



JÖNKÖPING INTERNATIONAL BUSINESS SCHOOL  
JÖNKÖPING UNIVERSITY

# **Business Valuation**

How to Value Private Limited Knowledge Based Companies

Master Thesis in Finance

Author: Olsson, Fredrik

Persson, Martin

Tutor: Österlund, Urban

Jönköping June, 2009

## Acknowledgements

There are a number of people who deserve our appreciation for their contributions in helping us to conduct this master thesis. Firstly we want to thank our tutor Urban Österlund who has provided us with support and guidance throughout the research. Finally, all the respondents from various corporate finance departments in Sweden and Norway. They have made the work possible and we wanted to send them a special thanks for taking time off to answer our questions which made our research possible.

The respondents who have participated in the study is:

**Jonas Ahlberg**, Grand Thornton, Sweden.

**Björn Gustafsson**, Ernst & Young, Sweden.

**Sverre Krog**, DnB NOR, Norway.

**Hans Nyqvist**, Öhrlings PriceWaterhouseCoopers, Sweden.

**Jan Swärd**, Nordea, Sweden.

And three persons who wanted to remain Anonymous.

Jönköping, 5<sup>th</sup> of June 2009

---

Fredrik Olsson

---

Martin Persson

---

## Master Thesis in Finance

<b>Title</b>	Business Valuation – How to Value Private Limited Knowledge Based Companies
<b>Authors</b>	Fredrik Olsson and Martin Persson
<b>Tutor</b>	Urban Österlund
<b>Date</b>	June, 2009

---

### Abstract

<b>Purpose</b>	The purpose of this study is to investigate the methods used for valuating private limited knowledge based companies and if a new approach is required, create or modify a foundation that will constitute as a base within the valuation process.
<b>Method</b>	This is a qualitative study using interviews to obtain primary data. People working in the valuation industry were contacted and we got eight respondents. The questions were designed to answer our purpose and research questions. Telephone interviews were chosen due to the fact that we believed the response would be higher.
<b>Frame of References</b>	The theories used in this section is divided into three parts; the financial analysis including traditional valuating methods such as the Discounted Cash Flow model and relative valuating and multiples. The non-financial analysis focus on the underlying analysis consistent of structural- and intellectual capital and also value drivers that are creating value for the firm. In the end other theories concerning the analysis are presented, such as the risk-return trade-off, risk rating systems and analytical hierarchy process.
<b>Empirical Findings and Analysis</b>	In this section the presentations of the respondents' answers and a brief analysis related to each question. After this an extended analysis is presented focusing on the subject and our risk scheme and guidelines we created/modified. The extended analysis is connected to the respondents' answers. The purpose of this section is to have a better understanding about the risk of transient intellectual capital and give recommendations how to handle it. Also, guidelines of how to weight different value driver are discussed.
<b>Conclusion</b>	We concluded that all valuations utilize more than one approach in order to estimate the most accurate value for the company. For knowledge based companies the biggest risk with a M&A transaction is the probability of diminishing the intellectual capital. We constructed a model that will manage this risk based on our interviews and established theories.

# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Background .....	1
1.2	Problem Discussion .....	2
1.3	Purpose .....	3
1.4	Definition of Knowledge Based Company .....	3
<b>2</b>	<b>Method .....</b>	<b>5</b>
2.1	Inductive Versus Deductive .....	5
2.2	Qualitative Versus Quantitative .....	6
2.3	Literature Search .....	6
2.4	Interviews .....	7
2.4.1	Interview Guide and Interview Questions .....	7
2.4.2	Our Interview .....	8
2.5	Interview Selection Process .....	9
2.6	Validity and Reliability .....	10
2.7	Criticism of Method .....	11
<b>3</b>	<b>Frame of References .....</b>	<b>13</b>
3.1	Motives for Valuation .....	13
3.2	Due Diligence .....	13
3.3	Financial Analysis .....	14
3.3.1	Discounted Cash Flow Model .....	14
3.3.2	Profit Margin .....	17
3.3.3	Relative Valuation Approach and Multiples .....	17
3.4	Non-Financial Analysis .....	19
3.4.1	Value Driver .....	20
3.4.2	The Structure of the Underlying Analysis .....	20
3.4.2.1	Industry Structure .....	21
3.4.2.2	Intellectual Capital .....	23
3.4.3	Value Drivers to Look For .....	25
3.4.4	Underlying Analysis Framework .....	27
3.5	Tax Considerations with M&A Transactions .....	28
3.6	The Risk-Return Trade-Off .....	28
3.7	Risk Rating System .....	29
3.8	Analytical Hierarchy Process .....	30
3.9	Summary of Theories .....	32
3.10	Previous Study .....	33
<b>4</b>	<b>Empirical Findings and Analysis .....</b>	<b>34</b>
4.1	Initial Clarifications .....	34
4.2	The Questions .....	35
4.2.1	Question 1 .....	35
4.2.2	Question 2 .....	36
4.2.3	Question 3 .....	37
4.2.4	Question 4 .....	38
4.2.5	Question 5 .....	39
4.2.6	Question 6 .....	40
4.2.7	Question 7 .....	41

4.2.8	Question 8 .....	45
4.2.9	Question 9 .....	46
4.2.10	Question 10 .....	47
4.2.11	Question 11 .....	48
4.2.12	Question 12 .....	49
<b>5</b>	<b>Extended Analysis .....</b>	<b>51</b>
5.1	The Risk Analysis Scheme for the Intellectual Capital.....	51
5.1.1	The Categories .....	52
5.1.2	The Risk Analysis Scheme .....	54
5.1.2.1	The Steps of Risk Analysis Scheme.....	55
5.1.2.2	Discussion about the Risk Analysis Scheme.....	56
5.2	Guidelines to Weight Internal and External Value Drivers .....	58
5.2.1	The Process of Using the Guidelines .....	59
5.2.2	The Value Drivers in the Guidelines .....	59
5.2.3	Discussion about the Guidelines .....	62
<b>6</b>	<b>Conclusion.....</b>	<b>63</b>
<b>7</b>	<b>Discussion and Reflections .....</b>	<b>65</b>
7.1	Final Remarks .....	65
7.2	Further Studies .....	65
<b>8</b>	<b>References .....</b>	<b>67</b>
	<b>Appendices.....</b>	<b>72</b>
	Appendix 1 – Interview Guide in English.....	72
	Appendix 2 – Original Interview Guide in Swedish.....	74
	Appendix 3 – S&P Ratings Category Definitions.....	76

## Figures and Tables

Figure 1-1	Customer Adoption Model .....	4
Figure 3-1	Porter’s Five Forces.....	21
Figure 3-2	The Intellectual Capital Value Tree .....	23
Figure 3-3	Underlying Analysis Model.....	27
Figure 3-4	Risk-Return Trade-Off.....	29
Figure 3-5	AHP Example .....	31
Table 4-1	Description of the Interviewees .....	34
Table 5-1	Risk Analysis of Intellectual Capital.....	55
Table 5-2	Risk Rating Table.....	55
Table 5-3	Guidelines to Weight Internal and External Value Drivers.....	59

# 1 Introduction

---

*This chapter is an introduction to the thesis. Firstly, a background about the subject is given followed by a problem discussion with research questions leading to the purpose of the thesis.*

---

## 1.1 Background

At the moment of writing, Sweden is in a recession with stock markets in a free fall in the end of 2008. From an extreme high level it has made a historical quick drop to an extreme low level and by looking closer at the companies we can see that their firm value is changing rapidly. These changes are not entirely depending on conditions controlled by the companies, but rather changes in the business's surrounding environment. The crises seen today started with a financial meltdown, resulting in a tough atmosphere to get loans granted, which will have an affect on everyone (DagensIndustri, 2009). The importance of knowing the current market value of your company and other factors around the company has increased. This is not only from an ownership perspective but also from the board-, accounting-, and financial perspective a valuation is done (PriceWaterhouseCoopers, 2005).

Sweden started off as an agricultural country moving on to become an industrial community and today we are heading more and more towards a service economy. In the end of the 60s more than half of the workforce was connected to the services sector and since the 80s the private services had grown dramatically and today almost three out of four paid works is in the service business. The development here in Sweden is not unique, it is something recognised in all well developed economies. In fact, the service sector was responsible for 62 percent of Sweden's GDP in 2008 and 75 percent of the total employment (Almega, 2009).

Having a business in today's environment there exist many challenges and changes you have to face. There exists increasing globalisation, trade liberalization, the European Union, introduction of the Euro and other factors forcing companies to determine a value for them self, the corporate world has become more dynamic. Mergers, acquisitions, divestitures and corporate takeovers are an increasing important part of a day's work for many senior managers (Frykman & Tolleryd, 2003).

In March 2007 KPMG published a research paper showing that almost half of all manufacturing companies and 75 percent of the private equity funds failed to maximize their value in the case of an acquisition. Emanuel Ramstedt, head of Strategic and Commercial Intelligence at KPMG, said that this is remarkable since at this time it was a seller's market. The biggest explanation of this is that many companies are allocating more resources into the valuation when buying instead of selling, he believes this is an area of improvement. One of the most common pitfalls is that the buyer finds unwelcome surprises when doing an in-depth analysis of the company.

Since the beginning of the 1990s the focus in the business world has been to generate value for the shareholders and this has spread to business schools all over the world. Companies

have investment decisions where valuation methods are used to capture the shareholders value. Therefore, it is necessary for a businessman to understand how corporate value is measured. If you are not clear on how markets measure value you cannot work effectively to maximize it (Frykman & Tolleryd, 2003).

There have always existed occasional and temporary differences between the market's opinion and the accounting reality, but in the last decade this small different has grown substantial. Showing more of a systematic miscalculation in the way the value is measured, in other words the company's balance sheet tells another story than the reality. It has become clear that the real value for companies cannot only be determined on the foundation of traditional accounting principles due to the fact that many firms today is constituted mainly by intangible assets such as intellectual capital (Edvinsson, 1997).

## 1.2 Problem Discussion

Every asset, financial as well as real, has a value. The key to successfully investing in or managing these assets lies in understanding not only what the value is, but the sources of that value. Any asset can be valued but some assets are harder than others. How does one decide what the value of a company really is? Valuation is neither a specific science nor is it objective it is rather a subjective appreciation or judgment of the value that the appraiser concludes from his own analysis, experience and knowledge. Today, there exists no common methodology when it comes to valuation of knowledge based companies and most of the methods and theories are based on investment theories. Usually it is the demand and the potential future growth of the company that will decide the value (Damodaran, 2002). Therefore, we asked ourselves the question:

*What methods are used in the valuation industry to find the value of a private limited knowledge based company?*

There exist a large variety of methods and tools in order to valuating a specific company, but not all of them are equally suitable (Nilsson et al, 2002). The information during a valuation is almost endless and it is based on the internal and external information from the company such as everything from macro economical- to company specifics variables. Therefore the valuation can never be perfect it is rather an approximation. One of the most problematic elements in a valuation is the intellectual capital and we ask the question:

*Is it possible for the valuation industry to determine a value for the intellectual capital? And to what extend?*

An investment means that one need to give up some resources today in order to receive future potential rewards. In order to know what a company is worth today one need to know what will happen in the future. We have chosen an approach aimed at constituting a ground for discussion and further investigation as a part of the final valuation methodol-

ogy. When valuating knowledge based companies the valuator needs to recognize the transient intellectual capital and the existence of different critical value drivers for the valuation.

*How does the valuation industry manage the risk of the transient intellectual capital?*

The problem is that the main asset, intellectual capital and human capital, for knowledge based companies do not reflect the book value of these companies since it do not satisfy International Accounting Standards Board's (IASB) criteria for an asset. According to IASB's standards, an asset has to be controlled by the company as the consequence of occurring events and it is suppose to generate future economical rewards. Since the company cannot own its employees or their competences, they cannot control them and therefore it cannot be reported, most of the times, as an asset in the balance sheet (FAR, 2005). Most previous research and literature in the area of valuation concerns manufacturing companies as most of the theoretical framework will present. We find it interesting and challenging to go further into this specific field of valuing private limited knowledge based companies. The main focus will be on the company's intangible assets and its transient nature. Thus, the aim is to increase the understanding and process of valuing when it comes to a merger and acquisition transactions both for people in the business and for private limited knowledge base companies' stakeholders.

### **1.3 Purpose**

The purpose of this study is to investigate the methods used for valuating private limited knowledge based companies and if a new approach is required, create or modify a foundation that will constitute as a base within the valuation process.

### **1.4 Definition of Knowledge Based Company**

The concept behind knowledge based companies might today seem as understood and established but a common accepted terminology does not exist. In previous literature and studies there exist a large variety of definitions but they all have some similar attributes and therefore the common definition of a knowledge based company is that it *sells knowledge* (Støy, 2007). A knowledge based company is also a service company but on the other hand not all service firms are knowledge based companies. A knowledge based company is a service company that adds knowledge when they deliver their services. The main assets is the employee and there special knowledge, competence and experience (Nationalkylopedin, 2009a).

Sveiby (1995) adds that knowledge based companies is a specific type of service company, where there is a closer cooperation between the parties and their production should be characterized by being:

- Not standardized
- Creative
- Strongly individual dependent
- High level of complex problem solving

In figure 1-1 Sveiby (1995) present how knowledge based companies can be divided according to their customer adoption ability.

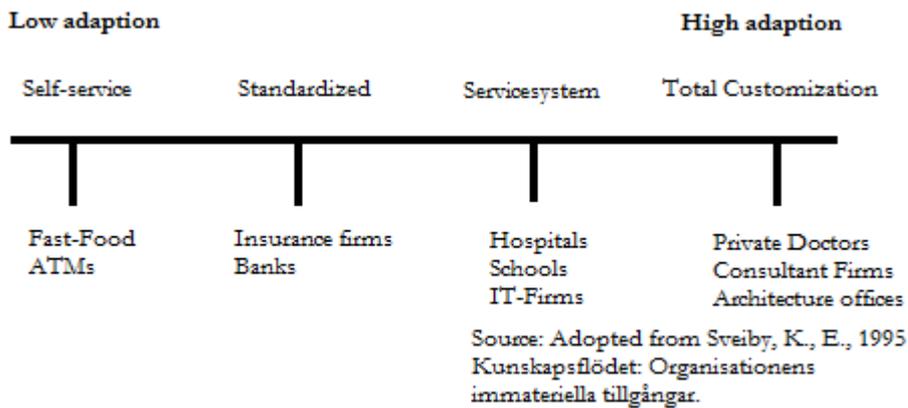


Figure 1-1 Customer Adoption Model

## 2 Method

---

*This chapter motivates the research philosophies and research approach used in the thesis. It will also describe the procedure of the study with ways of collecting information. A discussion of the validity and reliability is followed by criticism of the method.*

---

### 2.1 Inductive Versus Deductive

When conducting a research paper one usually use one out of two approaches, either; inductive or deductive reasoning. An inductive method can be seen as “theory comes last” which means that the theoretical framework will be developed out of the empirical data (Mason 2002). It takes a bottom up approach, by collecting the data first through empirical observations and then try to develop a theory from the data analysis. The deductive method on the other hand takes a top down approach “theory comes first”. With this approach the researcher tries to generate a hypothesis or proposition from theories of earlier research and test that with the empirical data (Saunders et al, 2007). In most research papers a combination of different research methods is used, Alvesson & Sköldbberg (1994) refers to this combination as abductive reasoning. The abductive approach begins with empirical findings but without disregarding the theoretical background. The analysis of the empirical findings can be combined with or preceded by research of existing theories, where existing theories may serve as a source of inspiration for the research to discover new patterns.

The aim of this thesis was to increase understanding of the relationship between the existing theoretical framework of valuation and the complexity of knowledge based companies. The research examined if there existed any pattern when analyzing the primary empirical data retrieved from the interviews, on which theories and concepts that could be used and how they were combined if more than one valuation method was used. According to Holme & Solvang (1997), new and exciting knowledge can be discovered between the deduction and the induction.

Therefore the research approach of this study has both characteristics of an inductive as well as a deductive study. Since our theoretical framework and prior understanding has been helpful when retrieving the data conversely the actual retrieval and analysis of the data has helped us obtain an improved and more practical understanding of the theories. Different theories has been used to examine whether knowledge based companies could be valued from the existing theories of valuation, but it could also been the case that not all theories were relevant. Out from this view the elements of both approaches were significant where one was used to create a better understanding of the other. This research not only tested to assess the collected data to existing proven theories but also to modify and develop a model and new understanding of the data. In other words, an adductive approach was most appropriate for this thesis.

## 2.2 Qualitative Versus Quantitative

The general purpose for both qualitative and quantitative methods is to give a better understanding of the research. When conducting a study it is essential to evaluate the underlying problem in order to determine the most preferable research method (Saunders et al, 2007). With this research we intended to acquire a deeper understanding regarding the methodology of valuation concerning knowledge based companies, a qualitative strategy was therefore chosen. Since this method emphasizes more on how the researchers can create this deeper understanding when interpreting the data and how that can constitute the foundation for the analysis. According to Holloway (1997) qualitative study can be conducted through different methods either through observation, interviewing or a survey research.

The collection of our empirical data was retrieved from interviews with people with expertise and experience within the field of valuation. A lot of the information retrieved from interviews can be of a more complex and interwoven nature and can usually not be transformed into quantities (Holme & Solvang 1997). The research purpose was therefore of a more exploratory approach and not explanatory. When conducting exploratory research, qualitative data should provide deeper knowledge of the concept or the investigated problem rather than giving a greater amount of data. The goal is to find unique details about the analyzed problem and being able to provide examples and through them make conclusions (Svenning, 2003).

The advantage with a qualitative research is that it will be more flexible giving the researchers the ability to correct mistakes during the process more easily compared to a quantitative study. The answers from the interviews can be revised and if some information was missing or if some answers were not satisfying there would exist an opportunity to contact the interviewee again (Saunders et al, 2007).

## 2.3 Literature Search

To find the most appropriate theories and models for business valuation an investigation of existing material was conducted, leading to a previous research section. In the beginning we focused on general business valuation models such as Discounting Cash Flow model and later in the theory the focus shifted towards more intangible assets within the firm, such as intellectual capital.

In the business valuation area there are many sources of information; it comes from academic journals including the Bell Journal of Economics and the Journal of Business. However, the focus to gain information in the subject where on non-fiction books on the subject business valuation. A selection of those books was Frykman & Tolleryd (2003) “*Corporate Valuation – An Easy Guide to Measuring Value*” and Damodaran (2002) “*Investment valuation: tools and techniques for determining the value of any asset.*”

Articles and books used during the process of this paper were found in the Jönköping University's Library, but also by the use of databases such as JULIA and JSTORE. Also some online libraries were used, one of them was *ebary*. As a good way of extending the list of articles and books we looked into suggested reading- and references lists from relevant working papers, articles and books.

With the approach of using the suggested reading- and references lists it was easier to access good and reliable sources once we found trustworthy articles and books. However, to find the initial and new sources some key words were used regularly, either as standalone or combined with each other. Examples of key words: *business- firm- company- corporate valuation, Discounted Cash Flow Model, intellectual capital, human capital, five forces, multiples, knowledge based, risk rating and value drivers*.

During the work of setting up the Frame of References we faced a problem that within some areas there were absorbed amount of sources and in other areas the information could only be found in just a few articles and/or books. Due to this it took a lot of time sorting among the information to find the most relevant for our study.

## 2.4 Interviews

When it comes to collecting primary data there are a wide range of different ways of doing it. The ways of collecting information can firstly be divided into two groups; oral- and written methods. Among the oral methods there are individual interviews, telephone interview and group interviews. For the written methods there are different types of surveys; for example individually, in group or by mail/e-mail, and there is also an essay type of survey (Andersson, 1985). We have decided to do an oral interview, more specifically a telephone interview. By choosing an oral method instead of a written is often that you want to create a connection with the interviewed. Another reason could be that you wish to customize the next question depending on the answers given before and have the ability to explain or redesign the question to clarify the meaning (Eriksson & Wiedersheim-Paul, 2006). By using a method like telephone interview there are both advantages and disadvantages. The disadvantages are that you might lose some of the personal contact and that the questions cannot be too complicated (Andersson, 1985). On the advantage side it is a cheap and quick method to do many interviews and it has high response rate on this type of interviews (Andersen, 1998).

### 2.4.1 Interview Guide and Interview Questions

In the same way as a study can be qualitative or quantitative, an interview can also be done in these two ways. When it comes to a quantitative interview it is more about using the data in statistic, mathematic and formulas in a way to explain a phenomenon. A typical example of a quantitative interview is to ask 200 students, with a simple survey, about how much

beer and wine they are drinking in a week (Andersen, 1998). A qualitative interview will on the other hand have easy and straightforward questions, but, the answers to those will be complex and comprehensive. After successful interviews one can have rich and hopefully good material, which by hard work and a bit of luck turn into a great conclusion. You might even come up with something no one else has done before (Trost, 2005).

The key to do a first-class interview is to formulizing the questions in a way that the purpose and desirable result are well defined. It is also a must to describe who is behind the research and how the material collected will be used. The people being interviewed surely have questions why he or she has been elected for this study and it can therefore be good to explain the selection process (Andersson, 1985). Another crucial moment in an interview process is to select the appropriate interview type, it should be the most suitable for the specific interview situation (Trost, 2005).

Interviews are usually having one of the three characteristics or a combination of them; open-end, multiple chose or ranking questions. The characteristic of question you should use is once again a matter of the specific interview situation and the purpose of the research. By using open-end it allows the interviewee full scope and they may open the door to a great report. If you as an interviewer are looking for open answers, open-end questions should be used. Even if you are interested in a specific area, the questions should be specific but open-ended to get the most out of the interview (Benjamin, 1981).

#### **2.4.2 Our Interview**

The main goal with this research was to get a deeper understanding about how people in the valuation industry are valuing private limited knowledge based companies, in order to investigate the need for new tools concerning the problem of estimating intellectual capital. Therefore we chose an approach that will get us in contact with actual valuers within this specific business field, since we believed that they will have the knowledge and experience to help us fulfil our purpose. According to Andersen (1998) an interview method with open-end questions is most appropriate for a qualitative interview method. We decided that this was the best approach for our study, and chose telephone interviews as our method of collecting information, due to the fact that most of the people we wanted to interview are working in Stockholm and are very busy. We chose this method firstly to have a higher response rate and secondly due to the low cost and time spent on each interview.

Before actually interviewing, it is important that the research purpose and the frame of reference are actually represented in the interview guide (Andersen, 1998). Therefore a lot of effort and time were put into the interview guide, to ensure that our purpose and theories was related to the questions in order to get as valid answers from our interviews. Since interviewing is very time consuming for both parties it is very important to get all the relevant information needed at interview and not have to contact the interviewees an additional time for extra questions. Still we asked all our interviewees if they agree to being con-

tacted again for complementing questions or if something needed to be clarified, which they agreed to in order to ensure that we could answer our purpose.

To make sure that our interviews had a better flow and a higher validity we e-mailed our interview guide and an explanation of the purpose of our thesis to all our interviewees before the actual interview. It was done in order to assure the respondents that we were asking the questions for a study not at we were journalists seeking information. This also provides the interviewee the opportunity to be better prepared and also get an understanding of our research problem and the direction of the thesis. This we believed would help us retrieve more information from the interviews. However that also led to that we got two of our interviews in email format, even though it was stated that we were looking for telephone interview. They did not have the time for an interview but we still think their answers are valid since they were part of our sample of potential interview candidates.

During the interviews only one of the authors was participating since it was a telephone interview it would get very messy with too many participants and we believed that more information would be lost instead of the opposite. Since most people in this business field are very busy we thought it would be more suitable with one contact partner in order to establish a better relationship with the interviews. All the interviews were conducted in Swedish, which was natural since it is the mother tongue for both the interviewees and interviewer. Except for the interview with DnB NOR which was a mix of Norwegian and Swedish. The information received from the interviews as well as the interview guide was translated into English due to the format of writing. The disadvantage with this is of course the translation and the risk that some information will be wrong due to languages difficulties but we believed this risk to be very small. We also thought the ability for the interviewee to speak in their native tongue will provide greater benefits than the potential loss of the translation.

For the thesis to get a higher validity all the interviewees were asked to read through their answers before publishing. This reduces the risk for any misunderstanding that could have accrued during the interviews, since it gave the interviewees the possibility to verify that they have been correctly interpreted.

## **2.5 Interview Selection Process**

The main objective with our interviews was to collect information from people within the valuation industry, we believed that these people working with mergers and acquisitions could possess the most knowledge and expertise within this field and therefore they were the main target group. People working with valuation can mostly be found within the corporate finance department of banks or audit firm but also in private equity firms. Therefore we conducted a list of potential interview candidates for our thesis.

We had to conduct an extensive screening process in order to find our respondents. We contacted five auditing firms, five commercial banks, eight larger private equity firms, ten smaller private equity firms and three government agencies. Due to either; lack of time, no personal resource or other difficulties such as strict company policies or the lack of knowledge not all organisations could or wanted to participate. The sample for our research paper turned out to be eight companies in various business fields, one thing that all respondents had in common was that they are working at a corporate finance department.

The corporate finance department core function is advice services that are provided to various corporate bodies about the financial aspect of their operations for example; allocate money to run the business and make it grow, make acquisitions and plan for its financial future (PriceWaterhouseCoopers, 2009b).

The companies we chose to contact are all on daily base working with valuation within the corporate finance department providing qualified services such as firm valuation and procurement of capital. They are involved through the entire process of the transaction chain from the analysis, valuation, due diligence and further development towards counselling and problem solutions in relation to business transfers, re-structuring, and financing. Our respondents have a lot of experience and knowledge of providing such services for a long time and these companies also possess a lot of skills and hence are able to offer corporate finance solutions and that is why they were contacted.

These companies provide advisory services in the domain of corporate finance in the following fields:

- Solutions related to Problems of Business Operations
- Mergers and Acquisitions
- Planning of Business Services
- Generating Funds

## **2.6 Validity and Reliability**

When doing a research it is up to the researchers to convince the readers that the study is reliable and valid (Ghauri & Grønhaug, 2005).

Validity is referring to the instrument or question that should be measured is the intentional ones. For example if I am interested in knowing how many days in a week people are reading the newspaper, the expected answers should be in days not very often or rarely. Simply, is the study correctly reflecting the specific concepts the authors' are attempting to measure (Trost, 2005). There are some problems with validity, since no experiment can be perfectly controlled and no measuring instruments can be perfectly standardized (Kirk & Miller, 1986). Issues affecting the validity in a study in a negative way can be for example

stress or misinterpretations; different people interpreting information differently (Yanow & Schwartz-Shea, 2005). An issue for our thesis could be that we misunderstood our respondents, it is easily done for a telephone- than a face-to-face interview. We addressed this concern by sending the empirical findings to our respondents before publishing, in order for them to agree with the information presented.

When talking about the steadiness of the measures it is referred as the reliability of the study. In other words, despite the consequences of who is conducting the studies, the result should be the same as long as the same method is used (Ghauri & Grønhaug, 2005). A problem with reliability is that the statistical relationship is a most. The reality looks different, meaning that the results will be different at different times and it is expected. Reliability is built up on a quantitative study and that all variables are a fixed unit. This means that it is more or less meaningless to measure the reliability for qualitative studies or interviews (Trost, 2005). Due to the limitation of our sample of only eight respondents our findings could differ, if other people in the industry would be contacted. However we believe that that the findings are relevant since the respondents are representing some of the biggest actors in the market form different types of businesses. Due to the consensus of our respondents' answers we believe that a larger sample would not differ significantly.

Reliability and validity are by no means symmetric, it is relatively easy to obtain perfect reliability with no validity. However, perfect validity would guarantee perfect reliability, for every observation would yield the complete and exact truth (Kirk & Miller, 1986).

One of the biggest problems with doing a qualitative study or interview is the trustworthiness. As a researcher you have to convince the readers through the data collection and analysis that the study is trustworthy. This means that you have to show that the data is collected in a trustworthy way and especially that it is relevant to the purpose. A good way of increasing the trustworthiness in a study is to describe how and what questions have been used. By showing openness about the way of collecting information will give better responses then keeping it a secret (Trost, 2005).

## **2.7 Criticism of Method**

Even though secondary data usually can generate higher validity, in the way it can be easily verified by others unlike the data one collect them self. We concluded that, the way our purpose was constructed, the collection of primary data was most suitable and correct for this study, since we wanted to investigate the valuation process of knowledge based companies and its transient intellectual capital. Most secondary data concerning this topic is mostly about business valuation in a broad perspective and aimed more towards manufacturing industries. We determined that the cost of obtaining primary data was much lower compared to a biased result caused by secondary data. The choice of using a qualitative method can generate that the analysis will be biased on the writer's own knowledge, experience and emotions due to the fact that the information gathered is not quantified (Holme

& Solvang, 1997). This issue is evident for every researcher conducting a qualitative analysis and we have tried to be as objective as possible in order to produce a non-biased result and analysis.

The method of selecting our sample of respondents can be critiqued since we did not go through any database to find our respondents. Since the specific business field of valuation is limited and that many of the companies that provide these services are well known for most people with an interest within finance we argued for this to be an adequate foundation for our sampling. By this assumption we concluded that our sample would still be representative and be able to fulfil our purpose. When conducting a study about what valuation methods most appropriate for a specific service firm it is important to get in contact with the valid expertise and experience.

The disadvantages of using an interview technique as telephone interviewing are that you lose some of the personal contact and do not have the ability to study affect like body language of the respondents (Andersson, 1985). A telephone interview is one of the most effective ways of conducting an interview and due to the stressfulness of the business the issue of time was a big concern. We determined that this approach was most suitable since we wanted to get in contact with as many different candidates as possible. Also many of the respondents firms are located in Stockholm making it almost impossible to conduct this paper within the time restriction. Another disadvantage with telephone interviews is that the questions cannot be too complicated. This was never considered an issue since we contacted our candidates because of their expertise and experience within the field.

Another potential disadvantage of our interview approach might be, sending the interview guide with our questions to the interviewees in advance. There then exists a risk that the answers can be manipulated (Saunders et al. 2003). We believed this risk to be very small since the information shared from the respondents is not of sensitive nature. Also it is believed that the extra information can be received due to this since the interviewees get the chance to read through and think about the answer in advance with the purpose of the study in mind and we believed that this would generate more value for our thesis.

Every method chosen would have its limitations since there exist no single perfect approach, we believed that the different choices made within the research approach best reflected our problem statement and guided us in order to fulfil our purpose.

### 3 Frame of References

---

*This chapter will begin with a description of why a business valuation is needed and what due diligence is. It will be followed by a deeper understanding of the financial- and non-financial analysis. A discussion about the tax considerations and relevant theory for the analysis before the chapter is ending with a summary of the theories used.*

---

#### 3.1 Motives for Valuation

Within today's business world with a more global environment and mergers, acquisitions, Initial Public Offering (IPO) and raise of new capital are daily challenges of managers, a business valuation is more important than ever (PriceWaterHouseCoopers, 2005). Whether you are a prospective investor, a member of the board or the manager, knowing and understanding the value of the company and the process of valuation is always beneficial and in some situations crucial. As mentioned earlier, valuations are carried out for many different situations by different parties, for different reasons (Frykman & Tolleryd, 2003). The purpose of a valuation is determining the direction and range of the executing work. For example, if the purpose of the valuation is for an IPO it will be more extended than if it is for the board to just have knowledge about the value. The purpose is also important to know since it is defining what values to put specific weight on and use as benchmark for the valuation (PriceWaterHouseCoopers, 2005).

#### 3.2 Due Diligence

According to Nationalencyklopedin (2009b) due diligence is an in-depth company investigation of the firm's legal, financial and markets oriented aspects before, for example, a merger or acquisition. A due diligence analyze is usually done to give the new potential owner their own picture of the company, but also as a tool to control to that the information given by the owner is agreeable with the reality.

A due diligence analysis is almost never the same for two companies, one of the reasons is due to what the seller is prepared to show in this phase of the selling process (PriceWaterHouseCoopers, 2005). In the beginning of a due diligence analysis an overview of six different areas are analysed. A *commercial analysis* is conducted to give the buyer a broader understanding of the environment the company is active in. During the transaction process it is also necessary to get the basic knowledge of the *market dynamic* and the commercial risks that are affecting the business (Deloitte, 2009a). The *financial analysis* is normally an accurate review of the company's financial numbers, such as revenues and cash flows and so on. Other analysis that is conducted is *operational analysis* which is concentrated to the daily functions in the company. *Environmental-* and *legal questions* are also areas where the potential buyer is looking at (Lawrence, 1994).

A due diligence analysis is not done by every potential buyer, it is only at a specific point in the transition process the analysis is interesting. At this point the potential buyer has given a cause of the acquisition and an indicative offer. The result of the due diligence gives the buyer decision-making basic data about the objective and a foundation when the price is negotiated (PriceWaterHouseCoopers, 2005).

In the case of mergers and acquisitions it is very common that the buyers are conducting a due diligence. However, more and more sellers are doing the same, a so-called sell side due diligence. Due to the fact that they want to be prepared and increase their knowledge about their own company. This can be valuable knowledge when starting a price negotiation (Lawrence, 1994).

### **3.3 Financial Analysis**

Analysts are using a wide range of models when doing the financial valuation of a company. It is everything from simple models to extremely complex ones, the models often make very different assumptions but they do share some common characteristics. In general, there are three main valuation approaches. The first, discounted cash flow model is used to see the value of an asset by using the present value of future cash flows. The second, relative valuation is looking at comparable variables such as earnings, book value, sales and so on. The final, contingent claim valuation is using option pricing models to measure the value (Damodaran, 2002). The last model will not be used in this paper due to the focus is on private limited companies and thus firms do not have public traded shares and options making it really difficult to value. The input for the value of the underlying asset cannot be found in the financial market and therefore assumption has to be made increasing the errors.

When analysing a company's business and their environment the quality of the valuation is crucial for the result. To conduct a good analysis you need to master the Discount Cash Flow (DCF) calculations, however, when that is done the focus should shift to the value creation process within the firm (Frykman & Tolleryd, 2003).

#### **3.3.1 Discounted Cash Flow Model**

Discounted cash flow valuation (DCF) relates to the value of an asset to the present value (PV) of expected future cash flows on that asset and is the foundation on which all other valuation approaches are built. This approach has its foundation in the present value rule, where the value of any asset is the present value of expected future cash flows (Damodaran, 2002). The DCF model looks like this:

$$Value = \sum_{t=1}^{t=n} \frac{CF_t}{(1+r)^t}$$

Where n = Life of the asset

CF<sub>t</sub> = Cash flow in period t

r = Discount rate reflecting the riskiness of the estimated cash flows

This model is providing a reliable and detailed insight into the value of the company (Copeland et al, 1990) and it is the most trusted and utilized valuation method (Weston & Weaver 2004). This method calculates the present value of all the future free cash flows (FCF) generated by the company know as the discounted cash flow (DCF). By calculating FCF it is assured that the CF generated is available to the providers of capital both equity and capital (Copeland et al, 1990). The value of the firm's equity is equal to the present value of the net cash flows generated by the firm's assets, including the present value of investments made in the future. The free cash flow approach estimates the value of the firm as a whole and derives the equity value by subtracting the market value of non-equity liabilities (Damodaran, 2002).

There exist differences depending on the purpose of the valuation; one can either value the whole firm or just the equity. When evaluating the equity one start from the net income compared to when evaluating the whole firm then one start with the cash flow from EBIT, also called free cash flow to firm (FCFF). The second step is to calculate how much the firm has invested in order to create predictions about future growth and lastly the cost of equity or cost of capital has to be estimate determining the discount rate (Damodaran, 2002).

The FCFF is calculated from the income statement and can be a bit different depending on the purpose of the valuation and if the firm is levered or unlevered. It can look like this:

Revenues  
 - Operating Expenses  
 = EBITAD  
 - Depreciation and Amortization  
 = EBIT  
 - Taxes  
 = Net Income  
 + Depreciation and Amortization  
 = Cash Flows from Operation  
 - Capital Expenditures  
 +/- Working Capital Change  
 = FCFF

The difference for a levered firm is that principal repayments get deducted and proceeds from new debt issued get added after working capital changes (Damodaran, 2002).

**Cost of Equity** is somewhat difficult to determine with accuracy since it is impossible to know what every investor require in terms of return on their investment. The cost of equity is built up by a risk free rate, the market risk premium and an equity beta and is estimated using the dividend growth model or the Security Market Line (SML) approach (Damodaran, 2002).

The most commonly used approach to estimate the risk free rate is to use the US Treasury Bonds as a benchmark. There should not exist any default risk or reinvestment risk. Market risk premium is the estimated excess return in the market portfolio compared to the risk free rate and is a premium for average risk investment. The premium consists of the base equity premium and the country risk premium (Damodaran, 2002).

The equity beta is the systematic risk of a risky asset compared to the relative market risk and can be seen as the assets tendency to swing with the market. Beta is calculated as a regression analysis between the market and the chosen asset. A beta of 1 indicates that the asset has the same volatility as the market, while a beta higher than 1 indicates a higher volatility than the market and vice versa (Damodaran, 2002).

**The WACC Formula** is used in order to weight the market value proportions of the different components of financing used by the firm. The relative weight of cost of equity and debt adjusted for the tax effect will be the weighted average cost of capital (WACC). It is the return that a company has to earn on its assets to maintain the stock value. When valuating using the discounted cash flow model, the discount rate will be the WACC since it is the required rate of return on an investment made by the firm with the same risk as the existing operations (Damodaran, 2002). The WACC formula looks like this:

$$WACC = \frac{E}{V} * r_E + \frac{D}{V} * r_D * (1 - T_C)$$

Where:

V = Combined market value of debt and equity (E+D)

E = Market value of equity

D = Market value of debt

R<sub>E</sub> = Cost of equity

R<sub>D</sub> = Cost of debt

T<sub>C</sub> = Tax rate

### 3.3.2 Profit Margin

It is of most importance for firms to keep their margins as high as possible since costs are continuously rising and the growing competition on the market forces companies to become more competitive advantage in their services or products (Doyle & Corstjens, 1983).

Margins are good estimate for service firms since many of their products/services do not have large costs. For production firms cost reduction is a very powerful competitive weapon, since there exists many different ways to make the production process more effective and efficient and thereby lowering cost and increase margins. For many service companies the biggest cost is their employees and that is also their most important asset (Bennett, 1966).

Profit margin is a common key ratio in order to determine the profitability of a firm. It illustrates the firms profit in relation to the turnover, other relevant margins is gross margin. The prices of the services the firm offer its end customer have to be able to cover not only the cost associated with the development and value chain but also include a profit margin (Fairley, 1979).

### 3.3.3 Relative Valuation Approach and Multiples

The objective of relative valuation is to value assets based on how similar assets are currently priced in the market and it consists of two components (Damodaran, 2002). The first is to value assets on a relative basis making them standardized by converting prices into multiples of earnings, book value or revenues. The second part is to find similar firms, but even firms within the same industry often have different risk, growth potential and cash flow. The main task when using relative valuation is to handle these differences correctly when comparing multiples across firms (Damodaran, 2002).

An isolated number do not have any significance, it is not until it is compared against a standard value one can determine if it is satisfying or not. The relative valuation approach relies on that the market sets on average correct prices and that the errors will be corrected over time. This approach is widely used due its simplicity and quickness, it needs fewer assumptions and is easy to present and understand and also reflects the current state of the market. The approach can either use fundamentals, similar to the discounted cash flow model, or use comparables. The advantage of using fundamentals is that it shows the relationship between multiples and company characteristics, but the most commonly used is comparables which compare multiples to see how the company is valued. The comparison is usually done by comparing multiples against other similar firms within the same industry but one can also compare multiples over time (Damodaran, 2002).

The strengths of relative valuations is also its weakness, the ease with putting together a multiple and a group of comparable firms, can result in inconsistent estimates, where key variables like risk, growth or potential cash flow are ignored. The fact that relative valuation

reflects the mood of the market can lead to overvaluing and undervaluing. The biggest flaw with this theory is that it is particularly vulnerable to manipulation, due to the lack of transparency regarding the underlying assumptions. The most common multiples to analysis is earning, book value and revenue multiples (Damodaran, 2002).

**Earnings Multiples:** The price-earnings ratio is the ratio of the market price per share to the earnings per share. It reports how much the purchasers of stocks must pay per dollar of earnings that the firm generates and can vary a lot across different firms. A high P/E ratio usually indicates that the firm has potential to grow. P/E is calculated by the formula (Damodaran, 2002);

$$PE = \frac{P_0}{EPS_0} = \frac{(Payout\ Ratio)(1 + g_n)}{k_e - g_n}$$

Where;

$P_0$  = Value of the stock today

$EPS_0$  = Earnings per share in year 0

$g_n$  = Growth rate after n years

$k_e$  = Cost of equity

A multiple that can be used on more firms is the EV/EBITDA since fewer firms have a negative EBITDA than the number of firms that have negative earnings per share. Therefore in depreciation methods do not affect EBITDA, but it affects operating income and net income. The multiple is also more useful when comparing firms with different financial leverage. Value to EBITDA is calculated by the formula (Damodaran, 2002);

$$\frac{EV}{EBITDA} = \frac{Market\ Value\ of\ Equity + Market\ Value\ of\ Debt - Cash}{EBITDA}$$

Where;

EV = Enterprise value

EBITDA = Earnings before interest, taxes, depreciation, and amortization

**Book Value Multiples:** The estimates of the value of a business often differ a lot. The book value of assets is heavily influenced by the original price paid and accounting adjustments, such as depreciation. In order to see if a stock is over- or undervalued one usually look at the relationship between the price paid for the stock and the book value of equity. The Price to Book Value (PBV) can differ a lot between industries since it is depending on the potential growth and is also heavily influenced by the return on equity (ROE). When valuing an entire business the book value of all assets is used rather than just the equity. The PBV for a stable-growth firm is calculated by the formula (Damodaran, 2002);

$$\frac{P_0}{BV_0} = \frac{ROC * Payout\ ratio}{k_e - g_n}$$

Where;

ROE = Return on Equity

$g_n$  = Expected growth

$k_e$  = Cost of equity

**Revenue Multiples:** For young firms that have negative earnings, multiples of revenues are more accurate than a multiple of earnings. A revenue multiple such as, value to sales (V/S) can measure the value to equity or the business relative to the revenues that it generates. When using revenue multiples it is much easier to compare firms in different markets compared to the use of earnings or book value multiples (Damodaran, 2002). V/S is calculated by the formula;

$$\frac{Firm\ value_0}{Sales} = \frac{After\ tax\ operating\ margin * (1 - Reinvestment\ rate)}{Cost\ of\ capital - g_n}$$

Where;

EBIT = Earnings before interest and taxes

$g_n$  = Expected growth

**Multiples Related to Employees:** It is important to know that the number of employees is one of the most common measure concerning the company's size and growth. These measures can be divided into different key figures; turnover per employee, value added per employee, employees in different categories etc. This measure is suitable when one follows up the company over time and the ratio can be used to compare the company with other companies within the same industry. For personnel intensive companies the measure, growth in relation to employees, can be an important measure since these companies' results are highly dependent upon the employees.

### 3.4 Non-Financial Analysis

When doing a non-financial analysis all information and variables affecting the firm's value should be considered, which will be a great number of variables and will make the valuation very difficult to work through and use. In order to make the underlying analysis easier to implement the analysis is usually focusing on so-called value drivers (Hitt at al, 2002).

### 3.4.1 Value Driver

When doing the valuation it is necessary to understand where the company is creating their value, which means identifying the value drivers for the business. Having an understanding about the value drivers and their effect on the company's future cash flow will be a great help when estimating the input variables in the DCF model (Coperland, Koller & Murin, 1994). Within today's businesses there are hundreds of value drivers adding up to the whole firm's value. Value drivers exist on all levels in an organization, but they are categorized into two groups, financial value drivers which are more often at top management levels where the value driver usually reflect the overall performance of the company, measuring the past period. Examples of financial value drivers are; Return on Invested Capital, Return on Equity, Revenue Growth and so on (Frykman & Tolleryd, 2003). The other group is operating value drivers, being used as early indicators of the company's future performance and cash flow. Examples are Customer Brand Loyalty Index, Investment in Brands, Motivation Index, Corporate Quality Performance and so on (Coperland, Koller & Murin, 1994).

When executing a valuation, understanding and determining all value drivers is not necessary, nor is it recommended (Frykman & Tolleryd, 2003). You should instead focus on the a few variables generating the greatest overall value, these variables are distinguished as "key value drivers". Which value drivers that are the most important differ from company to company and industry to industry (Coperland, Koller & Murin, 1994).

To identify the key value drivers within a company is not easy, since it requires understanding of the firm's whole value creation process. Just because one found the key value driver once does not mean that it never has to done again, they can change over time. It is recommended to look at the effect of changes in the key value drivers and also to understand how the different value drivers are related to each other (Frykman & Tolleryd, 2003).

Understanding the key value drivers is one of management's most important tasks since it is clearly difficult to maximize value without knowing where it is created (Coperland, Koller & Murin, 1994).

### 3.4.2 The Structure of the Underlying Analysis

The underlying analysis is divided into three parts; an *external* part consisting of macroeconomic analysis of the overall economy focusing on factor affecting the company and an industry analysis of the industrial structure in which the company operates. The focus in this part is on the industrial analysis instead of the macro-factors since those factors are also affecting the industry. The second part is the *internal* resources also called, intellectual capital. In this part the company's intangible resources are analyzed, for example employees' knowledge, intellectual property and processed documents. The last part is the *corporate strategy*, being the link between the two other parts. This part is also about how the management will achieve the corporate goals, but the strategy itself is not seen as a value driver.

---

*Now the basic structure of the underlying analysis is presented briefly, below the ability of a deeper understanding in the industry structure and the intellectual capital is given based on well-known models. After that a presentation of the most common non-financial value drivers are presented in more detail and a framework for the underlying analysis is presented.*

---

### 3.4.2.1 Industry Structure

The first step towards formulating a competitive strategy is to define the industry structure within which it is operating and an analysis of that industry is always necessary for a valuation in order to make as correct assumptions as possible (Porter, 1980).

When analyzing the industry structure the famous Harvard professor Michael Porter’s “five forces” model will be used, see figure 3-1. Porter’s “five forces” combined power is deciding the potential profit in the industry. The “five forces” are *Rivalry*, *Barriers to Enter and to Exit*, *Substitute Products*, *Suppliers Bargaining Power* and *Customer Bargaining Power*, each “force” will be described additionally below.

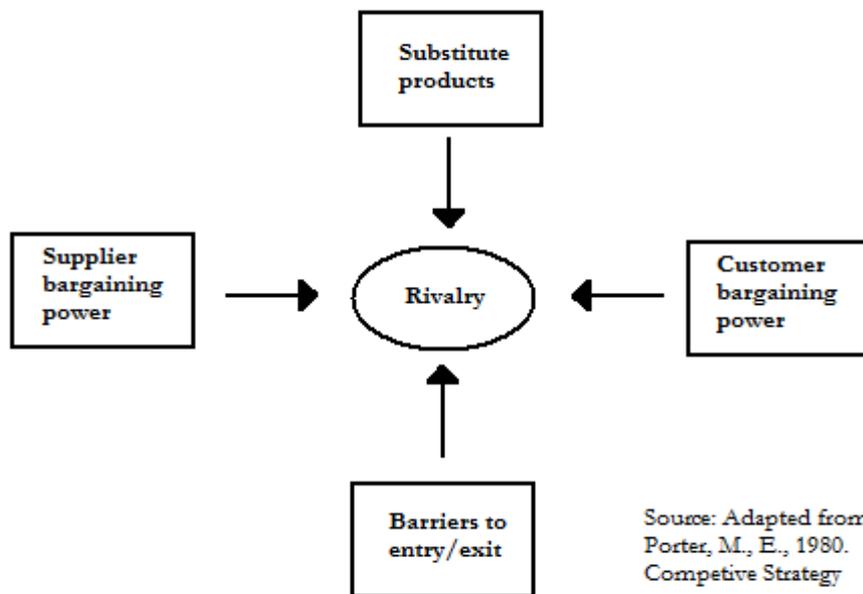


Figure 3-1 Porter’s Five Forces

**Barriers of Entry and to Exit** is a normally the way of referring to factors that make it more difficult and/or expensive to establish a presence in a market or exiting the market. There is a difference between natural barriers to enter such as economic of scale, strong brands, partners or capital needed. Then there are the unnatural barriers such as regulations, tariffs and monopolies in the market. The best scenario for a firm that already is in the market would be costly/high barriers to enter but almost no extra cost/low barriers to exit. This situation sets a profitable environment where the risk of price competition is low.

The worst case scenario would be the opposite resulting in that many firms are entering the industry in good times and nobody leaves during bad times (Frykman & Tolleryd, 2003).

A **Substitute Product** is a product/service that is fulfilling the same needs or functions as yours but it is product or delivered by another firm, a competitor. If there is a substitute product on the market it will limiting the profitability in that industry and also set an upper limit to the price of the product (Porter, 1980).

The relative bargaining power of **Customers (buyers)** and suppliers reflect the well known supply-demand axis in any famous strategic models. Buyers influence determines the profits that can be gained from a product will you meet the price and quality demand (Porter, 1980). Customer can influence the profitability of the industry by demanding lower prices, better service or better performance. Factor that can raise negotiating power could be that customer are more concentrated than the sellers and buy in large quantity or customers have very low cost of changing supplier (Frykman & Tolleryd, 2003).

**Suppliers (seller)** can influence the profitability of an entire industry, almost in the same way as customers, if they have a strong position. For example, they can rise prices, decrease the service level or take a number of other actions affecting the structure of the industry (Frykman & Tolleryd, 2003). Porter (1980) also saw the workforce of an industry as a supplier influencing the cost of production. Situations where the negotiating power is high for the suppliers are when the supplier industry is dominated by fewer companies and more concentrated to the industry they provide. Another example is when the industry in question is not an important customer for the supplier. When the competitive balance and natural profitability in the industry is set a structural analysis would be the next step in strategic planning (Porter, 1980).

**Rivalry** is that companies in the same industry are mutually dependent on each other, meaning that if one firm does a competitive move it will have an effect that others in the industry provoke a countermove (Porter, 1980). Of course, rivalry works differently in different industries and is also affected by many different factors. In generally, an industry with high rivalry is often an industry where the profit is lower (Frykman & Tolleryd, 2003). The best scenario for a single company, but probably not the best for its customers, would be that rivalry is low for example due to high growth in the industry, few players on the market with very different products and/or no barriers to exit (Porter, 1980).

By analyzing the “five forces” you will have a better understanding about the industry your company is active in. Does this industry have high profit potentials? Is the profit going to remain the same? This means that the “five forces” is an excellent tool to analyzing the current and future situation for the industry. Porter (1985) also pointed out that, the strategy is about making choices to pursue things a firm wants and overlook things it does not want, no firms can be able to do everything for all people. By this, he means that firms have to set limits on what they are trying to accomplish to become unique which sometimes requires trade-offs between interconnected options to achieve fit.

### 3.4.2.2 Intellectual Capital

When talking about intellectual capital there are people arguing that it is easy to set a value and define it. It is just the difference between the market value and the net asset value of the company. There are also other people considering that to be wrong, arguing that intellectual capital is much harder to define and especially to set a value on (Roos, Fernström & Pike, 2006). When it comes to high-growth- and knowledge based firms it is even harder. These people mean that the net asset value have very little to do with the market value and it is not possible to explain the different between them using intellectual capital alone (Frykman & Tolleryd, 2003). There are much more that affects the market value, such as macro economical variables, the company's industry structure, business strategy and many more. A more correct definition would be: all non-financial assets of a company that are not reflected in the balance sheet. By other words, it is extremely hard to put a value on (Stewart, 1998).

Today there is no good model of calculating the intellectual capital within a company, this is also the case for the industry structure framework presented in section 3.4.2.1. The industry structure has proven to be an important part in a company valuation (Hansson & Anderson 1999). There is one framework that has been used when valuing intellectual capital, that is Edvinsson's (1997) Intellectual Capital Tree presented in figure 3-2.

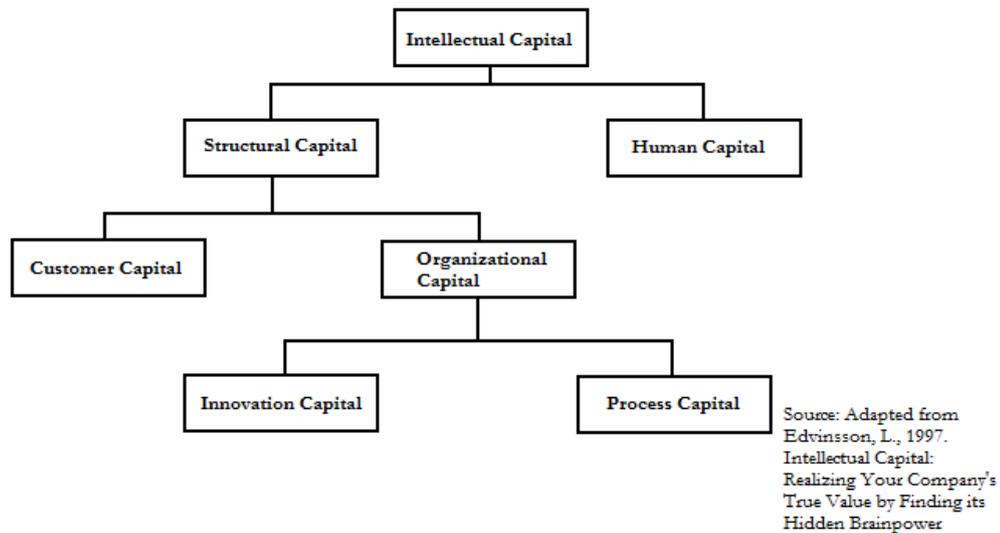


Figure 3-2 The Intellectual Capital Value Tree

According to Edvinsson (1997) intellectual capital is divided into two categories and different sub-groups.

<i>Capital Group</i>	<i>Definition</i>
Structural Capital	divided into Customer Capital and Organizational Capital.
Human Capital	the intellectual recourses possessed by the individuals in the company and that leaves the company every evening when the employees leave the office.
Customer Capital	the value of all the relationships the company has with their customers.
Organizational Capital	divided into Innovation Capital and Process Capital.
Innovation Capital	consists mainly of brands, patents and documented ideas.
Process Capital	is all support systems, process documentation, manuals, IT systems and the like.

(Edvinsson, 1997)

The terminology **Human Capital** includes more than all the individual capacity, knowledge, competence and experience among the firm's employees and management. It also has to capture the dynamic and flow of knowledge in an intellectual organization that operates in constantly changing and competitive environment. In order for the human capital to grow within a company the employees and senior management have to develop and improve their existing as well as new abilities. The company also has to realize the need for this abilities and competence and incorporate them in the organisation's operation (Edvinsson, 1997).

According to Roberts (1997) the efficacy and skill with which a company is able to increase its human capital is the real yardstick of its efficiency in the age of knowledge. One approach of create a value for human capital is to divide the employees into categories, according to their replace ability and the high or low added value they provide. The problem with this is the critical segment where the categorization to determine who is replaceable and who provide high added value; those whose expertise and talent create the products or services, who link the customer to the company.

According to Edvinsson (1997) the **Structural Capital** is properly described as the incarnation, enabling and the supportive infrastructure of the human capital, in other words the organisation's ability transfer and store the intellectual capital within the organisation. It can include IT-systems quality and effectiveness, corporate image, internal databases, organisational concepts and documentation. As can be seen in figure 3-2 the structural capital can be divided into three part; organisational capital, innovation capital and process capital.

Ideas are usually floating free and it is the company's responsibility to manage these ideas and transform that know-how into the organisation's property. Since the goal for a firm is

to be as effective as possible, it is in their self interest to allow collective knowledge to be shared and added. Instead of letting each of employees' waste time looking for information that other people have. This sharing will lead to gains in productivity, efficiency and relationships and here is the importance of knowing how to handle structural capital (Roberts, 1997).

### 3.4.3 Value Drivers to Look For

As described above there are plenty of variables that can be taken into consideration in a valuation. Due to time and cost the focus has to be on a few variables, and in some cases it is unnecessary to focus on more. It is standard in the valuation business to only have a few important variables to work with (Coperland & Koller & Murin, 1994).

For the areas of industry structure and intellectual capital there are seven main value drivers to get a deeper understanding for. These will be presented below category wise, with three respective four variables. There will also be a suggested way of measuring each value driver (Frykman & Tolleryd, 2003).

**Level of Consolidation** refers to the number of companies in a specific industry, being a measurement of the competition. If an industry has 300 competing companies, it is possible to assume that the competition is high, resulting in low margins and vice versa. The lower the competition is in an industry the more attractive the company's position is (Spencer, 1984).

One simple way of measuring the level of consolidation is by the company's relative market share, dividing the company's market share by the sum of all market shares. The measurement will give a good indicator of the dominance in the industry. One problem is that it only gives a good look on how the situation has been not anything about the future (Frykman & Tolleryd, 2003).

**Barriers to Enter** as mentioned by Porter's "five forces" there are two types: natural and unnatural barriers. With this measurement you can make assumptions on how the future will look like in the industry. It is important to look at the two types of barriers and evaluate the situation (Porter, 1980).

Barriers of enter can be measured in two currencies; time and money. Time refers to how much time it takes to enter a market and become a credible threat, and money is the amount it takes to achieve that (Frykman & Tolleryd, 2003).

**Industry Growth** consists of two variables; general GDP and industry-specific growth. A company within an industry having a high growth is always worth more. The company is worth more for two reasons, (1) the market is expanding and the company can remain or even lose market share and still increase the profit. (2) Industry growth indicates that the industry is in a dynamic phase, which can result in new segments and opportunities (McDougall & Covin & Robinson Jr & Herron, 1994).

The industry growth is easily measured, there are many research firms specializing in measuring GDP growth and growth in different industries on continuous basis (Frykman & Tolleryd, 2003).

**Brand Strength** also called customer capital is a measurement on the ability to attract new and keep existing customers. It is important since the customer loyalty is often closely connected to the profitability. It is mostly more costly to attract new customers than maintain existing ones (Lassar & Mittal & Sharma, 1995). The brand is important for many reasons, firstly, the globalization makes markets larger and more accessible at the same time the number of competitors is also increasing. Secondly, the brands become more and more important since in the technologic world today a product cannot keep the competitive advantage for long, but the brand as a competitive advantage can be used for extensive time (Frykman & Tolleryd, 2003).

A way of measuring the brand strength is usually done by combining the two variables; brand loyalty and brand recognition. The measurement can be the percentage of the company's target group who recognize the brand and what it stands for (Francois & MacLachlan, 1994).

**Human Capital** consists of collective abilities, relationship, talents, knowledge and experience within the company. It can be recognized in the way that it cannot be owned by the firm. Human capital can be divided into two groups, motivation and competence. When analyzing the human capital the main focus should be on the management and the board (Elliot & Dweck, 2005).

When trying to measure the competence within an organisation, past performance is a valid estimation. Here the focus should be on key persons and key financial value drivers. To measure the motivation is much harder, but a suggestion is to look at the percentage of compensation, both directly and indirectly. Combine this with the personal turnover at management level (Elliot & Dweck, 2005).

**Innovation Power** is important to analyze if you want to see the company's future marketplace and the ability to renew itself and break new ground. It is the ability to improve their existing product and develop new products. The importance of high innovation has increased in past decades due to shorter product life cycles (Von Krogh, Ichijo & Nonaka, 2000).

The best way of measuring the innovation power is to recognize how high a percentage of the company's whole revenue comes from products launched the past three years. In this way you measure both the ability to develop new products and the ability to create revenues from those new products (Von Krogh, Ichijo & Nonaka, 2000).

**Person-Independent Knowledge** is valuable in two ways; the company owns this type of knowledge meaning it does not leave the company when employees do and companies can leverage person-independent knowledge better than they can leverage human capital (Frykman & Tolleryd, 2003).

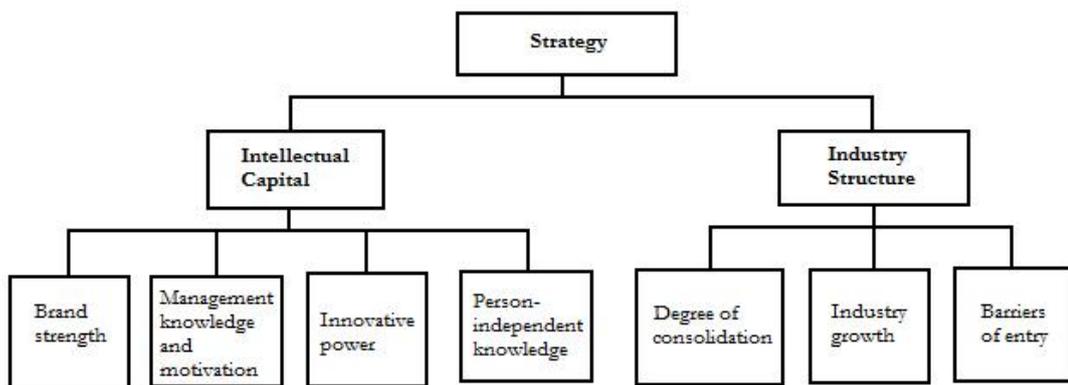
A good way of measuring the person-independent knowledge is through IT investment per employee multiplied or IT use per employee. It is not a perfect measurement but often it is closely related to the investment a company makes in IT systems (Frykman & Tolleryd, 2003).

The seven value drivers presented above are the variables that seem to have a great impact on the firm's value. However, it is important to understand that those are very general and can differ from industry to industry and company to company. When analyzing a firm for a valuing purpose, do not take the seven value drivers for granted. Firstly, do an analysis of the company to see what value drivers that should be used in that case and do not be afraid to switch some of the value drivers if you find variables with greater explanatory value (Frykman & Tolleryd, 2003).

### 3.4.4 Underlying Analysis Framework

In the previous sections the factors of the underlying analysis was described. Now the three components, (1) the external and (2) the internal part and (3) the strategy, will be combined together into a model. The main foundation of the model is the key value drivers presented in section 3.4.3.

In figure 3-3 an underlying analysis model is presented, it is to give you a good overview of the company's present and future status and also help you to perform an underlying analysis and transform it into data to use in a valuation model. By structuring the underlying analysis you will have a good foundation to stand on during you valuation. It is important to mention, once again, that you have to choose the variable that is most suited for your company and industry (Frykman & Tolleryd, 2003).



Source: Adapted from Frykman D., & Tolleryd J., 2003. Corporate Valuation - An Easy Guide to Measuring value

Figure 3-3 Underlying Analysis Model

### 3.5 Tax Considerations with M&A Transactions

There are some tax questions that sometimes also have to be taken into consideration when pursuing a business valuation. Those questions can become a significant to find a correct value of the firm (PriceWaterHouseCoopers, 2005). Since almost every transaction that is done has an indirect- or direct tax affect it is important to work through the transactions from a fiscal point a view before it is executing (PriceWaterHouseCoopers, 2009a). By doing a fiscal analysis before a merger or acquisition you can avoid pitfalls and fiscal pin down effect. To optimize the structure of the transaction it is important to use valuable information such as the ability to generate revenue, debt-incurrence and other information accessed from a financial review (Deloitte, 2009b).

When Moderaterna won, the election of parliament in Sweden, in September 2006 they started to build a new foundation for Swedish fiscal policy. From first of January 2009 an amended legalization of the corporate tax was changed. From this date the tax rate where reduced from 28 percent to 26.3 percent. Today it is also possible for a company that has acquired a shelf company to give or receive a deductible contribution between the two companies during the year of the acquisition (EVCA Tax and Legal Committee, 2009).

### 3.6 The Risk-Return Trade-Off

In almost all aspects of life, the largest risk you take on the larger payoffs you will receive. In the competitive financial markets, this is true almost across the world in every situation (Garger, 2008).

The risk-return trade-off is connected to the relationship between the return of an investment and the undertaking risk of that investment. The higher required return the riskier the investment has to be (See figure 3-4). Of course it applies in the opposite direction as well, the higher risk an investor undertakes the higher return he or she expects to receive (Campbell & Viceira, 2005).

With risk-return trade-off it is reasonable to assume that investors are working towards investment opportunities yielding a high return with a low risk. If there are two alternatives with the same return given different risks, most investors would choose the alternative with the lowest risk. This is called the principal of risk aversion suggesting the people are, in general, avoiding risky investment when an alternative with the same benefits exists. On the financial market investors are always seeking to find alternatives either with the same risk but higher return or the same return but to a lower risk (Adler, 1969).

Most investors in the market are so-called risk averse, meaning you are seeking to minimize risk and maximize return. However, how does an investor decide how much risk is too much? (Garger, 2008)

As an investor you have individual goals and you have your knowledge and those are factors determining the risk rate you will undertake. Generally, the younger the investor is the

riskier projects he or she tends to join. One of the arguments for that is lack of knowledge and you have plenty of time to correct and learn from all your investment projects. Of course this means that the older an investor is, the lower risk he or she will undertake. The point of doing these generalizations is to show that there is no optimal risk-return trade-off. In a market where there is endless of investment alternatives with extremely many risk levels, an investor is undertaking the risk appropriate for him. Generating in some cases, there are investors taking on too much risk and have too many bad outcomes generating a bankruptcy, such is the game of risk and return (Garger, 2008).

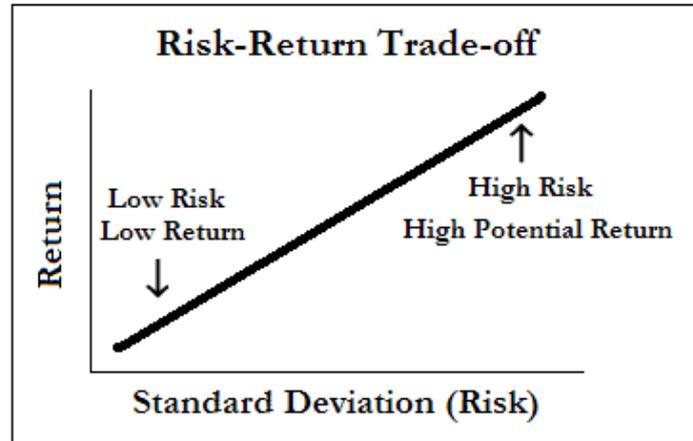


Figure 3-4 Risk-Return Trade-Off

### 3.7 Risk Rating System

This section is built upon the research paper by Crouhy et al (2001), which investigates the traditional and prevalent approach to credit risk assessment - the rating system. Quantitative and qualitative evaluation usually constitutes the foundation for most of the rating systems. In a risk analysis the final decision and rating is determined by many various attributes. Rating systems are most commonly applied to non-financial organisations, as a specific service provided by either banks or other financial institutions. This research paper describes the rating systems of the two main credit rating agencies, Standard & Poor's (S&P) and Moody's since they are considered to have valid expertise and experience within the field and would act as a trustworthy base for their own risk rating system.

Crochy's et al (2001) research suggests an adoption of a two-tier rating system. First, an *obligor rating*, that can be easily assigned to a default probability bucket and secondly, a *facility rating* that determines the loss parameters in case of default. To rate a borrower correctly one must decide whether to evaluate the borrowers according to their current conditions or their expected creditworthiness over the entire credit cycle. This decision will of course depend on the objective of the risk rating system. The risk factor occurs mostly due to the

difficulty of obtaining information about companies, transparency is therefore extremely important in order to manage and distribute risk within a risk rating system.

A credit rating is not, in general, an investment recommendation concerning a particular asset. A credit rating is S&P's opinion about the general creditworthiness of an obligor based on relevant risk factors. It can be estimations on the future ability and legal obligations of a borrower to make timely payments. When rating a company, the nature of competition within its industry is a very important to consider and one need to determine in what entity one is rating.

A risk rating system consists of different categories, rating the riskiness of a specific asset, S&P's different definitions for their ratings system for long-term credit can be viewed in Appendix 3. The categories are defined in terms of default risk and the likelihood of payment for the issuer, where highest rating is "AAA" followed by AA and so on. This role of ratings differences is important since it should clarify to what extent the rating is quantitatively based and what extent is the role of judgement and by this give a more valid information about the asset.

The risk rating system developed by Crouhy et al (2001) consist of nine different steps in order to arrive at a final obligor rating and facility rating. Their model starts with a financial assessment of the borrower to provide a picture of the financial health of the borrower. The second step is analyzing the managerial capability of the borrower, thirdly the model exams the borrower's absolute and relative position within the industry and its competition. The fourth step is reviewing the quality, adequacy and reliability of the financial information provided and step five concerns the country risk which the borrower is exposed to. Additional four steps are associated with arriving at a final facility rating which may be above or below the final obligor rating. These steps include examining third-party support, factoring in the maturity of the transaction, reviewing how strongly the transaction is structured, and assessing the amount of collateral.

The utilization and appropriate processing of a diversity of factors such as key financial analysis measures can provide the analyst with a vital tool to arrive at the obligor and facility rating. Therefore should this risk rating system be able to rate a borrowers' creditworthiness and with the help of S&P's rating system generate an easily understandable value.

### **3.8 Analytical Hierarchy Process**

The Analytical Hierarchy Process (AHP) is methodological framework of assessing multiple criteria selection problems, especially useful for complex decisions. The foundation of the methodology is that it should help the decision maker to choose the most suitable alternative rather than prescribing the "correct" alternative. The base of the methodology is

on mathematic and psychology. By using the AHP methodology the decision maker has the ability to rank alternative courses of action based on the judgement relating to the importance of the criteria. By this it means that the criteria are numerical valued (Saaty, 1994). The methodology is more or less a rational framework for structural decision making and it is representing and quantifying its elements and connecting those elements to the overall goal, and perhaps evaluating alternative solutions. The APH is used around the world in many different decision making situations (Saaty, 2008).

To explain the methodology clearer an example would help and is provided below.

Here there are three candidates to become the leader of a business unit. The goal is to choose a leader and that should have the numerical value 1. Before doing this the decision maker have made some criteria that the candidate should have. In this case it is age, experience, education and charisma. The initial value of 1 should then be divided among the different criteria and add up to one. The criteria that the decision maker believes are the most important will get the highest number, or it can be called weight, and the least important gets the lowest. By looking at the example in figure 3-5 we can see that here experience is the most important and education the least. Now you should match the alternative candidates with the criteria ending with a numerical number of each candidate and the one with the highest value are you most suitable choice. In the example we can see that Erik would have been the best alternative to become the leader of this business unit (Saaty, 2008).

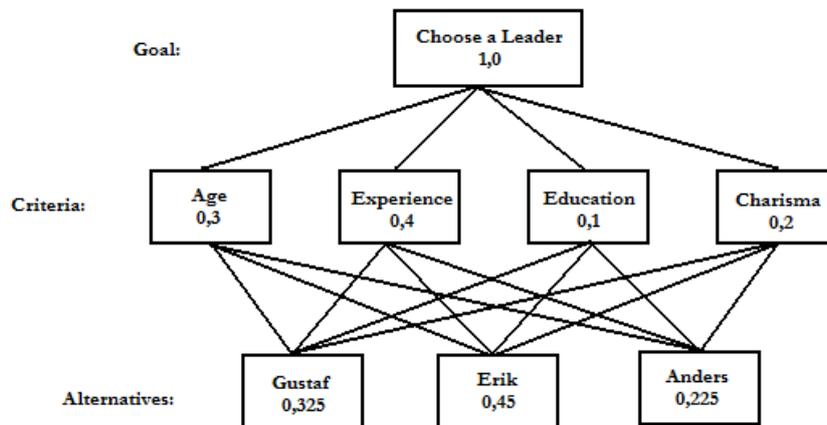


Figure 3-5 AHP Example

### 3.9 Summary of Theories

In this section we will summarize our frame of references in order to make it more comprehensible for the reader. A valuation can take on many sides and the need for it can differ substantially, that is why it is important to understand the motives behind a valuation, since the agenda for IPO is not the same as need for raising new capital (Frykman & Tolleryd, 2003).

Before an acquisition should be conducted a thorough due diligence analysis should be carried out. This is an in-depth company investigation of the firm's legal, financial and markets oriented aspects. A due diligence analyse provides the buyer their own picture of the company and works as a control to see that the information given corresponds with the reality (Nationalencyklopedin 2009b).

In today's financial environment analysts need to master a wide range of models when doing the financial valuation of a company. The two most common valuation methods is the DCF model and relative valuation. The DCF model is often seen as the foundation to all other valuation method and is the most trusted and utilized valuation method. The DCF estimate the value of an asset to the present value of expected future cash flows and it either estimates the free cash flow to equity or the free cash flow to firm. The difficulty with this model is the estimation of the potential growth and the cost of equity respectively the cost of capital.

The relative valuation approach tries to value assets based on how similar asset are priced. First the assets need to be valued on a relative basis, called multiples and secondly these multiples have to be compared against firms within the same industry preferable with similar risk, growth and cash flow (Damodaran, 2002). Within the industry of service firms, such as knowledge based companies it is also of most importance to compare the firm's margins to determine the potential of the firm's growth and future cash flows.

Since the purpose with this thesis is to create a complete valuation method, one needs to consider and analyse all information and variables affecting the firm's value. There will be a great number of variables, making the valuation more difficult to work through and use. In order to make the underlying analysis easier to implement, the analysis is usually focusing on the firm's value drivers in order to understand where the company is creating value (Hitt A., M. at al., 2002).

The underlying analysis can be divided into three parts; an *external* part consisting of macroeconomic analysis of the overall economy and an industry analysis of the industrial structure in which the company operates. The Porter's five forces is a commonly used to analyse the industrial structure. The second part is the *internal* resources also called intellectual capital consisting of the company's intangible resources, for example employees' knowledge, intellectual property and documented work processed. The last part is the *corporate strategy*, acting as a link between the two other parts (Frykman & Tolleryd, 2003).

The value drivers can be categorized into two groups; financial value drivers reflecting the overall performance of the company and operating value drivers, indicators of the company's future performance and cash flow. For the areas of industry structure and intellectual capital there are seven main value drivers; level of consolidation, barriers to enter, industry growth, brand strength, management and board competence and motivation, innovation power and person-independent knowledge (Frykman & Tolleryd, 2003).

### 3.10 Previous Study

Lieberman (1980) was presenting an article about *The Human Capital and the Financial Capital Market*. He pointed out that during the last two decades there has been much progress made in the area of "human capital theory" and "modern portfolio theory". Interesting enough the "human capital theory" is recognizing the human resources as a part of an individual's capital asset held. The "modern portfolio theory" on the other hand is dealing with the pricing of these holdings, recently there have been efforts made to bring these two areas together. What Lieberman (1980) tried to do was to joining those two areas by exploring empirically the effect of human capital upon (1) the *pricing* of the risky financial assets and (2) the *composition* of individual investor risky financial asset portfolios. He developed an empirical methodology by which to study the human capital effect and then tested it using number of very different sets of data. The methodology was build upon work by David Mayers (1973), Farma (1977) and Schwert (1977).

When it comes to the problems of estimating the market values of assets in absence of an observable market price, Boatsman & Baskin (1981) handled this problem in their article *Asset Valuation with Incomplete Markets*. They developed a usable valuation scheme for such assets are derived from a modification of the popular two-parameter capital asset pricing model. Also indirect empirical evidencing is presented which suggests that the valuation scheme yields superior predictions to two competing schemes which have been advanced in the literature: indexing and earn capitalization. In addition, limitations of the valuation scheme are discussed.

In addition to the traditional personnel and human resources management there is a need for a new approach to personnel management. Van Marrewijk & Timmers (2002) called it Human Capital Management (HCM) in their article *Human Capital Management: New Possibilities in People Management*. HCM emphasises on an alliance between the individual and the organization and in their view this will offer the challenges and the key to successful management in the future.

According to Weaver, Harris, Blelinski & MacKenzie (1991) merger and acquisition valuation receives limited attention in literature even though it is a very important subject. In their article *Merger and Acquisition Valuation* they are examine and discuss critical "real world" issues such as screening targets, valuation models and discount rates etcetera.

## 4 Empirical Findings and Analysis

---

*In this section the empirical findings will be presented. It will start with a short introduction followed by the questions and some short comments and analysis. Every question will be presented in the same order as in the interview guide and the respondents' answers together with the question.*

---

### 4.1 Initial Clarifications

We have decided to present the findings in the structure of question by question. Due to that it will provide a better overview for the reader and make it easier to follow what the respondents have answered on each question. Having all the respondents' answers at the same place will simplify our work with the analysis. We have decided to present some comments and a brief analysis after each question. This is done since it would be confusing having the analysis of the answers in different section of the paper and it will provide the reader to have a better overview of each question. The analysis of the purpose and a deeper analysis of our purpose are presented in the next chapter.

We decided to also present the interview question before the respondents' answer, the purpose of that was to update the reader of the question instead of going to the appendix to find them. The interview guide is presented in appendix 1, is translated into English. The original interview guide in Swedish can be found in appendix 2.

Before reading the findings it is important to mention that the respondents are from different business fields within the field of valuation and every firm has their own strategy for valuation. The purpose of a valuation can as mention before differ from case to case.

The people that were interviewed for this study are from different firms, three of the respondents wanted to be anonymous. The selection process is described in-depth in section 2.5. We decided to present the names, work place, department, type of interview and the date of the interview in a table, see table 4-1, because of the ability for the reader to match the name in the presented findings with the name in the table for additional information.

Name of the Interviewee	Company	Position	Interview type	Date
Sverre Krog	DnB NOR	Corporate Finance	Telephone	2009-05-05
Björn Gustafsson	Ernst & Young	Corporate Finance	E-mail	2009-05-05
Jonas Ahlberg	Grant Thornton	Corporate Finance	Telephone	2009-05-07
Jan Swärd	Nordea	Corporate Finance	Telephone	2009-05-05
Hans Nyqvist	Öhrlings PWC	Corporate Finance	Telephone	2009-05-04
Anonymous X		Corporate Finance	Telephone	2009-05-05
Anonymous Y		Corporate Finance	Telephone	2009-05-04
Anonymous Z		Corporate Finance	E-mail	2009-04-29

Table 4-1 Description of the Interviewees

## 4.2 The Questions

### 4.2.1 Question 1

**What method/methods is/are best/most suitable to use when estimating a value of a private limited knowledge based company?**

Jan Swärd who is currently working at Nordea, pointed out that there are not any significant differences in the method chosen when estimating a value of a listed compared to an unlisted company. However, it is hard to argue that the value of a listed company is something else than price the stock is trading for. When Jan is estimating the value of a company he often uses multiples, assess the profitability and the growth in the specific industry. He also put significant weight to the company's profit margin. Of course the Discounted Cash Flow (DCF) model is the main method used for all valuations, since it is important that the business is bringing in money. Jan said that they also are looking at previous transactions of similar companies. He also told us that he has recently done a new issue for the IT-company Fibercom and for that valuation mostly traditional methods were used.

Also Sverre Krog, currently at DnB NOR in Norway, believed it is a good idea to look at previous transactions where companies with similar characteristics were involved. Another part to investigate is the ability of future growth in the company. Sverre stated that, the opportunity for the buyer to earn money in the difference between the estimated value and the price you are willing to pay for the company. He also pointed out some multiples that are used; among other types of earning- and depreciation multiples.

Anonymous X was more focusing on different types of multiples and looking at previous comparable transactions with the purpose of finding a mean value. He also put big weight and time on producing a five year forecast for the company. In that forecast the main parts are the future profits and the growth of the company. Another important part in the valuation process is to find the company specific factors that can affect the end value.

According to Jonas Ahlberg, currently at Grant Thornton, net asset value approach is not very useful when the purpose is to value a knowledge based company since these kinds of firms usually do not have a great deal of capital assets.

One thing that only Anonymous Y said was that they are looking at the company's cost levels and compare those to the industry average in order to make the valuation more accurate.

Hans Nyqvist, presently working at PriceWaterHouseCoopers, believed that the concept of knowledge based company is extremely wide, it can be everything from one entrepreneur to a business with hundreds of employees. Still he said that for almost every valuation the DCF model is used as the main method with a combination multiples and previous comparable transactions. This was a thoroughgoing answer from all of the respondents.

**Analyse:** As presented, all the respondents gave similar answers and there were no surprise for us that the mostly used method is the DCF model. Just by looking in a textbook that concerns the subject of valuation, the DCF model is the one which will get the most attention. By going deeper in to the model you will see that the DCF model is often used as a foundation for other models. One of the biggest reasons for using the DCF model is that it generates a good overview. When using the model you are measuring the present value of future cash flows and the most important for a firm is to bring in money. Many of the respondents also mentioned that they are using various multiples and that was expected since there are many kinds and they are easy to use in a comparing purpose.

The third approach that was used as a “model” were previous comparable transactions and that was one thing that we had not thought about before the interview started. Gradually we believe it is extremely good to compare your valuation with transactions made where comparable companies have been involved. By doing this it will give you an understanding if you valuations are totally wrong or if you have done a good job. Especially in the business of valuing this type of firms, where most of their assets do not have a numbered value, it is good way to indicate if you have done your assumptions and predictions correct.

#### **4.2.2 Question 2**

**Is it common to use many different valuation methods to estimate the value?**

For this question all respondents in the study advocate the use of many different methods and they also recommend coordinating the methods towards each other. According Sverre by using many methods you will assure the valuation and you will get a more accurate picture. Hans pointed out that among this industry it is hard to find good previous comparable transactions and therefore it will have a smaller part in the valuation process.

According to Jonas it is all about reasoning around the values given by the different methods and tries to answer the question: is this a plausible value for this firm? Maybe there are various factors making one method better to use than another. That is something you always have to consider.

Anonymous Y added that they are also taking other aspects into account, such as the firm’s position in the market and the dependency position the firm has. Those aspects have a great meaning when estimating the value of a knowledge based company.

According to Anonymous X the purpose of the valuation also plays a part in how many and what type of methods you should use. For example there are different approaches between a valuation for a synergism effect and for an IPO.

**Analyse:** The use of many different methods was expected and it is good to get a broader perspective. The different methods can give different values and it is good to have another one to compare with. As some pointed out there are differences when choosing which methods to use depending on the purpose of the valuation. For an IPO you want to point on some things and for M&A transition other factors are important. It does not matter how many methods you are using, the value always are dependent on some assumptions you made and the value will be more trustworthy with fewer assumptions. In the end you have to take a step back inspecting the value you got and reasoning with yourself if it is realistic for that firm.

### 4.2.3 Question 3

#### What factors are affecting the choice of method/methods?

Jan said since the DCF model is the main method used, if you have available information about today's figures and future profits than it is a good model to use. He also said that some factors are having different weight of importance depending on what firm to value.

Anonymous X brought up the problem with small businesses where there can be problems with multiples, if the business is up and running the best method is DCF model. He also said that the hardest firms to value are the so-called "future companies" where the profit is in the future. Here it is better to use a option pricing valuation. Björn Gustafsson, presently at Ernst & Young, is working in the same direction saying the choice of method is always depends on the accessibility of information.

Jonas believes that sometimes it is hard to say any typical factors affecting the method, the standard is always DCF model. It will be much harder if there is a business that has a very specific type of business segment. He also wanted to bring up the importance of understanding the fundamentals affecting the valuation process.

Anonymous Y was more precise saying it depends on how the business looks like, such as size, if it is small or even have a negative result. If that is the case, a method where the turnover instead is the main variable is preferred.

Anonymous Z mentioned that they are using many different methods and those methods are given various explanation-value depending on the situation. Some of them can be growth, cash-conversion ratio; these are valuable in the process of choosing a method.

**Analyse:** It was a bit unexpected that they could not mention more factors affecting the choice of method. However, since almost everyone is using the DCF model as a main valuation model, there would probably be very extreme factors in order to use another one. As one said, the DCF model are not the best for valuing companies were the profit is in

the future, and we can understand why. Anonymous X said that the option pricing valuation would be better. We believe that these types of companies should not be valued with strict numerical interest. Instead the focus should be on the person behind the firm and its business idea, with other words the intellectual capital. A risk analysis along with an underlying analysis should be conducted in order to come up with a prediction about the future.

#### **4.2.4 Question 4**

**Do you have any established model for how to estimate the specific value of the intellectual capital?**

At this question none of the respondents had any established model estimating the intellectual capital, however, there were many other interesting meanings where the end point was that the intellectual capital is there to create cash flow and revenue for the company. A good intellectual capital will reflect the result.

Jonas said that they do not have a model, but when they value knowledge based companies they are considering the intellectual capital. The question about the intellectual capital will definitely rises when you are trying to establish the required rate of return. One important aspect is how vital and transient the key persons in the firm are. He draw attention to that the DCF model will indirect value the intellectual capital as well since the model are focusing on the rate of return, despite where it comes from.

Anonymous X had the same opinion on this as Jonas. He believed that indirect you could find the value of the intellectual capital by looking at previous transactions. Also the intellectual capital is there to create profit and cash flow for the company but there is no direct number of its value. Another way of looking at it would be to see if there is an industry growth and in that way estimate the future potentials of the company and the value of the intellectual capital now.

Anonymous Z said it is rarely necessary to have a specific model for the intellectual capital since it will be valued through a cash flow analysis. Jan told us that they almost never look at the balance sheet, they are paying more attention to the company's earnings. He also mentioned the higher risk with knowledge based companies and difficulty of keeping the employees. This can be factors creating uncertain cash flows in the future. Hans is working in a similar way letting the DCF model providing them with an overall picture.

According to Anonymous Y if they are looking at the intellectual capital they are focusing on aspects such as customer relations and so on. They are aiming on structural capital, for example IT solutions and programs.

Björn does not have an established model but they do have a process where the intellectual capital gets a lot of attention. He describes that sometimes they value the human capital in a so-called acquisition analysis to better understand where a possible overvalue in the business consists from. Still this analysis will never be put in the financial report. Briefly, the method is estimating the cost of retrain all employees and train them to the current skills level.

**Analyse:** For us it is a little surprising that none of the respondents have an established model for the intellectual capital, but we can understand why due to the problems to determine a numerical value for it. Since most of the intellectual capital is extremely hard to set a numerical value on, the use of a model would be hard. One can argue that it is not needed since a good intellectual capital is reflecting the result. One can also say that the intellectual capital is indirect value in the DCF model since it is focusing on the rate of return, no matter where it comes from. There is a point in the indirect valuation in the DCF model. Nevertheless, there is a larger risk in knowledge based companies that is connected with the intellectual capital. Such as employees leaving or intellectual capital gets destroyed. This increasing risk is an uncertainty about the future cash flows. Therefore, we see a need for a way of measuring the risk of the intellectual capital and a way of handling that risk.

#### 4.2.5 Question 5

**How important is the company's strategy, business idea and products/services when estimating the value?**

According to Anonymous X these parts are very important and they are often the foundation of the valuation and sometimes it can be very hard due to the fact that everything is about estimating the predictions for the future. You have to assess how big- and if the company will create profit. You also have to reason about the predictions made by the company and if they are somewhat reliable. A unique product/service can give the company a market leading position. The strategy, business idea and their products/services are extremely important if the valuation process is done for an IPO purpose, since that is what entices the customer.

Jan believes it is very important but it is extremely hard to set a value on it, it is more about the predictions about the future that matters.

Anonymous Z are pointing out that it has significant importance and a strong strategy and superior products/services will increase the comfort regarding the predictions for future company.

Hans, Anonymous Y and Sverre, all had the same thoughts; it is extremely important to have a good strategy, unique business idea and superior products/services. Due to the fact

that this is what will create future returns and profitability for the firm. Sverre added that the use of benchmark analyses for turnover, margins, cost items and other key ratios.

According to Jonas it of course is central, but he would say that it is very individually for every company. He adds that they start with the firm's historical variables, for example the earnings and if the volatility is high it is significant for the valuation.

Björn is arguing that the strategy, business idea and product/service are a part of the analysis of the future cash flows and they are usually comparing this with competitive firms' value.

**Analyse:** These three factors are really important, since it is the product/service that is bringing in the money and business idea is producing the product/service. The strategy of the business is in what way the firm works. All the respondents believed there were essential parts in a valuation process, for some situations more important than other. We also believe these factors have a huge impact on the valuation, but they are very hard to set a numerical value on and therefore they are not brought up in a valuation method. There is a need of building in them in a valuation. By our approach of reasoning we have determined that the product/service and business idea is more important than the company strategy, due to that the strategy is easier to change in case of needing a new one. The other two are harder to change and knowledge based companies are built around their product/service and business idea, changing them and the firm would probably be a totally new one.

#### 4.2.6 Question 6

**How would you weight financial measures (Discounted Cash Flow Model etc) versus non-financial measures (Intellectual Capital etc)?**

All respondents said that it is more or less impossible to separate the two in order to weight against each other, of course it is individually for every case. The two parts are often put together, but in the end everything is up to the financial part. The ability to get the whole picture is important.

According to Jan, it will be 100 percent on the financial measures since it is hard to set a value/number of the intellectual capital and put it into a model.

Anonymous X developed his answer describing that the basic is the financial measures and the non-financial can create a credit value. For example the non-financial could be employees and what is the market value of them? Compare this with competitors on the market and you may find some extra value. In this way it can be a foundation for valuing the non-financials, still it is hard to set a value on it and make it a part of the valuing process. He

also mentioned there are many different non-financial measures, but they are almost never used.

Anonymous Z believes intellectual capital is a pretty fussy concept, however, it should be treated in the same way as all capital. A valuation of the capital is set to what extent it can generate profit. He described a small concept:

Intellectual Capital → Generating Rate of Return → Base for Valuation

**Analyse:** Our expectations were to find weight on the two measurements, but that was impossible and many are using the intellectual capital in the same way as all capital, it has to generate cash flow and profit. Some said that the two parts are often put together and the non-financial measures are indirect affecting the financial measures. We believed there could be two different methods used here, but no. Another way of doing it would be to look at the risk the intellectual capital has and adjust the required rate of return used in the DCF model. In that way the intellectual capital is judged and taken into consideration in a valuation process. Maybe the intellectual capital should be more considered when doing an underlying analysis of the company to get a good overview of how the business works.

We agreed with Anonymous Z way of looking at non-financial measures; if for example the intellectual capital generates rate of return it should be included in the valuation process. All the things that are generating money should by our opinion be included and analyzed.

#### 4.2.7 Question 7

According to a theory (Frykman & Tolleryd, 2003) there are seven important parts (see below) to look closer at in a valuation process when estimating the non-financial value of a company. Do you believe these are the most important or would you like to change any of them? How would you weight the different parts?

- Level of consolidation
- Barriers of Entry
- Industry Growth
- Brand Strength
- Human Capital
- Innovation Power
- Person-Independent Knowledge

Hans pointed out that all the parts are recognized, but the importance of them varies for every valuation you do. Depending on if the company is big or small, what industry they are working in and if they are an established firm or not. So of course all the parts are important and it is extremely hard to make generalizations about it. The biggest difference is between a small company with one only owner and a firm with more than hundreds of owners. Therefore, the owner structure is interesting to understand for the valuation.

According to Anonymous Y all the parts in the theory is relevant. He also wanted to see that there was a part taking up the possibility of growth, as in industry growth, but if the firm grows then the profits should also grow accordingly. He would like to see something about that in the theory as well. Connected to the level of consolidation he wanted to investigate the possibilities of acquisitions. Another part that is extremely important is the management, however, there should be a possibility to switch the whole management without losing the entire firm.

Also for Sverre the seven parts were significant, but he pointed out that the level of consolidation, barriers of entry and industry growth as the parts to put most focus on. Of course the specific situation has to decide what to focus on. He also brought up the business idea as very important and the management due to understand and see how things are working in the firm today. About the owner structure he said it depended on how many owners there are and how much equity/money they can contribute in an investment situation and not hamper the company to gather growth capital.

Anonymous Z believed it was impossible to ascribe the different parts a weight without having a case to apply it to. In the end everything is about to create and ensure the individual firm's rate of return, which can vary heavily from case to case. For example, Coca-Cola the brand plays a huge part, for Ericsson the Intellectual Property Right (IPR) is extremely essential and for wind power firms the industry growth is more or less everything.

According to Jan it is really hard to set a value on the different part meaning it is impossible to weight the importance of them with a percentage. On the other hand, the industry growth would be weighted high since it is the easiest part to transform to the specific case and the potential future growth and its rate of return. He also believed that level of consolidation and barriers of entry also would be weight high, but they are very hard to set a value/number on. When it comes to the four others, he said they are impossible to appreciate a value for. Then he added that it is always recommended to have a conversation with the firm's owner and management who have explicit knowledge about the company and the industry. Many times it is also good to talk to other people with knowledge about the industry in order to make more trustworthy and correct predictions for the future. Jan furthermore pointed out that it is about judging the risk for future cash flows and potential earnings.

Consistent with the other respondents Anonymous X said that all the parts are interesting, nonetheless, there are differences depending on what industry the business is active in. When it comes to the level of consolidation it will affect the firm's profit margin, especially in the consulting industry.

High level of consolidation → Lower margins → Lower growth

The barriers of entry looks different in every industry therefore the importance differ between the industries. Anonymous X described that the industry growth is always essential for the valuation since it is an indicator of the future for companies in that industry. The brand is more central for some firms than others and human capital is very complex to set a value on. For firms that have a very limited segment the innovative power is not that significant, but for other it is everything. Of course you have to be innovative to survive in today's business environment. He concluded that all the parts are hard to value and the problem is that even more assumptions will render in a higher uncertainty. When doing a valuation you additionally have to look at historical data and if the company has good tracking record it will increase the trustworthiness of you valuation. Other parts to focus on are the owner structure and the management. There can be big risks with companies with major owners and too dependent management.

Björn gave a short and precise answer, the three first factors are the most important to understand the future cash flow or how comparable multiples should be interpreted.

Along with all the others, Jonas said it depended on what kind of business it was, there are huge differences. Certainly all parts are relevant but maybe not to all firms. For example if there is an acquisition of small firms to become a big player the level of consolidation is interesting and for a consult firm a barrier of entry can be that they do not have a reputation yet, but on the other hand it will usually require small investments to enter a market. These variables are often included in the company's specific risk analysis and they are very individually when setting the required rate of return. Jonas said that they look at the key persons and their dependence for the business. It is often a higher dependence with small firms and could be an aspect when setting the required rate of return. Many of the factors are indirect affecting the required rate of return and the predictions about the future, for example if there is one key person for the firm and the risk of him leaving.

**Analyse:** The theory presented by Frykman & Tollyrd (2003) illustrates seven important value drivers to look for when conducting an underlying analysis and valuation of a firm. All respondents recognised the importance of these levels but explained that the importance of them varies for different sectors, industries and firms. They therefore found it very hard or for some levels impossible to assign different specific weights to the value drivers. The biggest difficulty is that the importance of value drivers can differ substantial for every

valuation but after analysing our respondents' answers, we concluded that. When it is a valuation concerning knowledge based companies some of the value drivers are more important than other, with reservation for unique firms with large anomalies.

The most significant value driver is the industry growth parameter, due to the easiness of applying the growth in the industry to the specific firm being valued. Since the DCF model is the most utilized valuation approach within the industry and due to the fact that the estimation of growth is one of the most important inputs of this model it is no surprise that most respondents would weight this value driver the highest. Other value drivers that are consider to be of relevance would be the level of consolidation and barriers of entry. Once again these are very hard to assign weights without a specific case but a high level of consolidation often lead to lower margins and for most knowledge based companies which generates positive cash flow this is due to very high margins. This will then lead to a lower growth for the company. The barriers on entry always look different for every industry but for a specific valuation it more easily observable and can therefore be analysed.

Since these three value drivers were consider the ones with the highest applicability on a specific valuation, the other four was considered too hard to assign any weight and to specific to generalise for all knowledge based companies. For some companies brand is the most important value driver or its human capital, this is often true for a consulting firm or the innovation power in order to survive in rapidly changing business environment. Since the person-independent knowledge factor did not get mentioned we have concluded that it will be least important value driver but still it have to be recognize during a valuation. The challenging with some of the value drivers is the difficulty of transforming them into number or data that can be used in a valuation. It also exist a hazard that the more assumption about the value of these drivers can lead to an even higher risk and uncertainty. In the end everything is about to allocate the individual firm's capacity to generate a required return rate and find the companies value drivers.

During our interviews we also encounter other valid aspects that can influence the non-financial part of the valuation. The most important was considered the management aspect and the firm's dependency of it. This could be seen as way to locate key personal within the firm. The management could also provide explicit knowledge about the company and the industry. For smaller firms it is always important to understand the ownership structure and the firm depends on key personal. As mentioned, value drivers are very specific for each firm and industry and the interviews have established a foundation of the most important ones concerning knowledge based companies.

#### 4.2.8 Question 8

**Do you believe that knowledge based companies should report their intellectual capital in their annual reports? Why or why not?**

According to Jan there is no need of doing so and it would probably not be workable. He believed there would be many misunderstandings. If the intellectual capital would be in the annual report the values would be hard to use since it is a subjective judgment of the assets. For Jan it is important when doing a valuation that all accountants are using the same accounting standards and those are as transparent as possible.

Consistent with Jan are all other respondents, it would be really hard to determine a value of it and they do not believe it would work. Jonas, Anonymous Z and Sverre saw the positive thing with having it in the annual reports; it would make the valuation process easier, but the question is how trustworthy the values would be.

Once again Anonymous Z pointed out that it is what rate of return the intellectual capital can generate that is the most interesting.

**Analyse:** In today's financial environment it is almost impossible to illustrate the intellectual capital due to regulations and accounting rules, for example an employee can never be an asset, accounting wise. We believe that being able to quantify the intellectual capital would improve valuation concerning companies with a large intellectual capital, since there for most companies exist a significant difference between market value and book value. Due to the limitations in accounting rules that exist today and the answer we received, we concluded that there is no need for quantifying the intellectual capital. This would rather lead to more misleading information due to the difficulties and subjectivity of valuing it, making a valuation harder and less reliable.

A common acknowledgement is that, the more information one receives the better, transparency is always important when dealing with a situation that will require a form of judgment. But as our interviewees point out this excess information is only useful if it is trustworthy and valid. Common for companies today where the personal is its most valuable assets are to state this fact in their annual report but usually no more information is given. There exists a huge potential in managing the intellectual capital if it could be quantified and there exist different models as Skandia Navigator model designed by Edvinsson (1997) but still there do not exist any commonly acceptable and recognized theories.

### 4.2.9 Question 9

**What key ratios would you prefer to use for a comparative valuation of knowledge based companies? (For example P/E, P/BV, EV/EBITDA)**

Björn explained that cash flow key ratios are to prefer before balance sheet based when it comes to knowledge based companies.

Anonymous Z had the same belief that key ratios from the income statement are the most appropriate, especially if they are high up in the income statement. He explained that the balance sheet based ratios are really realistic since various valuation methods are used. Some examples on good and valid key ratios are EV/EBITDA, P/E and P/BV.

Jonas had the same ratios as Anonymous Z and he believed that for knowledge based companies it would be good to look at; turnover/employee, debt ratio, price/consult, and probably the best one: value/consult.

Anonymous X is consistent with the others of the higher up in the income statement the better. He would not use the P/E since it does not take consideration to the capital structure. He would prefer the EV/EBITDA due to the lower risk in a comparable purpose. Another ratio is the cover ratio, it is good to have to adjust the prices. P/BV is more a ratio for concerning banks since they can approve more loans with a better BV. Anonymous Y would also use EV/EBIT and EV/EBITDA due to the good competency ability. He also added that the other ratios can be affected by for example different tax rates.

Both Jan and Sverre said that P/E and EV/EBITDA are good since the company should generate return. Sverre also said that he would use EV/EBITDA for unlisted companies and another key ratio is the value/employee, this give insight in how much revenue each employee is contribute with. The ratios used should give you a better picture of the cash flows of the firm. He also believed that these are good ratios to benchmark against comparable firms.

Hans could not say any specific key ratio since he believes that no matter what ratio and its value, DCF has to generate a return. Therefore, he could not say a specific key ratio.

**Analyse:** When it comes to valuation of knowledge based companies and valuation as a whole the most utilized approach is the DCF model but for a valuation to be as reliable as possible it is important to control that one's estimation is realistic and a good way of doing this is to look closer at multiples. Multiples are very useful in relative valuation when comparing one firm against other suitable comparables firms. As Damodaran (2002), clearly state there exist two important aspects when using multiples in a comparable way; converting assets on a relative basis and to locate comparable firms within the same industry. This was also made clear by our interviewees who all concluded that the most valid multiple is EV/EBITDA due to fact that the value will be easily comparable with other firms. The

EV/EBITDA is calculated high up in the income statement before any company strategy specific alteration can be made making the data more trustworthy and a more valid comparable multiple.

Within the industry of service firms, like knowledge based companies, there are also more industry specific multiples one can look at, such as value/consultant and turnover/employee that can provide a deeper and more accurate picture of the firm for a valuation.

#### **4.2.10 Question 10**

##### **How are you managing the risk/problem that intellectual capital is transiently?**

For this question Björn pointed out that this problem is bigger for smaller firms and it is usually handled through a higher required rate of return. This is a so-called small-business premium.

Jan had a similar approach, he said that they are increasing the WACC used in the DCF model to somewhat fix the problem. For the multiples he compared them with other firms, one important point is that you have to compare apples with apples, not apples with pears. Anonymous Z was along with Jan that you can increase the WACC or you can adjust your predictions to reflect this problem. For multiples an adjustment should be done as well and when comparing with other firms it should not be any problems, since the buyer are aware of the risk.

Sverre was in line with Björn meaning that the problem is increasing the smaller the firm is and the problem is really hard to get to. At DnB NOR they are having a discussion about this problem at this moment.

Anonymous Y are consistent with the other respondents meaning the problem is affecting the valuation a great number, on the other hand, there can be opportunities for acquiring a firm to a lower price.

Jonas only had only one thing to add; higher required rate of return. Hans answer was in accordance with Jonas's. Simply; huge key competence should be met by higher required rate of return in the DCF model.

Anonymous X had a more exhaustive answer. There are huge problems, being a large risk that intellectual capital will disappear or be destroyed or employees will leave their position. You have to come up with a risk that than will be a premium in a potential transaction. It is essential to understand the importance of the key persons and be able to insure that they will stay through commitments and contracts.

**Analyse:** How can someone manage something that cannot be properly estimated? There is no good answer for this and although our interviewees provides us with different solutions, the best one to some extent handle the risk is to simply increase the WACC, in other words just assume a general higher risk. Another way would be to adjust the predictions in order to reflect the intellectual capital's volatility. It was also obvious that this risk is much more evident for smaller firms where key personal is more manifested. A useful way of manage this risk before an acquisition would be to include a risk premium, which would lower the price opening for opportunities to acquiring firms at a lower price but with a higher risk.

The most important aspect is to understand the importance of key personal and the impact an acquisition can have on a firm. We believe that in order to manage something one must be able to control it, this could be done by either different commitments or legal binding contracts and also by to transforming the intellectual capital in order to make it less volatile.

#### **4.2.11 Question 11**

**Are there any differences on the valuation approach between knowledge based- and manufacturing companies?**

All respondents agreed that there are relatively no differences when estimating a value of a manufacturing- or a knowledge based company. Of course there are individual differences for every case to be aware of. According to Björn there are rather more differences between a new started/small firm and a larger establish company. Jonas added that the process is the same, look at the history and create reasonable predictions and required rate of returns. You only have to be aware of the need of key persons and the risk that intellectual capital transiently.

Hans believe that there are differences, however, the methodology is the same. The difference is in the total analysis of the company, for example the required rate of return.

Anonymous Y explained that in knowledge based- and service companies the investment need is often lower and the same for the need of working capital. Exceptions are special developing IT firms.

As said by Anonymous X when valuing knowledge based companies it is crucial to have a good estimate of the intellectual capital in order to make predictions for the future. You have to know what the risk of the intellectual capital will disappear or get destroyed. For manufacturing firms it is easier to use more traditional methods, such as the DCF model, and overview the costs. A knowledge based company possesses more unique competence, culture and factors making the valuation process harder. Still the basic methods are the same.

**Analyse:** To our surprise all respondents agreed that the difference between valuating a service firm and a manufacturing firm is basically nothing, the same methodology would be utilized. There of course exist smaller differences for every individual valuation but they are often too detailed for that specific valuation and cannot be generalize upon. Since the valuation- and accounting methodology is built upon research towards manufacturing companies we believed that people with the industry would have new input when it comes to this type of valuation. A knowledge based company usually has more complex and unique structure which is harder to estimate a proper value and therefore it is important to have valid estimates of the intellectual capital. Once again it is the common belief that the DCF model will show the generated cash flows for the future which will be based on historical analysis and reasonable predictions.

#### **4.2.12 Question 12**

Since the answers are from very different areas and there is no common subject, we have decided to include our analysis in each of the answers.

##### **Any remaining comments?**

Hans added that there has to be a required rate of return and today at PriceWaterHouse-Coopers the DCF model is the one used since it will easily explore where cash will be generated.

Sverre wanted to tell us that you have to find a way of decreasing the risk that people/intellectual capital can disappear from knowledge based companies. He suggested taking legal actions, for example writing agreements to stay and so on. These are not tools used in the valuation but rather during a merger and acquisition transaction to reduce the risk. One of the most evident risks with an acquisition of knowledge based firms is the transient intellectual capital and valutors have of course managed this risk in the most appropriate way possible. As it was mentioned in question 10, Sverre's idea would be a way to reduce the risk of employees and key personal leaving and thereby keeping the intellectual capital within the company which could lower a required return rate.

Jan gave us a new insight about the financial crises that is going on at this moment, which is a huge factor in the valuation process and has to be considered. The reason for this is that the situation is affecting interest rates that will affect the outcome of the DCF model valuation. The financial crisis today is the cause for the turmoil that we see in the market; interest rates are at a historical low rate and many firms show negative earnings. Since the valuation principals are much interwoven with this, it is very important to take this in consideration when valuating and how one interpret the value of a firm. Especially one cannot draw conclusion when comparing similar transaction that was conducted during a different time where the conditions in the market were different since it will have a direct affect on the DCF model.

Anonymous X once again wanted to point out that they are looking a lot at previous comparable transactions to get a better understanding but with the current situation in the market with very fast and high volatility, it could prove difficult to find appropriate comparables.

Anonymous Z wanted to wish us good luck with the thesis and the rest of our education.

The other respondents did not have anything to add.

## 5 Extended Analysis

---

*During this section a presentation of the Risk Analyse Scheme for Intellectual Capital and the Guidelines to Weight Internal and External Value Drivers. After each model there will be a discussion about it.*

---

According to our purpose we are investigating if there is a need for a new approach for valuing private limited knowledge based companies and if there exist such a need create or modify a approach that can be used as a foundation for the valuation. After doing the interviews we realised that the industry are using the DCF model on almost every case, and therefore there was no direct need of a new model. However, during the interview and this study we came across that one of the biggest problem in this type of firms is the risk the intellectual capital is generating. Instead of creating a new valuation method we have put together a risk analysis scheme for the intellectual capital as a part of a valuation approach for knowledge based companies. This scheme is helping to get a better overview of the risk connected to the intellectual capital in the firm and giving a general solution to the problem, a required rate of return at a specific level of risk. This required rate of return can then be used in the DCF model and thereby you have included the intellectual capital in your valuation.

When doing the analysis of knowledge based company there are many factor to consider, but analyzing every single one will take time and cost a lot. With this as a background we also constructed short guidelines to weight internal and external value drivers. This guideline can be used as a foundation for an underlying analysis on a company.

### 5.1 The Risk Analysis Scheme for the Intellectual Capital

There is a large risk with the transient intellectual capital when valuing knowledge based companies. There are areas where the risk can appear and these areas are not easily valued and the risks are hard to include into the valuation process. Often for knowledge based firms their biggest asset is their intellectual capital, and most of the intellectual capital is more or less impossible to set a value on. This creates a problem when valuing this type of firms and you have to take it into account. Some of our respondents had a solution; increasing the required rate of return to fix the problem. However, how much should you increase the required rate of return and at what risks level? These are questions you have to answer during a risk analysis of the firm's intellectual capital. We have created a risk analysis scheme for private limited knowledge based companies to help people to increase their ability to predict a more suitable required rate if return. The inputs to this have been the interview we had, but also literature on the subject of intellectual capital. The literature used is Edvinsson (1997) since he is one of the most known professors on this field. He divided the intellectual capital into two main categories (human capital and structural capital) with

sub-categories on for the structural capital as can be viewed in section 3.4.2.2. We have decided to build our scheme with these categories as a foundation.

### 5.1.1 The Categories

As stated above there are two main categories in Edvinsson's (1997) model of intellectual capital with sub-categories. We have, with help of our respondents, expanded his model by divided human capital into two sub-categories instead of one. By using the empirical findings as a starting point we have expanded the model by adding additional factors, which also will affect the risk in a knowledge based company. In next section we will shortly describe each category and factor, and present why we believe it is important to incorporate it within our risk analysis scheme.

For the first main category, *human capital*, there are two sub-categories that you should rate the firms risk in. Edvinsson's (1997) model only had one category for these two, but we decided to split them.

*All employees* – is the intellectual recourses possessed by the individuals in the company and that leaves the company every evening when the employees leave the office. Of course there is a higher risk within knowledge based companies that the staff will get a better offer from a competitor or just leave. The employees are the most important asset a knowledge based company has and therefore one of the biggest risk. According to Anonymous Z there is higher risk in this type of firms since there is a difficulty of keeping the employees. Not only will they lose experience they will face high costs. Björn are measuring that cost by estimating the cost of restoring the employees and train them to the current level of skills. In other words, there is a huge cost. Therefore, this part is probably the part with the highest risk.

*Dependence on Key Persons* – refers to the importance for the firm that the specific key person will continue. For example, he or she has all the contacts or is the only one having the full knowledge about the business. Jonas said that it is simple, the higher the key competence the higher required return and one very important aspect is how transient the key persons in the firm are. Also for Anonymous X this was a large risk and you can lower this risk by insuring that the key persons will stay through commitments and contracts. We believed this was a different thing from all the employees and they can differ in a risk rating. Therefore, we are having in as an own sub-category.

The second main category, *structural capital*, there are three sub-categories that are rating the risk. All of the categories here are from Edvinsson (1997).

*Customer Capital* – is the relationships the company has with their customers. We believed that it was important to consider since the customer relations are extremely crucial for knowledge based companies. This was also in line with what Anonymous Y said; if they are looking at the intellectual capital they are focusing on aspects such as customer relations and they are aiming on the structural capital

*Innovation Capital* – consists mostly of brands, patents and documented ideas. For knowledge based companies it is maybe not the riskiest part, however, their brand and reputation is really essential. A consultant firm with bad reputation will almost never get customers, and the firm's name has to be present on the market to attract new customer even with a good reputation. This is consistent with Jonas way of working, where it will be a part of a risk analysis.

*Process Capital* – is all the support systems, process documentation, manuals, IT systems and the like. The purpose of the process capital is to rationalise the administrative work. Here the risk is focusing on hands on risks, maybe the servers are crashing and all the information gets lost. It is also about the security of the routines of handling information. As Anonymous Y pointed out they are looking at the IT systems and other structural capital.

The third part in the risk analysis scheme is to rate the risk of other risk factors. None of these are in Edvinsson's (1997) model, we believed there was an additional need to look at these risks as well.

*The Size of the Firm* – the size matters when measuring the risk of the intellectual capital. Of course there is an increasing risk dependence of key person and many more things with smaller firms. We believed there was a need of adding this as a separate factor to rate the risk since many of the respondents pointed out, along with Björn and Sverre, the intellectual capital risk is increasing for smaller firms. Björn handles this through a higher required rate of return, a so-called small business premium. Damodaran (2002) also mentions this difficulty when valuing smaller private firms, since one can never be sure if the profits made are basically only a result of the owner's skills and contact

*Competitors* – we believed this is a part to consider in the risk analysis since it is a factor affecting knowledge based companies hard. A manufacturing firm can always cut costs, for this type of firms it is difficult to do. As Anonymous X mentioned, the competition is affecting the firm's profit margins, espe-

cially in the consulting industry. We also wanted to bring up the competitors as a risk connected to the skilled employees. Many competitors are meaning there are many potential new employers for the employees to work for.

*Business Cycle Situation* – when doing a valuating of a company it is good to know that the valuation is fresh and the value can rapidly change. It can be other factors than company specific once that changes. Therefore, we have seen a need of evaluating the risk in the business cycle. As Jan pointed out, we are at the moment in a financial crisis that has huge impact on the valuation process. For example, there are interest rate changes and probability of bankruptcy will increase.

*Other Case Specific Risks* – we wanted to bring in more factors to the model where specific risks associated with the individual valuation are measured. The need for this one is due to that every case is very individual and there are always aspects that only are related to that case. All the respondents said that it is depending on what type of case they are valuating. Within this factor you can evaluate the risk if the firm is newly started or it is a so-called “future company” as Anonymous X said. Another aspect that can be interesting to look at is the ownership structure, does the firm have one strong owner or many small owners. These types of firms have a higher risk. Another thing that Björn presented, that also can be rated in this factor, is the accessibility of information. A firm where there is almost no information has a higher risk requiring a higher rate of return.

The question about the risk of the intellectual capital will definitely rise when you are trying to establish the required rate of return or vice versa. Therefore, we have extended and added new variables, to Edvinsson’s (1997) model of intellectual capital, to make the process easier, less time consuming and in that way cheaper.

### **5.1.2 The Risk Analysis Scheme**

The final decision about the risk of a specific asset or company is based on many different categories. This will not be calculated using a mathematical formal or model that would show how to weight all these different categories in a normative way. Since it is impossible for most of these attributes to be quantified it makes no sense in trying to create weights for them. Instead our risk analysis is based on general reflections and experiences, and not on mathematical modelling. The result of the analysis will depend on the information about the company as well as the industry and the sound judgement of the valuers. Since the usage of comparable transactions is a common practice among valuers, it is also important to consider the nature of the entity a company is operating in when valuating.

Here below the complete risk analysis scheme is presented in table 5-1 with a complementary risk rating table in 5-2.

<b>Risk Analysis of Intellectual Capital</b>		
<b>Category</b>	<b>Sub-Category</b>	<b>Risk Ranking (0-10)</b>
Human Capital	<i>All Employees</i>	
	<i>Dependence on Key Persons</i>	
Structural Capital	<i>Customer Capital</i>	
	<i>Innovation Capital</i>	
	<i>Process Capital</i>	
<b>Other Risk Factors</b>		<b>Risk Ranking (0-5)</b>
	<i>The Size of the Firm</i>	
	<i>Competitors</i>	
	<i>Business Cycle Situation</i>	
	<i>Other Case Specific Risks</i>	
	<b>Total Risk</b>	

Table 5-1 Risk Analysis of Intellectual Capital

<b>Risk Rating Table</b>		
<b>Total Risk</b>	<b>Risk</b>	<b>Required Rate of Return</b>
>70	Extremely High	Extremely High
55-69	High	High
40-54	Normal	Normal
30-39	Small	Little Less Than Normal
20-29	Little	Low
0-19	More or Less None	Very Low

Table 5-2 Risk Rating Table

### 5.1.2.1 The Steps of Risk Analysis Scheme

Step 1: You should set a risk rating on every sub-category, where 0 is no risk at all and 10 being extremely risky. For the factors the rating is between 0-5, 0 is no risk at all and 5 being extremely risky

Step 2: Take a moment and see if there are any specific risks with the case, and if there are add the risk rate of that factor. Of course there can be more than one.

Step 3: Summarize the risk rating.

Step 4: Take the total risk and read in the “risk rating table” to see how risky your case is and if it should have a high or low required rate of return.

This is generalizations made from us backed up by literature from Edvinsson (1997) and the answers the respondents in this study gave. Of course there are many differences between different firms and industries, but this scheme should be used as a first over view in a risk analysis. If there is case where the risk is high, we recommend doing a deeper risk analysis on the specific areas.

### **5.1.2.2 Discussion about the Risk Analysis Scheme**

When we created the risk analysis schema we based it on the theory from Edvinsson (1997) and the information from the respondents, we needed more to back it up with. Since almost the whole financial market is built around the trade-off between risk and return we had that in mind. When putting the risk rating table together we looked at S&P’s credit rating and tried to convert the same idea to our risk rating table.

The foundation of a risk rating system is based on both quantitative and qualitative evaluation, since it will be determined by several of different attributes (Crouchy et al, 2001). Our risk analysis is based on nine different categories that together will determine the level of risk for the chosen firm. The risk rating analysis shown in table 5-2 is based on same underlying assumption as the assumption for S&P’s credit risk rating, which is the concept of; a high risk should yield a high return. Since we have concentrated our research towards knowledge based companies and concluded that for firms within this industry the most important asset is the intellectual capital. Therefore we argue that the higher the risk of diminishing or destroying the intellectual capital, a higher rate of return is required.

The risk rating system consists of many different categories, rating the riskiness of a specific asset. S&P determine their risk rating depending on the creditworthiness and future ability to make payments from the borrower, based on different factors that are associated with risk (Standard & Poor’s, 2009). We believe that our nine different risk categories are most relevant and valid for a rating analysis of a knowledge based company and therefore we construct our table 5-2 with the same basic structure as the S&P’s corporate ratings criteria. S&P classify there highest trust worthiest rating AAA, which means that that security will have a low default risk and smaller return. This corresponds well with a value between 0 to 19 in our risk analysis table, which implies that a specific firm will have a very low risk of losing or destroying the intellectual capital and therefore a lower required return during an acquisition. Table 5-2 illustrates that the higher firms score on the rating system the higher the required return needed since the uncertainty about the future of the firm will be greater, which is the same concept as S&P’s rating of the default risk.

It is important that a rating system can clarify how the rating is conducted in order to show how the different attributes is actually applied and managed. For a rating system to be reli-

able and useful it is important to explain to what extent the rating is quantitative and to what extent it is based on judgement (Crouchy et al, 2001). Our nine different categories will give guidance where to search for the quantitative data which will be the foundation of the underlying analysis behind a rating. Then it is a valuator experience and expertise that will determine a risk parameter for each category. For this to be as reliable as possible it is important that valid information can be obtained and we believe that the problem with transparency today can be an issue.

The utilization and appropriate processing of our risk rating analysis can provide an analyst with a vital tool to determine a risk for a knowledge based company. Based on the judgement and usage of our different categories one can arrive at an appropriate and valid risk rating.

Risk is something we as people encounter everyday and it can appear in many various forms and this risk has to be recognised, managed and controlled. There exists a mantra that is called “there is no such thing as a free lunch” that is to say, no investment is totally risk free. If an investor desire large rewards they have to be willing to expose themselves to a considerable higher risk (Holton, 2004). This concept is a very well known theory that the whole financial market is built up on called, *the risk-return trade-off*. The basic fundamental investment concept is that the higher risk you take on the higher the potential return should be, therefore risk and return can be seen as the opposite sides of the same coin (Campbell & Viceira, 2005).

According to Holton (2004) there are two components that are needed for the concept of risk to exist. The first is uncertainty concerning the potential outcome from an investment and the second is that the outcome has to matter in terms of providing utility. An acquisition will always carry a certain amount of uncertainty and the outcome can differ considerable in terms of utility making risk an important factor to consider and analyse. The principle that potential return rises with an increased risk or uncertainty is what we have based our risk analysis scheme on. We argue that an investor or potential buyer will require a higher rate of return or a risk premium when a knowledge based company show tendencies that the intellectual capital is very transient.

Since our risk analysis scheme is based on a cumulative rating of the potential risk, the risk-return trade-off easily illustrates the relationship between the required return and the undertaking risk of the intellectual capital of the firm. Our risk rating system rates the risk from a score of 0 to 80, a rating 0 to 19 implies that the firm demonstrate very low risk, if any, of the intellectual capital to be diminished due to an acquisition. A rating of 55 or higher, on the other hand, show tendencies that the risk level of diminishing or even destroying the intellectual capital is evident. Then an investor will require a much higher return rate. Of course the table is based on the assumption that a firm is able to generate the required rate of return for a specific risk rating, otherwise a transaction should not be executed.

There are many problems with the valuation of a knowledge based company. Our risk analysis scheme is making it easier to estimating the risk and by that estimating the required rate of return. The whole scheme is built on that there will be a required rate of return, what if the business is for sale, how would the scheme help you? It can be transferred in to that situation as well. There has to be some kind of premium for a firm with high risk. It can be seen as the higher score on the risk rating table the larger the premium should be, with other words lowering the price.

As many of the respondents said there is a huge risk in valuating knowledge based companies and it is crucial to have a good estimate of the intellectual capital in order to make predictions for the future. You have to know what the risk of the intellectual capital in order to make those estimates. This is where our risk analysis scheme should be used, to make the valuation of knowledge based companies easier and more “correct”.

## **5.2 Guidelines to Weight Internal and External Value Drivers**

When doing business valuations of knowledge based companies there are many value drivers to analyse and most of the time you do not have time or money to do a full analysis of every single one. Instead by using our guidelines for weighting internal and external value drivers, you would focus on the value drivers with the highest weight and get a better overview of the company’s present and future statuses. It can also help you in some cases to perform an underlying analysis and transform it into data to use in a valuation model. By using our guidelines as an underlying analysis you will have a good foundation to stand on during the valuation process. According to Frykman & Tolleryd (2003) you should focus your analysis on the variables that are most suitable for the situation and your company. Therefore, our guidelines have generally weighted the importance of the different variables for knowledge based companies valuations.

The guidelines are built upon the seven value drivers presented in the theoretical framework and three additional that we believed were needed to be considered as well. During our interview we wanted the respondents to reasoning around the seven theoretical value drivers and we also asked them about our three additional. From the answers presented in section 4.1 we found that all the respondents agreed that the seven theoretical- and the three additional value drivers where needed to be considered. However, some of them were seen as more important than other. Therefore, our guidelines will consist of ten weighted value drivers. The value driver in the guidelines are weighted from low to very high, where very high is indicating that this is a value driver to focus one. The guideline is presented in table 5-3 together with the assigned weight.

<b>Guidelines to Weight Internal and External Value Drivers</b>	
<b>Value Driver</b>	<b>Guided Weight</b>
Barriers to Enter	High Weight
Level of Consolidation	High Weight
Industry Growth	Very High Weight
Brand Strength	Medium Weight
Human Capital	Medium Weight
Innovation Power	Medium Weight
Person-Independent Knowledge	Lower Weight
Business Idea	High Weight
Company Strategy	Medium Weight
Product/Service	High Weight

Table 5-3 Guidelines to Weight Internal and External Value Drivers

### 5.2.1 The Process of Using the Guidelines

- Try to analysis all of the value drivers, starting with the one with the highest weight.
- The guidelines are mostly used to identify the most important value drivers to put the most weight and time on for the analysis.
- The value drivers with the highest value should be the once you spend most time on and the once with low the least time and effort. The purpose of the guidelines is for you to easier understand where to up most effort on and in that way save time and money.

This is generalizations made from information gained during the interviews and the value drivers in this guidelines is backed up by literature and answers to questions during the interviews. It should be used as a foundation for an underlying analysis. Since we know from Frykman & Tolleryd's (2003) framework the use of an underlying analysis is essential for a good valuation process.

### 5.2.2 The Value Drivers in the Guidelines

As presented above the guidelines are based on Frykman & Tolleryd's (2003) seven value drivers to look for, presented in the frame of references, and we have added three value drivers that we believe are needed. These three additional are the Business Idea, Company Strategy and Product/Service. We thought these were interesting for our guidelines before starting the interviews. Therefore, we tested the importance of them during the interviews asking for weighted importance. For the other seven, taken from theories, we had a separate question asking the interviewees to weight the importance of them for an internal and external analysis.

The internal and external value drivers presented in section 3.4.3 will act as a starting point for the guidelines. We have also added three additional value drivers. The different weights for these have been determined based on the respondents' answers. The value drivers in table 5-3 are presented below together with a short explanation and the reason for the assigned weight. The weights for some of the value drivers are assigned lower due to the fact that the respondents did not talk about them but still said all the seven are important and should be considered.

*Barriers to Enter* – is a normally the way of referring to factors that make it more difficult and/or expensive to establish a presence in a market or exiting the market. Here there is a value driver which is extremely hard to set a value on, but still it is one the respondents had in their top three of highest weight together with level of consolidation and industry growth. These three were described as the most important to analyse in order to understand the future cash flow.

*Level of Consolidation* – refers to the number of companies in a specific industry, being a measurement of the competition. This value drivers has been given a high weight since all the respondents were referring to it as important. Sverre was one of them who believed that and Anonymous X was another. The competition within an industry can be good as long as the industry is not overflowed by firms. When the completion is hard you have to cut prices or something else to survive. For knowledge based companies this factor is crucial since higher level of consolidation means lower profit margins, most likely affecting the firm's profit.

*Industry Growth* – consists of two variables; general GDP and industry-specific growth. A company within an industry having a high growth is always worth more. The company is worth more for two reasons, the market is expanding and the company can remain or even loss market share and still increase the profit. Industry growth indicates that the industry is in a dynamic phase, which can result in new segments and opportunities. We have decided to weight this the highest and that is in line with the respondents. The biggest reason for this is that it is a clear connection between the industry growth and future potentials for the firm, more or less it is an indicator of the future of the firm. If there are a firm in an industry how grows a lot investor can require a higher rate of return.

*Brand Strength* – a measurement on the ability to attract new and keep existing customers. It is important since the customer loyalty is often closely connected to the profitability. The brand strength only got a medium weight due to the fact that it can be a central part for some firms but most of the firms this is not the most important part. The respondents did not discuss this factor very much meaning they believed other factor are more interesting.

*Human Capital* – consists of collective abilities, relationship, talents, knowledge and experience within the company. It can be recognized in the way that it cannot be owned by the firm. This factor only got the medium weight since it is very complex to set a value of the human capital. In a knowledge based company the importance is a bit higher, especially the management, but there should be a possibility of switch the whole management without losing the entire firm. If you can do that you should not put too much weight on analysing the human capital.

*Innovation Power* – is important to analyze if you what to see the company's future marketplace and the ability to renew itself and break new ground. We gave this value driver a medium weight since there was almost no respond on it except that the respondents said all seven are important. The respond we got was that for firms with very limited segment the innovative power is not that significant, but for other it is more important. Even though it can be significant it still is not a factor to put much weight on, it can be improved after a transition.

*Person-Independent Knowledge* – is valuable in two ways; the company owns this type of knowledge meaning it does not leave the company when employees do and companies can leverage person-independent knowledge better than they can leverage human capital. This was the value driver where there were lest discussion about and it is a factor that can be easily improved if needed, thus we gave it a lower weight in the guidelines.

The seven value drivers about are consistent with the theory of Frykman & Tolleryd (2003) and the next three are the one we have decided to add since we saw the need.

*Business Idea* – is essential for the firm since it is what will create future returns and profits. Without a good business idea you cannot come far. This also a part that is hard to change without changing the whole firm, especially for knowledge based companies. We have given it a high weight, it did not get the highest weight since firms that are interested for a merger and acquisition transaction usually have a ongoing business showing that their idea works. New started firms can stand and fall with their business idea.

*Company Strategy* – only were assigned a medium weight due to the fact it is something that can be changed relatively easy. On the other hand, a strong strategy is raising the comfort regarding the future predictions.

*Product/Service* – a unique product/service can give the company a market leading position. The products in the firm at the moment are what they are getting the money from. It will probably take time and money to create new

once if the existing ones are no good. Many of the respondents pointed out the importance of the firm's product. Those are the arguments giving a high weight in the guidelines. One thing to mention is that according to Anonymous X if the purpose for the valuation is for an IPO the business idea and the service/product is the most essential, since that is what entices the customer.

### **5.2.3 Discussion about the Guidelines**

There can be discussion around the value drivers we decided to use and the assigned weights. All the information is taken from the theory of Frykman & Tolleryd (2003) and our interviews. There is actually a well used theory within management called Analytical Hierarchy Process (AHP) that is weighting different criteria. It is a structured method of dealing with complex decisions. The multi criteria method is built up on the fundament of making the best suited solution rather than the "correct". Within this method there is a step where there the different criteria is weighted against each other, they gets a numerical value or weight. Our guidelines has the same basic idea, however, it was impossible for us to set a general numerical value on each value driver. Instead, we gave some guides of what value drivers to look closer at and spend the most time on analysing. The methodology is connecting the different criteria to the overall decision and maybe not only finds a solution to the traced goal but also alternative solutions. For our guidelines it is the same, the different value drivers are weighted and they should work together to come up with the most suitable analysis of the firm.

## 6 Conclusion

---

*The conclusion chapter is directly connected to the purpose and the research questions of this study. The empirical findings and the analysis will be summarized in order to fulfil the purpose and answer the research questions.*

---

Within this study we investigated deeper into the valuation process of private limited knowledge based company within a merger and acquisition transaction. Our findings are meant to assist the appreciator to an easier and quicker understanding of the risks within a firm and what factors to allocate most resources towards. This knowledge is also valuable to know for the companies stakeholders.

When examine if there are any general models used in the valuation industry to estimate the value of knowledge based companies we found that the same methods are used for all type of firms. The most utilized one is the DCF model and that did not surprise us since this model is mostly used in the theoretical world as well, also the use of multiples is common. One approach we had not considered that much was that valuers are using previous comparable transaction in a wide range. After conducting the interviews we understood that this is a good approach since assets within this type of business are extremely difficult to estimate a value for and include in the valuation process. A considerable part of these assets is the intellectual capital and we therefore explored deeper into the process of handling the intellectual capital in a valuating process.

One of our first's thoughts regarding the intellectual capital was if it was possible to determining a value for it. According to our respondent it do not exist any good model and they believed it would be very difficult to estimate. However, we got some examples of how it could be managed. One way of valuing the employees could be to compare with competitors and another would be to look at costs of replacing them and train the new employee to the same level. Many of the respondents said that the intellectual capital is included in the different models since is it is producing revenue. A valuation of capital, all type of capital, is set to what extend it can generate profit. All type of capital contributing, economically, to the firm should be a base for valuation. Our respondent Anonymous Z presented a small concept (presented below) that we believe is a good idea to consider when doing a valuation of knowledge based companies.

Intellectual Capital  $\longrightarrow$  Generating Rate of Return  $\longrightarrow$  Base for Valuation

According to our respondents one of the biggest problems with knowledge based companies in a valuation process is the risk of the transient intellectual capital. We knew a bit about this problem before, but we never could imagined it was to this extend. We needed to find a way of managing this risk or at least making it easier to get an overview of it, since there today exist no suitable model in the valuation theories and none of our respondents mentioned one. We have developed an extended version of Edvinsson's (1997) model of

intellectual capital to incorporate this risk in the valuation. In section 5.1 our Risk Analysis Scheme is presented. The purpose of the scheme is to evaluate the different risk factor concerning the firm. By ranking the risk of each factor and summarize the whole risk aspect you can put it into your risk rating table and find a recommendation of the required rate of return. The model was constructed under these assumptions since most of the respondents said that the way to manage the risk of transient intellectual capital was to increase the required rate of return in the DCF calculations. With our scheme we provide recommendation at what risk level the required rate of return should be low or high. Another purpose is to give both the appreciator and the firms a good overview of the risk situation.

The purpose with our study has been to investigated if there is a need for a new approach for valuing private limited knowledge based companies and if there exist such a need create or modify a approach that can be used as a foundation for the valuation. Our findings provided use with valuable input and we found that the model most utilized model is the DCF and there were no direct need of a new valuation model. However, in order to get the most accurate estimation when conducting a valuation you should combine different models and there exist many numerical analyses before you can determine a value, in for example the DCF model. Since there is a big problem with the risk of transient intellectual capital in knowledge based companies, our Risk Analysis Scheme is helping the appreciator to get an overview of the risks which he or she can convert it to a required rate of return. The required rate of return is the outcome of our scheme and the purpose is to implement it in the DCF calculations.

## 7 Discussion and Reflections

---

*The Discussion and Reflection section will point on some final remarks and some suggested further studies are presented.*

---

### 7.1 Final Remarks

A considerable amount of time has been spent in order to gain a deeper understanding of the valuation process concerning knowledge based companies and the transient nature of intellectual capital, which proven to be very valuable. When it comes to the subject of business valuation you have to be careful since it is a very subject topic, especially when valuing companies where there are a very small part of fixed assets. As many of the respondents pointed out; a valuation always depends on the situation. For knowledge based companies there are probably more differences between the companies than in any other industry. Therefore, it is extremely hard to do generalisations on the topic of how to value these companies, due to this we could not conclude more than guidelines and recommendations. However, there is no right way of value a company, but there are many wrong ways.

Our Risk Analysis Scheme is a model that never has been used on real world cases and if that had been done it would have increased the reliability of the model significantly. It would have been preferred to have done it but we could not, due to lack of time and resources.

We are very satisfied with our respondent, they were from different type of fields within valuation but still all worked in a corporate finance department. One can argue that we should have tried to find respondents with other backgrounds, but in order for us to fulfil our purpose we believed it would be most valid to get in contact with people who work with the subject on a daily basis. It can also be considered that eight respondents are too few, however, there is not an extremely large sample from the beginning and these people are very busy and hard to get them to answer our questions.

Overall we are very satisfied with our work and it has been a very enjoyable and worthwhile for us to do.

### 7.2 Further Studies

A problem that occurred during this study connected to the valuation of knowledge based companies is the risk of transient intellectual capital. We touched on it in this study but it would be interesting to get a closer look of the nature of intellectual capital and how it is handled within the company. It would be attractive to continue the work we have done with the risk connected to a merger or acquisition transactions, but also to see how the risk of the intellectual capital is managed within companies.

A study of intellectual capital can also be made more quantitative by investigate the differences in intellectual capital and its value over the years. Connected to this, the intangible assets within firms today have dramatically increased over the years. It would be interesting to investigate how much and what impact it has had on the stock prices for public traded companies.

For us it would be interesting to apply the Risk Analysis Scheme we presented in this study to a real world cases and see how it work.

## 8 References

### Article in Scientific Journals

Adeler, M., 1969. On the Risk-Return Trade-Off in the Valuation of Assets. *The Journal of Financial and Quantitative Analysis*, Vol. 4, Issue: 4, pp.493-512.

Bennett, W., M., 1966. Capital Turnover vs. Profit Margins. *Financial Analysts Journal*, Vol. 22, Issue: 2, pp. 88-95.

Boatsman, J., R., & Baskin, E., F., 1981. Asset Valuation with Incomplete Markets. *The Accounting Review*, Vol. 56, Issue: 1, pp. 38-53.

Campbell, J. Y. & Viceira, L. M., 2005. The Term Structure of the Risk-return Trade-off. *Financial Analysts Journal*, Vol. 61, Issue: 1, pp. 34-44.

Crouhy, M., Galai, D., & Mark, R., 2001. Prototype risk rating system, *Journal of Banking & Finance Vol. 25 pp. 47- 95.*

Doyle, P., & Corstjens, M., 1983. Optimal Growth Strategies for Service Organizations. *The Journal of Business*, Vol. 56, Issue: 3, pp. 389-405.

Fairley, W., B., 1979. Investment Income and Profit Margins in Property-Liability Insurance: Theory and Empirical Results. *The Bell Journal of Economics*, Vol. 10, Issue: 1, pp. 192-210.

Fama, E., F., 1977. Interest Rates and Inflation: The Message in the Entrails. *The American Economic Review*, Vol. 67, Issue: 3, pp. 487-496.

Francois, P., & MacLachlan, D., L., 1994. Ecological Validation of Alternative Customer-Based Brand Strength Measures. *Journal of Research in Marketing*, Vol. 12, Issue: 4, pp. 321-332.

Holton, G., A., 2004. Defining Risk. *Financial Analysts Journal*. Vol. 60, Issue: 6, pp. 19–25.

Lassar, W., Mittal, B., & Sharma, A., 1995. Measuring Customer-Based Brand Equity. *Journal of Customer Marketing*, Vol. 12, Issue: 4, pp. 11-19.

Lieberman, J., 1980. Human Capital and the Financial Capital Market. *The Journal of Business*, Vol. 53, Issue: 2, pp. 165-191.

Mayers, D., 1973. Nonmarketable Assets and the Determination of Capital Asset Prices in the Absence of a Riskless Asset. *The Journal of Business*, Vol. 46, Issue: 2, pp. 258-267.

- McDougall, P., P., Covin, J., G., Robinson Jr., R., B., & Herron, L., 1994. The Effects of Industry Growth and Strategic Breadth on New Venture Performance and Strategy Content. *Strategic Management Journal*, Vol. 15, Issue: 7, pp. 537-554.
- Saaty, T., L., 1994. How to Make a Decision: The Analytical Hierarchy Process. *Interfaces*, Vol. 24, Issue: 6, pp. 19-43.
- Saaty, T., L., 2008. Decision making with the Analytical Hierarchy Process. *International Journal of Service Sciences*, Vol. 1, Issue: 1, pp. 83-98.
- Schwert, G., W., 1977. Public Regulation of National Securities Exchanges: A Test of the Capture Hypothesis. *The Bell Journal of Economics*, Vol. 8, Issue: 1, pp. 128-150.
- Spencer, M., 1984. Cost Reduction, Competition, and Industry Performance. *The Econometric Society*. Vol. 52, Issue: 1, pp. 101-121.
- Stewart, A., T., 1998. Intellectual Capital – The New Wealth of Organizations. *Journal of Performance Improvement*. Vol. 37, Issue: 7, pp. 56-59
- Van Marrewijk, M., & Timmers, J., 2002. Human Capital Management: New Possibilities in People Management. *Journal of Business Ethics*, Vol. 44, Issue: 2, pp. 171-184.
- Weaver, S., C., Harris, R., S., Blelinski, D., W., & MacKenzie, K., F., 1991. Merger and Acquisition Valuation. *Financial Management*, Vol. 20, Issue: 2, pp. 85-96.

## Literature

- Alvesson, M. & Sköldbberg, K. 1994. *Tolkning och reflektion Vetenskapsfilosofi och kvalitativ metod*. Lund: Studentlitteratur
- Andersen, I., 1998. *Den Uppenbara Verkligheten – Val av Sambällsvetenskaplig Metod*. Lund: Studentlitteratur.
- Andersson, B-E., 1985. *Som Man Frågar Får Man Svar – En Introduktion i Intervju- och Enkät-teknik*. Kristianstad: Rabén & Sjögren.
- Benjamin, A., 1981. *The Helping Interview*. 3<sup>rd</sup> Ed. Boston: Houghton Mifflin Company.
- Coperland, T., Koller, T., & Murin, J., 1994. *Valuation: Measuring and Managing the Value of Companies*. 2<sup>nd</sup> Ed. New York: John Wiley & Sons, Inc.

- Damodaran, A., 2002. *Investment valuation: tools and techniques for determining the value of any asset*. 2<sup>nd</sup> Ed. New York: John Wiley & Sons, Inc.
- Edvinsson, L., 1997. *Det Intellektuella Kapitalet*. Malmö: Liber AB.
- Elliot, J., A., & Dweck, C., S., 2005. *Handbook of Competence and Motivation*. New York: Guilford Press.
- Eriksson, L., T., & Wiedersheim-Paul, F., 2006. *Att Utreda Forska och Rapportera*. 8<sup>th</sup> Ed. Malmö: Liber AB.
- FAR (Föreningen Auktoriserade Revisorer), 2005. *Internationell redovisningsstandard i Sverige, IFRS/LAS*. Stockholm: FAR Förlag AB.
- Frykman, D., & Tolleryd, J., 2003. *Corporate Valuation – An Easy Guide to Measuring Value*. London: Prentice Hall, Financial Times.
- Ghauri, P. N. & Grønhaug, K., 2005. *Research Methods in Business Studies: A Practical Guide*, 3rd ed. London: Pearson.
- Hitt A., M. at al., 2002. *Creating Value: Winners in the New Business Environment*. Oxford: Wiley-Blackwell.
- Holme, I., M., & Solvang, B., K., 1997. *Forskningsmetodik – Om kvalitativa och kvantitativa metoder*. Lund: Studentlitteratur.
- Kirk, J., & Miller, M., L., 1986. *Reliability and Validity in Qualitative Research*. London: SAGA Publications Ltd.
- Lawrence, G., M., 1994. *Due Diligence in Business Transactions*. New York: Law Journal Press.
- Mason, J., 2002. *Qualitative researching*. 2<sup>nd</sup> Ed. London: Sage Publications Ltd.
- Nilsson H., Isaksson A., & Martikainen T., 2002. *Företagsvärdering med fundamental analys*. Lund: Studentlitteratur.
- Porter, M., E., 1980. *Competitive Strategy*. New York: The Free Press.
- Porter, M., E., 1985. *Competitive Advantage*. New York: The Free Press.
- PriceWaterhouseCoopers, 2005. *Företagsvärdering – Översikt av Området Baserat på Erfarenhet*.

- Roos, G., Fernström, L. & Pike, S., 2006. *Den värdeskapande organisationen – intellektuellt kapital i praktiken*. Lund: Studentlitteratur.
- Hansson, J. & Andersson P., E., 1999. *Intellektuellt kapital i teori och praktik*. Falun: AIT Falun AB.
- Sveiby, K., E., 1995. *Kunskapsflödet: Organisationens immateriella tillgångar*. Stockholm: Svenska Dagbladets Förlags AB.
- Saunders, M., Lewis, P., & Thornhill, A., 2007. *Research Methods for Business Students*. Pearson Education Limited, Edinburgh.
- Silverman, D., 2000. *Doing Qualitative Research - A Practical Handbook*. London: SAGE Publications Ltd.
- Støyt, L., 2007. *People Before Strategy*. Copenhagen: Ramboll Management.
- Trost, J., 2005. *Kvalitativa Intervjuer*. Lund: Studentlitteratur.
- Von Krogh, G., Ichijo, K., & Nonaka, I., 2000. *Enabling Knowledge Creation: How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation*. New York: Oxford University Press US.
- Weston, F. & Weaver, S., C., 2004. *Mergers and Acquisitions*. New York: McGraw-Hill Professional.
- Yanow, D. & Schwartz-Shea, P., 2005. *Interpretation and Method: Empirical Research Methods and the Interpretive Turn*. London: M.E. Sharpe Inc.

### Internet Sources

- Almega, 2009. *Branschfakta: 3,4 miljoner arbetar i tjänstesektorn*. Retrieved 2009-03-14, from <http://www.almega.se/web/Branschfakta.aspx>
- DagensIndustri, 2009. *Nytt År – Nya Vinstvaningar*. Retrieved 2009-04-27, from <http://di.se>
- Deloitte, 2009a. *Commercial Due Diligence*. Retrieved 2009-04-22, from [http://www.deloitte.com/dtt/section\\_node/0,1042,sid%253D38910,00.html](http://www.deloitte.com/dtt/section_node/0,1042,sid%253D38910,00.html)
- Deloitte, 2009b. *Skatterådgivning: Skattefrågor vid Företagsöverlåtelse och omstrukturering*. Retrieved 2009-04-27, from [http://www.deloitte.com/dtt/section\\_node/0,1042,sid%253D38916,00.html](http://www.deloitte.com/dtt/section_node/0,1042,sid%253D38916,00.html)

- EVCA (European Private Equity & Venture Capital Association) Tax and Legal Committee, 2009. *Sweden – Tax and Legal Update*. Retrieved 2009-04-27, from <http://www.evca.eu/publicandregulatoryaffairs/cooperationwithotherstakeholders.aspx?id=522>
- Garger, J., 2008. *The Risk-Return Trade-Off Principle*. Retrieved 2009-05-28, from <http://www.brighthub.com/office/finance/articles/16345.aspx>
- KPMG, 2007. *Missat Värde Vid Varannan Företagsförsäljning*. Retrieved 2009-04-27, from <http://www.kpmg.se/pages/105213.html>
- Nationalencyklopedin, 2009a. *Kunskapsföretag*. Retrieved 2009-04-15, from <http://www.ne.se/sok/kunskapsf%C3%B6retag?type=NE>
- Nationalencyklopedin, 2009b. *Due Diligence*. Retrieved 2009-04-22, from <http://www.ne.se/1%C3%A5ng/duediligence>
- PriceWaterHouseCoopers, 2009a. *Strukturarbete och Modellering vid Förvärv*. Retrieved 2009-04-27, from <http://www.pwc.com/extweb/service.nsf/docid/1AF341FC38E8BD7E802574C800449CDD>
- PriceWaterHouseCoopers, 2009b. *Corporate Finance*. Retrieved 2009-05-29, from <http://www.pwc.com/Extweb/service.nsf/docid/4B3A60A6AF618755802570C200471482>
- Standard & Poor's, 2009. *Understanding Standard & Poor's Rating Definitions*. Retrieved 2009-05-29, from [http://www2.standardandpoors.com/spf/pdf/fixedincome/Understanding\\_Rating\\_Definitions.pdf](http://www2.standardandpoors.com/spf/pdf/fixedincome/Understanding_Rating_Definitions.pdf)

## Appendices

### Appendix 1 – Interview Guide in English



#### Interview guide

Hi, we are two students from Jönköping International Business School in Jönköping and we are writing our master thesis regarding the valuation of private limited knowledge based companies. We are investigating what type of theoretical models is suitable for this type of valuation. Through interviews we want to examine what methods used by the people in the industry.

The time span for the interview is approximately ten to fifteen minutes and if you want to, the possibility of anonymity is available. If you are interested in reading the finished report you are more than welcome.

#### Questions

1. What method/methods is/are best/most suitable to use when estimating a value of a private limited knowledge based company?
2. Is it common to use many different valuation methods to estimate the value?
3. What factors are affecting the choice of method/methods?
4. Do you have any established model for how to estimate the specific value of the intellectual capital?
5. How important is the company's strategy, business idea and products/services when estimating the value?
6. How would you weight financial measures (Discounted Cash Flow Model etc) versus non-financial measures (Intellectual Capital etc)?
7. According to a theory (Frykman & Tolleryd, 2003) there are seven important parts (see below) to look closer at in a valuation process when estimating the non-

financial value of a company. Do you believe these are the most important or would you like to change any of them? How would you weight the different parts?

- a. Level of consolidation
  - b. Barriers of Entry
  - c. Industry Growth
  - d. Brand Strength
  - e. Human Capital
  - f. Innovation Power
  - g. Person-Independent Knowledge
8. Do you believe that knowledge based companies should report their intellectual capital in their annual reports? Why or why not?
  9. What key ratios would you prefer to use for a comparative valuation of knowledge based companies? (For example P/E, P/BV, EV/EBITDA)
  10. How are you managing the risk/problem that intellectual capital is transiently?
  11. Are there any differences on the valuation approach between knowledge based- and manufacturing companies?
  12. Any remaining comments?

**Please accept our thanks in advance.**

Martin Persson and Fredrik Olsson

## Appendix 2 – Original Interview Guide in Swedish



JÖNKÖPING INTERNATIONAL BUSINESS SCHOOL  
JÖNKÖPING UNIVERSITY

### Intervjuguide

Hej, vi är två studenter från Internationella Handelshögskolan i Jönköping och vi skriver just nu på vår magisteruppsats som behandlar värdering av onoterade kunskapsföretag. Vi tittar närmare på vad det finns för modeller anpassade till just dessa typer av företag och genom intervjuer ta reda på vad för värderings metoder som används av människor i branschen.

Tidsåtgången för denna intervju är cirka 10 till 15 min och om ni önskar finns möjligheten till att vara anonym. Om ni är intresserade av att ta del av undersökningen när vi är klara får ni gärna det.

### Frågor

1. Vilken metod/metoder är bäst/lämpligast att använda vid värdering av ett onoterat kunskapsföretag?
2. Är det vanligt att använda flera olika värderingsmetoder för att komma fram till ett värde?
3. Vilka faktorer påverkar valet av metod/metoder?
4. Har Ni några utarbetade modeller för hur Ni tar fram ett specifikt värde på intellektuelltkapital (humankapital)?
5. Hur viktig är företagets strategi, affärsidé och produkterna/tjänsterna vid en värdering?
6. Hur stor vikt lägger ni på finansiella mått (Discounted Cash Flow Model etc) v.s. icke finansiella mått (Intellektuellt Kapital etc)?
7. Enligt en teori (Frykman & Tolleryd, 2003) finns det sju viktiga delar (se nedan) att titta på vid en värdering av ett företag när de gäller den icke finansiella delen. Tycker ni att dessa är de viktigaste eller skulle ni vilja byta ut någon/några? Hur stor vikt tycker du att man ska lägga på varje del?
  - Konkurrensen inom branschen (Level of consolidation)
  - Etableringshinder (Barriers of Entry)
  - Branschens tillväxt (Industry Growth)

- Varumärkets värde/styrka (Brand Strength)
  - Humankapital (Human Capital)
  - Förnyelse styrkan (Innovation Power)
  - Företags ägda kunskaper, ej människornas kunskap (Person-Independent Knowledge)
8. Bör kunskapsföretag redovisa sitt intellektuellt kapital i sina årsredovisningar? Varför/varför inte?
  9. Vad föredrar Ni att använda Er av vid en jämförande värdering (t.ex. P/E, P/BV, EV/EBITDA) Nyckeltal vid en värdering av kunskapsföretag?
  10. Hur hanterar ni risken/problemet med att intellektuellt kapital delvis är flyktigt?
  11. Finns det några skillnader på tillvägagångssättet vid värdering av tillverkande respektive tjänsteföretag?
  12. Övriga kommentarer?

**Tack på förhand!**

Martin Persson och Fredrik Olsson

## Appendix 3 – S&P Ratings Category Definitions

- AAA** An obligation rated AAA has the highest rating assigned by Standard & Poor's. The Obligor's capacity to meet its financial commitment on the obligation is extremely strong.
- AA** An obligation rated AA differs from the highest rated obligations only in small degree. The obligor's capacity to meet its financial commitment on the obligation is very strong.
- A** An obligation rated A is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher rated categories. However, the obligor's capacity to meet its financial commitment on the obligation is still strong.
- BBB** An obligation rated BBB exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitment on the obligation.
- BB** An obligation rated BB is less vulnerable to nonpayment than other speculative issues. However, it faces major ongoing uncertainties or exposure to adverse business, financial, or economic conditions which could lead to the obligor's inadequate capacity to meet its financial commitment on the obligation.
- B** An obligation rated B is more vulnerable to nonpayment than obligations rated BB but the obligor currently has the capacity to meet its financial commitment on the obligation. Adverse business, financial, or economic conditions will likely impair the obligor's capacity or willingness to meet its financial commitment on the obligation.
- CCC** An obligation rated CCC is currently vulnerable to nonpayment, and is dependent upon favorable business, financial, and economic conditions for the obligor to meet its financial commitment on the obligation. In the event of adverse business, financial or economic conditions, the obligor is not likely to have the capacity to meet its financial commitment on the obligation.
- CC** An obligation rated CC is currently highly vulnerable to nonpayment.

- C** The C rating may be used to cover a situation where a bankruptcy petition has been filed or similar action has been taken, but payments on this obligation are being continued.
- D** The D rating, unlike other ratings, is not prospective; rather, it is used only where a default has actually occurred  $\pm$  and not where a default is only expected. Standard & Poor's changes ratings to D either:  
On the day an interest and/or principal payment is due and is not paid. An exception is made if there is a grace period and S&P believes that a payment will be made, in which case the rating can be maintained; or  
Upon voluntary bankruptcy filing or similar action. An exception is made if S&P expects that debt service payments will continue to be made on a specific issue. In the absence of a payment default or bankruptcy filing, a technical default (i.e., covenant violation) is not sufficient for assigning a D rating.
- + or -** The ratings from AA to CCC may be modified by the addition of a plus or minus sign to show relative standing within the major rating categories.
- R** This symbol is attached to the ratings of instruments with significant non-credit risks. It highlights risks to principal or volatility of expected returns which are not addressed in the credit rating. Examples include: obligations linked or indexed to equities, currencies, or commodities; obligations exposed to severe prepayment risk- such as interest-only or principal-only mortgage securities; and obligations with unusually risky interest terms, such as inverse floaters.

*Source: Reproduced from Corporate Ratings Criteria of S&P for 1998*