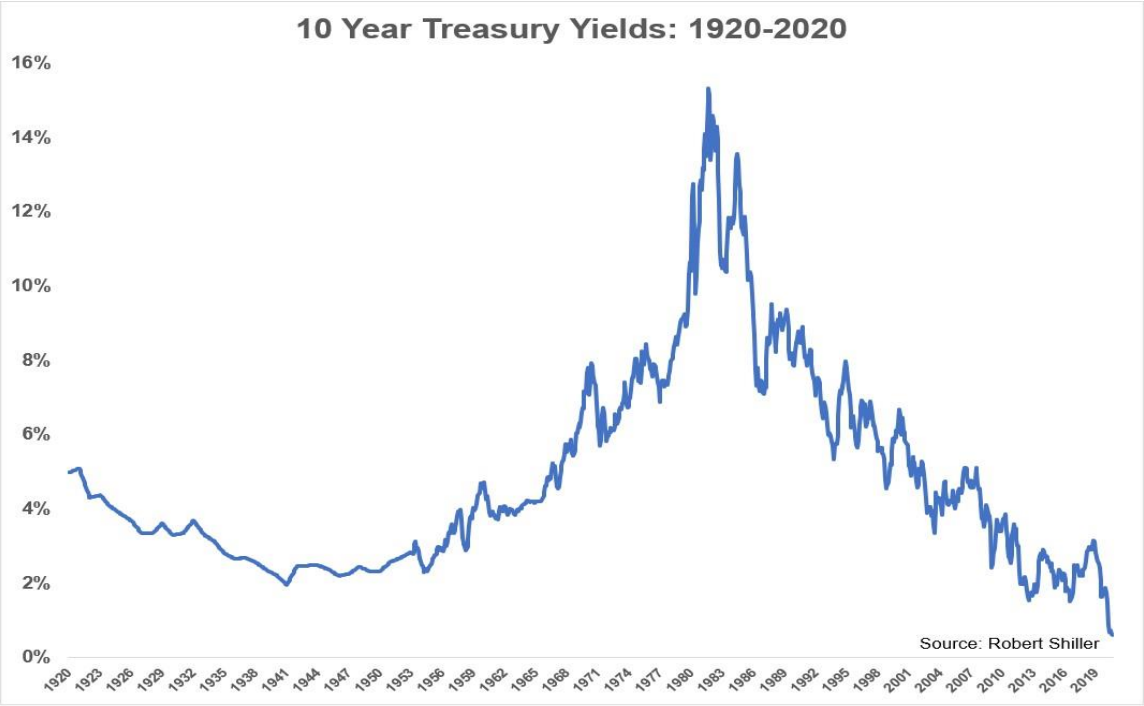


*Figure 6: 10-year treasury yield (Carlson, 2020).*

According to (Carlson, 2020) the risk-free rate has never been lower. As we see supported by figure 6 the rates are at a historical extreme making capital cheaper than ever before. This however has implications when discounting cash flows for years into the future. What is an appropriate risk-free rate to use going forward?

A suggestion by Joel Greenblatt in a recent interview with Howard Marks is normalizing to a high risk-free rate of 6% inspired by margin of safety by Ben Graham (Greenblatt, 2021). Also, Koller et.al. (2015) use a synthetic risk-free rate that brings the risk-free rate close to the historical rate of 4.5%. In a more short-sighted perspective according to Harald Arnet the most important factor now is the interest market for the pricing of young tech stocks in Norway and the overall stock market (Trondsen, 2020).

However, in the venture world the industry standard hurdle rate[2] of 8% in Europe seems resilient despite American peers operating without a hurdle rate at all. In addition, Matanova & Bellavitis (2017) found that lower rates fuels VC fundraising. The reason rates fuel VC funding is that due to the resilient hurdle rates becomes increasingly attractive asset

[2] An internal annual rate of return the VC firm must deliver to limited partners before starting to receive any profit for themself.

class as rates and expected return on other asset classes falls. This in turn increases competition for start-ups and affects market sentiment in raises.

The Greenblatt approach is probably a reasonable one when considering equity investments. It will however be exiting to hear the respondent's thoughts on the topic.

In contrast Gompers et.al. (2021) found that almost none of the VCs adjusted their target returns for systematic (or market) risk—a mainstay of MBA textbooks and a well-established practice of corporate decision-makers.

#### *2.3.1.5 Dealing with great uncertainty:*

As discussed, young growth firms are very risky and outcomes very uncertain. To deal with this uncertainty, Koller et.al. (2020) suggest developing different scenarios for outcomes. Thereafter probability weight those scenarios. These measures are not meant to kill uncertainty, but to make get a greater sense of clarity. However, Koller et.al. (2020) suggest that investors should get a clearer picture of which scenarios are more likely as the stories develops and the business progresses.

> *"Accurately predicting which scenario will occur is a laudable goal, but unlikely to happen. Investors struggle to incorporate new information every day, and this leads to high volatility in the share prices of young companies." (Koller, 2020, p. 77)*

When faced with great uncertainty many evaluators may fall into the temptations of pricing equity instead of valuing it. The pricing often takes the form of some sort of comparable valuation, however the shift to pricing makes the evaluator do implicit assumptions instead of explicit as with a full-fledged valuation (Damodaran, 2012).

Solutions to attempt dealing with uncertainty could be running simulations or/and option pricing models. Running simulations forces the evaluator to make assumptions/calculations about the probability of different scenarios and might help to visualize distributions of outcomes. Option pricing models could be helpful evaluating equities with option like characteristics. However, the evaluator still has to do assumptions on future expected cash flows and risks.

#### *2.3.1.5 Summary intrinsic valuation:*

The estimation of intrinsic value through is by the Damodaran (2000) and Koller et.al. (2020) the preferred and theoretically correct method to value the business in questions in this

thesis. However, Gompers et.al. (2021) clearly found that this is not the practice within the VC world.

For the drivers of value in the DCF: market opportunity that determines the growth opportunity, reinvestment need defined by return on capital and growth opportunities are all extremely hard to validate.

To validate these drivers, it is suggested using industry standards with adjustment due to own assumptions. Also, to deal with the uncertainty probability weighted scenario analysis is the preferred solution by the mentioned literature.

### 2.3.2 Relative valuation:

Relative valuation is the valuation of a company based on the pricing of similar assets. The most common way of doing this are multiples of market value of equity to earnings, cash flows to equity, book value of equity or sales. It is also common to use multiples of enterprise value compared to EBITDA, EBIT, and sales.

However, I find relative valuation has its limitations as a valuation method for the type of businesses in this thesis. The limitations stem from multiples being based on values which might be non-existent, like cash flow or earnings. Damodaran (2012) is also clear in his critique of the method.

In addition, book value might give little info about the future as this is purely a measure of how much cash have gone into the business and is not meant to describe the cash flows going out of the business. Furthermore, book value will often not even describe the cash gone into many businesses as the investments often are expensed instead of capitalized as discussed earlier.

Despite this relative valuation could be very useful as a pricing tool. Multiples as price-to-sales (P/S) or enterprise value-to-sales (EV/S) has become widely accepted for instance for pricing SaaS businesses (SaaS Capital, 2019).

As we see from figure 7 an important metric to track while choosing a sales multiple for a SaaS business is the growth rate of sales. In addition, we see difference in the pricing of public and private. According to SaaS Capital (2019) this is due the fact that private

businesses are usually smaller and thereby riskier. Another argument is due to lack of liquidity for investor in private businesses.


*Figure 7: P/S vs growth rate (SaaS capital, 2019).*

Furthermore, a different problem with using relative valuation is that the evaluator must find comparable businesses for it to make sense; the peer must have the same accounting policies and exclude non-recuring items in order to be truly comparable.

Also, they need to have the same characteristics and outlook. It might be hard to find comparable businesses to Kahoot, Facebook, Apple, and Google, but should be easier to find comparable to business like salmon farming businesses, real estate, savings banks and shipping companies.

In addition, according to SaaS capital (2019) there has been an expansion in the P/S multiple for SaaS businesses in the last decade. The multiple has expanded from the median P/S below 4x in 2010 to between 9x and 10x in 2019.

According to Damodaran (2011) both a strength and weakness for relative valuation is that the method is much more likely to capture market moods and perception at the moment of

the pricing. Whether this should be considered as a strength or weakness depends on the goal of the pricing, but from a strictly valuation perspective this is clearly a weakness.

This is also the main reason why I throughout the thesis refers to relative valuation as a pricing tool and not as a valuation tool this due to the sensitivity to market cycles. However, multiples are in my opinion good tools if you are researching what price you could sell a business for within a specific time frame.

> *"The other problem with relative valuation is that it is based upon a fundamental presumption that the sector is correctly valued. If an entire sector is overvalued, the fact that a firm looks undervalued on a relative basis does not mean that it is undervalued on an intrinsic basis. The danger in trusting the market to be right, on average, especially in sectors where there are huge swings in expectations is large." (Damodaran, 2000, p. 53)*

#### *2.3.2.1 Summary relative valuation:*

According to SaaS capital (2019) the methods of P/S is an accepted method to value SaaS businesses. Many of the new type of business this thesis focuses on is SaaS business and the method should therefore apply. In addition, valuing fast growing business on relative valuation especially P/S is a method seen used in practice from brokerage houses and other sell side participants.

Damodaran's (2012) critique intuitively makes sense due to the high sensitivity the method will have to market moods, also to relatively value a business there need for comparable businesses might be an issue.

The driver of value when applying relative valuation should be the same as when using the DCF. Although in a relative valuation the assumptions are more implicit than the explicit assumptions in the DCF (Damodaran, 2012).

The validators of the implicit assumptions in a relative valuation are as illustrated by SaaS capital (2019) is driven by the growth rate of sales.

### 2.3.3 Option pricing:

Option price valuation is valuation of assets with option like characteristics. In this regard the reason to consider option pricing as an alternative and real options as a supplement to the DCF approach is that the businesses themself has an exponential pay off profile like options. The other argument is using real options to value strategic investments as the businesses grow.

Furthermore, investments with greater uncertainty have higher option value due to higher volatility. In the DCF higher volatility leads to higher discount rates, but for options higher volatility increases changes of asymmetric payoff and thereby increases the option value (Mauboussin, 1999).

For instance, Mauboussin (1999) suggest that stocks of companies that participate in highly uncertain markets are best viewed as a combination of the discounted cash flow value of the current businesses plus a portfolio of real options. The real option can be estimated by taking the difference between the current equity value and the DCF value for the established businesses.

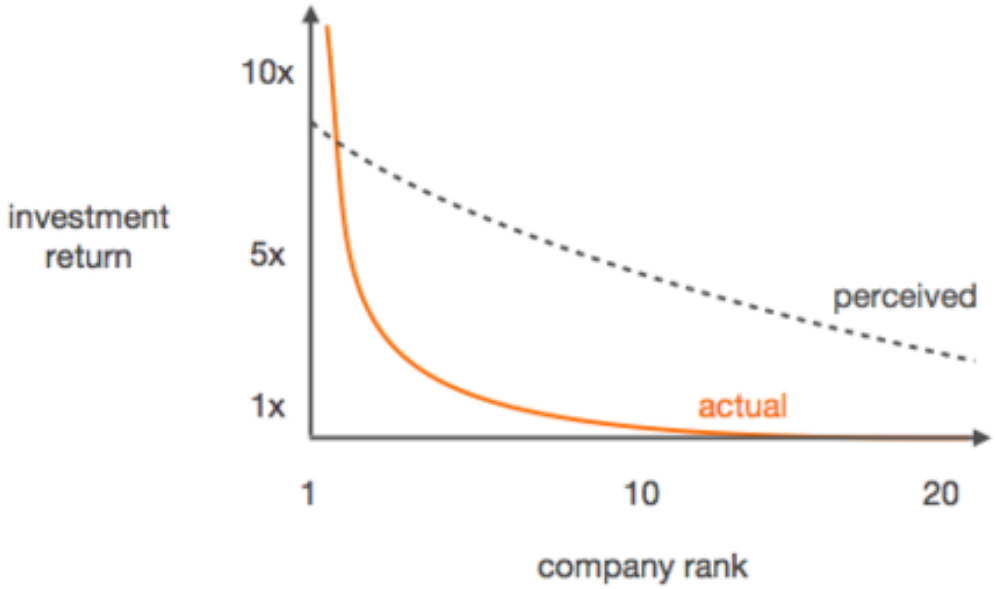


*Figure 8: Venture fund return profile (Thiel, 2014).*

The first argument is the payoff profile for especially start-ups but also young growth companies. As we see from figure 8 most of the returns for VC funds come from a few investments. The power law distribution of venture capital dictates that the success of a fund is not reliant on investments not failing, but on the success of the winners.

According to Thiel (2014) this implies two strange rules for VCs:

1. Only invest in businesses that has the potential to return the value of the entire fund.
2. Because rule nr 1 is so restrictive, there can't be any other rules.

The law has two major consequences. The first and most obvious one is that any investment need to have a big enough TAM and the possibility to scale into meaningful margins. The second, is that funds cannot overdiversify their investments. Doing so would mean the winners would have to deliver extreme results which off course is possible but not necessarily probable. For instance, if a fund invests in 500 start-ups, then to be in compliance with Thiel's rule, all those 500 businesses need to have the potential to deliver 500x.

An interesting anecdote is that the big wins for top-performing funds are larger in magnitude than the big wins of worse performing funds. However, what is far less intuitive is that the best funds actually have a greater percentage of their invested dollars go to zero than good funds do. This is indicative of the fact that the best investors possess a deep, underlying appreciation for the power law (Stark, 2015). Understanding of the power law would make the investors target the big wins rather than trying to avoid the losers. In other words, trying to achieve success rather than avoid failure.

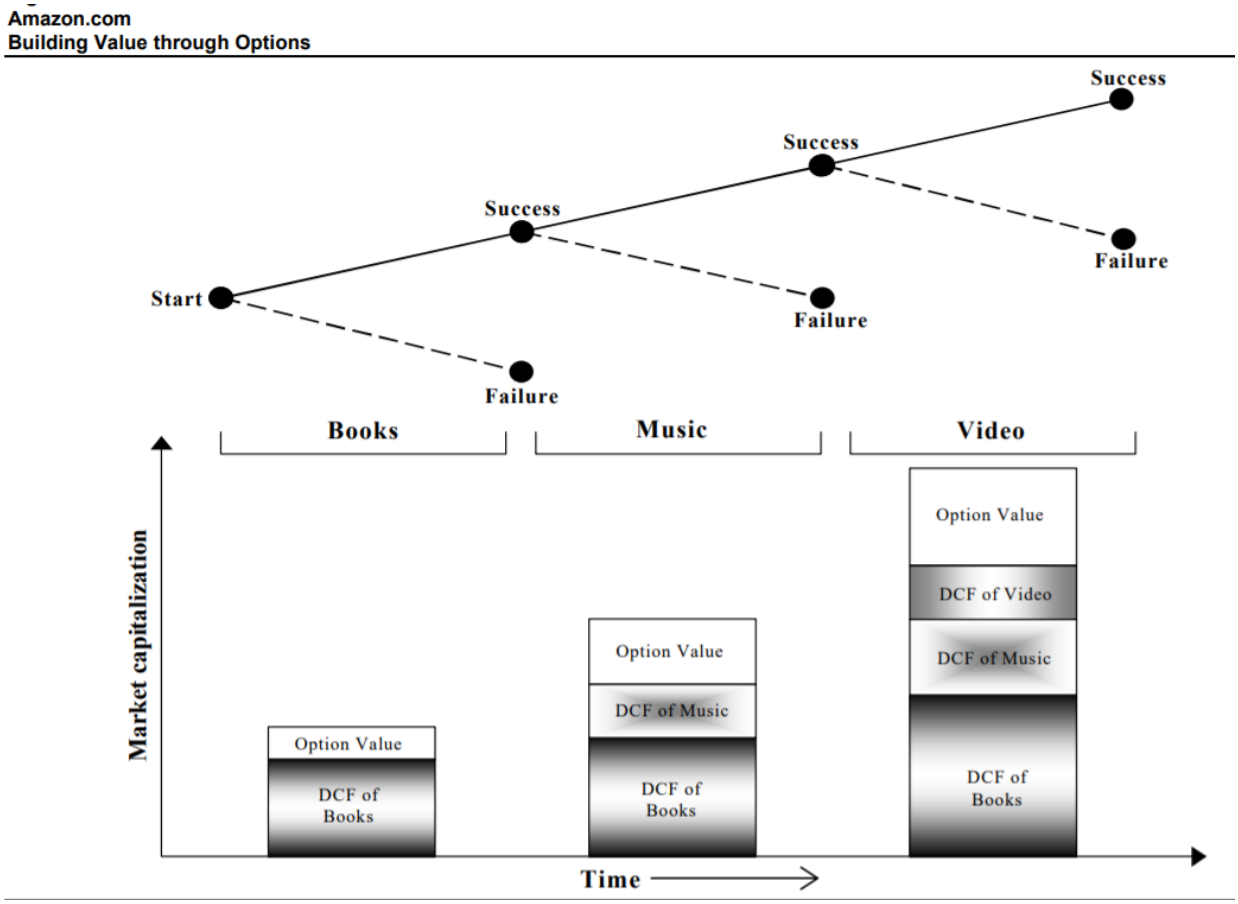


*Figure 9: Valuing Amazon with real options as a DCF supplement (Mauboussin, 1999).*

The second argument for options pricing is real options to value strategic investments. As we see from figure 9 where it is exemplified how one can value the option to pursue new business areas. Mauboussin (1999) suggest a DCF for existing business and option value from future expansion and as the business manages to capitalize on its real options the value of future optionality should also increase.

According to Mauboussin (1999), although the five Black Scholes inputs are relatively straightforward, option models can get very complex, but it is argued that the real power of real options stems more from the mindset of real options than from the output from an option model. An element that causes the difference between option model value and reality is leakage[3]. The cash burn is considered an important source of this leakage especially for young businesses.

The point of the real options mindset I believe could prove useful for valuing businesses, however I question using it for very young businesses as they do not have built their initial business and it therefore seems immature to put value on expansion into new categories.

However, for more mature businesses I believe that founders and/or management having proven success in the initial business and especially if they have successfully expanded the business to new areas should be given additional value due to real optionality.

#### *2.3.3.1 Summary option pricing:*

The method of using a real option mindset could be a possible addition to the DCF approach as mentioned before. The argument to implement this mindset comes down to the similar pay of profile for these types of business to options. The mindset was originally by Mauboussin (1999) meant as methods to value the business that apply to this thesis.

The drivers of the option value according to Mauboussin (1999) is uncertainty (volatility), the leakage from sustaining the optionality and historical execution on real options.

To validate the uncertainty, one must have an idea of the potential payoff from the optionality, TAM and the scalability of the business model are important validators of the pay off potential. For leakage, the most important factor is the cash burn related to maintaining the optionality. Lastly, historical execution on optionality comes down to the

[3] Leakage is relevant when cash flows move in or out of the underlying asset, affecting the option value.

human capital of the business and can be valued both on the human capital execution with the business in question as exemplified by Mauboussin (1999), but also prior results from similar firms.

### 2.3.4 Five times the raise:

Another pricing technique is the 5x your raise method. The approach might seem weird considered that it seemingly does not try to value the business, but rather focus on the need for capital and protecting incentives for the founders.

The method is present in the earliest stages of fundraising and seems at first sight simple.

> *"In Rare Carat's conversations with VCs, we were surprised to find that it was not so much the 'value' of our company from metrics like monthly revenue — but more about the 'stake' the investor is receiving for their money — with a rule of thumb that investors will desire something in the neighborhood of 20 to 25 percent. So, to oversimplify, we've found it to roughly be five times the amount you are raising." (McGowan, 2018).*

The method is highly untraditional and purely an early-stage valuation method. However, according to Gompers et.al. (2021) VCs usually disregard traditional financial valuation because they understand that their most successful M&A and IPO exits are the real driver of their returns. Although most investments yield very little, a successful exit can generate a 100-fold return. Because exits vary so much, VCs focus on finding companies that have the potential for big exits rather than on estimating near-term cash flows.

> *"Successful VC deals take a long time to develop, mature, and exit. We very much focus on potential return multiple rather than on NPV or IRR at the time of investment. IRR is only calculated after the fact, when there is an exit for our limited partners." (Gompers, 2021).*

Based on these sources I'm not in a position to comment on drivers of valuation or validators of drivers for this method. Hopefully, the interviews will shed light on to this method.

### 2.3.5 Valuing human capital:

When valuing young businesses, an important driver of the value, no matter the method, is the quality of the human capital/founders' teams, especially for businesses in the life stages relevant for this thesis.

For instance, Gompers et.al. (2021) found that when VCs cited their most important factor founders were the most frequent by 95% in decisions to pursue deals. For comparison the

business model was cited as an important factor by 74% of firms, the market by 68%, and the industry by 31%.

As founders are the cornerstone of young businesses, this can be linked to another of Thiel's laws that says a startup messed up at its foundation cannot be fixed (Thiel, 2014). Also, according to McGowan (2018) valuing human capital is often an important part of start-up valuation.

The importance of human capital highlighted by Gompers et.al. (2021), McGowan (2018) and Thiel (2014) makes intuitively sense as all value in start-ups and young growth business must be created by that human capital going forward.

However, Levie & Gimmon (2008) found that there is a suboptimal evaluation by investors of the human capital of first-time high tech venture founders and extensive use of gut feeling in decision-making.

The value of human capital works as a driver of value in all methods outlined in this thesis. Due to the importance given to the theme by Gompers et.al. (2021) and Thiel (2014), the human capital driver should be considered the main driver of value for these types of businesses.

In addition, to validate human capital past experience, incentives, drive and relevant knowledge and skills are critical validators of the human capital. However, how to weight and measure these is no easy task and the ability to do so I strongly believe is a result of experience and exercise.

> *"If you focus on near-term growth above all else, you miss the most important question you should be asking: Will this business still be around a decade from now? Numbers alone won't tell you the answer; instead, you must thing critically about the qualitative characteristics of your business." (Thiel, 2014, p. 47)*

## 3.0 Methodology:

As of my problem statement where I want to explore a topic that is unmapped (Barry, 1994), I have collected my data through a qualitative approach. I have used primary data from my own interviews.

I wanted to explore the beliefs and methods of different types of participants in a specific type of business valuation. As this methodology is less controlled and more interpretative, I

need to reflect on my position in this research, I should take into account how my participation and perceptions have influenced the interviews and the analysis of the results.

## 3.1 Collection of data:

I have collected my primary data through interviews with anonymous participants which are or have invested both in startups and young growth businesses. The interviews were done over the phone, over Google meets, Microsoft teams and Facetime. Recording equipment has been Audacity on my computer when interviewing through a phone call or Facetime and the recording app on my iPhone when interviewing over Teams or Meets. There has also been follow up questions on email.

My sampling has been non-probability since I am not trying to figure out an everyday issue most people deal with. I need to have a population of respondents that actually meets the problem themselves in their daily work. This off course threatens the validity of my research if I am not aware of my own biases. For instance, it is important to control that my population do not reflect my own opinions about valuation.

When selecting my target group, I started out with a wide scope of who I wanted to interview. After more thought and a few interviews, I decided that I only wanted participants who are or have been handling the investment process and investment decisions with real skin in the game.

The reason for this is that the valuation leading up to a decision to invest or not is where I believe the real difficulty lies (off course also when and if to increase the investment and how and when to take exit). Thus, methods drivers and validators of drivers could be handled different for participant without direct exposure to the result. Most equipped investors or professionals are able to put some assumptions into a DCF or slap a multiple on sales or EBITDA. In my opinion, the hard part is considering the realism of those assumptions and calculating the future growth rates of sales and cash flow. Therefore, I excluded analysts, brokers and deals/M&A departments from this thesis.

The respondents I wanted was either investors investing with their own money or fund managers investing in the type of businesses related to my problem statement. The funds could be venture capital, mutual funds and/or hedge funds.  The private investors should have a long track record and experience.

The prosses of gathering respondent has been through both trying to contact funds directly and through personal networks. Funds I have tried to contact directly has been reluctant to participate in a thesis without any prior personal knowledge or connections. There has also been discussed a reluctancy to share processes and techniques with academia from hedge funds and mutual funds.

However, I have been able to gather a very exciting group of 5 respondents through personal networks which has been extremely interesting to interview, and which I am extremely grateful that took the time to participate. In addition, I consider it important to note that the private investors I have interviewed has invested in start-ups recently as well as young growth businesses.

The interviews have been 25-50 minutes long and has been done in a semi-structured manner. I've had an interview guide attached as appendix 1 which was based on the table 23.5 in Qualitative research: The essential guide to research (Savin-Baden & Major, 2013). The guide was used as a map where I started with very open-ended questions and got more specific based on the answers from the respondents. Some questions developed through the process and to satiate my own curiosity.

## 3.2 Analysis of data:

The process of analyzing the interviews has been done continuously after the recording. In addition, I have also taken notes during the transcriptions. However, there has been done a more structured thematic analysis afterwards. According to Braun et.al. (2006), thematic analysis is a method for identifying, analyzing, and reporting patterns within data.

In the analysis I will support or challenge parts from my theory section by presenting the results from the interviews relating to a specific theme and compare the results against both each other, but also my theory chapter. I will also present other interesting findings related to the theme in question. The results chapter will contain direct quotations from the respondents translated to English from Norwegian.

I acknowledge that this approach could threaten the validity and reliability to the research due to the threat of subjectivity. However, the transparency and replicability of the research should strengthen the reliability.

## 3.3 Justification and takeaways:

According to Thagaard (2009), qualitative research method gives basis for gaining an understanding of social phenomena based on comprehensive data on people and situations being studied. It is characterized by the focus being on process and meaning, analysis of text, closeness to the informants and a small selection of participants. The method is well suited for studies of topics on which there is little prior research, and where great demands are made on flexibility and openness. Therefore, I found this approach useful for this thesis.

In addition, it made sense to do the research in a qualitative manner since the issue is complex and thereby needs deeper understanding. Furthermore, I need to understand the context my participants are in to derive any value from their responses, given that my field of research is extremely exposed to biases of the participants. At last, I value the ability to write in a less formal manner within less rigid academic structures (Koulaei, 2020).

The reason I chose to conduct a semi-structured interview is to make sure that the informants get asked more or less the same questions. At the same time, it gives me the opportunity to be able to ask questions based on the informants' descriptions and statements for further elaboration and clarification.

Semi-structured interviews usually produce results that cannot be generalized beyond the sample group and thereby would have limited external validity, but they provide a more in-depth understanding of participants' prosses. Which, as previously discussed is suitable for unmapped topics and for research that is not necessarily looking for generalizable results. What I'm trying to expose is the processes and techniques used by private serious investors with a long track record in the market and professional fund managers regarding the businesses in question.

The participants in this thesis have also been kept anonymous. I acknowledge that this threatens to some degree the credibility of my research. However, when interviewing some of the respondents I gained better and more honest responses from being off the record. Also, one of my respondents likes to hold a private profile despite a successful career in investing. Thereby, it is unlikely that I would have gotten the respondents on record if they were not kept anonymous.

The transcription was done after all interviews were conducted. However, I listened to all interviews immediately after recording them to learn and improve before the next interview and start to subtract insight from the interviews. In addition, I noted that it became significantly less painful to listed to the interviews during the transcription process. The reason for this is because it was obvious that I was not comfortable during the first interviews. However, this is part of the exciting part of this project namely going beyond comfort zones.

## 3.4 Profile of the interviewees:

| Symbol. | Age. | Education. | Work situation. | Prior experience. |
|---|---|---|---|---|
| R1. | 32. | MSc in Economics with a specialization in IT. | VC partner. | Entrepreneur. |
| R2. | 59. | MSc in management. | Global Partner for a venture capital firm. | Entrepreneur. Raising capital for and managing multiple venture capital funds. |
| R3. | 44. | Almost MSc from NHH. | Founding and managing partner of Venture capital firm. | Entrepreneur. |
| R4. | 65. | MSc in geophysics. MBA and PhD in Economics. | Full time private investor. | Entrepreneur and business professional. |
| R5. | 31. | MSc in economics. | Customer contact brokerage house. | 16 years of part time investing. Founder of former popular finance blog. |

*Figure 10: Profile of the interviewees.*

R1: Working on investment activities for a venture capital firm and manages money on behalf of some of Norway's most successful technology entrepreneurs. He previously has a background from the entrepreneurial business in Norway, Denmark, and Silicon Valley.

R2: Started working in one of the leading global consulting firms out of business school before starting his own business which he later sold. Then went on to co-found a venture capital firm where he made close to 100 investments in tech and software companies across

the Nordic region and grew the firm to become a leading Nordic Venture firm. In addition, former CEO of state backed innovation engine, now global partner at venture capital firm.

R3: Started working for one of the biggest Nordic media firms before finishing his studies, then went on to start his own business which he later sold. Later served as CEO of a young business which he grew to become the leading Norwegian digital performance marketing agency, before he co-funded a venture capital firm which he today manages.

R4: Former chairman in Norwegian listed energy company and entrepreneur. Sat as chairman in a transformational period for the business until the company got acquired. Full time investor since then with impact areas typically within oil and gas, renewable energy and technology. Technology then often related to oil and gas or renewables with software in that segment.

R5: Founder and main writer of former popular Norwegian finance blog and 16 years as part time investor. Recently invested in both start-ups and young growth companies. Now customer contact for Nordic brokerage house and a familiar face in Norwegian business papers.

## 3.5 Assessment of methodology:

In this part I will reflect and discuss the methodology of this paper. I will discuss possible weaknesses of the methodology and my population.

The respondents are a gathered through personal networks. This opens the thesis up for the possibility of the respondents being similar type of people and investors. All three VCs are familiar with each other and was gained as respondents through one of them. This could imply that they are more homogeneous in their opinions than if they were random participants.

R4 and R5 has to my knowledge no connection to each other or the other respondents. Also, it could be worth mentioning some overlap in the author's own stock holdings with R4 and R5 which possibly could imply similarity in opinions about how to value or assess businesses. The overlap with R5 is also a relevant business in the context of this thesis.

A missing part of this thesis is representatives from mutual funds and hedge funds. In the first category there are respondents that clearly could have been relevant for this thesis. As

mentioned earlier some funds were reluctant to share process with academia. However, it was implied in phone calls this might would have been possible given more time to discuss internally how to participate and what could be shared.

This does not suggest that these funds would have participated, but I cannot rule out the possibility given earlier contact and personal connections to employees with the capabilities to make or influence decisions. In addition, the same considerations could apply to hedge funds, however I am not certain there are Norwegian hedge funds relevant to this thesis as they do not disclose their holdings in the same manner as mutual funds.

Another aspect worth discussing is the choice to do interviews instead of a questionnaire. Arguments for a questionnaire would possibly be increased quantity of respondents and thereby increased generalisability. Arguments against is previously outlined in this thesis. In retrospect a combination could have been desirable. Although quality control of the responses is hard for a questionnaire given the complexity of issues being discussed.

The interviewer also holds his own opinions although not fully formed about how to value the businesses in question. In addition, the quality of understanding the theme has significantly improved during the thesis. If one had acquired the same level of understanding the respondents and the theme prior to the interviews it would probably have increased the quality.

The authors own opinions are a threat to the thesis as they have the possibility to colour the entire thesis. To prevent that from happening has been a focus throughout the thesis. However, the fact that the thesis is done by one person makes it exposed.

The choice to do the thesis as one-man show has been a weakness and both threatens the thesis through the authors own conformation biases, but also has had an obvious negative impact on the day-to-day discussion that should exist within a group. Also, being two authors would have doubled personal networks when recruiting respondents.

## 3.6 Ethical considerations:

From an ethical perspective the thesis experienced some restraints to avoid harm of the respondents by holding them anonymous and editing part of their response that could potentially do harm to the respondents. The interviews were conducted in compliance with relevant GDPR rules, and all information has been handled in a responsible manner as tapes

were deleted after transcription. All respondents have been informed that they at any time could retreat from the research at alle times or avoid answering questions if that were desired.

## 4.0 Results:

In this part I will present my material from the interview's trough a categoric structure and a table of summary. The categories are presented to give an understanding of the theme and problem statement of this thesis.

Further, I will present the interviewees statements through both my own words and theirs through direct quotations. The reason I will be expressing the views of the interviews through my own words is because it allows for connection to the setting, between the different interviewees and theory. Also, the direct citations are to protect the original voice of the respondents and provide clarity to what is actually being said.

The categories I will use in this chapter are the same categories as in the theory chapter with a few new additions due to interesting statements. However, I will not touch on all sub chapters from the theory chapter as there were not results of interest on all of them.

### 4.1 The DCF:

The DCF was an approach strongly argued for in the valuation chapter especially by Damodaran (2000) and Koller (2020). However, it was not a to popular method during the interviews. One of the reasons for the dislike of the DCF as an approach was due to the detail orientation. The detail orientation becomes an issue when the input is extremely uncertain. As stated by R2:

> *"When valuing venture companies, it is never on DCF. So, if you tried on such a DCF, it would be completely meaningless, because then it will just be shit in and shit out. Then it's much more about how big the company can be, what such companies can be worth, how fast they can grow, how much money they need to get there and if they need 300 million to get there if you then count backwards what is a reasonable valuation of the company if you have to raise NOK 10 million today."*

R1, describes that putting together a calculation is unnecessary for investments in the life stage they operate. He stated during the interview that doing calculations of the exact value of a business is unlikely and unproductive:

*"The growth rate of revenue and things like that will be considered, but very early on it is more about is this such a large market that this can be worth an insane amount of money? Ok check then we do not need a calculation on it."*

R4 describes that he will do a DCFs, but not for the types of businesses in this thesis:

*"Do you ever set up a DCF or have some kind of DCF mindset?*

*Yes, of course. Most often, you make a present value consideration of things. You try to model, but it again depends on the case. If it e.g., is a solar energy plant in Italy then it is a fine calculation. But if it's software, that may be bankrupt tomorrow, then it's not going to work out. So, it really depends on the case. And with the latest company, you could not count anything because there is nothing right. So, it is from one extreme to the other. It's the same if you were to buy commercial property, then it's down to 2 decimals. That's the way it is. It all depends on the type of case in question."*

R5 states that the false accuracy of the DCF is something that he believes give little value and everything comes back to the assumptions for the input which makes it easily manipulated. He further explains that if he has to use hours into a spreadsheet it is probably not a good investment:

*"Yes, and the DCF is really a perfect attention model to use. Because it gives an answer, but there is no one who can give an answer. If you look around you Thor, the house you are sitting in moves a millimeter a year. So even if you think it's a fixed point, it's not necessarily so. The same is with companies, they are living organisms that change from day to day and quarter to quarter and year to year. So, to somehow manage to come up with that stock should be in 150 bucks based on that analysis. Then my question is what is it that you have put into that analysis? What do you assume? And then at some point you come to that: No, I have guessed at that and I have guessed at that. Okay so you basically just really guessed then. That is what is in a way the weakness of the DCF is that if you go into component by component then it is the case that you have assumed what you have assumed, while the price target is firm based on that DCF. And I think it is contradictory then."*

*"So, then it goes again more on the qualitative and the product the company sells. I mean it's a bit like Ivar Koteng said that when he goes and looks at a building if he has to spend 3-4 hours in the spreadsheet to see if he should buy it or not, then it's just nonsense, but if he can go there to say how much is the rent? How much does the building cost? How much do I earn a year? Just like that back of the envelope and it's positive he buys it. And I'm a huge fan of that for my part in many ways as well."*

In addition, as stated by R2 it is hard to argue that the typical valuation models like the DCF are wrong. They are just not practical for the business in question:

*"Yes true, so it's hard to argue that those models are wrong. These are the models that exist, the quality of the models lies in the quality of the assumptions. While if you look at companies that are start-ups or early-stage companies, it is a completely different game and none of the models work because you do not even know what the cost structure of the company looks like."*

Despite this, the interviews circled a lot around input of and DCF and around the sub chapters of my DCF chapter as sizing up the market, future margins and scalability, the investors sensitivity to interest rates and capitalizing expenses.

### 4.1.1 Sizing up the market:

When considering the TAM, the interviewees also say they put heavy weight on the company's ability to take market share through their recent growth rates. R1 stresses that a fast-growing business will create all revenue in the coming years and therefore today's sales is not an important metric for super growth firms:

*"So, it is the case that if a company grows 20% month over month do not quite remember if it was 10% or 20% but then you go 3 years forward in time. Then the revenue they then have in 3 years is 97% created in those 3 years and that is simply before you started counting. And that's what's so hugely important about these super-growth companies that are growing so fast, looking at today's sales is not so important it's just the growth rate. This you can enter into DCF analysis as well, but it becomes so very difficult to calculate that because 10% and 15% month over month growth are two very different figures in 5-10 years."*

Further, the interviewees usually sized up the TAM through available data, analysis and statistics. R3 specifically describes that they make explicit assumptions about the development in specific markets. R3 had recently chosen to not invest in a business where the market was extremely big today, but maybe not in 10 years and therefore dismissed the opportunity:

*"To take an example of a case we looked at a while ago that was someone who was going to revolutionize taking the driver's licenses. How to take driver's license much more efficiently with a kind of Uber approach to it. So yes, then the market can be quickly calculated since all 18-year-olds will go through this or at least a large percentage share of 18-year-olds worldwide will go through this and there will be just as many new ones every year, but then you see in relation to trends that we are more uncertain in relation to self-driving cars etc. So, we then question whether this market will exist in 10 years? And then we have to make an assessment more trend-wise, even if this market has been growing and is growing, etc., we do not think this is the future. And then it is in a way no, then we back out even though the market is large today."*

In addition, R4 says he sizes up the TAM by the possible use cases for the technology and assumptions about the developments for those markets. He also describes it as a gut feeling in a lack of a better word for how to size up the market opportunity:

> *"There should also be a lump called upside and it is often defined based on the technology. It must be a unique idea, there must be something that can make it great. How the hell do you appraise that? There is a lot of gut feeling, but it is of course about understanding technology systems, you read statistics and analyses, how to sell the technology in the market right, and what does the future look like? is it a bit disruptive?"*

R1 highlights the point of big enough TAMs by the low success rate of newly born businesses. If 90% of business do not succeed, you need to bet on lottery tickets with billions of kroners in pay offs:

> *"If you have 2 lottery tickets with an equal probability of winning, one has a payoff of 1 billion and the other of 10 thousand, then everyone bets on the one with 1 billion. And that means that raising capital at such an early stage as that is things that need to have great potential."*

When describing his approach R5 also express that the market opportunity and the possible market share a business could gain is a big part of his process for these types of businesses:

> *"What drives the sector. I look at the whole space, how big will the market be? How big is it predicted to be? And then again then look at scenarios in relation to, given that this company x gets 3% market share, what will they be able to earn going forward in time?"*

### 4.1.2 Margins and scalability:

When the interviewees have established that the businesses they work with have a big enough market opportunity, they often turned right over to margins and especially the scalability of the business.

As describe by R2 it is all about if the business can sell their product at a meaningful margin and whether the marginal profit increases as the business grows:

> *"And in short, it depends on whether you manage to come up with a product that you can sell with a meaningful margin, right. And the second question is can that model be scaled? And that you will be able to sell it to a meaningful margin and will you then over time be able to sell so many units or so many contracts or so many customer relationships that your marginal income rises so that it scales without there being a 1 to 1 ratio between the income you create and the cost you incur. Because if you do, you're really just running a consulting company, right? So, it must be scalable."*

R4 also explains he pays extra attention to how the business plans to get paid for their service. He wants to see that they have a modern way to monetize their product:

> *"When it comes to software, I am very interested in payment models and such. And then I would like them to do the more modern use-based model that works well, so I really like that. In the old days, you bought CDs, so if you had 50 users, you bought 50 software licenses, it also cost 50 million, it just doesn't work anymore.*
>
> *So, then you look at how is the plan to charge in a sensible way?*
>
> *Exactly in this case I did not get a good answer to that. I remember it was like that we have to find out."*
>
> *"But also, I may not have needed an answer when one of Europe's largest oil companies will buy the product, so yes, then it will work, then it will be commercial."*

R1 expresses in his interview that his way of working doesn't work for traditional businesses with big markets, but poor margins and lack of scalability. He looks for businesses that can grow to billion valuations with 40% margins which you naturally do not find in most industries:

> *"So, you can say the way we work does not work if one is to value a restaurant. A restaurant can have good potential for revenue and all that but needs a lot more and completely different things to make it worth 1 billion with 40% margins."*

### 4.1.3 Sensitivity to low interest rate:

As described in the theory chapter adjustments to the discount rate has been a relevant topic due to historic low interest rate environment. However, the theme has reached the attention for many market participants when rising rates has been used as an explanation for falling duration assets.

The literature on VCs expresses that VC fund raising should gain from lower rates due to resilient cost of capital/hurdle rates. Therefore, there is no surprise when one of the VCs (R3) interviewed described that an attempt to lower the hurdle rate for their fund was not successful due to push back from investors in the Nordic market:

> *"Yes, we have a hurdle rate, and it is pretty standard. It is not adjusted down now in relation to low interest rates. So, the one in fund 1 with us is at 8% and we are in the process of opening a fund 2 where it is also at 8%. We actually started out with 6% as you say due to low interest rates, but we got so much pushback on it from investors that we landed at 8%.*

*We even wanted to start without a hurdle rate first. So, if you look at American VC funds, they operate mostly without a hurdle rate, but here you do not. So, you simply have to adapt to the market where you have to raise capital. So that you do not price yourself out as an alternative."*

R5 also describes low sensitivity to interest rates in his valuations:

*"Yes, so I mean then if you are going to do a DCF, the interest rate should be maybe as much as 5-8% that the banks use when you borrow money. You can also say that: Yes, but the interest rate will never come up again. And no, it's fair enough, but then you at least have a margin of safety. And if you then come out with a positive result with that interest rate, then that is a great case."*

While R4 expresses that it depends on the investments case, but for the business discussed in this thesis, he has low sensitivity to low interest rates. However, on investment cases with more stable cashflows as real estate or solar parks, he would be more sensitive to interest rates:

*"In relation to the fact that you have very low interest rates now. Do you then use the current interest rate as a starting point or not?*

*No, I cannot do that.*

*So, the risk-free interest rate is not something you take in as a factor.*

*No, it does not work. It will be wrong. It depends a bit on where you are also. Whether there is a solar energy plant in Italy that simmers for 30 years, and you know approximately how much the sun shines. Then I can adjust a little on the discount rate, but I will not, I'm a little greedy for just that."*

### 4.1.4 Capitalizing expenses:

Capitalizing expenses was one of the questions with no interesting response when asked about directly.

When asked about the lifetime value of customers R2 goes into a specific investment case where he suggests an exercise where what was then a young growth company stops investing in growth. Further, it is explained that the business in question would have generated positive returns, but all cash generated and raised in the business got invested in growth:

*"What does each customer actually generate from income and how much do you actually invest in your growth per customer?*

*Is the investment then seen against a lifetime value per customer then?*

*Yes, or it depends, but what you will be able to do is. To be able to calculate the lifetime value and look at the churn on the company's customers and on what will be a sustainable growth. Also, in a way, you can then do an exercise where you say that now we do not invest in any growth at all, what happens then? In Spotify, it was very often an alternative, right. Spotify lost money until they went public, but they could at any time stop the rollout of Spotify and earn hundreds of millions of kroner because all the profits that Spotify generated were put into marketing and sales."*

In addition, R5 expresses his believe that the stickiness of a user for subscription-based services as Netflix is significant and therefore acquisition of customers should be considered investments:

*"Which is more durable, take an example like Netflix. They have gradually started to make some money, but for a long long time they spent on user growth. It's really a sustainable thing because if you get into the Netflix sphere you do not stop using it. You may not use it as much as before, but you let your subscription roll in and out. So, the value of attaching a new user is very large then because then it will probably stay there. So, I look at long numbers of user growth and that it is increasing and that not least the revenue shows up."*

## 4.2 Relative valuation:

The respondents all to some degree use relative valuation in their process, but the multiples differ mainly due to the difference in maturity of the business being priced.

As expressed, R1 uses relative valuation with a focus on comparable businesses as a negotiation tactic when discussing the pricing of a capital raise:

*"It is also based on what feels fair in relation to other companies. So, it may be the investor's counterargument on reasons why the company is worth 30 million that they look at 4 companies that are relatively identical with pressure on relative. No two companies are alike, but you can say big market, strong team, pre product, pre revenue also all the other 4 are at 20 million. Then the investor can say that then he would rather put the money in them because you can relatively get a better return there."*

R4 also describes use of relative valuation multiples as P/S something he looks at quickly in the valuation process:

*"Do you use multiples as price against revenue or other factors? So, pricing based on multiples then.*

*Yes, I use it, I do. I calculate fast on that kind of thing, but I look quickly at the payback time, i.e., how fast if I go in with 50 million how fast can I expect to get my 50 million back in terms of earnings. It's as simple as it can get. If it takes 20 years, it is not so exciting."*

During that interviews R1 also highlighted the high sensitivity to market sentiment when applying this method. In addition, R3 acknowledge the high risk of market multiples being moved by the market sentiment and point to multiples in video tech with the leader Zoom trading on a sales multiple of 50 this is something he expresses that they do assessments of:

> *"Would you then say that the price of the capital in venture can be moved a lot since you are affected by the competitive situation and you use multiples, then you can say that since you then compare relatively. Will the market mood then have a great influence on price to a large extent?*
>
> *Yes, absolutely, and it's easy to look at the last year with covid and look at the multiples on video tech e.g., Zoom is 50 times, and such market assessments must be made."*

The P/S multiple as expected gets mentioned in several of the interviews. Both R2 and R3 mentions that they use the multiple. R2 argues for the use of the sales multiple due to the high uncertainty in these types of business that a more precise method adds little value:

> *"Then you can build the model from there and once you get there then you can of course do some DCF or something, but for our part we think much more about multiples, right. So, if you then have 100 million in sales and you have 20 million on the bottom line, you can perhaps count on an 8-10 multiple on sale. Then you suddenly have a billion company.*
>
> *So, you are thinking primarily of multiples in relation to how a company can be priced?*
>
> *Yes, because it's too uncertain, right. The point is that it does not help to count on commas and dots because everything is so extremely uncertain."*

R5 expresses his dislike of what he categorizes as high-risk multiples as P/S and other multiple based on numbers higher up in the income statement:

> *"Yes, it is extremely difficult. I'm not very much of a fan of using these EV/EBIT, P/S these far out on the risk scale multiples that very many have now started to price some growth stocks with then. So, I'm really going for a lot more on the qualitative side then."*

The difficulty of using multiples in the earliest stages is expressed by R3 if the business is too early in their development. Then he rather qualitatively benchmark against other comparable recent capital raises:

> *"Multiple calculation often becomes difficult because it may be premature. And then there are other mechanisms we use such as how far has the company come in its development, what type of financing round are they getting into and then*

*there is very often a benchmark assessment based on other companies. It is a great advantage to be a VC in relation to a family office because we look at so extremely many tech cases that we get the benchmark basis for doing good benchmarking, and where are other companies that have come about as far as in their valuation."*

For early revenue stages he suggests that a general rule might be 15-20 times revenue and highlights revenue as the most useful multiple:

*"So, you can say that as a standard rule of thumb that we often use in SaaS companies when you can check off on a number of things, a good team, you have good growth numbers type month to month or quarter to quarter and you have it within an attractive space, the retention rate is where it should be so then it becomes in a way like check, check, check and you end up at 15-20 times in the early phase of revenue, but it is very much the rule of thumb like many VCs in early phase often lands on."*

A difficulty when doing relative valuation from the theory chapter is finding truly comparable business. Both R3 and R2 have views and approaches when finding comparable business to those they are pricing. R3 goes into depth on how they search for both private and public business within specific niches is priced:

*"What we do then is that we judge it against others. If you look at a SaaS company that operates in procurement, for example. a niche area within software, we try to look at other companies in the same niche and try to see what range the multiples are in. If we look at a video tech company, it makes sense to compare multiples with other video tech companies. And now there are often listed companies where information is available, while private companies can be very difficult to find information on. This is because they have not gone public with revenue exactly at the time they made an issue. So, in a way, you just have to guess what those multiples was."*

However, R3 explains the approach of relative valuation is a qualitative floating process based on looking at thousands of businesses. The process could be described as a result from accumulated learning and experience. He acknowledges that even as this sounds very approximate and unstructured it is truly that simple:

*"It is difficult. You form a reference basis after looking at thousands of companies and you get the idea that companies that have come that far and have so many employees have so much validated have so many customers. Then you quickly form an image of, okay the starting point should be about there. And then these things pull up and then these things pull down and then you end up about there. So, it is in a way the sum of experiences and of companies you talk to and look at. I understand that sounds very vague, but it's just like that. Although it may sound very unsystematic. It is difficult to explain in a better way, but you run into*

*financing rounds all the time and you read all the time. You could sit down and systematize it in a spreadsheet, but you don't. It is simply accumulated experience and learning. It's that simple really."*

When discussing how to find true comparable businesses R1 expressed that in his opinion you cannot really find very similar businesses and that it is more like a very coarse filter. Even similar teams going after similar markets often has different approach as how to go after the market or different drive. So, when describing the exercise of finding true comparable businesses he quite brilliant describe the exercise as not comparing apples to apples, but rather comparing apples to diamonds:

*"Yes, you can also say that no one had regretted investing in Facebook pre product at a price of 1 billion because you get your money back so insanely with interest that is what is difficult here is also that there are no apples and apples. There are a lot of apples and pears or apples and diamonds if you will."*

### 4.3 Real optionality:

The real optionality chapter was meant as an addition to the DCF and derived a lot of inspiration from the developments of Amazon expanding and making most of its profit from new initiatives. Therefore, the question on the topic was asked with Amazon as a reference.

The response on the subject was not very clear. R1 highlights the difficulty of evaluating such opportunities and point to it as more of a way of defending a high price when exiting through an IPO in the recent cases he has seen:

*"Like when Uber goes public so to justify that they cannot grow into infinity with ride sharing, but so okay then they pull up lots of stuff with helicopter services and other ways to facilitate mobility in many ways that you do not really think of as natural. That Amazon would make most of its money on servers then enough people had laughed at them in the late 90's or early 2000's."*

R2 is very clear however that in an early-stage real options are not something they consider important when investing in early stages. However, the VCs in general point to the possible value that can come from entirely new initiatives is a result of the quality of the founding team in more mature stages.

*"No, not at an early stage. On the contrary actually. Any entrepreneur has 140 ideas on what he could have done, right. So, the most important thing as an investor and as a coach for early-stage companies is to get them to focus on what they actually should do, what is it that you can actually make money on and if you cannot make money doing that, then you can do something else, but not until you have completed step 1. You can have a few twists at a time and try to test*

*hypotheses and try to come back again, but you cannot do 4-5-6 different things at the same time. It will not work, but it is clear that the best teams they manage it when they have reached a certain level, but it is not something that is important to us when we invest in that type of companies early."*

When it comes to leakage especially from cash burn R4 pushes on this point on several occasions during his interview. Obviously, big cash burns are something that he really dislikes when considering these types of investments:

*"I hate extreme burn rates. Keep in mind that if a company employs only 10 people, it will cost 20 million. Or 20 people, that's 40 million. Then you should have 40 million in before you make money. It does not help to have a revenue of 5 million if you have employees that cost 40 million. Then the money does not last long."*

In addition, R5 also suggest that he looks at the cash positions and cash burn:

*"I go much more on the balance sheet than the income statement and look at simply how much cash do they have? How long can they last, without having to raise money and dilute existing owners sharply. So, I probably look a lot more at the capital situation in relation to the balance sheet and the fundamentals."*

## 4.4 Five times the raise:

The approach of five times the raise got discussed quite early in the interviews with the VCs. R1 brings the approach to light in the introductory opening questions. Explaining that if a start-up wanting to raise x kroners that usually should equal 15-20 % of the company:

*"We typically want to invest in the first round of cash in. Then it is normally between 15-20% of the company that is given away. And as an example, with the most diluting of 20% and 5 million to be raised, then you have a price there of 25 million."*

R1 also expresses that he believes the approach to be very approximate and confirms that it is also a very approximate process:

*"Soo, we look at how much money the company needs and what feels fair. It sounds very approximate and so it is, given that companies have big ambitions and will raise money in several rounds and measure that the entrepreneurs are sufficient incentivised along the way."*

However, he emphasizes that a founder cannot just raise any amount. He further explains that the amount that is possible to raise comes down to the human capital in the founding team and the competitive situation in the raise:

*"All companies can go out and say they are going to raise a billion. But how do you get it? This sounds very approximate, and it is very approximate as well, but is your name Eilert Hanoa, you can be closer to raising 1 billion for 20% than if your name is Ola or Kari Nordmann and you come straight out of your studies. So, the team, attractiveness, how well it is argued that we have done this before or that they have very high human capital often means that the pricing is higher. There is one component another component is the market. With more competition for the best companies, it is quickly easier to say that instead of raising 3 million, the company raises 6 million, because they can."*

When asked about his most recent pre revenue investment R5 say that the five times the raise was the method but stressed that he did most considerations on the investment from a purely qualitative perspective.

In addition, R3 starts out his statement about the five times the raise approach saying that it is unfortunate that the approach often gets used when pricing start-ups. Especially if the businesses are going to go the venture run the approach is very normal:

*"Also, it is unfortunately you can say, but often you end up with such an assessment of, ok how much capital is it that is raised then it is a reasonable level in relation to how far the company has come, and it will be a kind of opposite calculation that one also uses the rule of thumb on how much dilution the entrepreneurs should take per round in a venture race. And then there is typically at seed level 20-25% dilution. They should not be diluted any more than that if they are going to go the venture race. And on series A it is maybe a little less maybe max 20%. Series B is maybe 15-20% and Series C is maybe 10-15%, right. So, the dilution becomes less and less, but it is also such an assessment that you do. Should they pick up 20 million on a seed. Yes, then maybe, then automatic valuation will be 60-80 million since they will then have a dilution of 20-25%."*

However, R3 also emphasizes that if they believe the valuation is too high, they go into discussion with the founders advising them to raise less capital in this round but rather go with a shorter runway to build the business and prove more before raising more capital. That way they control the risk of over valuation as well as protecting the incentives of the founder team.

The outlier here is R4 which had taken part in a pre-revenue raise where the founder gave away a much smaller part of the business, but highlighted that due to high interest the valuation was something he just had to accept or not take part:

*"The assessment of a company without income is very difficult. In that case, I believe they raised 20 million on a pricing of the company of 500 million. This pricing is extremely high but could be accepted because I had knowledge of the*

*market for the product. An equally important factor was the ability to sell the product and at what pace, so-called rollout. I thought it would go relatively quickly. At the same time, I also thought that the company would be attractive as an acquisition case.*

*Your rule of thumb does not hold here - you had to multiply by 25!*

*Another factor was whether others were willing to buy at 500 million, and that was there. Thus, it became a question of whether one wanted to join or not."*

## 4.5 Valuing human capital:

It is no surprise that the VCs came back to this as the most important part when considering investing in a company, especially for start-ups this is the most important aspect to consider. In line with the theory chapter VCs considers this an extremely important part of the investment decision.

When asked about how to value human capital in a business R1 expresses that it's hard to give a one size fits all answer to this:

*"It is difficult to give a very simple answer to that - overall we talk a lot about "founder market fit" - that the entrepreneurs must be right for the problem they are to solve. What this means in practice is a little more abstract - is industry experience good? The founders of Airbnb did not come from the travel industry, and there are countless such examples. Is previous entrepreneurial experience good? (Apple, FB, Microsoft etc beg to differ). We prefer that teams can build the technology they are going to sell themselves, and we prefer teams with ambition, speed and competence, but there are very general characteristics that make the answer very fluffy."*

In addition, as we have previously touched on VCs consider the human capital a driver of not just the core business, but also optionality value from new initiatives. R1 expresses that strong human capital with the right incentives will always try to find new ways of creating value.

*"If the team is strong enough then they will not give up once they have taken the book market. They will use it as a springboard to take more markets. And that is also why it is terribly difficult to calculate the return on such investments. Yes, Kahoot too true. It is difficult to say what the expected return is here because it is so violent non-linear growth and therefore the focus is more on the entrepreneurs having sufficient ownership because. With Bezos and others, they have owned enough of the company themselves that they bother to think of new business areas and new markets."*

R1 also as previously mentioned claims that when considering a high seed raise the opportunity for companies with significant human capital is larger:

*"If your name is Eilert Hanoa, you can be closer to getting 1 billion for 20% than if your name is Ola or Kari Nordmann and you come straight out of your studies. So, the team, attractiveness, how well it is argued that we have done this before or that they have very high human capital often means that the pricing is higher."*

R5 says that the human capital is something he weighs heavily in a specific investments case, but not only the management he also values the human capital in the owners of the business:

*"If you look at Kahoot in this respect, they have done everything right so far, with good shareholders, for example. Softbank, Microsoft are involved, etc. And made agreements with, among others, Google so it is clear that the more such types of things that materialize, the greater the chance they also have of success."*

In addition, he later says he believe that quality in the human capital becomes comfortable while management makes acquisitions:

*"There is a bit of talk that you have to choose to believe that those who sit and make the acquisitions in Kahoot are good people who know what they are doing, who then consider the price whether it is high or low depending on, but that they manage to get added value out of that purchase over time."*

Furthermore, R4 says he invest heavily in the beliefs in the human capital. As he expressed it himself:

*"But I have an investment where I really could not negotiate price. It was simply a company that did not fucking have 1 kroner in revenue, and then was valued at 500 million kroner and that is a lot in my world. It is a good example of a company where the whole valuation is based on a belief that you get it right. And that is reliant on technology and people. You never get around people, right? Good people make wonders right and idiots don't make anything. So therefore, I invest deeply in the faith of these people."*

He also describes how to value the human capital as a result of his network where he knows people who could be involved in relevant businesses within his fields:

*"I am in an environment where I know many people. And I stay reasonably focused, so I know very well what is going on and, in that case, here with a software product that I know what to use for, I feel that ok. I know it can go all ways."*

In addition, he says he is really quick to say no to investments if there is any concern about the human capital. He also adds that the human capital is something that has become more and more important in his approach:

*"At the same time, I should not have anything wrong with the human capital. If there is 1 person that I do not like or who does not have performance, or there may be a board member who I do not trust, I just say no. I'm really clear. And it has happened countless times where a half-crazy board member has been pulled in, and then I just say stop. I do not want that; I cannot bear it. So, you have on the one hand that you buy the positive part, but you also have a very clear no criteria for what you do not, right. So, you have to learn that form of mastery to say yes or no, and sometimes I say no for really strange reasons. "*

*"I have also become faster at saying no. It's probably because I have become more and more focused on the human part. Without the right people, things will not go well."*

### 4.6 Paying up for winners:

Another finding worth mentioning is the effect of betting on the winners as they prove their product and market fit as well as the founders proving their implementation capability.

The importance of doubling down on successful investments get highlighted by R3 explaining as most start-ups don't make it, he need to double down on the founders that delivers desirably:

*"Yes, and that, yes you can say that. Where they develop in relation to expectations. Also, within venture, the statistics show that many companies do not become anything because they do not succeed in what they are supposed to do and then it is a matter of doubling up the companies that develop best."*

Further, he explains that if he invests in a 30,40 or 50 million valuation is not the important part. The important questions are whether the business can be a 200 million or 2 billion business. The important part is having the 100x potential:

*"We spend a lot more time on the upside because it is much more important whether the company can end up with a valuation of 200 million or 20 billion, that is where the important battle is. And there you will meet those who hit the largest valuation and it is then a much more important assessment than whether the valuation of the company was 30 or 40 million when we invest. Whether the exit will be 100X or 85X is in a way not so important. I remember Bjørn Stray in Northzone once said that they had experienced in retrospect, that it had never turned out that they paid too much for a success, so for companies that did succeed, the experience was that it never had been too expensive to get into those companies even though they experienced it as expensive when making the investment. If it first becomes a success, then it will be a success also as an investment. So, the experience was that in the companies that had ended up doing well, even though at the time of investment they felt that it was expensive to get in, they never regretted the price afterwards when the company first did well."*

R1 expresses something in a similar fashion explaining that due to the payoff of the successes the price is not their biggest worry:

> *"Because we take into account that if this goes well, the growth will be 99% of the company in a couple of years. So, to start calculating present value, or present value well, but we do not see much value in starting to look at a DCF today. We rather think that if this continues to go very very fast then it will be worth so much that then the pricing you pay today is not something to worry about at all."*

> *"We basically think that the investment we make must be worth enough to be able to return the entire principal (all the capital in the "fund") alone. This means that the amount must not be too low, the valuation not too high, and that not all companies are right for such an investment model."*

Also, R4 expresses a lack of price sensitivity for early-stage businesses if he believes in the people and product. He explains that he invested in a company pre revenue that he wanted to get at a 200 million valuation but ended up investing at a 500 million valuation:

> *"Yes, I thought I would get 200 million, but it cost 500 million. That's how it is."*

## 4.7 Summary of results:

| | DCF: | Sensitivity to low-risk free rates: | P/S: | Qualitative benchmarking: | Five times the raise: | Valuing human capital: | Paying up for winners: |
|---|---|---|---|---|---|---|---|
| R1 | No. | No. | Yes. | Yes. | Yes. | Yes. | Yes. |
| R2 | No. | N/A. | Yes. | Yes. | Yes. | Yes. | Yes. |
| R3 | No. | No. | Yes. | Yes. | Yes. | Yes. | Yes. |
| R4 | No. | No. | Yes. | N/A. | No. | Yes. | Yes. |
| R5 | No. | No. | No. | N/A. | Yes. | Yes. | Yes. |

*Figure 11: Summarization of results.*

After presenting the results in a categorical manner with both direct quotations and through my own words in the recent chapters I have summarized my findings in figure 11.

In regard to the relevant businesses in this thesis figure 11 illustrates:

- 0/5 respondents using the DCF.
- 0/4 respondents are sensitive in relations to movements in interest rates.
- 4/5 uses P/S.

- 3/3 use qualitative benchmarking.
- 4/5 uses/have used the five times the raise methods.
- 5/5 say that human capital is an important driver of value.
- 5/5 is willing to pay up if they strongly believe the business is going to become successful.

# 5.0 Discussion and analysis:

In this part of the thesis, I will discuss and analyze the results from my interviews in the context of my problem statement and the theme being explored. I will assess the approach of the practitioners against the theory and previous knowledge outlined in the theory chapter.

Furthermore, I will describe the findings of the DCF, relative valuation, five times the raise, human capital, and paying up for the winners. The DCF is placed at the end due to no use of the tool but is included because of focus on the inputs. Real optionality did not have clear enough findings that makes it worth being included in this part.

## 5.1 Valuing human capital:

The value of human capital is a key driver of value in any valuation method relevant for this thesis. This is clearly the most important driver according to the respondents and probably also the hardest to quantify. This is in line with findings from Gompers et.al. (2021), Mcgowan (2018) and Thiel (2014) highlighting the human capital as the most important driver for business value. There is no easy answer to how to value human capital and there is not one answer that will fit any scenario as described by the respondents. This is also in line with Levie & Gimmon (2008).

It is clear from the respondents that lack of human capital is a clear deal breaker and extraordinary human capital significantly increases valuations of their businesses. However, no answer about how to quantify a value of this capital. Moreover, not everything that counts can be counted and not everything that can be counted counts.

Despite that it is clear how to value the human capital in a qualitative way the respondents weights experience, technical competence, and reputation. However, as expressed by respondents there are no single answer here with a lot of successful exceptions to the rule.

It is clear also that their professional networks and accumulated experience and learning is a big part of how they are able to value human capital.

## 5.2 Relative valuation:

It was quite clear from the interviews that the respondents all used multiples to some degree. The high use of multiples is in line with SaaS capital (2019) especially as the respondents have a high portion of software as their investments that fits this thesis. Naturally, also the VCs express higher focus on sales multiples than the more all-round investors.

There were many references to comparable pricing based on less easily quantifiable measures of the businesses as the founding team, TAM, and business models, but also on the more traditional sales multiple.

Firstly, for pre revenue businesses pricing is an approach where accumulated experience and/or technological knowledge are the drivers of valuation based on the founding teams, markets, products, and business models. The other as businesses start to generate revenue, they get priced on a sales multiple adjusted for the current growth rate of the business.

The focus on relative valuation is a result of the difficulty of properly valuing these businesses which is the core problem of this thesis.

However, this is not a result of the lack of ability to value the businesses in the theoretical correct way, nor is it because they believe that the valuation tools are wrong. Correctly valuing these businesses is considered not as productive due to the high uncertainty and changing environment. Therefore, merely pricing it becomes adequate in the earlier stages.

In addition, the market sentiment will have a significant effect on pricing or valuation using this approach based on the interviews, theory, and intuitive logic (Damodaran, 2000). This is both a strength and weakness for the method. The strength is that it makes it easy to price businesses appropriate in today's market. This is useful to easily find a price in capital raise or exits through IPO or outright sales of the business. The weakness is that price can diverge significantly away from the underlying value in periods.

## 5.3 Five times the raise:

As mentioned earlier, the methods of five times the raise have been the most surprising method and intuitively the theoretical most questionable. The method is mainly in

connection with early-stage capital raises and based on my respondents answers often for pre revenue businesses. The outlier here is R4s investment pre revenue at 25x the raise.

Also, from the practitioners this is described as a method that's unfortunately used to often. I do not consider it earthshattering to propose that the method seems unworthy. However, the use of the method is not surprising as it is often used in the venture space also internationally (McGowan, 2018).

However, it might not be as unworthy as it seems at first glance, at least as a pricing tool. The interviewees do describe the methods as a comparable exercise where the amount raised gets compared to similar raises. Therefore, it could be suggested that the methods are relative valuation, but without an accounting number to do a multiple because there is none.

In addition, the method could be considered a way to acknowledge and deal with the great uncertainty of investments in the life stage of start-ups.

The method to some degree outsources the pricing to the market, this is underlined by respondent's statements of not thinking too hard about whether the valuation should be 40,50 or 60 million and the investments in a 500 million valuation even though the investors wanted to get it at 200 million. However, they do obviously not go with any valuation when they believe the market is pricing a collection of business way to high or the business is too unproven.

## 5.4 Paying up for winners:

An interesting perspective that that has become quite clear throughout this thesis is that the price for especially the VCs but also the investors is not the most important part for their investment's decisions. However, it is still obviously important, and they will not pay any price no matter how much they believe in a business. They will however stretch from their own price estimates if they see a probable successful business.

There are two interesting points to make about price being secondary. The first is highlighted by one of the respondents quoting another VC saying that they have never regretted an investment that became a success due to price.

This clearly underlines the profile of start-ups, but also young growth business. The power law is so significant that the investments will prove successful if the business succeeds even

if it seems expensive at the moment of investment. After all ideas are cheap, and especially for the VCs it is the few founding teams that actually manage to execute on their business plan that matters.

The second interesting point is that even if a price needs to be extremely high to make a successful business an unsuccessful investment the same is not true for a portfolio of start-ups or young growth companies.

To go back to Thiels law that every investment needs to be big enough to return the entire value of the fund on its own (Thiel, 2014). If an VC or investor constantly overpays or diversifies to much the successful business must prove out to be incredibly successful to make the fund or investor successful. In addition, this puts clear limitations to which kind of businesses are relevant for venture funds.

## 5.5 The DCF

The DCF or methods like it was argued strongly for in my theory chapter got strong both by Damodaran (2000) and Koller (2020). However, research suggested that this was not the methods of the respondents for these types of investments. This became apparent during the interview and the methods was under attack from the first sentence in the first interview.

Whereas both Koller (2020) and Damodaran (2000) suggests dealing with this difficulty through scenarios analysis with probability weighting it is very clear that the practitioners see this as unproductive. However, while not using the DCF per se for these types of businesses they do think a lot about the same inputs as the value drivers in the DCF.

The TAM, growth rates, margins and scalability are important drivers of value in the DCF, but the approach of the interviewees seems far more qualitative than theory suggest. The qualitative approach makes sense due to the answers to these questions being hard to quantify.

The most discussed theme during the interviews which we kept coming back too, was the market opportunity. A big market opportunity was clearly the biggest factor together with the founder team.

When it comes to sizing up the TAM approaches by the VCs it is under clear influence of the power law for VCs where the gains for their funds will come from a few investments. Therefore, the focus is on the opportunity being big enough to create businesses worth billions. Also, the investors focus on the opportunity being large enough even though their portfolios do not necessarily share the same characteristics.

As it gets pointed out in one interview it is not easy to calculate the TAM. This is as expected from the theory chapter, and it is stated that over analyzing the market is unproductive. The most important part is knowing the market is large enough and growing, not figuring out exactly how big it is. It seems it is a point to try to be approximately right rather than exactly wrong on this issue.

Another important part of the evaluation of investment cases that there was clear consensus on was the importance of scalable business models. As with the TAM this comes back to the payoff profile for these types of investments. Considered the failure rates the businesses must be able to grow their marginal income as they get bigger and more mature. A business with a big TAM and the possibility to scale into great margins is obviously in a great position to satisfy Thiel's Rule number 1.

For the sensitivity to low interest rates, it was clear that low interest rate had not impacted the all-round investors investments process or approach for these types of businesses. In addition, the same could be said for the VCs.

However, the resilience of VCs against falling interest rates strengthens VC competitiveness for capital as most other asset classes like stocks and bonds lowers their expected return due to falling interest rates. The resilience is underlined by one of the VCs in my research explaining that they tried lowering their hurdle rates due to lower interest rates but was unsuccessful in doing so.

The theme of capitalizing expenses has been one of the most eye opening for me throughout this thesis. The reason being the obvious differences in treatment for investments depending on the tangibility of the asset.

On this theme, I got useful comments that could be tied to the critic against todays accounting standards by Damodaran (2009) were investments gets miscategorized as expenses due to miscalculation of the lifetime value of the customer or other mistreatments.

This aligns with Greenblatt (2021) and Damodaran's (2009) critique. The practice of expensing the customers acquisition cost implicit says that customer churn is going to be high, and the company has to expense the same amount next year to achieve the same revenue.

## 6.0 Conclusion:

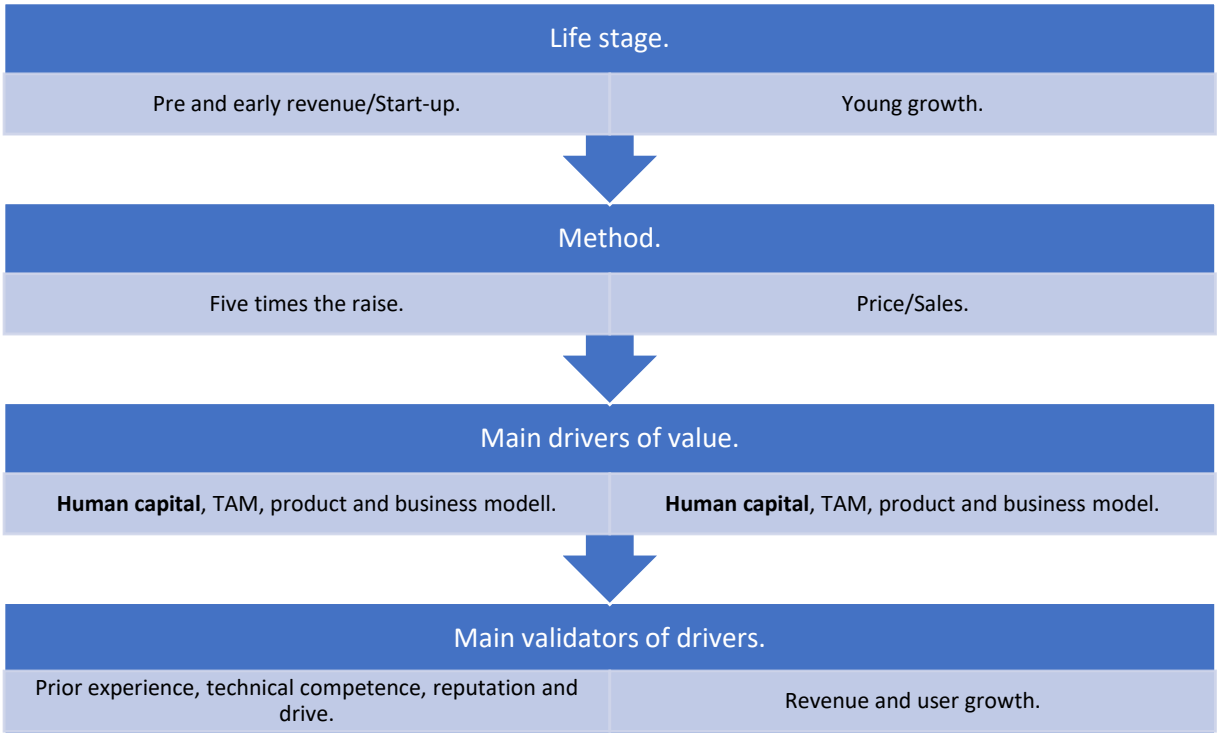


*Figure 12: Conclusion.*

A summary of the findings of this thesis is illustrate in figure 12. However, this is a simplification and needs to be seen in relation to the entire paper. The valuation methods that are most commonly used are the five times the raise in the earliest stage, and the use of P/S when the business has started to generate sales, both by active market participants from McGowan (2018) and SaaS capital (2019) and by my respondents. This dismisses the method of Damodaran (2000) and Koller (2020) who prefers the DCF. Although no respondent nor the author questions the DCF as a tool. Importantly they do not say the DCF is something they do not use, but rather something they do not use for these types of businesses. In addition, the real optionality by Mauboussin (1999) or similar methods get no mention during any interview.

The main driver of value in these stages is clearly human capital both expressed by respondents, Thiel (2014), McGowan (2018) and Gompers et.al. (2021). The factor is significantly less considered as a key driver by Damodaran (2000) and Koller (2020) at least explicitly. TAM is also a critical driver but is not something that is given the same sharp focus as described both by respondents and the literature, and somewhat the same could be said for business model. Although, it is critical with a big enough TAM and a scalable business model for the valuation at these stages.

At last, I illustrate the validators of the drivers of value. Pre revenue this naturally comes down to ways to validate the human capital or the technology/product. When the business starts to generate revenue the way to validate the human capital comes down to growth in revenue and users, were the first is the most important as a measurement of the management ability to execute.

The assessment of the drivers through its validators is, according to previous research and this thesis, what will determine the multiple of sales for the business or the amount possible to raise if applying the five times the raise approach.

## 6.1 Reflections and further work:

In this thesis I have focused on methods for valuation, the drivers of value and the validators of the drivers for young growth businesses and start-ups. I believe that through the thesis I have gained significant insight into the methods of Norwegian venture funds valuation process and the methods used in most early-stage capital raises. Moreover, I've had the opportunity to compare their responses not only to theory, but also against more general investors who also invest in the relevant types of businesses.

Furthermore, the thesis does not focus on the outcomes from these methods. However, the outcomes are evident from the results of the funds and investors. Although only R2 could be considered to have a long enough track record with sufficient investments reaching exit in the relevant field to do such assessments.

The thesis is focused on a few respondents where the goal has been to get a strong understanding of their processes. Another research like Gompers et.al. (2021) with a similar purpose and similar results have taken an alternative approach, where they sent out surveys to 900 venture capitalists and doing several follow up interviews. Obviously that quantity of

pure venture respondents would require other Nordic or European respondents given that it is about 15 Norwegian venture firms according to R2, whereas the Norwegian venture association has 12 members (Norwegian venture capital and private equity association, 2021).

Finally, due to results that do not deviate substantially from the venture literature highlighted in this thesis and about ¼ of Norwegian venture funds present. Therefore, I suggest that further interviews in the venture world would not add significant additional insight (Pareto law etc.). However, interviews with other types of funds and investors with involvement in the relevant types of businesses could add to a holistic view of methods being used by practitioners in the space.

# Appendix:

## Appendix 1:

Interview guide.

# Interview guide

Based on the table 23.5 in Qualitative research: The essential guide to research by Savin-Baden & Major, 2013.

**Topic:**

How does practitioners of investing or valuation value high growth companies in new industries.

Time:

Date:

Interviewee:

**Interview procedure:**

During this interview you will be asked to answer several open-ended questions. You may choose to not answer any or all of the questions. The interview will be taped, and the tape will be transcribed. Your results will be confidential, and you will not be identified.

**Questions:**

1. Gender?
2. Age?
3. Education?
4. Describe your role at your firm? (Excluding this one when/if interviewing independent investors)
5. Have you valued any new and fast-growing businesses recently?
6. If yes, how did you value that company? Techniques, assumptions and so on.
7. Would you have chosen a different approach for a different type of fast growth business?
8. I understand that you have stock xxx in your portfolio, how did your investment decision look like for stock xxx and how did it look when exiting the stock?
9. How did you account for uncertainty in your valuation? Discount rate, probabilities, etc.
10. How did the investment idea reach your attention?
11. Regarding accounting policies do you adjust any accounting numbers when valuing these types of businesses? (Capitalizing expenses).
12. If yes, why?
13. 2020 was a record-breaking year for capital raises on the Norwegian stock exchange did you try to value any of the new business taken public or any of those raising capital in 2020?
14. If yes, how did you value that company/companies?
15. When/if applying relative valuation, how do you choose appropriate peers?
16. When/if applying relative valuation, do you use any non-conventional multiples? P/users, P/deposits, etc.
17. We have historically low interest rates now; do you use todays risk free rate when calculation your cost of capital?
18. How many years do you usually forecast before you move on to the terminal value?

19. How do you calculate the terminal value?
20. Which weaknesses/strengths do you see using a DCF as a valuation tool for these types of business?
21. Which weaknesses/strengths do you see using relative valuation as a valuation tool for these types of business?
22. Which weaknesses/strengths do you see using option pricing as a valuation tool for these types of business?

**Closing:**

Thank you for participating in this interview, and for taking the time to do this. Once again, I want to assure you of the confidentiality of your responses. If you have any questions, feel free to contact me.

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