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Valuation of Small Private Firms

A review of the most common theoretical frameworks for valuing firms, applied on a small private Swedish business.

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Abstract

This thesis aims to provide the reader with an overview of the current issues and practices of valuing small private firms. Focusing on methods such as; Asset-, Income-, Multiple- and Real option-based approach. Thenceforth, applying said practices on an earlier cross-national acquisition of a small private Swedish firm. Utilizing the different viable models and dismissing those not feasible. Estimates of fair value at the time of purchase are made and compared to the actual transaction price, to show the variation in results of the different models. The literature supporting this thesis consists primarily of circa 35 different published books and peer-reviewed articles on the subject. The results from this paper highlight the biggest issue observed in the valuation process, the subjectivity. Regardless of the valuation method used, the possible missteps are prevalent, and the components are highly subjective. Additionally, the important issue of information deficiency to small private firms is further mentioned. Finally, emphasizing the significance of small businesses to the Swedish economy, and how this importance, in the views of the authors' is not reflected in the literature on firm valuation at universities.

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1. INTRODUCTION

This thesis begins with an overview of the most prevalent methods and models when valuing small private firms. Thereafter, comparing the different methods and discuss which one could be more suitable for estimating the fair value of small private Swedish firms.

To illustrate the different valuation methods, a case study over a small private Swedish firm will act as a practical example. It will cover the authors' attempt to value a small private Swedish company with an approximate turnover of 15 million SEK. The Swedish company was acquired by an international firm in early 2015.

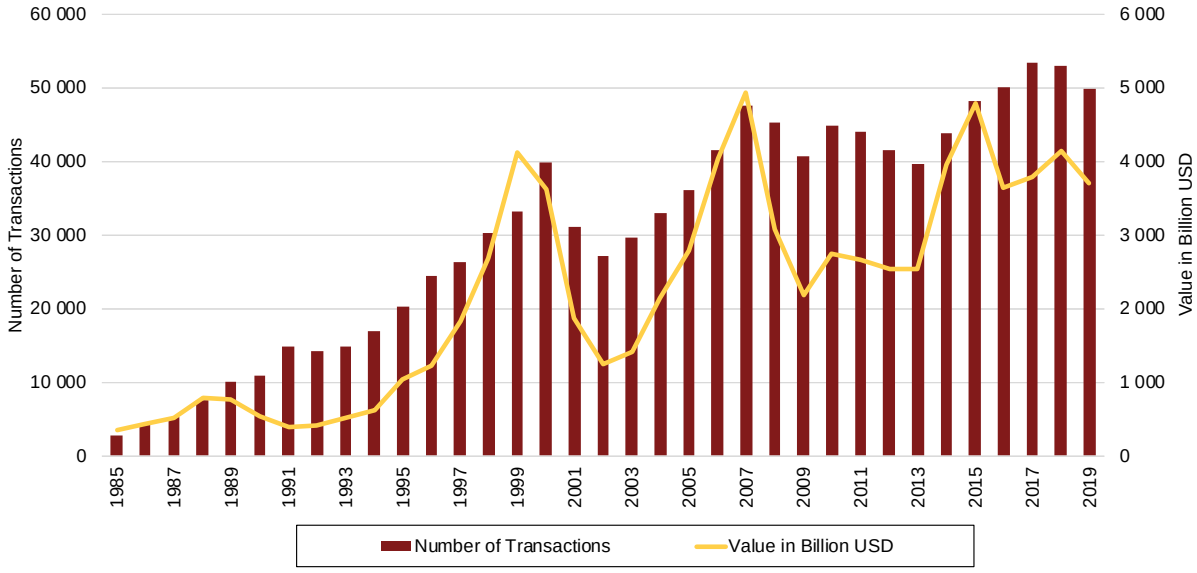
Given that the valuation of the firm in the case study is based on an actual transaction, the result from the valuation will serve as a satisfactory example of the difficulties when applying the theoretical frameworks on a real-life example. The firm is valued from the perspective of a potential buyer. Where the results are compared to the actual purchasing price evaluating if there is any deviation from the estimated value of the firm and the actual price paid.

1.1 Background and Problem

Business valuation is necessary in a diverse set of situations. To name a few; if a firm is to be listed on a regulated exchange, a fair estimate is needed to set an initial offering price. Credit-rating agencies must be able to set a basis for the risk of the firm, in effect to set a reasonable rate of which the firm can borrow. If a firm needs access to additional capital, claim holders need to establish a fair estimate of the firm. Or if a firm's shareholder passes away, a fair value needs to be estimated when distributing the asset among the potential inheritors. However, the primary reason might be in mergers and acquisitions (M&A) setting.

In the last decade, there has been more M&A activity than ever before, both in terms of monetary value as well in numbers of transactions (M&A Statistics - Worldwide, Regions, Industries & Countries, 2020). Reports from Ernst & Young, PwC, and J.P. Morgan among others indicate no major slowdown in numbers of M&A activity in the future, even if 2019 and 2020 will hold uncertainty and less volume than the peak of 2017 and 2018.

Figure 1. Mergers & Acquisitions Worldwide



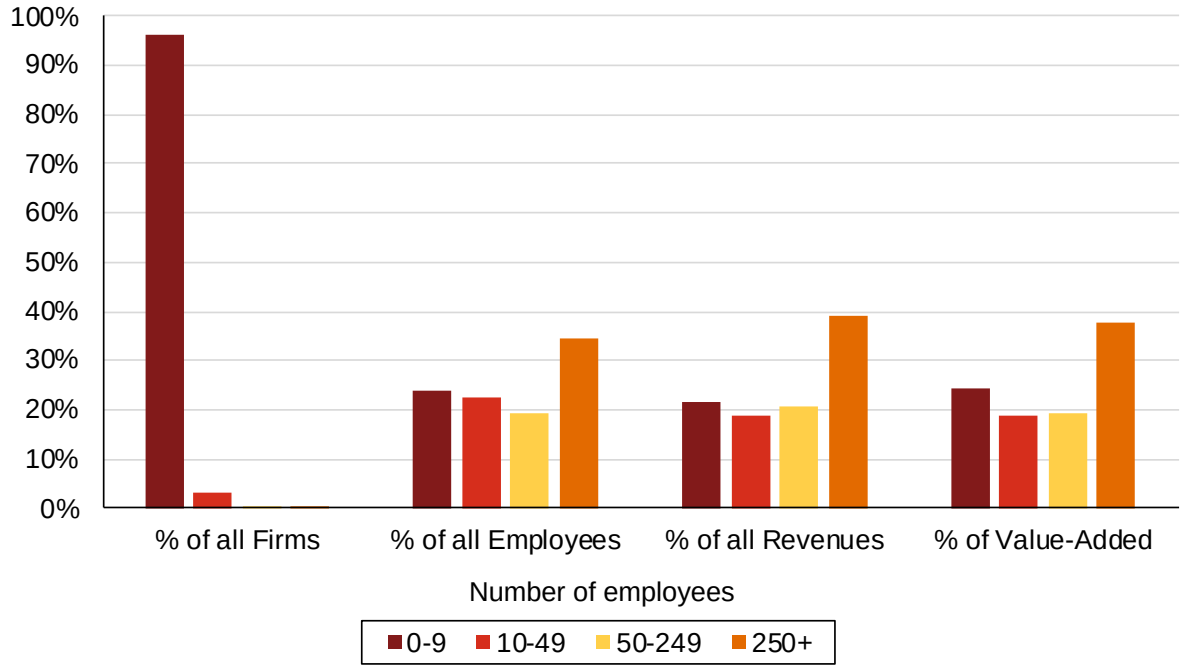
Source: IMAA analysis; IMAA-institute.org

No matter the uncertainty in the market, whether there is a recession- or boom cycle, there will still be lots of activities of buying and selling companies. Consequently, plenty of company valuations must be and will be made regardless of the market environment.

The Swedish agency for economic and regional growth reports that there are about 1.2 million companies in Sweden. Of which, small- and medium-size business (classified as between 0-249 employees) constitutes 99.9 %, and about 96% employs less than 10 people. If one were to look at revenues, value-added, and number of employees, small- and medium-sized businesses still comprise a large part of the Swedish economy. Small businesses (0 – 49 employees)

represent about 40% of all revenues of private Swedish firms, 40% of the value-added, and employ about 45% of all employed in the Swedish private sector. Whilst medium-sized businesses (50 – 249 employees) represent about 20% of revenues, value-added and number of employees in the private sector. It is noteworthy that despite large enterprises representing only 0.1% of all companies in Sweden, they employ about one-third of the workforce in the Swedish private sector and represent about 40% of total revenues and value-added. (Tillväxtverket, 2020).

Figure 2. The Distribution of Firms by Different Size Classes



Source: Tillvaxtverket.se

The relevance of small- and medium-sized businesses to the Swedish economy cannot be understated, but their relevance is not, in the views of the authors, reflected in academia. What is mostly taught in Swedish universities on a bachelor level regarding company valuation does often only involve large public firms. Rarely are small companies discussed or investigated. Small private firms could be regarded as more difficult to value than more established enterprises. There is a great deal of uncertainty that is associated with smaller private firms. Such as inappreciable access to information, unstable- or unreliable cash-flows, brief- or negligible track-record, weak- or no competitive advantages, illiquidity of the asset, heavily depending on a few individuals, uncertain forecasts, or some combination of the above. Perhaps the biggest challenge holds to the subjective judgment that comes in to place under all these uncertainties. This raises the question of how these small businesses should be fairly valued and by which method. There is simply no subject in the course curriculum on a bachelor level that brings up how to value a small private firm. The reasons for this might be the lack of- and difficulties in, accessing data from small firms. Whereas, for large public firms, there is plenty

of data and market values available. The authors themselves have experienced this specific situation during their education.

With an interest in valuation and with not enough education on the subject from their university curriculum, the authors found a gap to fill. To add nuance to the knowledge-gap on the valuation of small private firms and help to introduce future students and professionals to the subject. Given its big potential, the authors hope to spur interest for further research. Both within the actual valuation of smaller firms but also the surrounding areas, such as risks, and problems associated with them.

1.2 Purpose and Research Question

There is an abundance of education material and publications that have been made over the years on valuation methods and models. However, several issues arise when these methods and models are applied to small private firms in practice. The authors' own university experiences on this subject has been brief. Whereas the purpose of this study is to provide the reader with an overview of the theories and practices used to value a small private Swedish company from the perspective of a potential buyer. Thus, finalizing the research question, it was concretized into:

What are the most common valuation methods available and what are the main issues that arise when applying these methods on a small private Swedish business?

2. METHOD AND MATERIALS

The basis of methodology is gathered from the book *Forskningsmetodikens grunder* by Runa Patel and Bo Davidson (2011). Initially, the purpose and research question for this case have been discussed and identified. This is necessary to decide an appropriate methodology process, which data is required, and analysis of the data (Patel and Davidson, 2011).

The theoretical models were applied to value the chosen firm, in the form of a case study. Furthermore, the issues encountered during the application process of the case study along with similar issues found in the theoretical references were discussed and analyzed. To found which methods might be most applicable compared to others. The results from the theoretical models used have been analyzed and compared with the actual final transaction price of the acquired firm. To strengthen the authors' selection and applications of said models.

2.1 Collection of Data

To answer and further investigate the research questions on hand, the preferred approach has chosen to be a collection of qualitative secondary data, in combination with a case study. Preferably of a company that has been valued and sold in the past, because there is a good amount of data and material to use in such a case. Whereas, the results of the valuation methods will be able to be compared to the results of a real transaction. Having an actual example should, therefore, contribute to a higher validity. According to Denscombe (2000), a case study will be appropriate and useful as a research strategy when profoundly examining the process of firm valuations. Patel and Davidson (2011) confirm the choice of using a case study by agreeing with Denscombe (2000) that they are often beneficial when studying processes, as is intended in this thesis. Therefore, an appropriate company has been selected and will be used in the case study for this thesis. This will not only contribute to a higher validity; it will also help to illustrate the models and methods provided in the theoretical excerpt on a real-life example.

The firm used in the case study was chosen through convenience sampling. Since firstly, one of the authors has had previous contact with the firm, and therefore they were allowed access to the insider information needed to perform the valuation. And secondly, it fit the thesis purpose and criteria as a small and private firm. Proceeding, financial information such as balance sheets, income statements, agreements, salaries, investments, forecasts, and the SPA (Share Purchase Agreement) from the previous transaction were gathered. This allowed the authors to answer the research question and perform a more accurate and comprehensive valuation in the case study. To collect the required information, a questionnaire with a list of appropriate open-ended questions and standardized requests was sent out to the company and later received in full, see Appendix; 9.1 Questionnaire for the complete list. By studying previous research on valuation models and methods, the authors' questionnaire is based on these earlier observations and learnings, Patel and Davidson (2011) highlights the importance

of acquiring prerequisites on the topic when performing a form of an interview. Adding to this is also what the authors themselves considered to be necessary questions to complete a reliable valuation. For example; to perform an income-based valuation method it is required to have an estimate of the future cash-flows of a company. Questions regarding market-related rent, pensions, salaries, non-recurring costs, etc. are necessary in order to adjust figures to "normalized" values. "Normalized values" will be brought up later in this thesis. Hence, questions on these topics are vital to include in the questionnaire. Additionally, crucial requests for specific documents such as balance sheets, income statements, SPA, etc. were also included in the list of questions. An important note is the questions regarding the legal structure, clients and suppliers. These questions are to provide the authors with an estimate of the risks related to the specific company. Described in further detail later in the build-up model.

By respect and in disclosure purposes, the specific firm will not be named. Details that can reveal the identity will be used sparingly in this paper as a precautionary measure. The decision to keep details about the firm confidential was a decision made in unison with a representative of the firm. The decision may have an impact on the thesis's validity and reliability. Seeing as it might impact the applicability of the thesis results on other firms, i.e. the generalizability, in a negative manner. This, however, was a necessity to be granted access to the needed data and material. Further on, when referring to the company in the case study, it will be given the name ABC. This to facilitate understanding and ease of referencing in this thesis.

The collection of secondary data is primarily in the form of peer-reviewed scientific articles and educational textbooks. Information on well-established relevant theoretical concepts and frameworks have mainly been gathered from *Corporate Finance* by Berk and DeMarzo (2016), *Investment Valuation* by Aswath Damodaran (2012) as well as *Företagsvärdering* issued by Öhrlings PricewaterhouseCoopers (2007). Gupea and De Gruyter databases were used to search for appropriate literature. In addition, the internet search engine Google Scholar was used to search for supplementary information within the valuation process of small private firms. The most used search word was the cost of capital, small business valuation, private firms, M&A, beta, and CAPM.

2.2 Limitations

To embark on such a broad topic would seem rather overwhelming considering the authors' current level of expertise and prevailing constraints in the form of time restrictions etc. The aim is rather to add but a little nuance to the current body of research within this area. Considering these shortcomings, a brief discussion on the thesis limitations is therefore appropriate. A more thorough discussion regarding the study's inadequacies and imperfections is addressed under the potential insufficiencies- and shortcomings section.

The case study has been limited to one single firm. With the obvious shortcoming that it would be a less representative picture. However, the number of companies needed to extract some form of a representative picture would take resources and expertise far beyond the scope of these types of theses. As is to why this study is limited to only one firm, and should thus not be regarded as representative, but rather, an example of how one might approach the valuation of businesses of these sorts. On the same note, considering the authors' access to insider information that would otherwise be rather difficult, if not impossible, to gather due to various reasons. Such as some businesses' unwillingness to share information regarding their business transactions. Thus concluding, it is better to limit the study to only one particular firm, where full insight was allowed. To make this thesis feasible it has been limited to discuss valuation methods the authors believe to be the most common and well-recognized when valuing a small private business.

2.3 Potential insufficiencies- and shortcomings

Patel and Davidson (2011) mention that to demonstrate and declare awareness of potential insufficiencies and shortcomings in one's research will be in favor of asserting a high level of validity. This section will list what the authors assume to be the principal deficiencies of this thesis.

Since the outcome and the transaction value from the acquired company used in the case study in known beforehand. There will be a fair degree of hindsight bias from the authors. Something that would be difficult to overcome in this particular context regarding the case study. This also comes in effect as to the reliability of the thesis. The case study is based on information not available to the public and hence the replicability of the study is affected negatively. To counter this issue, the thesis tries to include as much relevant information as possible with consideration to confidentiality restrictions.

Patel and Davidson (2011) address some risks associated with the collection of data. Mainly they notice the risk of misalignment in the material through the inadequate selection and emphasizing of information. Which by interpretations can give an incorrect picture of the validity of the result.

In several sections and places within this thesis, the problem with subjective judgment and an individual’s assessment occurs. The authors will have to make decisions and come up with values they believe to be appropriate and fair. Examples of such judgments could be in the development of the build-up model for the cost of capital, or the accounting adjustments made in the asset-based approach. Although the authors’ approaches are based on proven methods and trustworthy experts are referred to, the valuations are still based on the authors' current acumen and comprehension of business valuations. Furthermore, their subjective perception of what is relevant and what is not, is existent throughout the thesis, as would be expected in theses

of these sorts. The authors try to combat this issue by emphasizing it throughout the paper, as to make the reader fully aware. The authors have also tried to mention other resources that have been excluded, and suggestions for further reading, in the hope of making the thesis more generalizable and show a higher level of validity.

3. THEORY

This section highlights the theories the authors believe to be most common and appropriate to use when valuing a small private firm. When it comes to valuation, the problem is not that it is too few tools or methods but rather that it is to many. Thus, it becomes a problem of which model to use and when to derive a reasonable value of an asset (Damodaran, 2012)

Several authors, such as Öhrlings PricewaterhouseCoopers (2007), Damodaran (2012), Nilsson, Isaksson and Martikainen (2002), and Pinto, Henry, Robinson, Stowe, Wilcox, and Miller (2015) categorizes the different models very similar. However, the option price approach does not appear as frequently as a method when valuing private firms. Nevertheless, in this thesis and theory section, the categories will from here on be named as follows: (1) Asset-based approach. With models such as liquidation value, where one value the business based on what it would be worth if all the assets were to be sold at the time of valuation, and secondly, the replacement value. Where one values the business after what it would cost to replicate or replace the business (2) Income-based approach, with models such as the discounted cash flow valuation method. That discounts the future cash flows from the asset to estimate the value of the firm. (3) Multiple-based approach, where comparable business prices are the basis for valuation. For example, a multiple of the earnings. Lastly (4) Option-based approach, where the value is derived from uncertain future events. However, the option price approach does not appear as frequently as a method when valuing private firms and will not be attempted in this thesis.

3.1 Adjustments

Before diving into the different models for valuing a private business, some common issues have to be directed, more specific the issue regarding "normalized" earnings. Pinto et al. (2015) state that in a potential acquisition, earnings should be adjusted to be "normalized" to a baseline that is relevant when forecasting future results. Therefore, significant adjustments might have to be made (Pinto et al., 2015). Hence the next section will explain and give examples of typical adjustments of these sorts.

A small private company is often controlled by a sole single owner, one who is active and often runs the company. He or she is in control of the board and the potential dividend payout. Therefore, the owner might act in their own interest and the bottom-line earnings might not be "normalized" as if an independent outsider were to own and run the company. For example, abnormal compensations will reduce the corporate taxable income of a company. If an owner instead of paying out dividends overcompensate him- or herself, he or she will reduce the taxes that should have been paid on the higher earnings that would have occurred. There are various other areas where consideration for plausible adjustments have to be made to establish "normalized" earnings. For example, tax purposes, personal expenses, real estate compensation

to the owner, employees, or family members. Important to note still, these adjustments can affect the companies earnings both negative and positive. (Pinto et al., 2015).

3.2 Asset-based approach:

The asset-based approach has its foundation and starting point from the balance sheet. Whereas the company is valued from the structure of its assets and liabilities, in other words, its net asset value (Nilsson et al., 2002). Furthermore, the value of a company will be the market price of its assets, minus the market price of its liabilities Pinto et al. (2015). Therefore, the value of individual assets and liabilities has to be adjusted, since the book value might be different from the market value Öhrlings PricewaterhouseCoopers (2007).

Damodaran (2012) states that there are at least two ways in which one can value firms using an asset-based valuation. Firstly, the liquidation value, where one estimates what the firm would be worth based on one's assessment of what the market would be willing to pay if the assets would be liquidated today, net of transaction costs and legal costs. He continues by saying that it may be difficult to assess liquidation value when assets cannot be separated and thus cannot be valued individually. Additionally, he mentions that as the urgency of the liquidation increases, the probability that the assets will sell for fair market value decreases. If there is a rush to sell the assets, the seller may have to accept a discount to fair value if the seller cannot wait for an offer of fair value. Secondly, states that an asset-based valuation can also be done based on replacement cost, where one estimate the value based on what it would cost to replicate or replace the assets that the firm currently has. (Damodaran, 2012).

3.3 Income-based approach

This method aims to determine the value of a company by forecasting future returns and discount those to a present value, using a fair discount rate (Öhrlings PricewaterhouseCoopers, 2007). There are several different discounting models within the Income-based approach used to determine the value of public and private firms. According to Nilsson et al. (2002), the three most common discounting models are based on dividends, cash flows, and residual earnings. There is also an easier and less demanding model based on perpetuity, were the average net income, and the expected growth rate is used and discounted with the cost of capital i.e. the discount rate (Öhrlings PricewaterhouseCoopers, 2007). However, the authors try to highlight and discuss the most commonly used valuation models when determining the value of a private firm. Thus, leading to other models more frequently used on public firms being excluded, even though possible uses on private firms may exist. Examples of such models are for the reader, if interested, the Residual Income Model, see Ohlson (1995) and the Adjusted Present Value model introduced by Stewart C. Myers (1974).

3.3.1 Discounted Cash-Flow, DCF formula

The model discounts a firm's cash-flows back to present value. When valuing a business, usually it is the firm's unlevered free cash-flow i.e. the free cash-flow to the firm that is being discounted. There are several reasons future cash-flows are discounted to present value. Most aptly summarized as opportunity costs and risks, in accordance with the theory of time value of money. The theory states that money today is worth more than money tomorrow because money today can be invested and earn interest. (Corporate Finance institute, n.d. c).

3.3.1.1 Present Value, PV formula:

Berk and DeMarzo (2016) provide the general formula for the present value of a cash flow stream can be regarded as an annuity and be written as:

Equation 1

$$PV = C_0 + \frac{C_1}{(1+r)} + \frac{C_2}{(1+r)^2} + \cdots + \frac{C_T}{(1+r)^T}$$

Where PV = Present Value, r is equal to the discount rate used, T is equal to the last time period, and C is equal to cash-flows in the relevant period.

The formula can also be written as a summation according to the following:

Equation 2

$$PV = \sum_{t=0}^{T} PV(t) = \sum_{t=0}^{T} \frac{C_t}{(1+r)^t}$$

Where t is equal to the time period.

Berk and DeMarzo (2016) continue by saying that some cash-flows are constant however and can thus be viewed as continuing indefinitely. These types of cash-flows are often labeled as perpetuities. The general formula is shown above still holds for perpetuities, except that the exponent variable T= ∞. When these infinite number of cash-flows are to be discounted back to the present day, mathematically derived, this formula can be written as:

Equation 3

$$PV(C\ in\ perpetuity) = \frac{C}{r}$$

There are several models available when calculating the present value of a firm. It is common if the firm is expected to enter different levels of growth, to model these different periods by using a n:th stage model. So, if the firm is expected to have two stages of growth, one would model a growth stage followed by a terminal stage. If the firm is expected to have three stages of growth, one would model two different growth stages followed by a terminal stage, and so on. (Damodaran, 2012). See the formula below.

Equation 4

$$PV = \sum_{t=0}^{T} \frac{C_t}{(1+r)^t} + \left[\frac{C_{T+1}}{(r-g)} * \frac{1}{(1+r)^T}\right]$$

Where g is the expected growth rate in percent.

The first part of the formula is the growth stage, and the second part of the formula is the terminal stage, also called the sustained growth period. Öhrlings PricewaterhouseCoopers (2007).

3.3.1.2 Free Cash Flow, FCF:

The Free Cash-Flow is the cash generated by the business after investments in the non-current assets have been made. Meaning the cash that is left after the business has reinvested in assets such as property, plant, and equipment. In other words, it is the amount of cash available for discretionary use by the firm (Corporate Finance institute, n.d. a,b)

3.3.1.2.1 Free Cash Flow to Equity, FCFE:

Damodaran (2012) introduces the concept of free cash flow to equity by saying that the model is a more expansive term than merely treating dividends as the discretionary cash left over for shareholders. Dividends are the cash that is paid out to shareholders and are the basis for the dividend discount model, DDM. But all firms do not pay out *all* cash that is left for discretionary use but instead retain some various percentages that could have been paid out to shareholders. In the same chapter, Damodaran (2012) continues by defining FCFE as the cash that is left after meeting all of its financial obligations, including debt payments, but also after including expenses of meeting capital expenditures and working capital needs. The formula is as follows:

Equation 5

$$\begin{aligned} FCFE = {} & Net\ Income - (Capital\ Expenditures - Depreciation) \\ & - (Changes\ in\ noncash\ working\ capital) \\ & + (New\ debt\ issued - Debt\ repayments) \end{aligned}$$

A noteworthy mention that differentiates free cash flow to equity from dividends, which is that FCFE can be negative, unlike dividends, which cannot. He goes on by saying that if FCFE is negative, it can be due to the fact that the net income is negative. But adds that it could also be because expenses in the form of net capital expenditures and working capital needs are greater than net income. Meaning that the assets reinvestment needs are greater than the firm's ability to generate free cash flow to equity from its operations. This implies that the firm will need to issue new equity in years when it is negative unless it can draw from existing cash reserves. He notes that this is not unusual if firms experience high growth. (Damodaran (2012).

Free cash flow to equity model can both yield the same result as the dividend discount model, but they can also differ. When they are similar this can be due to that FCFE is equal to dividends, implying that the firm distributes all discretionary cash to its shareholders. It could also mean that the firm invests its excess FCFE in value-neutral projects. These are projects that neither destroyed nor add value and have a net present value equal to zero. When FCFE and dividends differ however, this can be attributed to several reasons. Examples include when a firm retain excess cash that could have been distributed back to shareholders but instead are invested in value reducing projects, with net present values (NPV:s) that are net negative. It could also be that the firm decides to issue debt to pay dividends that are higher than FCFE and thus might become overvalued and increasing the risk of financial distress and default. Paying dividends that are higher than FCFE could also lead to the firm having to little excess cash to invest in value-creating projects that should of otherwise be implemented. (Damodaran, 2012).

3.3.1.2.2 Free Cash Flow to the Firm, FCFF:

Free cash flow to the firm, FCFF is the sum of the cash flows available to all claim holders, including bond-, equity and preferred stockholders. This can be estimated by adding up all cash flows to the claimholders, including free cash flow to equity. (Damodaran, 2012).

Equation 6

$$FCFF = Free\ Cash\ Flow\ to\ Equity + Interest\ Expence * (1 - Tax\ Rate) + Principal\ Repayments - New\ Debt\ Issues + Preferred\ Dividends$$

However, estimating FCFF can also be done without calculating FCFE, which gives the following formula:

Equation 7

$$FCFF = EBIT * (1 - \tau_c) + Depreciation - Capital\ Expenditures - \Delta Net\ Working\ Capital$$

Where EBIT = Earnings Before Interest and Taxes, and τ_c is the corporate tax rate.

Since these cash flows are before debt payments, they are usually referred to as unlevered cash flows. Damodaran (2012) continues by noting that FCFF does not incorporate tax benefits of interest payments, because the after-tax cost of debt in the cost of capital already considers this benefit as would otherwise result in double-counting the benefits.

The differences between Free cash flow to the firm and Free cash flow to equity is primarily about the cash flows associated with debt. This includes interest payments, principal repayments, new debt payments and non-equity claims such as preferred dividends. Damodaran (2012). If a firm does not have any debt, meaning that the firm is all equity-financed, the FCFE and FCFF will state equal values (Educba, n.d).

3.3.2 Cost of Capital:

There are a few theoretically sound approaches when trying to estimate the cost of capital in the valuation, i.e. the discount rate used in discounting models. The two main models used for determining the cost of capital for private firms are (1) the capital asset pricing model (CAPM). With the model being introduced by Jack Treynor (1961,1962), William F. Sharpe (1964), John Lintner (1965) and Jan Mossin (1966). Originally used on public firms but later attempts to adjust the model for private firms, such as with the accounting beta (Beaver, Kettler and Scholes, 1970), fundamental beta (Beaver, Kettler and Scholes, 1970; Rosenberg and Guy, 1976) and bottom-up beta, illustrated in this thesis by Damodaran (2012). (2) The build-up model, which is also the method most widely used by practitioners of private firm valuation (Feldman, 2005) illustrated in this thesis by Öhrlings PricewaterhouseCoopers (2007).

Abudy, Benninga and Shust (2016) notes that in general, the holder of a non-marketable firm, i.e. a firm that is not traded on a regulated exchange, would, *ceteris paribus,* all else equal, demand a higher cost of capital, a specific company premium, before accepting increased risk associated with ownership of non-marketable firms than would an owner of publicly traded firms. further, that this premium is based on the theoretical assumption that the holder is non-diversified, and thus is subject to unsystematic risk.

3.3.2.1 Capital Asset Pricing Model, CAPM:

The capital asset pricing model is the most prevalent model for determining the risk and reward of an asset among financial practitioners (Damodaran, 2012). Berk and DeMarzo (2016) derive the general formula to determine the cost of capital of an investment as the ensuing. It can be said to consist of two parts. The risk-free interest rate plus a risk premium. The risk-free interest rate is usually a long-term government bond. The risk premium, in turn, consists of two parts. A market risk premium multiplied by the beta of the investment. The market risk premium consists of the difference between the expected return of the market as a whole, and the risk-free rate. A beta is the expected percentage change in return in a security, given a one percent

change in the return of the market portfolio, which has a beta of one. Beta is calculated as the covariance between the security and the market portfolio, divided by the variance of the market portfolio. This concludes in the subsequent formula:

Equation 8

$$r_e = rf + \beta * \left(E[R_m] - r_f\right)$$

Where, r_e= Cost of equity, β = Beta and $E[R_m]$ = The expected return of the market

3.3.2.1.1 BETAS

Several issues arise when the expected risk and return shall be calculated for a private firm. One main concern includes calculating the beta of a private firm. As Damodaran (2012) states, when estimating the risk of an investment, assumptions include that the investors are both marginal and are well-diversified. These assumptions do not necessarily hold for a lot of owners of private firms, where they might be neither diversified nor owning marginal interests in the firm. Abudy et al. (2016) states that it is not uncommon for private owners to hold a substantial percentage of their net worth in only one. Furthermore, the beta variable is usually calculated using historical share prices of firms. This poses quite a significant problem in the computation, since private firms are, by definition, not listed on an exchange, and thus historical information on share prices are absent (Damodaran, 2012). To deal with this issue, various attempts to model risk using a different form of betas values have been made, and will further be discussed below.

3.3.2.1.1.1 Accounting Beta

Almisher and Kish (2000) separate different betas by defining the traditional regression beta, which is based on market information such as historical share prices, as the "market beta" and accounting beta as a beta derived entirely from accounting data, primarily the financial statements. The formula for **Accounting beta** can be written as:

Equation 9

$$\Delta EARNINGS_{private\ firm} = a + b\Delta EARNINGS_{equity\ index}$$

Where (a) is the intercept and (b) is the slope. The slope is the accounting beta for the firm, which is either the operating income (for an unlevered beta) or the net income which equals the equity or levered beta (Damodaran, 2012).

Damodaran (2012) also notes several issues with this model. For instance, since the accounting beta reckons changes in accounting earnings against changes in an equity index, considerable limitations to the computation arise. As earnings for a private firm are usually only measured yearly, the number of observations is often too few. Besides this issue, often are accounting

earnings smoothed out, as different expenses and incomes are spread over multiple periods. In addition, it comes with several accounting judgments that might lead to mismeasurement of the accounting betas. Which could result in the beta being pushed towards a beta of one, leading to a misperception of actual firm risk.

3.3.2.1.1.2 Fundamental Beta

Fundamental betas are attempts to estimate risk by comparing different betas of variables of public firms that are also available to private firms. For example, the betas of variables such as dividend payout, liquidity, leverage, earnings variability and so on (Beaver et al, 1970). Damodaran (2012) mentions a few warnings, for example, that calculations of fundamental betas tend to be associated with low R-squared thus prone to having large standard errors, increasing the likelihood of miscalculating firm risk.

3.3.2.1.1.3 Bottom-Up Betas

Bottom-Up Betas are the weighted averages of the risks associated with the different businesses a firm is operating in. The computation is done by first defining the relevant industries the firm operates in. Thereafter finding the regression betas (the "market beta" used in a traditional CAPM calculation) of similar firms to the firm of which the calculation is made. Further on, computing the average beta of the comparable firms. Afterward, the average beta is unlevered by the average debt to equity ratio. Finally, to estimate the beta of the firm one is analyzing, the weighted average of the different businesses the firm operates in is used. Giving weight according to the value the business gives to the firm (if a value is not available, operating income or revenue can be used instead). (Damodaran, 2012).

Beneda (2003) gives the formula for unlevering and levering the bottom-up beta as.

Equation 10

$$\beta_L = \beta_U * \left[1 + (1 - \tau_c) * \left(\frac{D}{E}\right)\right]$$

Equation 11

$$\beta_U = \frac{\beta_L}{\left[1 + (1 - \tau_c) * (\frac{D}{E})\right]}$$

Where β_L = Levered beta, β_U = Unlevered beta, D = Debt level and E = Equity level

Beneda (2003) argues for several reasons why choosing to use a bottom-up beta when determining the cost of capital for a firm. The first and foremost being that by calculating an average beta over several different regression betas from comparable firms, the standard error

associated with the regression beta is reduced. Since the average is calculated from comparables firms, the need for historical stock prices on the particular firm one is analyzing is removed. Beneda (2003) continues with another reason in favor of using the bottom-up beta. When using this approach, the current level of leverage in the firm is used, adjusting for the current financial risk, rather than the average leverage level during the regression period. In comparison to if market beta were to be used.

Different issues regarding the bottom-up beta exist An obvious issue that arises is that the regression betas used in the computation are from public comparables. of which there might be none. On top of this, regression betas come with several issues itself. One might also argue that since bottom-up betas are based on regression betas, issues that arise from using a regression beta would also apply to the bottom-up beta, of which one could agree. However, an additional plus for bottom-up betas compared to the regular regression beta is, that the larger sample size reduces the standard error associated with the calculation than a single regression beta, and thus, if used correctly would give a better estimate than what a simple regression beta would (Damodaran, 2012; Beneda, 2003). Added difficulties with the bottom-up betas include that the decision of which companies to use as comparables are subjective. Damodaran (2012) recommends starting narrow and broadening the search until one has an at least double-digits sample.

3.3.2.2 Build-up Model

Boudreaux, Das, Rao and Rumore (2012), Öhrlings PricewaterhouseCoopers, (2007) and Pratt and Grabowski, (2014) along with several others describe a build-up model that breaks down the cost of equity into several components, where all components are specified with a percentage (%) that will add up to a total cost of equity (Re). This model consists of a risk-free rate combined with different types of risk premiums. Where the risk premiums will show the additional return an investor would require in order to invest in the company, instead of investing in the risk-free option. (Öhrlings PricewaterhouseCoopers, 2007).

1. Risk-free rate
2. Equity risk premium (Market risk premium)
3. Size premium
4. Specific company premium
5. Country risk premium

These components can together be expressed as:

Equation 12

$$r_e = r_f + RP_m + RP_s + RP_u + RP_i$$

r_e = Cost of equity capital.
r_f = Risk-free rate.
RP_m = Risk premium for market or market risk premium.
RP_s = Size premium.
RP_u = Specific company premium.
RP_i = Specific country risk premium

3.3.2.2.1 Risk-free rate (r_f)

The risk-free rate is the return an investor, with certainty, will obtain from a capital investment. It is usually the yield on the 20-year US treasury bond, which has been empirically observed (Boudreaux et al., 2012). Both the ten- and five-year US treasury bonds are however sometimes used as well. Depending on the country where one is performing the valuation, the local treasury yield might be used.

3.3.2.2.2 Market equity risk premium (RP_m)

When it comes to estimating the equity risk premium (RP_m) historical yields are commonly used from the general stock market (Boudreaux et al., 2012). This market risk premium can often be found in reports from Morningstar, Duff & Phelps ”Cost of Capital Navigator”, PriceWaterhouseCoopers (PwC) among others. Furthermore, in the build-up model, these types of sources are oftentimes used to assess the equity risk premium (Boudreaux et al., 2012). It is the premium to invest in the general stock market compared to a risk-free investment and has nothing to do with the private companies (Öhrlings PricewaterhouseCoopers, 2007).

3.3.2.2.3 Size premium (RP_s)

Several studies have shown that there is a relationship between a company's risk and with their size. A decrease in company size means an increase in risk, and thereby an increase in the cost of capital. This size premium (RP_s) is to capture the premium an investor requires due to the size of the company. Again, as mentioned above, several companies publish similar types of reports. In Sweden, for example, PwC Corporate Finance (2015) releases a yearly report over the size-related risk premiums on the Swedish stock market.

Table 1. Size-related risk premium

Size-related risk premium

Size	March 2014	March 2015
Market cap 5 000 MSEK	0,4%	0,5%
Market cap 2 000 MSEK	1,1%	1,2%
Market cap 500 MSEK	2,2%	2,3%
Market cap 100 MSEK	3,7%	3,6%

Source: PwC Corporate Finance (2015)

Table 1 has been translated into English.

It is very important to note that this premium is a subjective task that is based on an individual's assessment and personal observation (Boudreaux et al., 2012).

3.3.2.2.4 Specific company premium (RP_u)

Some industries and sectors are riskier to operate in than others and have to be taken into account. Therefore, the specific company premium (RP_u) will embrace the premium associated with the industry. It will also include more company-specific premiums as; the volatility in earnings, lawsuits, dependency on personal, suppliers, distributors, and clients, i.e. the unsystematic risk elements. This premium should only include and be modified concerning factors that are unique to the specific company (Öhrlings PricewaterhouseCoopers, 2007). It is nothing that one can calculate and will consequently be a subjective estimate. This brings up some concerns, the same subjective issues that have been observed in previously premiums within the build-up model. (Boudreaux et al., 2012).

3.3.2.2.5 Country risk premium (RP_i)

From an international investor standpoint, they may require an additional risk premium when investing in a foreign country. Reflecting, for example, the economy and political uncertainty in a specific country (Pratt and Grabowski, 2014). With the U.S market as a starting point, it will have a 0,00% country-specific risk premium. An American investor will, however, most likely place a premium in the build-up model due to the risk associated with the specific foreign country he or she wishes to invest in. Depending on the country, this premium will differ. Damodaran (2020) computes and frequently updates a table where one will be able to roughly estimate the country-specific risk premium.

3.3.2.2.6 Problem with double-counting

The problem with double-counting can easily occur when the cost of capital is to be calculated. Caution should be taken when one uses the build-up model, more specifically when one is determining and summarizing the premiums. Some factors might already be acknowledged and accounted for and double-counting would result in an inaccurate outcome. Thus, special attention should be paid to this matter. The build-up model assumes that the beta is 1, making the beta independent to the build-up model and therefore erasing the possibility of making a double-counting error with the Beta value. (Mellen and Evans, 2018).

3.3.2.3 Weighted Average Cost of Capital

To calculate the present value of cash flows using an income-based approach. The weighted average cost of capital, WACC, must be determined. This since the WACC will be used as a discount rate in the income-based approach.

The WACC is the average cost of capital the firm must pay to all investors, including both equity- and bondholders. Without debt, the WACC equals the cost of equity capital. When the firm has debt, the WACC is a weighted average of the firm's cost of debt and equity capital (Berk and DeMarzo, 2016). Further, they state that the weighted average cost of capital can also be interpreted as the average risk of all the investments of the firm. The first part of the formula below determines the ratio of equity in the firm multiplied with the cost of equity. Then the ratio of debt in the firm is multiplied with the cost of debt and the corporate tax rate, this is thereafter added to the first part of the formula, according to the following:

Equation 13

$$r_{WACC} = \frac{E}{(E+D)} * r_e + \frac{D}{(D+E)} * r_D * (1-\tau_c)$$

$$= W_E * r_e + W_D * r_D * (1-\tau_c)$$

Where r_{WACC} = Weighted Average Cost of Capital, W_E = Weight of Equity in the firm and W_D = Weight of Debt in the firm

Feldman (2005) mentions that, unlike many public companies, private companies generally do not issue preferred stock. Which otherwise should be included in the WACC formula by adding its respective weight and cost to the end of the formula.

When valuing public firms, the rate on both equity and debt can be calculated and estimated since both stock- and bond prices are traded and have a market price. However, Abudy, Benninga and Shust (2016) report that the cost of capital between a public and a private firm differs. This since small private firms are seen as riskier, their cost of capital should be higher

compared to large public firms, this is something both academics and investors usually agree upon (Boudreaux et al., 2012).

Breaking down the WACC formula it is notable there will be of no great difficulty calculating the rate on debt. This for multiple reasons, one can for example divide the interest expense by the debt from the company's balance sheet, and from there extract the average rate on debt. Or use today's market rate on acquiring new debt. However, to estimate a fair and reasonable cost of equity, will not be made without ease (Boudreaux et al., 2012).

3.3.2.4 Alternatives within the income-based approach

As mentioned, this thesis will not discuss models that the authors do not believe to be commonly used when valuing private firms. An example includes the Fama and French Three-factor model (1993), Fama and French Five-factor model (2015) and the Arbitrage Pricing Theory model (Ross, 1976). However, as the authors have not found any articles applying these models on private firms, they have been excluded. Another method used to determine the cost of equity is the dividend discount model (DDM). A commonly used equation is in the form of the Gordon Growth model, developed by Myron J. Gordon and Eli Shapiro in 1956 and Gordon (1959). Where one would be able to algebraically rearrange the variables to solve for the discount rate. To extract the discount rate, one needs the current price of the firm, which is not available for this case study, and thus the model has been excluded from this thesis.

3.4 Multiple-based approach

In this method, the value of the company is estimated by studying how the market previously has valued similar companies or assets, more specifically using comparable multiples. The base of this method is to establish a value on a company by comparing it to a similar one. This can be done in two main ways, first by comparing to one or several publicly traded companies or secondly by comparing to previous acquisitions or mergers (Nilsson et al., 2002). To only use one multiple as a comparison will give a very uncertain result. Various valuation multiples should instead be applied to achieve a clearer view of the value of the compared company (Öhrlings PricewaterhouseCoopers, 2007).

Examples of comparable multiples:

- **P/E -** Price to Earnings after taxes.
- **EV/EBIT -** Enterprise Value to Earnings Before Interest and Taxes,
- **EV/EBITDA -** Enterprise Value to Earnings Before Interest, Taxes, Depreciation, and Amortization.
- **EV/S -** Enterprise Value to Sales.
- **P/BV -** Price to reported Book Value.

Besides the ones mentioned above, it is common to use industrial specific multiples, e.g. enterprise value in relation to the number of employees, liters, tons, etc. (Öhrlings PricewaterhouseCoopers, 2007). Further, when comparing multiples as a valuation method, it is common to use enterprise value in the numerator. Berk and DeMarzo (2016) state that the Enterprise value can be seen as the value of a firm after it has paid its debts, and is calculated as follow:

Equation 14

$$Enterprise\ Value\ (EV) = Market\ Value\ of\ Equity + Debt - Cash$$

Where Market Value of Equity is equal to Market Capitalization

It can further be explained as the amount of money someone has to put up when purchasing the company (Öhrlings PricewaterhouseCoopers, 2007).

On the other hand, using the approach with multiples from previously merged or acquired private companies might be useful. When doing so, however, obtaining valid information becomes a big concern. Since private companies are not obligated to publish sufficient information about the transaction. Even if the purchase price is published, it may be affected by specific obligations in the purchase agreement. For example, additional considerations, warrants, or different sorts of commitments, etc., making the published price less relevant. In effect, making the multiple not as reliable (Öhrlings PricewaterhouseCoopers, 2007). Therefore, when using this approach, the multiple has to come from equivalent companies that will be comparable to the targeted firm. Even if some public information is available from similar acquisitions, extensive data is needed to perform the correct adjustment and make it a fair comparison. (Nilsson et al., 2002).

It will consequently not be trustworthy to value a private business primarily by one single multiple. One should, therefore, use several multiples to get a clearer view of what range the value of the comparable firm lays within (Öhrlings PricewaterhouseCoopers, 2007). However, even if several multiples are used, numerous concerns arise; how does one determine what is a similar business? How reliable is the provided data? Which multiples should be compared? How and which adjustments have to be made? Etc. All resulting in subjective characteristics that arise from the multiple methods, and hence, an unreliable result.

The reliability in the multiple approaches will, therefore, be affected to the degree of which extent access to comparable publicly traded firms and information from acquisitions of similar companies exists. The advantage of using multiples from public-traded firms is that they are based on market values, where the market already priced in the collected growth, risk, etc. if the firms are similar, the comparison will be trustworthy. (Öhrlings PricewaterhouseCoopers, 2007).

3.5 Real option-based approach

A financial option gives the holder the rights, but not the obligation to buy, sell or trade an asset (most often a stock) at a certain time. These types of options are also often traded on an exchange. A real option, on the other hand, cannot be found in any marketplace, since it gives the holder the right to make a particular decision for its business. (Berk and DeMarzo, 2016).

Using a traditional model such as NPV or DCF (discounted cash flow) does not account for flexibility that may occur in a project the firm plans to invest in. There are plenty of choices and options along the lifetime of a project that will affect the result. The NPV and DCF assume that one has almost all the information on hand and do not allow any flexibility. This flexibility has great value when it comes to investment decisions and is something the real options try to capture. (Bowman and Moskowitz, 2001).

Further, a real option will give the holder or in this case a company the possibility to wait with their upcoming investments, enabling more flexibility during the lifetime of the project. Which will most likely help mitigate some of the uncertainty the investments hold. Moreover, one will be able to calculate and compare investing and reinvesting today, or at later a point in the future, resulting in more accurate and flexible decision making. Real options can, therefore, be used as a tool in capital budgeting and decision making regarding the future projects of a company. The authors' have not observed real-options to be a frequently used valuation method for small private firms. The literature on such studies is fairly narrow compared to other methods used. This might be since it requires specific technical knowledge on the topic of options and henceforth it will not be attempted as a valuation method in this thesis.

4. CASE STUDY

In short, the purpose of this case study is to apply the valuation methods discussed in this thesis to a real-life example, an actual firm. Further, the objective is to compare these methods to one another. Thereafter, to the transaction price when the company was sold in 2015, which will be used as a reference point and fair market value.

The empirical findings will be seen as the answers to the specific list of questions (Appendix; 9.1 Questionnaire) that were sent out to the company ABC beforehand. Along with the attached documents; BS, P&L, annual reports, and SPA from the company. Which all can be found in the appendix for ease of reference.

4.1 History of firm ABC

A background and a brief introduction to the company ABC will be presented below.

ABC was founded by a sole entrepreneur around 2010 and operates in the chemical business, mainly as a wholesaler of products to the construction industry. In 2014 the company had grown to five employees with a turnover of ~13,50 MSEK with a net income of ~ 0,25 MSEK. The firm was acquired in early 2015 by a larger international firm. The purchase comprised 100% of the shares on the day that the business transaction occurred according to the Share Purchase Agreement from 2015.

4.2 Assumed fair market value of ABC

What can be gathered from the SPA is the total purchase sum amounted to 3,785 MSEK with a possible additional compensation of 1,5 MSEK, based on future EBITDA results in the following three years. These types of purchase price mechanisms are very common and can take endless forms and shapes. The takeaway is that it is now known that the international firm was willing to pay 3,785 + 1,5 = ~ 5 MSEK. Even if this does not necessarily mean that the international firm valued ABC at 5 MSEK. The 5 MSEK should at least indicate the plausible value of the company. For the purpose of this study, these 5 MSEK will be seen as a reference point and the market value of the firm. With this data on hand, the authors will perform a valuation on the company ABC at 2014-12-31 and with the forecasts and data that was available on that specific date. On the notation that the value on ABC could differ from 2014-12-31 and the actual time when the purchase occurred. However, with regard to the short period and the size of the firm, the difference in the value of ABC will not differ. Therefore, will the purchase price still be seen as fair market value in this thesis.

5. ANALYSIS

For convenience, financial reports from 2014 have been attached in the appendix. Note, however, all reports are in Swedish and subject to Swedish accounting rules and standards.

Although the authors' own opinion is that one does not necessarily need to be limited to use only one valuation method, but rather using several methods in combination to get a wider range of value estimates of the company. An example of this would be to establish a liquidation value of the business as a sort of baseline value, a minimum value of the asset to use as a bottom reference point. Damodaran (2012) mentions combining a discounted cash flow valuation in combination with relative valuations to estimate value a firm and a sector as a whole. He mentions, for example, that if a firm is overvalued in terms of a DCF valuation but undervalued in terms of relative valuation, it could indicate that the sector as a whole might be overvalued. And also, that the inverse applies, if a company is undervalued when valued by a DCF model, but overvalued in terms of relative valuations, it could indicate that the sector in aggregate is undervalued.

5.1 Asset-based approach

As brought up in the theory section the base behind this method is to value the company based on the market price of its assets less the market price of its liabilities (Pinto et al., 2015). However, there have to be adjustments made in order to get a fair value of the companies assets.

5.1.1 Liquidation value

Starting with the asset side of the firm, one can observe from the balance sheet (see appendix: 9.2 Balance sheet and Income statement 2014) from the fiscal year of 2014 that property, plant and equipment, PP&E amounted to 0 SEK. This is because accumulated depreciation amounted to the equivalent sum, which was 85 KSEK for 2014. The company has in other words no stated book value of PP&E. This brings the appropriate question of comparing accounting values to market values. Since the machines and other such assets still are in use (as of the end of 2014), could these have some monetary value if sold? Even if it is probable, a fair estimate of the machines is however hard to estimate. For this case study, no adjustments to this entry will be made, since the probable estimates of PP&E assets will be very low in relation to all assets in the company.

Looking at Current Assets, both inventories and accounts receivable had a negative change for the year, implying both that inventories are being used and the accounts receivable are being paid. This lowers the probability of having to write down both the value of inventories and accounts receivable. Which one would if it is not believed that the debtor would be able to pay their debt. An estimate of fair value in those cases could be examined as what one could

receive if sold via factoring. The authors believe the book value for this entry to be reasonable since the company themselves states so (Appendix; 9.1 Questionnaire). However, some small adjustments to the account receivables will be made, merely to be on the safe side. The entry of accounts receivables will be adjusted down to 95% of book value, which amounted to a change of -69 KSEK. This adjustment is made because when selling via factoring the amounts received is usually between 2-5% less than stated book value and less some fixed fee. Therefore the 95% of book value was used.

The book value on inventory amounted to 1 172 KSEK which has to be adjusted as if they were to be sold today. The book value represents the purchasing cost of the inventory, and the authors believe that if they were to be sold today it would be at a higher price. To estimate this inventory value correctly is very subjective and requires experience and knowledge beyond their understanding. However, an attempt will be made of fair market value. According to the company they have an approximate profit margin of 35% which would estimate the liquidation value of the inventory to 1 523 KSEK (Appendix; 9.1 Questionnaire). However, the authors will err on the side of conservatism and set a less generous premium to 15% above book value. Which, is thought to be fairer, making the adjusted inventory to 1 347 KSEK. Putting the total assets to 3 973 SEK from the original 3 865 KSEK.

To be conservative there will be no adjustments made to the liabilities, assuming the closing balance of the entry to be paid in full by ABC. Pinto et al. (2015) state that the value of a company will be the market price of its assets less than the market price of its liabilities. With the adjustments being made to ABC's assets and liabilities it can now be seen as market values. Even if the authors' judgment for the adjustments might be on the conservative side.

Total adjusted assets of 3 973 and liabilities of 3 262 KSEK. A fair estimated liquidation value would be equal to the difference between them. Resulting in a company value based on the Asset-based approach to be: 3 973 - 3 262 = 711 KSEK

Table 2. Valuation, Asset-based approach, KSEK	
Balance sheet	**2014**
Materiella anläggningstillgångar	0
Finansiella anläggningstillgångar	0
Fixed assets	**0**
Current assets	2 695
Adjustment inventory	176
Adjustment accounts receivable	-69
Cash	1 171
Adjusted Total asset	**3 973**
Owners capital	**603**
Un-taxed reservs	0
Financial debt	0
Operating liabilites	3 262
Adjustment operating liabilites	0
Adjusted Total liabilities	**3 262**
Value on company ABC	**711**

A final comment will be made in this section concerning the transaction and legal cost that should be accounted for regarding the liquidation value (Damodaran, 2012). The authors' estimated value on ABC based on the asset-based approach does not include any such cost. Simply since these costs will vary widely depending on how the liquidation is executed.

5.1.2 Replacement cost

Damodaran (2012) states that an asset-based valuation also can be done based on replacement cost. This is something that would be difficult and very subjective to establish. As the authors' have no experience of the industry that ABC operates in or what it would mean to build up a somewhat similar business, this approach will not be pursued.

5.1.3 Discussion Asset-based approach

A company with nominal profits and with no projections of doing better in the future might best be valued according to the asset-based approach. Since the value as an active company might be less than its value if liquidated (Pinto et al., 2015). Independent of the reason for the Asset-based approach, some concerns arise; How does one decide on a fair market value of an asset? It is even tougher to put an appraisal on the goodwill or intangible assets like trademarks, patents, etc. Even if a small private company is unlikely to have goodwill or plenty of intangible assets this approach still results in subjective decision making on a firm's value.

5.2 Income-based approach

5.2.1 Adjustments

As have been alluded to earlier, certain adjustments to the financial statements need to be made. When calculating free cash-flows, some changes to "normalize" year-to-year cash flows are needed to create a more accurate reflection of the earning power of the firm. For ABC, these adjustments are: (1) increased wages to employees to reflect a reasonable "market" level. This is needed to be made since the managing director has not been receiving a "market" wage. An annual cost of 125 000 SEK under other operating expenses; wage costs are added to reflect "market" costs under the period 2012-2014. From 2015, ABC has made adjustments to marketable wages for all its employees and will continuously make these adjustments to keep marketable wages in the future. Therefore, no future adjustments regarding wages will be made in the forecasting period. And (2), a non-recurring legal-and advisory cost of 75 000 SEK is added back in 2014 to reflect realistic operating expenses in a "normal" fiscal year. The non-recurring adjustment was a one-time adjustment to 2014 and will not be added to the forecasting periods.

5.2.2 Free Cash Flows

Since the firm ABC is without debt, free cash flow to equity, FCFE will be equal to free cash to the firm, FCFF (Eduabc, n.d). Otherwise, free cash flow to the firm will create a present value of the firm to all interest-holders, including debtholders whilst free cash flow to equity would give the value of the firm's equity. To estimate ABC's free cash flow to the firm equation (7) from the theory section is used.

Equation 7

$$FCFF = EBIT * (1 - \tau_c) + Depreciation - Capital\ Expenditures - \Delta Net\ Working\ Capital$$

Table 3, Calculating Free Cash Flow, KSEK

Period (t)	**2015**	**2016**	**2017**	**2018**	**2019**
Sales	**16 000**	**19 200**	**23 040**	**27 648**	**33 178**
Sales growth %	20,3%	20,0%	20,0%	20,0%	20,0%
EBIT	**847**	**954**	**1 143**	**1 370**	**1 644**
Returning depreciation	3	6	9	12	15
EBITDA margin	5,31%	5,00%	5,00%	5,00%	5,00%
EBITDA	**850**	**960**	**1 152**	**1 382**	**1 659**
Net working Capital	175	210	252	302	362
Δ Net Working Capital	-742	-35	-42	-50	-60
Capital expenditures	-15	-15	-15	-15	-15
Free Cash flow before taxes	**93**	**910**	**1 095**	**1 317**	**1 584**
Taxes	-186	-210	-251	-301	-362
Unlevered Free Cash Flow	**-93**	**700**	**844**	**1 016**	**1 222**

Net working capital has been set to 1,1% of sales; this is based on the historical data from the company ABC. The company states that from 2015 and forward they will invest approximately 15 KSEK in equipment (Appendix; 9.1 Questionnaire). Based on accounting law in Sweden, this equipment will be depreciated over five years (FAR, 2018). ABC's CapEx (Capital Expenditures) will, therefore, be estimated to 15 KSEK /year for the upcoming 2015 – 2019 period (Appendix; 9.1 Questionnaire).

This is also done for all the prior years 2008 – 2013 to get an estimate of reasonable FCF growth. The Swedish corporate tax rate in 2015 was 22%, which is also the tax rate used in the valuation.

5.2.3 Cost of capital

5.2.3.1 WACC

Since the company ABC does not have any debt, its WACC will simply be the cost of equity. The reason for this can be understood by observing the WACC equation 13, provided by Berk and DeMarzo (2016). If there is no debt, there can be no cost of debt, thus by multiplying the right part of the formula by zero, $W_D * r_D$, it will be removed, leaving only $W_E * r_e$

5.2.3.2 Determinants of risk; Betas

Finding publicly traded companies to extract betas from that are somewhere alike ABC is of great difficulty. Unfortunately, ABC is in a niche industry. Where the competitors are large enterprises with activities in several different industries. Making it difficult to find similar public companies to compare with. Nonetheless, for this thesis, a fair attempt has been done with similar companies as could be found. Even though the comparables are also large enterprises and not ideally suitable to compare ABC within this case study, an attempt is made. It leads the authors to broaden the definition of the operations of which the firm is in, and its relevant industries. This was made to be able to extract additional comparables samples and thus reducing the standard error associated with smaller average sample sizes. Following the reasonings of Damodaran (2002, 2012) and Beneda (2003).

With assistance from Börsdata (a stock screening site). The authors were able to filter among public companies from the Swedish stock exchanges. Filters, such as industry and size were used to make the data set manageable for some brief research on the derived companies. The comparables deemed most appropriate were chosen based on the authors' assessment of similarity to the firm ABC. Ten companies were established as comparables and are shown in table 4 and 11.

5.2.3.2.1 Accounting Beta

As private firms, mostly, publish only yearly profits, the number of observations available used in the regression needed for a beta will usually be too low (Damodaran, 2012). So is also the case here, where the company at the time of valuation would only have about five observations. Since the firm was founded around 2010 and the valuation is performed with numbers ending in 2014. This would result in weak explanatory power because the R-squared would be low and the standard error high. Damodaran (2012) also mentions that firms frequently smooth out earnings, and so have the firm ABC done as well. ABC have smoothed out their earnings by setting aside profits to a restricted fund, which they have thereafter restated in a loss year. Giving a lower effective corporate tax rate by lowering the accounting profit in a profitable year and restating the restricted funds in the loss year. In effect, bringing the average profit closer to zero thus reducing taxable profits.

5.2.3.2.2 Fundamental Betas

Problems immediately arise when trying to determine the risk factor using fundamental betas on the firm ABC. When estimating fundamental betas, i.e. determining the risk based on fundamental factors such as dividend payout, liquidity, leverage, variability in earnings on so on. The same problem arises with fundamental betas as with accounting beta. The firm ABC's history is simply too short to derive an adequate number of observations to estimate reasonable regressions for the fundamental betas. The authors believe, based on the reasoning of Damodaran (2012), that five years of operations is a too short of a period to gather any useful betas and hence the meaningful estimate of firm risk. Therefore, as with accounting beta, these methods will not be used in the CAPM model.

5.2.3.2.3 Bottom-Up Beta

For this approach, one would estimate the betas of comparable firms to derive an estimate of the beta of the analyzed firm. As have been alluded to earlier, finding comparable firms to the firm ABC has been of great difficulty. Nevertheless, ten somewhat comparable firms have been selected, following the suggestion from Damodaran (2012) to find at least a double-digit number of comparables. Reasoning that broadening the definition of the firm and increasing the samples used, would decrease the standard error. Thus, giving a more accurate estimate of risk, rather than choosing fewer comparables with a narrower definition of the firm's operations. After selecting comparable firms, of which can be read from the table below, and calculating the average levered beta and a debt-to-equity ratio of the different firms. The levered beta was unlevered using the formula provided by Beneda (2003).

Equation 11

$$\beta_U = \frac{\beta_L}{\left[1 + (1 - \tau_c) * (\frac{D}{E})\right]}$$

Normally, after the beta has been unlevered, the unlevered beta would be re-levered to match the debt-to-equity ratio of the firm being analyzed. In ABC's case, this step, however, is not necessary since the firm is unlevered. An unlevered beta will be lower than a levered beta because, for a firm, debt is riskier than equity, all else equal. Imagine, for example, the financial risks of two otherwise equal companies. Where one is levered and the other one unlevered, the risk will be lower in the unlevered firm, ceteris paribus, all else equal. The reason for this is because the risk associated with debt has been removed, leaving the firm exposed to only the business side of risk.

Table 4. Comparable Betas public firms

Tax rate	22%
Unlevered Beta	**0,503**
Date	2014-12-31

Company	EV/Sales	EV/EBITDA	EV/EBIT	Beta 5y*	D/E ratio	Unlevered Beta
Absolent	4,29	19,43	32,09	0,52	0,6	0,35
Nordic Flanges	0,53	9,15	56,43	1,97	1,5	0,91
Bufab	1,27	13,51	15,99	1,13	0,94	0,65
Alimak	2,14	12,52	14,71	1,19	2,77	0,38
OEM	1,31	11,17	13,83	0,87	1,04	0,48
Clemondo	0,64	23,86	-22,36	0,63	5,23	0,12
Nolato	0,97	6,66	9,08	1,22	0,86	0,73
Trelleborg	1,87	11,03	13,68	1,37	0,86	0,82
Hexpol	2,3	12,65	14,09	1,02	0,44	0,76
Nordic Waterproofing**	1,1	8,69	9,74	1,12	0,96	0,64
Mean	1,642	12,867	15,728	1,104	1,52	0,58

Data from 2014-12-31

*Based on 2015-2020

**Data from 2016

The calculation resulted in an unlevered beta of **0,503** for ABC.

5.2.3.3 CAPM

As the authors were able to derive beta from the bottom-up model, the CAPM formula can now be applied on the private firm ABC. Using the formula under section (3)

Equation 8

$$r_e = rf + \beta * \left(E[R_m] - r_f\right)$$

The risk-free rate is usually set to a long-term government bond (Damodaran, 2012). As ABC is a small Swedish private firm, the risk-free rate has been set to the Swedish 10-year treasury bond as of the second of January 2015, which was 0.9% (Riksbank.se, 2020). The Beta used is the bottom-up beta calculated earlier. The third and final variable is the expected return of the market. As Berk and DeMarzo (2016) point out, the expected return of the market would be the expected return of the whole market. This is, however, difficult to apply in practice, therefore, it is praxis to use an equity-index as a substitute. In the united states, this is usually the expected return of the S&P 500. Yet the firm ABC is Swedish, and the authors consequently decided to use the expected return of the Stockholm market calculated by PwC Corporate Finance in their report from 2015, to mimic the expected return of the Swedish market. The expected return of the Swedish market was 6.8% as of early 2015 and is used in the computation. Concluding the formula results in a cost of equity for ABC of 3,8677%

$$r_e(ABC) = 0{,}009 + 0{,}503 * (0{,}068 - 0{,}009) = 0{,}038677$$

Table 5. CAPM, wacc

WACC using CAPM model	
Assessed unleveraged beta	0,503
Assessed Debt / Equity ratio (D/E)	0,000
Equity Beta (β)	**0,503**
Risk-free rate (Rf)	0,90%
Market Risk Premium (RPm)	6,80%
Size premium (RP)	0,00%
Specific company premium (Rpu)	0,00%
Country risk premium (Rpi)	0,00%
Required return on equity (Re)	**3,87%**
Debt / Equity margin (D/E)	0,00%
Tax rate	22,00%
After tax cost of debt	**0,00%**
Weighted Avarage cost of capital	**3,87%**

As can be observed, the CAPM formula gives a very low cost of equity. This is partly due, both to the low interest rates presently observed since the Great recession of 2008-2009. And ABC's low unlevered Beta. It is noteworthy, that this would give an estimate of ABC's risk if the firm was trading on a public exchange without debt. Since the comparable betas used in the bottom-up beta are "market" based. In effect giving no additional premium for ABC specific risk such as the illiquidity of the untraded asset, as is advised by Abudy et al. (2016). This low cost of

equity will, in the authors' opinion, inflate the value of ABC beyond opportunistic estimates of fair value. The lower the discount rate in the denominator, the higher the present value of the firm as a result.

To apply the unlevered Beta of 3,87% on the firm ABC would be as comparing apples with oranges. The 3,87% reflects the specific unlevered Beta from the ten large public companies compared in table 4. Which would, if applied, implicit that ABC is a large unlevered publicly traded company, which it is not. Therefore, this current estimate of present value cannot be seen as a fair estimate and should in the authors' view be discarded. If, however, a beta with a more representative picture of risks associated with small private firms was to be used, i.e., a higher beta, the CAPM model would give a higher cost of equity and hence a more reasonable fair value estimate. UC, the leading Swedish business, and credit reference agency claim that empirical findings have, however, found that when using the CAPM on small private firms, the risk is often underestimated. And hence, it recommends adding a risk premium of 4 – 7 %. (UC AB, 2017). This would result in a more sensible cost of equity of 7.87 – 10.87%.

In the next section, the Build-up model, a more commonly practiced model, according to Feldman (2005), is used to estimate the cost of equity. It will result in an exceptionally different cost of equity, and thus a vastly different present value of ABC.

5.2.3.4 Build-up model

Applying the build-up model from the theory section on company ABC the following components need to be established to obtain a cost of equity.

Equation 12

$$r_e = r_f + RP_m + RP_s + RP_u + RP_i$$

r_e = Cost of equity capital.
r_f = Risk-free rate.
RP_m = Risk premium for market or market risk premium.
RP_s = Size premium.
RP_u = Specific company premium.
RP_i = Specific country risk premium

5.2.3.4.1 Risk-free rate (r_f)

The risk-free rate from a Swedish 10-year government bond will be used. At 2015-01-02 it was set to 0,897 = 0,9% (Riksbank.se, 2020).

5.2.3.4.2 Market risk premium (RP_m)

According to PwC's report *The risk premium on the Swedish stock market,* the required return investors have on the Swedish stock market per March 2015, is set as the average market risk premium, which was 6,8% PwC Corporate Finance (2015). Which is a common approach to use as a market risk premium according to Boudreaux et al. (2012). This premium of 6,8% has been used in the build-up model.

5.2.3.4.2.1 Discussion Market equity risk premium (RP_m)

This market equity risk premium is a calculated average value from the Swedish stock market. However, one can argue that it could be more appropriate to use the market equity risk premium from a specific sector/industry. One that is associated with the company one tries to value. On the other hand, later premiums in the build-up model will cover this difference. Yet, this raises the flag for the problem with double-counting.

5.2.3.4.3 Size premium (RP_s)

Analyzing the size-related risk premium from PwC Corporate Finance (2015) there are no computed premiums for firms with a market cap value of <100 MSEK. By reasoning rationally and by following ratios from PwC Corporate Finance (2015) table 1, one can expect the premium to be higher as the companies market capitalization gets smaller. Therefore, the establishment of a size premium based on the firm ABC which has an expected market cap far below <100 MSEK has to be made on hand. Consequently, the size-related risk premium of smaller companies will be based on experience and personal preferences, resulting in highly subjective value.

For this thesis and case study, a size-related risk premium of 6,1% will be used and added to the build-up model. The authors estimated this number with regards to the small size of the company, and in unison what seems reasonable with the comparable values from PwC Corporate Finance (2015), (table 1). When establishing the size premium, the rate was estimated based on the expected percentage change of market cap in relation to their respective changes in premiums in table 1. Therefore, the size premium are the authors' assessment and is a subjectively estimated value.

5.2.3.4.3.1 Discussion size premium

The size risk premium is very subjective and hard to establish since the value of a private firm will most often be smaller than public ones. There is a lack of a risk-related premium for smaller sized firms in the reports from example PwC Corporate Finance (2015) and Duff & Phelps (2020). These reports are made from well established, creditable firms and experts in the field.

Once again this illustrates the difficulties and challenges when one is to come up with a size-related premium.

5.2.3.4.4 Specific company premium (RP_u)

The specific company premium (RPu) is to comprise the premium risk associated with the specific company and its industry it operates in. ABC is a niched firm, and highly dependent on one sole proprietor, with a low earning history and surrounded by large competitors. The company-specific risk premium is set to be 9,6%. Again, this value is something the authors' found to be very subjective and is based on their thoughts and most reasonable estimates. To help, a sample of a valuation report from ValuAdder, (2020) was used as inspiration. Along with Specific Company Risk Premium A New Approach (2004) who displayed a company-specific risk premium range between 0 - 15%.

5.2.3.4.5 Country risk premium (RP_i)

As brought up in the theory section, this specific country risk premium is to be seen from a foreign investors' standpoint. They might require an extra risk premium when investing outside their own country. This, to cover the potential economy and political uncertainty in a specific country. (Pratt and Grabowski, 2014).

Concerning the valuation of ABC, this premium will be ignored. If it were to be included, this country risk premium would most likely be close to 0%. Since according to Country Default Spreads and Risk Premiums by Damodaran (2020), the Swedish country-specific risk premium was estimated to be 0%. Even if this data were from the first of April 2020, the authors believe it was reasonable to assume a similar premium in 2014.

All these different risk premiums have been built up to result in the following WACC:

Table 6. Build-up, wacc	
WACC using Build-up model	
Assessed unleveraged beta	1,00
Assessed Debt / Equity ratio (D/E)	0,00
Equity Beta (β)	**1,00**
Risk-free rate (Rf)	0,90%
Market Risk Premium (RPm)	6,80%
Size premium (RP)	6,10%
Specific company premium (Rpu)	9,60%
Country risk premium (Rpi)	0,00%
Required return on equity (Re)	**23,40%**
Debt / Equity margin (D/E)	0,00%
Tax rate	22,00%
After tax cost of debt	**0,00%**
Weighted Avarage cost of capital	**23,40%**

Finally, this WACC value of 23,4% from the Build-up approach will be used as a discounted rate when computing the value of the firm.

5.2.4 DCF

Calculating the value of the firm with the DCF method using the equation 4 from the theory section will be applied.

Equation 4

$$PV = \sum_{t=0}^{T} \frac{C_t}{(1+r)^t} + \left[\frac{C_{T+1}}{(r-g)} * \frac{1}{(1+r)^T}\right]$$

ABC states their 2015's figures to be around 16 000 KSEK in sales with an EBIT of 850 KSEK (Appendix; 9.1 Questionnaire). From 2015's figures ABC forecast a growth rate of 20% on sales with a 5% EBIT margin for the upcoming 4 years. Given that the firm is quite recently founded, the authors' have no reasonable arguments against the expected growth rate that the company implies.

A two-stage model is chosen over a three-stage (two different growth periods plus a perpetual growth stage) or a n-th stage model, given that the authors' have no reasonable estimates of growth for further out than the next five years. The perpetual growth rate was set to the Swedish central bank's aim of two percent annual inflation (Riksbank.se, 2018), i.e. ABC is believed to have no inflation-adjusted growth. This assumption is made to keep the estimates conservative rather than opportunistic. Small changes in the discount rate over long periods of time will have a large impact on the terminal value of the firm (the perpetual growth period part of the formula) and thus the whole value of the firm.

5.2.4.1 PRESENT VALUE of ABC USING THE CAPM MODEL

Table 7. ABC Unlevered Free Cash Flows, Forecast Period (CAPM), KSEK

Period (t) Forcast	**2015**	**2016**	**2017**	**2018**	**2019**
Sales	**16 000**	**19 200**	**23 040**	**27 648**	**33 178**
Sales growth %	20,3%	20,0%	20,0%	20,0%	20,0%
EBIT	**847**	**954**	**1 143**	**1 370**	**1 644**
Returning depreciation	3	6	9	12	15
EBITDA margin	5,31%	5,00%	5,00%	5,00%	5,00%
EBITDA	**850**	**960**	**1 152**	**1 382**	**1 659**
Net working Capital	175	210	252	302	362
Δ Net Working Capital	-742	-35	-42	-50	-60
Capital expenditures	-15	-15	-15	-15	-15
Free Cash flow before taxes	**93**	**910**	**1 095**	**1 317**	**1 584**
Taxes	-186	-210	-251	-301	-362
Unlevered Free Cash Flow	**-93**	**700**	**844**	**1 016**	**1 222**
WACC	3,87%	3,87%	3,87%	3,87%	3,87%
PV Unlevered Free Cash Flows (UFCFs)	**-90**	**649**	**753**	**873**	**1 011**

Table 8. Value ABC, CAPM Model, KSEK — Perpetual Growth Rate: 2%

	-1,50%	WACC	1,50%
	2,37%	**3,87%**	**5,37%**
Present value of period 2015 - 2019	3 375	3 195	3 028
Present value of Perpetuity Period	299 611	55 123	28 471
Discounted Cashflows (EV)	**302 986**	**58 318**	**31 499**
Financial Assets	1 171	1 171	1 171
Financial Debt	0	0	0
Discounted Cashflow + Net assets	**304 156**	**59 488**	**32 670**

Using the DCF-model with the CAPM method and its calculated discount rate of 3,87%. The EV of ABC will amount to 58,5 MSEK. The CAPM model, and its resulting discount rate of 3,87%, is based on the assumption that it would have a similar beta as unlevered betas of similar public companies. This is what the authors believe to be the explanation for this abnormally high present value. The DCF-model based on CAPM makes an indirect assumption that ABC is compared with large, unlevered public enterprise and should, therefore, be valued as one.

This assumption according to the authors will not result in a reasonable outcome. It is worth noting the extreme changes in the present value of ABC when a 1.5% change in the discount rate is applied. Especially, when the exceptionally low discount rate is utilized to the terminal value of the firm ABC. A clear illustration of this effect is shown in table 8 and table 10 under WACC. Where a sensitivity of -1,5% and +1,5% is displayed.

5.2.4.2 PRESENT VALUE of ABC USING THE BUILD-UP MODEL

Table 9. ABC Unlevered Free Cash Flows, Forecast Period (Build-up), KSEK

Period (t) Forcast	**2015**	**2016**	**2017**	**2018**	**2019**
Sales	**16 000**	**19 200**	**23 040**	**27 648**	**33 178**
Sales growth %	20,3%	20,0%	20,0%	20,0%	20,0%
EBIT	**847**	**954**	**1 143**	**1 370**	**1 644**
Returning depreciation	3	6	9	12	15
EBITDA margin	5,31%	5,00%	5,00%	5,00%	5,00%
EBITDA	**850**	**960**	**1 152**	**1 382**	**1 659**
Net working Capital	175	210	252	302	362
Δ Net Working Capital	-742	-35	-42	-50	-60
Capital expenditures	-15	-15	-15	-15	-15
Free Cash flow before taxes	**93**	**910**	**1 095**	**1 317**	**1 584**
Taxes	-186	-210	-251	-301	-362
Unlevered Free Cash Flow	**-93**	**700**	**844**	**1 016**	**1 222**
WACC	23,40%	23,40%	23,40%	23,40%	23,40%
PV UFCFs	**-76**	**460**	**449**	**438**	**427**

Table 10, Value ABC, Build-Up Model, KSEK — Perpetual Growth Rate: 2%

	-1,50%	WACC	1,50%
	21,90%	**23,40%**	**24,90%**
Present value of period 2015 - 2019	1 774	1 698	1 626
Present value of Perpetuity Period	2 327	2 035	1 791
Discounted Cashflows (EV)	**4 101**	**3 733**	**3 417**
Financial Assets	1 171	1 171	1 171
Financial Debt	0	0	0
Discounted Cashflow + Net assets	**5 272**	**4 904**	**4 587**

When applying the discount rate from the Build-up model, it can be observed from the table that a discount rate of 23,4% results in an EV of ABC 3 733 KSEK. The output, i.e. value of the firm, is dependent on a discount rate and the amount of cash flows the firm forecasts to produces. Comparing DCF-method based on CAPM and Build-up model, the difference is as noted an immense difference. Though it can easily be explained by the underlying difference in the discount rates, 3,87% compared to 23,4%, it clearly illustrates the importance of having reasonable estimates.

5.2.5 Multiple-based approach

As stated in the theoretical section, comparing multiples from similar companies can be done in two main ways. Through multiples from public traded companies within the same industry, or with multiples from previously similar acquired companies (Nilsson et al., 2002). As pointed out earlier, difficulties in finding comparables to extract a relevant beta also apply when estimating comparables using the multiple-based approaches.

5.2.5.1 Multiples with public companies

The website Börsdata were used to screen and gather ten public companies to use in this comparable model, see table 11 below. Once again, how well these companies are as comparables to ABC is highly subjective. The approach in this case study should be seen as more of an illustrative example, rather than a correct solution. Since the comparable companies are not as similar to ABC as the authors would like. When estimating values from multiples, one can either compare multiples from one or two specific firms, or one could use a broader perspective and gather multiples from several companies. In this case study, the later approach was used. Öhrlings PricewaterhouseCoopers (2007) highlights the importance of using more than one multiple as a comparison. Therefore, the following multiples. EV/Sales, EV/EBITDA, and EV/EBIT will be determined from the chosen comparable companies and used to estimate a value on ABC. Resulting in two types of reference points. Firstly, a range from the lowest to highest multiple, and secondly, a mean.

Table 11. Comparable public companies

Company	EV/Sales	EV/EBITDA	EV/EBIT
Absolent	4,29	19,43	32,09
Nordic Flanges	0,53	9,15	56,43
Bufab	1,27	13,51	15,99
Alimak	2,14	12,52	14,71
OEM	1,31	11,17	13,83
Clemondo	0,64	23,86	-22,36
Nolato	0,97	6,66	9,08
Trelleborg	1,87	11,03	13,68
Hexpol	2,3	12,65	14,09
Nordic Waterproofing**	1,1	8,69	9,74

Data from 2014-12-31

**Data from 2016

Table 12. Multiples from public companies

	Low	Mean	High
EV/Sales	0,53	1,642	4,29
EV/EBITDA	6,66	12,867	23,86
EV/EBIT	-22,36	15,728	56,43

Using the average multiples from the ten public companies above (table 12), the value on ABC can be calculated. This by simply multiply the multiples from table 12 with the Sales, EBIT and EBITDA from ABC (table 13). Where the result is shown in table 14.

Table 13, Key figures from ABC annual report 2014-12-31

	KSEK
Sales	13 306,9
EBITDA	207,4
EBIT	207,4

Since ABC did not have any depreciation or amortization during 2014, the EBITDA and EBIT will result in the same value. When the EV/Sales multiple approach is applied, ABC's value should be between 7 052 KSEK to 57 066 KSEK with a mean of 21 849 KSEK. Likewise, if one were to value the company primarily on the EV/EBITDA multiple approach the value should be between 1 381 to 4 948, with a mean of 2 449 KSEK.

Table 14. ABC valuation bases on comparable multiples from public firms, KSEK

	Low	Mean	High
EV/Sales	7 052,7	21 849,9	57 086,6
EV/EBITDA	1 381,3	2 668,6	4 948,6
EV/EBIT	- 4 637,5	3 262,0	11 703,6

Values in KSEK

Pinto et al. (2015) state that using multiples from public companies as a comparison when trying to value small private firms might not be suitable. It might not be a good approach to proceed if the firms do not have the same growth, risk, and operating structure (Pinto et al., 2015). When evaluating the result from the valuation based on multiples from public companies, one can recognize that the approach is not very successful in this specific case study, confirming Pinto et al. (2015) thoughts. It is the authors' opinion, that for this case study the valuation with multiples from public companies should be foreseen. It does not act as a credible comparison to the private firm ABC. This is because the comparable public companies found are not similar enough. The companies used in table 11 are too different in structure, risk, growth, operating, etc., even though operating within the same industry.

5.2.5.2 Multiples with private firms

Related problems arise in the search for multiples based on private firms. Gathering data was likewise a challenge. Primarily due to the niche industry the firm operates in. There are simply not that many comparable competitors or similar companies. Secondly, as declared earlier, information regarding financials and purchasing prices are difficult to access since the companies are private. However, when searching on Capital IQ for completed acquisitions of private firms, the authors were able to find some earlier purchase prices of companies within a

moderately similar industry. By complementing the data from Capital IQ with annual reports, the following multiples were estimated, see table 15. As in the selection of public comparables in table 4 and 11, the chosen private comparables were also based on the authors' assessment of similarity to the firm ABC.

Table 15. Comparable private companies, values in MSEK

Announced transaction date	Target/Issuer	Multiple Sales/Purchase price	EBITDA/ Purchase price	EBITDA/ Purchase price	Sales in year of transaction	Purchase price in MSEK	Buyers/Investors
10-01-2010	Bladhs Industri AB	0,19	3,83	12,00	240,0	46,0	Talent Plastics AB
03-03-2008	Ratema AB	1,04	5,95	4,20	24,0	25,0	Lahega Kemi AB
11-05-2002	Gislaved Folie AB	0,41	8,85	11,30	246,0	100,0	Stena Adactum AB
02-24-2014	AB Bröderna Bourghardt	0,67	9,01	1,78	23,9	16,0	SP Group A/S
07-06-2018	Nolato Hertila AB	1,45	10,36	5,60	40,0	58,0	Essentra plc
04-26-2010	MIP Technologies AB	1,23	N/A	N/A	13,0	16,0	Biotage AB
10-04-2010	AdeKema AB	0,57	N/A	N/A	35,0	20,0	WashTec AG
11-04-2013	Nolato Sunne AB	0,17	N/A	N/A	130,0	22,5	Per Vannesjö Industri AB
03-16-2009	Geveko Industri AB	0,17	N/A	N/A	22,0	3,8	Auson AB
07-31-2009	Front Scandinavia AB	0,10	N/A	N/A	57,0	5,6	Attraq A/S

For these transactions, the purchasing price was announced publicly, and in some cases along with sales and earnings figures. However, in several of the public announcements, there was a lack of information. Prompting the authors to gather data such as Sales and EBITDA from annual reports. The companies are not public and since the acquisitions occurred several years ago, there was a limitation to the amount of data available. As seen in table 15 above, from half of the companies there is no EBITDA multiple. For the simple reason that it was not possible to find an EBITDA figure. Furthermore, since the authors do not have insight into these companies, the figures have not been adjusted for.

In addition to the above limitations, these transactions happened between the year 2002-2018. One could, therefore, argue if a low, high, and mean value based on these figures will be appropriate to use. Preferably, one would like to have several comparables from recently acquired companies, that are very similar to the one that is being valued. Along with complete information. This is however the theoretical optimum and would rarely happen in practice.

In this case study, the authors decided to use low, high, and mean values from their findings on private comparable companies. Even though, they do not match ideally in similarity and are from different time-periods. The result can be seen below in tables below:

Table 16. Multiples from private companies

	Low	Mean	High
Sales/Purchase price	0,10	0,60	1,45
EBITDA/Purchase price	3,83	7,60	10,36

Table 13. Key figures from ABC annual report 2014-12-31	
	KSEK
Sales	13 306,9
EBITDA	207,4
EBIT	207,4

Table 17. ABC valuation bases on comparable multiples from private firms, KSEK			
	Low	**Mean**	**High**
Sales/Purchase price	1 304,36	7 991,21	19 295,01
EBITDA/Purchase price	795,03	1 576,30	2 148,07
			Values in KSEK

From these multiples, the estimated value of the firm can be calculated (table 17). When the EV/Sales multiple approach is applied to value the firm ABC, it would result in a value range between 1 361 to 19 295 with a mean of 8 164 KSEK. Likewise, valuing the firm primarily on the EV/EBITDA the value range would be between 805 and 2 149, with a mean of 1 576 TSEK.

Multiples in the valuation process of private firms can be used as reference points and complement to other methods. The authors believe its usefulness lies in its simplicity and should be used supplementary when easily applied.

6. RESULTS

6.1 Summarizing all models

Table 18. Comparison all valuation models used on ABC, KSEK

		ABC, Enterprice Value (EV), KSEK		
Asset-based method				
	Value of Equity = Liquidation value of assets - Outstanding debt		**710**	
Income-based method				
	WACC	2,37%	**3,87%**	5,37%
	DCF, CAPM	302 986	**58 318**	31 499
	WACC	21,90%	**23,40%**	24,90%
	DCF, Build-up	4 101	**3 733**	3 417
Multiple with Private firms				
		Low	**Mean**	High
	Sales/Purchase price	1 304	**7 991**	19 295
	EBITDA/Purchase price	795	**1 576**	2 148
Multiple with Public firms				
		Low	**Mean**	High
	EV/Sales	7 053	**21 850**	57 087
	EV/EBITDA	1 381	**2 669**	4 949
	EV/EBIT	- 4 637	**3 262**	11 704
+ Net Fin Assets				
	Financial Assets	1 171	1 171	1 171
	Financial Debt	0	0	0
	Net Financial Assets	1 171	1 171	1 171
Unknown valuation method made by International firm				
			Paid by the aquirer in early 2015	
	Enterprise Value (EV)		?	
	Financial Assets		1 171*	
	Financial Debt		0*	
	EV + Net Fin Assets		**5 000**	

*Based on numbers at 2014-12-31

The asset-based approach with the liquidation model values the firm as if it were to be liquidated per 2014-12-31. Thus, it does not capture the fair value of ABC, since the model does not include the possible future value of the firm.

As can be observed from table 18, the different models give exceptionally different values of the firm ABC, even within the same model. Especially the multiple-based approach and when using CAPM. The authors have alluded to the imprecise nature of the multiple-based approach earlier, and it clearly shows why the authors discourage the use of multiples as an accurate estimate of firm value. The CAPM has in this thesis also been discussed as a less useful approach when valuing the private firm ABC. Primarily due to the difficulty in establishing a reasonable estimate of ABC's firm risk, i.e. the beta value. Predominantly, since the beta used in this thesis originates from public companies, which are not similar enough to the comparable firm ABC that is being valued. However, there are some key findings that need to be highlighted. Using the Mean Multiple EV/EBIT from public firms and the Income-based approach with DCF and the Build-up model. Those two approaches resulted in a very good estimate when comparing to the actual transaction price of 5 MSEK.

Table 10, Value ABC, Build-Up Model, KSEK		Perpetual Growth Rate: 2%	
	-1,50%	WACC	1,50%
	21,90%	**23,40%**	**24,90%**
Present value of period 2015 - 2019	1 774	1 698	1 626
Present value of Perpetuity Period	2 327	2 035	1 791
Discounted Cashflows (EV)	**4 101**	**3 733**	**3 417**
Financial Assets	1 171	1 171	1 171
Financial Debt	0	0	0
EV + Net assets	**5 272**	**4 904**	**4 587**

Table 19. ABC valuation bases on comparable multiples from public firms, KSEK			
	Low	**Mean**	**High**
EV/EBIT	**- 4 637,5**	**3 262,0**	**11 703,6**
Financial Assets	1 171	1 171	1 171
Financial Debt	0	0	0
EV + Net assets	**-3 467**	**4 433**	**12 874**

Even though, the Mean Multiple EV/EBIT gave a result close to the purchase price, the broad range of the EV/EBIT multiple will make it very dependent on the constitutions of firms compared. This applies to the multiple-based approach as a whole, resulting in it being slightly unreliable and inappropriate. Whereas the Income-based approach with DCF and Build-up model is in this thesis to be seen as the most reliable and preferred method. Since it provided the closest value and narrowest range compared to the transaction price.

7. DISCUSSION AND CONCLUSION

7.1 Discussion

An ideal example of issues in the valuation process is when adjustments to the financial statements are needed. Financial statements, especially in private firms, are not as extensive and detailed as their public counterparts. Often leading to adjustments being needed, and hence, a certain degree of comprehension of the relevant accounting rules and standards is of great convenience. Further, as the case study exemplifies, when adjustments to "normalized" earnings are to be made. There is a highly subjective judgment of what is to be seen as marketable wages and what is a non-recurrent cost or revenue.

Furthermore, an illustrative issue is applying multiples on different firms that are not extraordinarily similar. Otherwise, the comparison is apples and oranges. As is illustrated in the case study. It might put the valuation in a reasonable ballpark, the lesser the difference between them, the narrower the ballpark, presumably. But even so, that is a rather hefty might. The authors believe that it should preferably be seen as an oversimplified valuation and reference points used in combination with other valuation methods.

Another issue that quickly arises is knowing which model is relevant to use and when. This, however, is difficult to combat in practice. Indicating partly, a need for an appropriate experience in valuation. It seems wise to follow-up the outcomes when possible, after valuations are done, to see if improvements to the framework are needed. Keeping to the point, all valuations should, in the views of the authors, be regarded with considerate caution. Since with all valuations, assumptions are needed, thus inviting subjectivity. Rarely, will two different analysts estimate the exact same number of firm values. Thus, the ease of which the practitioner may misinterpret the numbers resulting in an inadequate valuation. The valuation models may be seen as straightforward in theory, yet several issues arise in practice, making it more difficult when a valuation is to be done in reality. The results illustrate the importance of questioning the assumptions made in the analysis. Since the assumptions made will determine the outcome of the valuation regardless of the model used. Practicing the theoretical valuation models on a real-life example has shown to be challenging and to include a high level of subjectiveness. Where several sections in the methods can be interpreted variously by personal opinions and experiences, resulting in an outcome that differs widely.

7.2 conclusion

The authors of the thesis set out to answer the following research question.

What are the most common valuation methods available and what are the main issues that arise when applying these methods on a small private Swedish business?

The thesis has provided the reader with the most common valuation models applicable to small private firms. Further, given only one method to use, the authors believe the most prevalent and preferred approach to use is the income-based approach, more specifically, the discounted cash-flow method with the build-up model. Used in combination, however, supplemental models could add reference points and be of additional aid when establishing the fair value of the firm. The results from this thesis have shown a broad difference between the estimated values of the firm ABC, highlighting the biggest issue, the subjectivity. Even within the preferred valuation method, the possible missteps are predominant. Not only to the discount rate chosen but also to the future cash flows, since forecasts are about estimating the unknown future.

Even though the importance of small- and medium-sized companies to the Swedish economy is well-known, it is in the opinion of the authors' that this importance is not fully reflected in the academic valuation literature. The authors aimed to explain the current theoretical frameworks and models used to value these sorts of firms. Categorizing the different models available and rejecting those that were not possible to apply to the firm ABC. Also explaining when, and when not, certain models are preferable to use over others.

In conclusion, this thesis has not only discussed how to value a small private Swedish firm, but it has also provided an understanding of challenges if this subject were to be included in the course curriculum on a bachelor level in universities.

Valuation on small private firms, is in the authors' view, an art rather than an exact science. Seldom are the words of Carveth Read more well-fitting:

"It is better to be vaguely right than exactly wrong." - (Carveth Read 1920, p. 351).

7.3 Contribution and further research

The authors have highlighted the important subject of small private firm valuation, illustrated issues and difficulties that occur in practice when valuing a small private Swedish firm. Further, this thesis can be seen as an illustrative example and therefore to be used in comparison and a reference point for novices in future valuations.

There is, in the authors' view, the substantial potential for further research within this area. Both in terms of actual valuation, where one could try to expand or add to the current models available. Especially, when modeling the risks associated with the firms and estimating their cost of capital, as this is an area of difficulty in practice. But also, further research regarding how one might approach the limiting factor of information availability commonly associated with small business valuation. As the authors have had access to insider information not available to the public, enabling them to make a fairer valuation than possible without this information, or even public information for that matter. This raises an interesting question for further research, "Is it possible to make an adequate valuation based on the less extensive annual reports small private companies are obligated to disclose in Sweden?".

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9. APPENDIX

9.1 Questionnaire

1. Income statement and balance sheet for 2011, 2012, 2013 and the 2014 financial years.
   Attached
2. Earnings report for 2011, 2012, 2013 and 2014 financial years.
   Attached
3. 2014-year budget for the upcoming 5 years.
   Roughly sales of 16 MSEK and earnings of 0,85 MSEK in 2015 and an expected growth with 20% each year and maintaining an EBITDA margin of at least 5% for the years 2015-2019.
4. Specify the investment plan for the upcoming 5 years. What investment is the company planning to pursue?
   Nothing specific, approximately 15 TSEK/year of equipment.
5. Send the existing business plan over 2014 to 2020.
   NA.
6. Have there been any overdue accounts receivable that has not been received in full for the last? years. And do you see any risk in accounts receivables in the future?
   There have only been very small amounts that have not been received the last year. We don't see any specially risk in our accounts receivables. Sometimes the customers pay late but they will always pay.
7. How does the legal structure look within the company, is there one sole owner?
   That is correct before the sale there was only one single owner.
8. Does the personal including the owner considered to have market related salaries? If not specify the amount that should be accounted for each year from 2011 – 2015?
   No, during 2013 – 2015 there should be adjustments made on a total of 125 TSEK/year. Adjustments for salaries were made to marketable rates when the new owner entered in 2015.
9. How much has been offset towards the workers and owners' pension, does these considers to be market related?
   Yes, the company is using an external business to handle this matter. It is seemed to be according to the market values.
10. Have there been any non-recurring costs in the last 3 year that has considerably affected the result of the firm? Please specify them.
    Yes, legal and advisor cost of approximately 70 KSEK during 2014 (account nr: 6590), which is not to be seen as normal.
11. List the company's 10 largest customers, information regarding their company name can be excluded, however, please specify the number of sales
    Attached

12. List the company's 10 largest suppliers, information regarding their company name can be excluded, however, please specify the amount of cost

    Attached

13. Has the company paid market related rent over the last 3 years?

    Yes, it is considered to be marketable.

9.2 Balance Sheet and Income Statement 2014

BALANSRAPPORT

Utskriftsdatum: 20-
Räkenskapsår: 1401 - 1412
Period: 14-01 - 14-12
Balansrapport

Konto	Namn	IB År Ing saldo 14-01		Förändring	UB 14-12
TILLGÅNGAR					
Anläggningstillgångar					
1210	Maskiner och andra tekniska anläggningar	85 379,85	85 379,85	0,00	85 379,85
1219	Ack avskrivningar maskiner	-85 379,85	-85 379,85	0,00	-85 379,85
Summa anläggningstillgångar		0,00	0,00	0,00	0,00
Omsättningstillgångar					
1400	Lager	1 245 781,10	1 245 781,10	-74 067,87	1 171 713,23
1510	Kundfordringar	1 452 724,00	1 452 724,00	-81 404,00	1 371 320,00
1630	Skattekonto	41 227,00	41 227,00	-40 318,00	909,00
1720	Förutbetald leasingkostnad	10 150,00	10 150,00	49 166,00	59 316,00
1790	Övr förutbet kostnader/upplupna intäkter	24 078,00	24 078,00	-5 517,00	18 561,00
1930	Checkräkning	1 313 190,53	1 313 190,53	-142 660,72	1 170 529,81
Summa omsättningstillgångar		4 087 150,63	4 087 150,63	-294 801,59	3 792 349,04
SUMMA TILLGÅNGAR		4 087 150,63	4 087 150,63	-294 801,59	3 792 349,04
SKULDER OCH EGET KAPITAL					
Eget kapital					
2081	Aktiekapital	-100 000,00	-100 000,00	0,00	-100 000,00
2091	Balanserad vinst eller förlust	-329 008,95	-329 008,95	75 971,38	-253 037,57
2099	Årets resultat	75 971,38	75 971,38	-326 186,89	-250 215,51
Summa eget kapital		-353 037,57	-353 037,57	-250 215,51	-603 253,08
Obeskattade reserver					
2113	Periodiseringsfond 2013 års taxering	-134 888,00	-134 888,00	134 888,00	0,00
Summa obeskattade reserver		-134 888,00	-134 888,00	134 888,00	0,00
Långfristiga skulder					
2330	Checkräkningskredit	-600 000,00	-600 000,00	600 000,00	0,00
Summa långfristiga skulder		-600 000,00	-600 000,00	600 000,00	0,00
Kortfristiga skulder					
2440	Leverantörsskulder	-2 256 279,06	-2 256 279,06	-64 003,20	-2 320 282,26
2510	Skatteskulder	-46 394,00	-46 394,00	119 067,00	72 673,00
2640	Ingående moms	0,00	0,00	64,00	64,00
2650	Redovisningskonto för moms	-374 216,00	-374 216,00	-58 418,00	-432 634,00
2651	Momsskuld enl. rättelsebrev	0,00	0,00	-213 232,00	-213 232,00
2710	Personalskatt	-34 879,00	-34 879,00	-25 031,00	-59 910,00
2730	Lagstadgade sociala avgifter/löneskatt	-35 461,00	-35 461,00	-16 856,00	-52 317,00
2890	Övriga kortfristiga skulder	-18,00	-18,00	0,00	-18,00
2891	Avräkning	-1 246,00	-1 246,00	0,00	-1 246,00
2920	Upplupna semesterlöner	-93 056,00	-93 056,00	18 869,00	-74 187,00
2940	Upplupna lagstadgade sociala avgifter	-29 238,00	-29 238,00	5 928,00	-23 310,00
2943	Beräknad upplupen särskild löneskatt på pensionskostnader	-43 218,00	-43 218,00	11 588,00	-31 630,00
2990	Övr upplupna kostn/förutbetalda intäkter	-85 220,00	-85 220,00	32 120,00	-53 100,00
Summa kortfristiga skulder		-2 999 225,06	-2 999 225,06	-189 904,20	-3 189 129,26
SUMMA SKULDER		-3 734 113,06	-3 734 113,06	544 983,80	-3 189 129,26

RESULTATRAPPORT

Utskriftsdatum: 20-
Räkenskapsår: 1401 - 1412
Period: 14-01 - 14-12
Resultatrapport

Konto	Namn	Per 14-12	%	Per fg år	Uppn	Ack År	%
RÖRELSENS INTÄKTER							
Försäljning							
3001	Försäljning varor, 25% moms	12 711 669,35	95	10 426 360,20	122	12 711 669,35	95
3005	Försäljning varor,	183 247,50	1	184 140,00	100	183 247,50	1
3008	Försäljning varor	65 272,45	0	50 000,00	131	65 272,45	0
3301	Försäljning tjänster, oreducerad	58 050,00	0	0,00	0	58 050,00	0
3520	Fakturerade frakter	278 310,00	2	203 163,00	137	278 310,00	2
3521	Fakturerade frakter,	2 173,00	0	0,00	0	2 173,00	0
3522	Fakturerade frakter, export	8 200,00	0	0,00	0	8 200,00	0
3740	Öres- och kronutjämning	6,83	0	39,01	18	6,83	0
3960	Valutakursvinster på fordringar/skulder	-58 044,84	-0	142 612,38	-41	-58 044,84	-0
3970	Vinst avyttr im-/materiella anläggn	16 908,00	0	0,00	0	16 908,00	0
3990	Övriga ersättningar och intäkter	1 949,00	0	0,00	0	1 949,00	0
Summa försäljning		13 267 741,29	100	11 006 314,59	121	13 267 741,29	100
SUMMA RÖRELSEINTÄKTER		13 267 741,29	100	11 006 314,59	121	13 267 741,29	100
Material och varor							
4010	Inköp varor och material	-2 093 466,92	-16	-3 466 573,28	60	-2 093 466,92	-16
4511	Import varor från land utanför EU	-6 468,00	-0	-16 610,50	39	-6 468,00	-0
4515	Import varor	-7 677 063,97	-58	-6 925 413,69	111	-7 677 063,97	-58
4731	Erhållna kassarabatter	8,15	0	25,89	31	8,15	0
4900	Förändring av lager	1 037 002,30	8	3 211 539,15	32	1 037 002,30	8
Summa material och varor		-8 739 988,44	-66	-7 197 032,43	121	-8 739 988,44	-66
BRUTTOVINST		4 527 752,85	34	3 809 282,16	119	4 527 752,85	34
Övriga kostnader							
5010	Lokalhyra	-220 833,00	-2	-221 095,00	100	-220 833,00	-2
5060	Städning och renhållning	-600,00	-0	0,00	0	-600,00	-0
5090	Övriga lokalkostnader	-1 179,18	-0	-3 875,00	30	-1 179,18	-0
5220	Hyra av inventarier och verktyg	-28 964,93	-0	-19 645,13	147	-28 964,93	-0
5400	Förbrukningsinventarier/-material	-54 937,82	-0	-21 371,50	257	-54 937,82	-0
5410	Förbrukningsinventarier	-15 782,08	-0	-17 344,66	91	-15 782,08	-0
5420	Dataprogram	-13 710,00	-0	-30 111,75	46	-13 710,00	-0
5440	Förbrukningsemballage	-6 059,00	-0	-39 535,10	15	-6 059,00	-0
5460	Förbrukningsmaterial	-8 284,99	-0	-14 391,04	58	-8 284,99	-0
5480	Arbetskläder, skyddskläder	-10 576,07	-0	-5 741,30	184	-10 576,07	-0
5500	Reparation och underhåll	-6 895,00	-0	-1 325,00	520	-6 895,00	-0
5520	Hyra o. serviceavtal inv.	-4 388,50	-0	0,00	0	-4 388,50	-0
5611	Drivmedel för personbilar	-123 945,52	-1	-131 348,48	94	-123 945,52	-1
5612	Försäkring och skatt för personbilar	-32 588,00	-0	-39 113,00	83	-32 588,00	-0
5613	Reparation och underhåll av personbilar	-69 738,27	-1	-34 940,60	200	-69 738,27	-1
5615	Leasing av personbilar	-171 624,16	-1	-183 103,49	94	-171 624,16	-1
5618	Trängselskatter, ej avdragsgilla	-3 860,00	-0	-2 755,00	140	-3 860,00	-0
5619	Övriga personbilskostnader	-3 148,44	-0	-1 423,86	221	-3 148,44	-0
5625	Leasing	-27 060,42	-0	-45 108,84	60	-27 060,42	-0
5700	Frakter och transporter	-602 282,63	-5	-539 059,73	112	-602 282,63	-5
5720	Tull och Speditions kostnader	-393,00	-0	-1 359,00	29	-393,00	-0
5800	Resekostnader	-83 004,23	-1	-16 172,37	513	-83 004,23	-1
5831	Kost o logi Sverige	-26 492,98	-0	-16 401,91	162	-26 492,98	-0
5832	Kost o logi utland.	-9 346,33	-0	-5 807,09	161	-9 346,33	-0
5900	Reklam och PR	-210 284,09	-2	-101 875,75	206	-210 284,09	-2
5910	Reklam	-500,00	-0	-9 289,80	5	-500,00	-0
5940	Utställningar och Mässor	0,00	0	-20 150,00	0	0,00	0
6040	Kontokortsavgifter	-2 950,00	-0	-3 534,10	83	-2 950,00	-0
6062	Inkassokostnad	-240,00	-0	0,00	0	-240,00	-0
6071	Representation, avdragsgill	-15 788,57	-0	-11 416,79	138	-15 788,57	-0

9.3 Figures

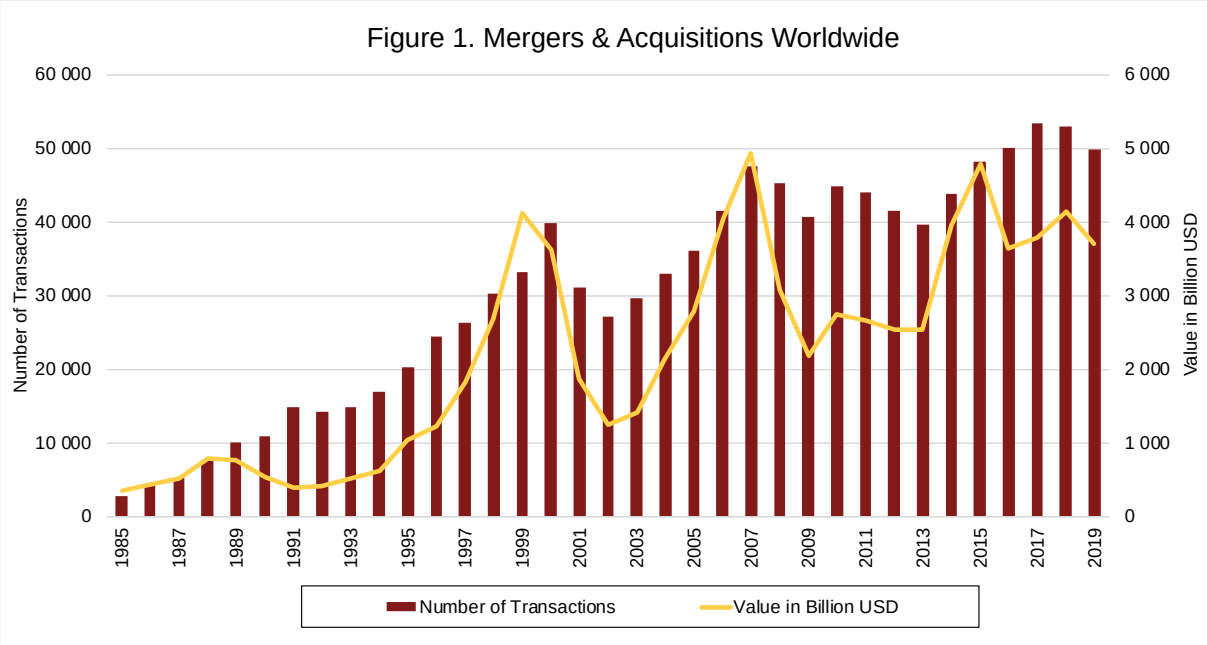
Figure 1. Mergers & Acquisitions Worldwide
60 000
50 000
40 000
30 000
20 000
10 000
0
6 000
5 000
4 000
3 000
2 000
1 000
0
Number of Transactions
Value in Billion USD
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
Number of Transactions
Value in Billion USD

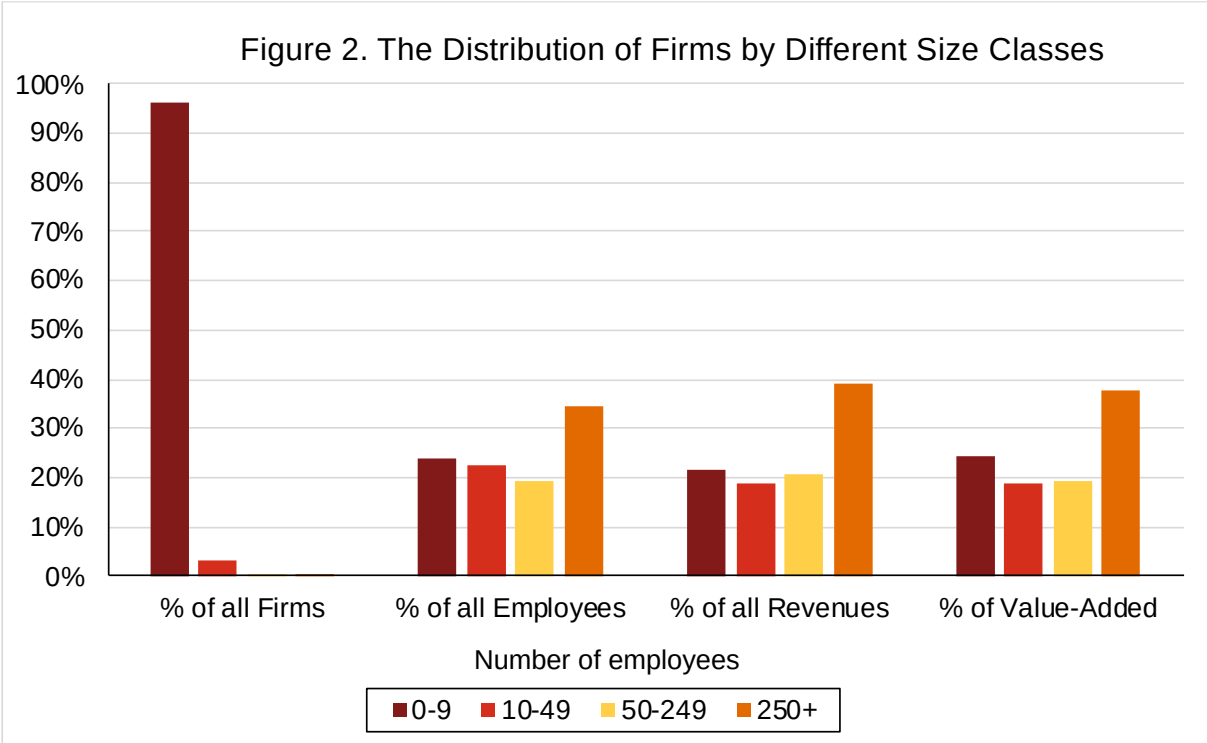
Figure 2. The Distribution of Firms by Different Size Classes
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% of all Firms
% of all Employees
% of all Revenues
% of Value-Added
Number of employees
0-9
10-49
50-249
250+

9.4 Tables

Table 1. Size-related risk premium

Size-related risk premium

Size	March 2014	March 2015
Market cap 5 000 MSEK	0,4%	0,5%
Market cap 2 000 MSEK	1,1%	1,2%
Market cap 500 MSEK	2,2%	2,3%
Market cap 100 MSEK	3,7%	3,6%

Table 2. Valuation, Asset-based approach, KSEK

Balance sheet	**2014**
Materiella anläggningstillgångar	0
Finansiella anläggningstillgångar	0
Fixed assets	**0**
Current assets	2 695
Adjustment inventory	176
Adjustment accounts receivable	-69
Cash	1 171
Adjusted Total asset	**3 973**
Owners capital	**603**
Un-taxed reservs	0
Financial debt	0
Operating liabilites	3 262
Adjustment operating liabilites	0
Adjusted Total liabilities	**3 262**
Value on company ABC	**711**

Table 3, Calculating Free Cash Flow, KSEK

Period (t)	**2015**	**2016**	**2017**	**2018**	**2019**
Sales	**16 000**	**19 200**	**23 040**	**27 648**	**33 178**
Sales growth %	20,3%	20,0%	20,0%	20,0%	20,0%
EBIT	**847**	**954**	**1 143**	**1 370**	**1 644**
Returning depreciation	3	6	9	12	15
EBITDA margin	5,31%	5,00%	5,00%	5,00%	5,00%
EBITDA	**850**	**960**	**1 152**	**1 382**	**1 659**
Net working Capital	175	210	252	302	362
Δ Net Working Capital	-742	-35	-42	-50	-60
Capital expenditures	-15	-15	-15	-15	-15
Free Cash flow before taxes	**93**	**910**	**1 095**	**1 317**	**1 584**
Taxes	-186	-210	-251	-301	-362
Unlevered Free Cash Flow	**-93**	**700**	**844**	**1 016**	**1 222**

Table 4. Comparable Betas public firms

Tax rate	22%
Unlevered Beta	**0,503**
Date	2014-12-31

Company	EV/Sales	EV/EBITDA	EV/EBIT	Beta 5y*	D/E ratio	Unlevered Beta
Absolent	4,29	19,43	32,09	0,52	0,6	0,35
Nordic Flanges	0,53	9,15	56,43	1,97	1,5	0,91
Bufab	1,27	13,51	15,99	1,13	0,94	0,65
Alimak	2,14	12,52	14,71	1,19	2,77	0,38
OEM	1,31	11,17	13,83	0,87	1,04	0,48
Clemondo	0,64	23,86	-22,36	0,63	5,23	0,12
Nolato	0,97	6,66	9,08	1,22	0,86	0,73
Trelleborg	1,87	11,03	13,68	1,37	0,86	0,82
Hexpol	2,3	12,65	14,09	1,02	0,44	0,76
Nordic Waterproofing**	1,1	8,69	9,74	1,12	0,96	0,64
Mean	1,642	12,867	15,728	1,104	1,52	0,58

Data from 2014-12-31

*Based on 2015-2020

**Data from 2016

Table 5. CAPM, wacc

WACC using CAPM model	
Assessed unleveraged beta	0,503
Assessed Debt / Equity ratio (D/E)	0,000
Equity Beta (β)	**0,503**
Risk-free rate (Rf)	0,90%
Market Risk Premium (RPm)	6,80%
Size premium (RP)	0,00%
Specific company premium (Rpu)	0,00%
Country risk premium (Rpi)	0,00%
Required return on equity (Re)	**3,87%**
Debt / Equity margin (D/E)	0,00%
Tax rate	22,00%
After tax cost of debt	**0,00%**
Weighted Avarage cost of capital	**3,87%**

Table 6. Build-up, wacc	
WACC using Build-up model	
Assessed unleveraged beta	1,00
Assessed Debt / Equity ratio (D/E)	0,00
Equity Beta (β)	**1,00**
Risk-free rate (Rf)	0,90%
Market Risk Premium (RPm)	6,80%
Size premium (RP)	6,10%
Specific company premium (Rpu)	9,60%
Country risk premium (Rpi)	0,00%
Required return on equity (Re)	**23,40%**
Debt / Equity margin (D/E)	0,00%
Tax rate	22,00%
After tax cost of debt	**0,00%**
Weighted Avarage cost of capital	**23,40%**

Table 7. ABC Unlevered Free Cash Flows, Forecast Period (CAPM), KSEK

Period (t) Forcast	**2015**	**2016**	**2017**	**2018**	**2019**
Sales	**16 000**	**19 200**	**23 040**	**27 648**	**33 178**
Sales growth %	20,3%	20,0%	20,0%	20,0%	20,0%
EBIT	**847**	**954**	**1 143**	**1 370**	**1 644**
Returning depreciation	3	6	9	12	15
EBITDA margin	5,31%	5,00%	5,00%	5,00%	5,00%
EBITDA	**850**	**960**	**1 152**	**1 382**	**1 659**
Net working Capital	175	210	252	302	362
Δ Net Working Capital	-742	-35	-42	-50	-60
Capital expenditures	-15	-15	-15	-15	-15
Free Cash flow before taxes	**93**	**910**	**1 095**	**1 317**	**1 584**
Taxes	-186	-210	-251	-301	-362
Unlevered Free Cash Flow	**-93**	**700**	**844**	**1 016**	**1 222**
WACC	3,87%	3,87%	3,87%	3,87%	3,87%
PV Unlevered Free Cash Flows (UFCFs)	**-90**	**649**	**753**	**873**	**1 011**

Table 8. Value ABC, CAPM Model, KSEK		Perpetual Growth Rate: 2%	
	-1,50%	WACC	1,50%
	2,37%	**3,87%**	**5,37%**
Present value of period 2015 - 2019	3 375	3 195	3 028
Present value of Perpetuity Period	299 611	55 123	28 471
Discounted Cashflows (EV)	**302 986**	**58 318**	**31 499**
Financial Assets	1 171	1 171	1 171
Financial Debt	0	0	0
Discounted Cashflow + Net assets	**304 156**	**59 488**	**32 670**

Table 9. ABC Unlevered Free Cash Flows, Forecast Period (Build-up), KSEK

Period (t) Forcast	**2015**	**2016**	**2017**	**2018**	**2019**
Sales	**16 000**	**19 200**	**23 040**	**27 648**	**33 178**
Sales growth %	20,3%	20,0%	20,0%	20,0%	20,0%
EBIT	**847**	**954**	**1 143**	**1 370**	**1 644**
Returning depreciation	3	6	9	12	15
EBITDA margin	5,31%	5,00%	5,00%	5,00%	5,00%
EBITDA	**850**	**960**	**1 152**	**1 382**	**1 659**
Net working Capital	175	210	252	302	362
Δ Net Working Capital	-742	-35	-42	-50	-60
Capital expenditures	-15	-15	-15	-15	-15
Free Cash flow before taxes	**93**	**910**	**1 095**	**1 317**	**1 584**
Taxes	-186	-210	-251	-301	-362
Unlevered Free Cash Flow	**-93**	**700**	**844**	**1 016**	**1 222**
WACC	23,40%	23,40%	23,40%	23,40%	23,40%
PV UFCFs	**-76**	**460**	**449**	**438**	**427**

Table 10, Value ABC, Build-Up Model, KSEK		Perpetual Growth Rate: 2%	
	-1,50%	WACC	1,50%
	21,90%	**23,40%**	**24,90%**
Present value of period 2015 - 2019	1 774	1 698	1 626
Present value of Perpetuity Period	2 327	2 035	1 791
Discounted Cashflows (EV)	**4 101**	**3 733**	**3 417**
Financial Assets	1 171	1 171	1 171
Financial Debt	0	0	0
Discounted Cashflow + Net assets	**5 272**	**4 904**	**4 587**

Table 11. Comparable public companies

Company	EV/Sales	EV/EBITDA	EV/EBIT
Absolent	4,29	19,43	32,09
Nordic Flanges	0,53	9,15	56,43
Bufab	1,27	13,51	15,99
Alimak	2,14	12,52	14,71
OEM	1,31	11,17	13,83
Clemondo	0,64	23,86	-22,36
Nolato	0,97	6,66	9,08
Trelleborg	1,87	11,03	13,68
Hexpol	2,3	12,65	14,09
Nordic Waterproofing**	1,1	8,69	9,74

Data from 2014-12-31

**Data from 2016

Table 12. Multiples from public companies

	Low	Mean	High
EV/Sales	0,53	1,642	4,29
EV/EBITDA	6,66	12,867	23,86
EV/EBIT	-22,36	15,728	56,43

Table 13, Key figures from ABC annual report 2014-12-31

	KSEK
Sales	13 306,9
EBITDA	207,4
EBIT	207,4

Table 14. ABC valuation bases on comparable multiples from public firms, KSEK

	Low	Mean	High
EV/Sales	7 052,7	21 849,9	57 086,6
EV/EBITDA	1 381,3	2 668,6	4 948,6
EV/EBIT	- 4 637,5	3 262,0	11 703,6

Values in KSEK

Table 15. Comparable private companies, values in MSEK

Announced transaction date	Target/Issuer	Multiple Sales/Purchase price	EBITDA/ Purchase price	EBITDA/ Purchase price	Sales in year of transaction	Purchase price in MSEK	Buyers/Investors
10-01-2010	Bladhs Industri AB	0,19	3,83	12,00	240,0	46,0	Talent Plastics AB
03-03-2008	Ratema AB	1,04	5,95	4,20	24,0	25,0	Lahega Kemi AB
11-05-2002	Gislaved Folie AB	0,41	8,85	11,30	246,0	100,0	Stena Adactum AB
02-24-2014	AB Bröderna Bourghardt	0,67	9,01	1,78	23,9	16,0	SP Group A/S
07-06-2018	Nolato Hertila AB	1,45	10,36	5,60	40,0	58,0	Essentra plc
04-26-2010	MIP Technologies AB	1,23	N/A	N/A	13,0	16,0	Biotage AB
10-04-2010	AdeKema AB	0,57	N/A	N/A	35,0	20,0	WashTec AG
11-04-2013	Nolato Sunne AB	0,17	N/A	N/A	130,0	22,5	Per Vannesjö Industri AB
03-16-2009	Geveko Industri AB	0,17	N/A	N/A	22,0	3,8	Auson AB
07-31-2009	Front Scandinavia AB	0,10	N/A	N/A	57,0	5,6	Attraq A/S

Table 16. Multiples from private companies

	Low	Mean	High
Sales/Purchase price	0,10	0,60	1,45
EBITDA/Purchase price	3,83	7,60	10,36

Table 17. ABC valuation bases on comparable multiples from private firms, KSEK

	Low	Mean	High
Sales/Purchase price	1 304,36	7 991,21	19 295,01
EBITDA/Purchase price	795,03	1 576,30	2 148,07

Values in KSEK

Table 18. Comparison all valuation models used on ABC, KSEK

		ABC, Enterprice Value (EV), KSEK		
Asset-based method				
	Value of Equity = Liquidation value of assets - Outstanding debt		**710**	
Income-based method				
	WACC	2,37%	**3,87%**	5,37%
	DCF, CAPM	302 986	**58 318**	31 499
	WACC	21,90%	**23,40%**	24,90%
	DCF, Build-up	4 101	**3 733**	3 417
Multiple with Private firms				
		Low	**Mean**	High
	Sales/Purchase price	1 304	**7 991**	19 295
	EBITDA/Purchase price	795	**1 576**	2 148
Multiple with Public firms				
		Low	**Mean**	High
	EV/Sales	7 053	**21 850**	57 087
	EV/EBITDA	1 381	**2 669**	4 949
	EV/EBIT	- 4 637	**3 262**	11 704
+ Net Fin Assets				
	Financial Assets	1 171	1 171	1 171
	Financial Debt	0	0	0
	Net Financial Assets	1 171	1 171	1 171
Unknown valuation method made by International firm				
			Paid by the aquirer in early 2015	
	Enterprise Value (EV)		?	
	Financial Assets		1 171*	
	Financial Debt		0*	
	EV + Net Fin Assets		**5 000**	

*Based on numbers at 2014-12-31

Table 19. ABC valuation bases on comparable multiples from public firms, KSEK			
	Low	**Mean**	**High**
EV/EBIT	**- 4 637,5**	**3 262,0**	**11 703,6**
Financial Assets	1 171	1 171	1 171
Financial Debt	0	0	0
EV + Net assets	**-3 467**	**4 433**	**12 874**

9.5 Equations

Equation 1

$$PV = C_0 + \frac{C_1}{(1+r)} + \frac{C_2}{(1+r)^2} + \cdots + \frac{C_T}{(1+r)^T}$$

Equation 2

$$PV = \sum_{t=0}^{T} PV(t) = \sum_{t=0}^{T} \frac{C_t}{(1+r)^t}$$

Equation 3

$$PV(C\ in\ perpetuity) = \frac{C}{r}$$

Equation 4

$$PV = \sum_{t=0}^{T} \frac{C_t}{(1+r)^t} + \left[\frac{C_{T+1}}{(r-g)} * \frac{1}{(1+r)^T}\right]$$

Equation 15

$$FCFE = Net\ Income - (Capital\ Expenditures - Depreciation) - (Changes\ in\ noncash\ working\ capital) + (New\ debt\ issued - Debt\ repayments)$$

Equation 16

$$FCFF = Free\ Cash\ Flow\ to\ Equity + Interest\ Expence * (1 - Tax\ Rate) + Principal\ Repayments - New\ Debt\ Issues + Preferred\ Dividends$$

Equation 17

$$FCFF = EBIT * (1 - \tau_c) + Depreciation - Capital\ Expenditures - \Delta Net\ Working\ Capital$$

Equation 18

$$r_e = rf + \beta * \left(E[R_m] - r_f\right)$$

Equation 19

$$\Delta EARNINGS_{private\ firm} = a + b\Delta EARNINGS_{equity\ index}$$

Equation 20

$$\beta_L = \beta_U * \left[1 + (1 - \tau_c) * \left(\frac{D}{E}\right)\right]$$

Equation 21

$$\beta_U = \frac{\beta_L}{\left[1 + (1 - \tau_c) * (\frac{D}{E})\right]}$$

Equation 22

$$r_e = r_f + RP_m + RP_s + RP_u + RP_i$$

r_e = Cost of equity capital.
r_f = Risk-free rate.
RP_m = Risk premium for market or market risk premium.
RP_s = Size premium.
RP_u = Specific company premium.
RP_i = Specific country risk premium

Equation 23

$$r_{WACC} = \frac{E}{(E + D)} * r_e + \frac{D}{(D + E)} * r_D * (1 - \tau_c)$$

$$= W_E * r_e + W_D * r_D * (1 - \tau_c)$$

Equation 24

$$Enterprise\ Value\ (EV) = Market\ Value\ of\ Equity + Debt - Cash$$

9.6 Definitions

Small Business: A business with between 0 – 49 revenues employees or revenues less than 100 million SEK.
Private Business: A business not traded on a regulated market of exchange.
PV: Present Value, the current nominal value of an asset expressed in a particular currency.
FCF: Free Cash flow, the cash a business has left after it has expended all its investment needs. The cash left for discretionary use, e.g. use for dividend or additional expansion.
SPA: Sale and Purchase Agreement.
EBIT: Earnings Before Interest and Taxes.
EBITDA: Earnings Before Interest, Taxes, Depreciation, and Amortization.
Fair Market Value: The expected price if a transfer would be made on an open and unregulated market. Where the buyer and seller both are rational and hold relevant and equivalent information.
Public information: Information that is available to all.
Value-added: The added value a firm contributes by its activities. The firm's production value less the value of the firm's inputs. Often used as a measurement of a firm's contribution to Gross Domestic Product (GDP).
EV, Enterprise Value: The value of a firm after it has paid its debts.
Levered: A firm that has utilized borrowing and therefore has debt.
Unlevered: A firm without debt.
Terminal Value: The continuing value, the value in perpetuity.
Firm: Used interchangeably with business and company.
Claimholder: Person with an interest in the firm, such as Bond- and Shareholders.