

ABSTRACT

- Title: Valuation and the differences between strategic and financial buyers
- Author: Christopher Ekdahl
- Supervisor: Ingela Elofsson, *Department of Production Management*, Lund Institute of Technology
- Problem definition: For any acquisition to take place the assets to be sold must be valued. Some argue that an asset is worth whatever an acquirer is willing to pay for it at any given time. We believe that there is an underlying value (intrinsic value) that depends on the expected future cash flows of the asset and the risk associated with these cash flows. There exist several methods for estimating this value.
- Traditionally when a company was up for sale the most likely acquirer would be a “strategic buyer”, that is a competitor in the same industry or someone with good knowledge and a large amount of experience from the industry. In the 80’s a new breed of buyers called “financial buyers” developed rapidly in the US. Their motivation for acquiring companies was purely financial and these buyers came to revolutionize the mergers and acquisition industry. Today, up to 50% of transactions made include a financial buyer as one of the parties. In 2006 over \$250bn of new capital was raised to these firms.
- While working in the mergers and acquisitions department of Calyon I observed that financial buyers and strategic buyers often derived very different valuations of the same company.
- Purpose: The purpose of this thesis is to describe the common acquisition valuation techniques used by financial and strategic buyers, and the potential for value creation for each of them.
- Methodology: The study has been conducted in descriptive way with mostly secondary and qualitative data.
- Summery & Reflections: This thesis begins with a background discussion and definition of strategic and financial buyers. A section on valuation follows. Discounted cash flow analysis, relative valuation and leveraged buyout analysis are the valuation methods described. Next, the most common ways of creating value in an acquisition are described. The operating and financial synergies experienced by strategic buyers are described as well as the most common value creation levers used by financial buyers. The thesis is concluded by a summary and some reflections by the author.
- Key words: Strategic Buyer, Financial Buyer, Buyout Fund, Private Equity, Valuation Methods, Value Creation, Acquisitions.

PREFACE

Having worked for 9 months in the mergers and acquisition industry I got the opportunity to take a break and finish my studies before continuing in this field. I wanted to use this break to further investigate certain aspects of the mergers and acquisition process and to gain a broader theoretical base from which to develop on my next job. My work on this thesis has been very interesting and it has helped me to reach those goals. I would like to thank every one who has assisted me in my work and especially my supervisor Ingela Elofsson. Ingela has given me clear directions and her critique has been objective and well defined, which has been a great help to me in my work.

Helsingborg, March 2007

A handwritten signature in blue ink, appearing to read 'Ekdahl', written in a cursive style.

Christopher Ekdahl

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1 Introduction

In the introduction the background and problem definition of the thesis are described. Thereafter the purpose of the paper will be presented to provide the reader a tangible depiction of the scope of the report. Furthermore, the introduction treats the target group and delimitations as well as the disposition of the thesis.

1.1 Background and Problem Definition

Capitalism has existed in some form at least since the invention of agriculture, but the modern capitalism that we see today is often said to have started 300 to 500 years ago when the institution of private property was fully installed in a number of countries¹.

As long as we have had capitalism, businesses have changed hands. Consider, for example, the blacksmith being too old to run his business and therefore letting his son take over, or the barmaid having saved up for years before being able to buy the local pub. Today, many small companies are still traded in the same way, but the industrial revolution led to the creation of many large corporations, which increasingly used acquisitions as a growth strategy. These acquirers are often referred to as “strategic buyers”² and the rationale behind their acquisitions is of a strategic nature. Common motivations include gaining market share in their own market, gaining entrance into another market or gaining technological knowledge. Up until recently, when a sizeable company was up for sale, a strategic buyer from the same industry with superior size was the most likely potential acquirer. However, with the development of the credit markets a new breed of buyers was born.

In 1976, a firm called Kohlberg Kravis Roberts & co (KKR) was founded in New York. The three partners were non-operators with backgrounds in finance and their business concept was to acquire industry-leading companies and work with management to grow and improve them to create shareholder value. The firm was hugely successful and it came to initiate a revolution of the mergers and acquisitions industry. As opposed to strategic buyers this new breed came to be called “financial buyers”³, since their motives were purely financial. Today, up to 50%⁴ of transactions made include a financial player as one of the parties and in 2005 over \$250bn⁵ of new capital was raised to these firms world wide. These firms go under a variety of names including private equity funds, financial sponsors and buyout funds. For the sake of clarity, distinctions have to be made. Figure 1.1⁶ offers a schematic picture of how capital invested in corporations is divided into different categories. The financial buyers that we consider in this thesis are buyout funds. As we see in figure 1.1, buyout funds are one specific category of private equity investors and can be defined in the following way.

There are a large variety of financial investors, investing in everything from real estate to expensive wines. We will be concentrating on financial investors who invest in corporations, which is the top category in figure 1.1. When investing in a company one can basically invest either in the debt of the company or in the equity of the company. The financial investors that we

¹ Wikipedia.org

² Transactions Advisory (Mercer Capital)

³ Transactions Advisory (Mercer Capital)

⁴ Claes Jonsson, Calyon

⁵ ft.com

⁶ svca.se

are to explore invest, primarily, in equity. Equity can either be private or quoted on a stock exchange, where it is publicly traded. Since buyout funds acquire integer companies their investments are not listed on any stock exchange and are hence private. The financial buyers that we will describe invests in mature companies in a late stage of their life cycle, as opposed to Business Angels or Venture Capitalists that provide start-up or growth capital to firms early on in the life cycle. Mature companies often have more stable cash flows and lower investment needs, which make a high degree of debt financing a compelling option. Our financial investors are often referred to as buyout funds because they stage highly leveraged takeovers of both public and private firms. They are also referred to as Private Equity funds because once a buyout is completed the equity they have invested in is by definition private. Finally, the buyout firms are sometimes referred to as financial sponsors because they provide financing for management buyouts (MBOs).

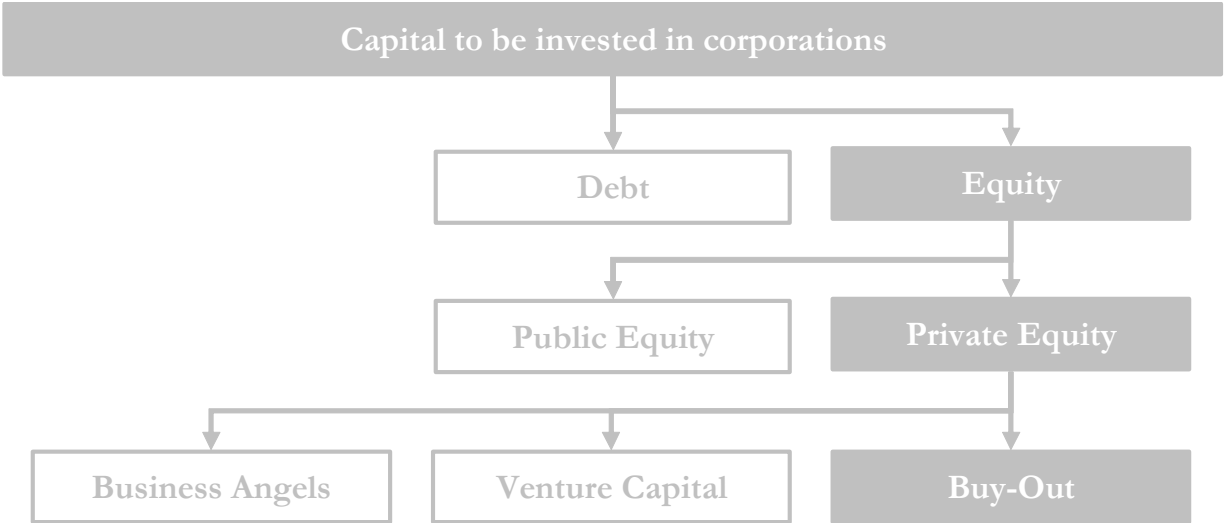


Figure 1.1 – Capital Market Structure

For any merger or acquisition to take place the assets involved in the transaction need to be valued. Valuation is often described as one of the three pillars of finance (the other two being risk management and optimization over time)⁷ and plays an essential role in all financial systems. We often encounter valuation in our every day life. If, for example, an apartment is to be put up for sale or a new mortgage needs to be taken out on a house, a real estate agent is needed to value the assets. In the corporate world assets constantly need to be valued. If a firm considers building a new plant, the future profits of the plant need to be estimated and valued to see that they cover the investment. When an auditor revises a firm’s financial statements he must asses the values of inventory, goodwill and pension obligations among others. If a firm wants to borrow money from a bank, its assets and repayment capabilities have to be valued. There are also a variety of philosophical approaches to valuation. Some argue that an asset is worth what ever someone is willing to pay for it and therefore adhere to the bigger fool theory⁸ of investing, which states that an asset should be bought at any price as long as there is a good likelihood that an even bigger fool will turn up and buy it more expensively later on.

In mergers and acquisitions the aim is on valuing the operating assets of a firm in order to derive the firm value or enterprise value of the firm. The value of the operating assets is derived from

⁷ "Finance" – Bodie & Merton, p.6
⁸ "Investment Valuation" – Damodaran, p.1

the cash flows those assets are expected to generate in the future and the amount of risk involved in those cash flows⁹.

Three models, in particular, are used to value companies in transactions, discounted cash flow valuation, relative valuation and leveraged buyout valuation. All three models can be used by either group of investors to derive a reference value. However, the leveraged buyout analysis is especially used to derive a value for a financial buyer, whereas the other two are traditionally used by strategic buyers¹⁰. The discounted cash flow analysis is the most thorough model and strategic buyers often use it in combination with relative valuation.

On several occasions it has been observed¹¹ that strategic buyers and financial buyers derive very different valuations of the same company. Harald Mix, founder of Altor, said in an interview that buyout transactions at a higher price compared to the stock exchange are common¹².

1.1.1 Purpose

The purpose of this thesis is to describe the common acquisition valuation techniques used by financial and strategic buyers, and the potential for value creation for each of them.

1.1.2 Target Group and Delimitations

This paper is aimed at senior students with a good understanding of basic financial concepts. It is also aimed at professionals in the financial services sector.

The thesis will be restricted to description and analysis of
[To be discussed and completed]

1.1.3 Disposition

Figure 1.2 shows the layout of this thesis.



Figure 1.1 – Disposition of Thesis

We commence with three chapters of introduction methodology and a presentation of the buyer group. The aim is to give the reader adequate background and vocabulary to move on to the

⁹ "Investment Valuation" – Damodaran, p.1
¹⁰ Otto Hermansson, Danske Bank
¹¹ Otto Hermansson, Danske Bank
¹² Interview in "Veckans Affärer" 15March 2007

theory section. The theory section is made up of three chapters and gives us information about the models used for valuation by our different buyer groups and the measures they take to create value. The thesis ends with analysis and conclusions.

Chapter 1 – Introduction

In the introduction the background and problem definition of the thesis are described. Thereafter the purpose of the paper will be presented to provide the reader a tangible depiction of the scope of the report. Furthermore, the introduction treats the target group and delimitations as well as the disposition of the thesis.

Chapter 2 – Methodology

In this chapter the methods used to fulfil the purpose of this thesis are described. Each section commences with general theory and concludes with the way those general theories are used in this thesis. Finally, the reliance of the thesis is discussed.

Chapter 3 – Presentation of Buyer Groups

In this chapter the two main types of acquirers, namely strategic buyers and financial buyers are described and discussed. The history of financial buyers and the main Nordic players as well as the main players world wide, are also described.

Chapter 4 – Valuation Methods

In this chapter the three most common valuation techniques used in practice by strategic and financial buyers will be described and discussed. The DCF analysis and relative valuations are traditionally used by strategic buyers, whereas the LBO model is special for financial buyers. The valuation methods aim to find the value of the firm's operating assets or the enterprise value of a firm, but since the firm's operating assets are financed by debt and equity, the equity value can easily be derived by subtracting the debt from the enterprise value.

Chapter 5 – Value Creation for Strategic Buyers

In this chapter the main ways in which strategic buyers create value through acquisitions will be described. Common operative and financial synergies will be discussed as well as a few doubtful sources of synergy. Finally an approach to valuing synergy is described. By finding ways to create value or improve the target financials, such as future margins or growth, variables can be altered in the valuation models.

Chapter 6 – Value Creation for Financial Buyers

In this chapter the main ways in which buyout firms create value will be described. A frame work developed by Berg (Mckinsey & Company) & Gottschalg (INSEAD) will be used to get an overview over the different value creating levers. Then each measure is discussed along with the variables in the valuation models it can improve.

Chapter 7 – Summary & Reflections

This chapter provides a summary of the main valuation and value creation techniques used by strategic and financial buyers. The author's reflections on the differences between strategic and financial buyers, with respect to valuation and value creation, follow.

References

A complete list of references used in this thesis is presented.

2 Methodology

In this chapter the methods used to fulfil the purpose of this thesis are described. Each section commences with general theory and concludes with the way those general theories are used in this thesis. Finally, the reliance of the thesis is discussed.

2.1 Introduction

It is very important to be structured when conducting research. Being structured is facilitated by following a clear method while working towards the accomplishment of the purpose of the thesis. There are a wide variety of methods available and several of them could normally be used to reach one's purpose. The choice of method depends on the purpose and the knowledge available. It is common to use a combination of methods in order to obtain the highest fulfillment of the purpose at the lowest expense¹³.

2.2 Scientific Approaches

The first step in a study is to identify the problem. Normally the author has an idea of what the problem is, but needs to clarify it further. Once the problem has been defined, the purpose of the study is to be determined. There are a variety of purposes in studies, but some of the more common include descriptive studies, explanatory studies and diagnostic studies.

2.2.1 Descriptive Studies

Descriptive studies include a wide variety of studies. They could describe the work environment at a plant, how the parliament works or marketing profile of a product. They could be conducted with both quantitative and qualitative research. The purpose of quantitative descriptions is usually to answer questions such as how many, how much, how often, etc. Measurement techniques are normally of great importance. A qualitative description is defined by its purpose, the target group and the data available. It is very important to choose the language in relation to the target group and to delimit the description to the areas that are important for this group. An example of a descriptive qualitative study would be to describe how a car works. This study would be very different if the target group was mechanics compared to if it was drivers¹⁴.

2.2.2 Explanatory Studies

Explanatory studies aims at answering the question "why". They often contain statistical exercises where the purpose is to reject or accept an hypothesis. An example of such a hypothesis would be "Does smoking cause cancer?". Explanatory studies can be both qualitative and quantitative.

2.2.3 Diagnostic Studies

The purpose of a diagnostic study is to find the cause of a phenomenon. The aim is often to find the solution to a problem and methods and actions to solve the problem should be presented. An example of a subject for a diagnostic study would be "why are our profits going down?". Diagnostic studies are often both qualitative and quantitative¹⁵.

¹³ "Utredningsmetodik för samhällsvetare och ekonomer" – Lundahl & Skärvad, p. 7-16

¹⁴ "Utredningsmetodik för samhällsvetare och ekonomer" – Lundahl & Skärvad, p. 47, 199-204

¹⁵ "Utredningsmetodik för samhällsvetare och ekonomer" – Lundahl & Skärvad, p. 48-49

2.2.4 Our Study

This thesis is a descriptive, qualitative study with a clearly defined purpose and target group. We describe how valuation is performed and how strategic and financial buyers create value through acquisitions. A descriptive approach was chosen because the purpose of the study was to describe these aspects. A quantitative approach would have been possible but given the difficulties associated with the collection of such data and the limited time at hand, it was decided that a qualitative study would better meet the purpose.

2.3 Data Collection

All research includes data collection. The quantity of data that is collected is often determined by the amount of time available for data collection. A larger amount of data collected generally gives a more reliable result, but the quality of the data collected is also very important¹⁶. Data can be either qualitative or quantitative and either primary or secondary.

2.3.1 Qualitative Data

This method for data gathering aims at creating a deeper understanding in a specific area as well as capturing the broader picture. It is important that the researcher is attentive and critically examines the material¹⁷. The qualitative method demands more resources and is harder to generalize compared to the quantitative¹⁸. Another important aspect is that the qualitative information can always be translated into quantitative information, whereas the opposite is never possible. A qualitative inquiry does not yield a precise answer but rather an interpretation in which additional information can be weighed in. Finally, the qualitative have been criticized for being non-scientific and subjective¹⁹.

2.3.2 Quantitative Data

Quantitative data gathering is a method where all data that is gathered can be translated into numbers. A specific event is often studied and then explained or proven by numerical data²⁰. An example of such a study would be a survey where questions are answered on a scale between one and five.

2.3.3 Primary Data

Primary data is data that is collected directly from the source. It is very reliable and is, in most studies, constituted of interviews, surveys, observations and experiments²¹.

2.3.4 Secondary Data

Secondary data is derived from literature and existing statistics. Another researcher has already picked and interpreted the data. Therefore it is viewed as less reliable and more subjective compared to primary data²².

2.3.5 My Approach

This thesis is a qualitative study conducted with secondary data in particular. Most data has been gathered from literature, where an extensive review has been performed. In addition, discussions

¹⁶ "Forskningsmetodikensgrunder" – Patel & Davidson, p.63-76

¹⁷ "Forskningsmetodikensgrunder" – Patel & Davidson, p.24-31

¹⁸ "Semenarieboken" – Björklund & Paulsson, p.63

¹⁹ "Forskningsmetodikensgrunder" – Patel & Davidson, p.51-53

²⁰ "Forskningsmetodikensgrunder" – Patel & Davidson, p.12-14

²¹ "Semenarieboken" – Björklund & Paulsson, p.66-75

²² "Forskningsmetodikensgrunder" – Patel & Davidson, p.63-76

with investment banking professionals and a Marco board member have given this thesis a certain amount of primary data.

2.4 Reliability

Not only is the quantity of data gathered significant, but also trustworthiness of the data. The reliability of the data is adequate only if it has been critically examined. The aim with reliable data is to make a study that can be conducted again with the same results. Subjectivity should be kept to a minimal and the margin of error eliminated²³.

In this thesis reliability has been ensured by critical examination of a wide variety of sources. The work of several acclaimed authors in the field of valuation and value creation has been studied to build a stable theoretical foundation from which this thesis has developed. Professionals in the field have also been consulted for views on how these theories are used in practice.

2.5 Reflections on the Impact of the Author

In all literature the author is mirrored in some way. In the beginning of my work on this thesis I read a wide variety of books and articles on the subjects that I was to describe. Among this wealth of sources I picked the parts that I thought best portrayed what I wanted to tell. By doing this my background and my experience in the field was reflected upon this thesis.

During my first year at the MSc in engineering physics program in Lund I gained an interest in investment banking. I had friends working in banks in London and their stories were very exiting to me. During the summer after my first year, I started to take additional business courses outside my main education. In Lund and Kristianstad, I was able to complete business courses that equals almost one year of fulltime studies. After my second year in Lund I went to France on a two year exchange program. One of the reasons why I decided to go to France was that the French program included far more business courses compared to my engineering program in Sweden. During my two years in France I took additional business courses at HEC and lived in London for a summer studying at London School of Economics. During my second year in Paris I was offered a 9 month internship in the mergers and acquisitions department of Calyon (the investment banking arm of Crédit Agricole). During my time at Calyon I worked on several deals including both strategic and financial buyers. For comparison and valuation purposes I also studied a wide variety of deals that I was not directly involved in. One of my main tasks at Calyon was to perform valuations. When I left Calyon I felt that I had good practical knowledge of valuations. My studies had given me some theoretical background to valuation, but I felt that I wanted to strengthen my theoretical foundation in valuation techniques, in order to be able to develop further on my next job. In order to accomplish this in the best possible way I chose a descriptive approach. The models described in this thesis are the models I used at Calyon. These models are the main models used by buyers and financial institutions in practice²⁴. During my time at Calyon I had also developed an interest in buyout funds (financial buyers). I had seen the growth of this sector and the important role it had come to play in mergers and acquisition. It was also a controversial sector of which every one seemed to have an opinion. My classification of two different types of buyers, namely, strategic and financial buyers, was also based on my practical experience. This classification is recognized throughout the business and in academic literature²⁵.

²³ "Semenarieboken" – Björklund & Paulsson, p.59-6

²⁴ Otto Hermansson, Danske Bank

²⁵ Otto Hermansson, Danske Bank & Transactions Advisory (Mercer Capital)

Although I came to this work with my own views on the differences between strategic and financial buyers I have done my utmost to stay objective throughout the thesis. The background, problem discussion and purpose of this thesis are built on my practical experience. I wanted to concretize the relationships I saw between the different buyer groups, valuation models and value creation levers.

3 Presentation of Buyer Groups

In this chapter the two main types of acquirers, namely strategic buyers and financial buyers are described and discussed. The history of financial buyers and the main Nordic players as well as the main players world wide, are also described.

3.1 Strategic Buyers

Strategic buyers are the traditional buyers, usually industry participants, which use acquisitions as a growth strategy. Their aim is to integrate the target into their own company and long-term goals²⁶. They look for synergies and for ways to strengthen their market positions²⁷. Most industries go through a consolidation phase as they mature. The leading players in each industry enjoy economies of scale, economies of scope, pricing power and buying power. All of which help increase margins. Through mergers and acquisitions industry leaders develop and the market moves towards oligopoly (horizontal acquisitions). Many companies also use acquisitions to enter new markets, both geographically and product wise. Companies might also aim to incorporate a larger part of the value chain by acquiring suppliers or distributors (vertical acquisitions).

3.2 Financial Buyers

Financial buyers (buyout funds) are investors who invest in companies for purely financial reasons. Their aim is not to manage the target's day to day business or to integrate it into their own entity, but to collect cash flows from it and make a profitable exit²⁸. Although time limit on their investment is fairly short term, the actions they provoke in their businesses may very well be long term.

With SEK 210bn²⁹ under management and SEK 36bn³⁰ in new investments in Sweden during 2005, the buyout funds constitute a force to be reckoned with. Financial buyers take public firms private or invest in equity not listed on a stock exchange. Such investments are normally quite sizeable, which rules out most private investors. Compared to investments in quoted stocks the holdings of buyout funds are very illiquid and they are also, as a rule, highly leveraged, which makes them high risk. To compensate for this risk financial buyers demand a high annual return on their investment (Internal Rate of Return (IRR)). A few years ago the return demanded was around 30% annually, but many financial buyers have lately been forced to accept expected returns of down to 20%³¹. This can, to a certain extent, be explained by a decrease in risk due to a raise in liquidity and many companies being able to show stable cash flows during the last five years, but the main reason is that competition has hardened, driving up prices on prospective deals. We have also seen many secondary or even third time LBOs, but with strong performance by public equity markets many buyout funds are likely to exit via an IPO in lieu of another trade sale. Financial buyers normally have a time limit of 3-5 years³² on their investments. As with

²⁶ Transactions Advisory (Mercer Capital)

²⁷ Otto Hermansson, Danske Bank

²⁸ Transactions Advisory (Mercer Capital)

²⁹ svca.se

³⁰ svca.se

³¹ Claes Jonsson, Calyon

³² svca.se

traditional funds, buyout funds take out a fee of around 1-2% of the invested capital annually. A performance based management fee (carried interest) is also normally charged in the order of 20% of the gains that precede an 8% annual return (hurdle rate)³³.

3.2.1 The rise of Buyout Funds

The predecessors of private equity firms began to appear in the late 19th century. In its initial decades it was a predominantly American industry, constituted of family offices that managed the funds of wealthy individuals. Gradually these families began to involve outsiders to select and oversee their investments. Shortly after World War II the first formal private equity fund was established. Professors from MIT and Harvard Business School together with business leaders from the Boston area formed American Research & Development (ARD) in 1946. The fund attracted capital primarily from individuals and invested in emerging companies based on technology developed for the war. Up until the late 1970s the private equity industry attracted only limited investments. The annual inflow of money could reach a few hundred million dollars at best but was usually lower. Although a few buyouts were completed at the time, the industry was primarily focused on providing venture capital to growth or start-up firms.

In the late 1970s the private equity industry changed dramatically. The interest of private equity funds to invest in mature firms had grown in the early 1970s when returns on venture capital investments were poor compared to the risk. In 1979 the Employee Retirement Income Security Act's rule "prudent man" was changed, which made it possible for pension funds to invest in private equity funds. Investments in the private equity sector soared and as a result, numerous venture capital, buyout and mezzanine funds sprang up in the following years. The venture capital funds enjoyed great success while providing capital to create and grow firms such as Microsoft, Cisco Systems and Sun Microsystems. The buyout funds were also booming with highly public transactions such as the acquisitions of RJR Nabisco, Dr. Pepper and McCall Pattern. Between 1979 and 1989 over 2000 leveraged buyout transactions were completed with an aggregate value in excess of \$250bn³⁴.

Towards the end of the 1980s returns on venture capital investments declined due to overinvestment in certain sectors. Mainly due to increased competition for the transactions, the returns for buyout funds decreased as well. As a result, the capital that had been flooding the industry dried up and many weaker players disappeared. With less competition buyout funds flourished once again in the early 1990s and the pattern of the 1980s was repeated during this decade as well, though on a much larger scale. During the 1990s the European private equity industry awoke and made serious progress. Led by Germany, the market grew from €500m in 1984 to over €24bn in 2001³⁵.

In recent years the industry has been booming once again. It has spread geographically and now exists throughout the world. Like the investment banks in the 1950s and 1960s the leading private equity players are now working hard to distinguish their brands from other investors³⁶. Several strategies are used in pursuing this task, including the raise of enormous funds to take on huge transactions that smaller competitors can hardly carry.

The bulk of the capital raised by buyout funds today comes from pension funds and the majority of financing to Swedish buyout funds comes from abroad³⁷.

³³ Otto Hermansson, Danske Bank & "VA Granskar Riskkapitalet" – Veckans Affärer, 15 March 2007

³⁴ "Value Creation in Leveraged Buyouts" – Loos, p.1

³⁵ "Value Creation in Leveraged Buyouts" – Loos, p.1

³⁶ "Venture Capital & Private Equity" – Lerner, Hardyman & Leamon, p.3

³⁷ svca.se

3.2.2 Main Players

In figure 3.1 a short overview of some of the leading Nordic players is presented.

Buyout Firm	Key Statistics	Comments
EQT	<ul style="list-style-type: none"> ▪ € 5bn under management ▪ 60+ investment professionals ▪ 6 offices in 6 countries ▪ HQ in Stockholm ▪ Founded in 1994 ▪ Current investments in over 25 companies 	EQT is the private equity arm of Investor and the Wallenberg dynasty. The buyout fund predominately invests in the Nordic region but has recently expanded to China. Its current investments include Scandic Hotels, Gambro and ISS, but the firm previously held Ballingslöv, Orrefors Kosta Boda, Dahl, Thule and ComHem among others ³⁸ .
Nordic Capital	<ul style="list-style-type: none"> ▪ € 4,5bn under management ▪ 30+ investment professionals ▪ 3 offices in 3 countries ▪ HQ in Stockholm ▪ Founded in 1989 ▪ Current investments in over 20 companies 	Nordic Capital is an independent buyout firm with focus on the Nordic market. Its current investments include Capiro, Nycomed and Finnveden, but the firm previously held KappAhl, SATS, Anticimex, Ahlsell, Hilding Anders and Karlshamn among others ³⁹ .
Industri Kapital	<ul style="list-style-type: none"> ▪ € 4bn under management ▪ 30+ investment professionals ▪ 5 offices in 5 countries ▪ HQ in London ▪ Founded in 1989 ▪ Current investments in over 20 companies 	Founded in London in 1989 as a division within Enskilda (SEB) the firm became independent in 1993 and took the name Industri Kapital. The buyout firm predominately invests in the Nordic region but also throughout Europe. Its current investments include Attendo, Myrsjöhus and Tradeka, but the firm previously held Alfa Laval, Nobia and Lindex among others ⁴⁰ .
Altor	<ul style="list-style-type: none"> ▪ € 1,8bn under management ▪ 17 investment professionals ▪ 2 offices in 2 countries ▪ HQ in Stockholm ▪ Founded in 2003 ▪ Current investments in over 10 companies 	One of the co-founders of Industri Kapital decided to take on a new venture and left to set up Altor Equity Partners in 2003. Altor invests in companies in the Nordic region. Current investments include Nimbus Boats, Byggmax, Relacom, Lindorff and HellyHansen, but the company formerly held Dynapac and ACO hud ⁴¹ .
Accent	<ul style="list-style-type: none"> ▪ € 500m under management ▪ 10 investment professionals ▪ HQ and only office in Stockholm ▪ Founded in 2003 ▪ Current investments in over 10 companies 	Accent was founded in 2003 as Nordico and Euroventures merged. Nordico itself was founded in Stockholm in 1994. The firm targets somewhat smaller companies compared to the other four on the list. Its current investments include Jetpak, Grycksbo, Annas Pepparkakor, and Euroflorist, but the firm formerly held KappAhl, Jøtul, Wedins, Fritidsresor and Karlshamn ⁴² .

Figure 3.1 – Nordic Buyout Firms

³⁸ www.eqt.se

³⁹ www.nordiccapital.com

⁴⁰ www.industrikapital.com

⁴¹ www.altor.com

⁴² www.accentequity.se

In figure 3.2⁴³ some of the leading players world wide are presented.

Buyout Firm	Key Statistics	Comments
Carlyle Group	<ul style="list-style-type: none"> ▪ \$ 31bn under management ▪ 300+ investment professionals ▪ 24 offices in 13 countries ▪ HQ in Washington D.C. ▪ Founded in 1987 ▪ Current investments in over 100 companies 	<p>Pursues a cautious investment strategy in many fields, but the bulk of its committed capital is in buyouts. The company is truly global with strong presence in the USA, Europe and Asia. Some of the more prominent members that have served on its board of advisers include George W. Bush, George H. W. Bush, James Baker, Fidel Ramos, John Major, Karl Otto Pöhl and George Soros. Investments include Hertz, Le Figaro, Insight Communications, Casema, Willcom and Dunkin' Donuts.</p>
The Blackstone Group	<ul style="list-style-type: none"> ▪ \$ 28bn under management ▪ 70+ investment professionals ▪ 8 offices in 4 countries ▪ HQ in New York ▪ Founded in 1985 ▪ Current investments in over 40 companies 	<p>Founded in 1985 as an M&A boutique the Blackstone Group entered the buyout field in 1987. It invests in “out of favour” industries, predominately in North America. However, the aim is to become global and it has recently increased its presence in Europe and Asia. Investments include Universal Studios Florida, Allied Waste, Nalco Prime Hospitality and Graham Packaging.</p>
KKR	<ul style="list-style-type: none"> ▪ \$ 27bn under management ▪ 90+ investment professionals ▪ 6 offices in 5 countries ▪ HQ in New York ▪ Founded in 1976 ▪ Current investments in over 35 companies 	<p>KKR seeks to invest in industry leading companies. The firm is mainly North American but is also present in Europe and Asia. KKR is well known for its role in the development of the buyout industry and also for its record breaking takeover of RJR Nabisco (\$31,4bn) in 1988, which was subsequently made into a book and movie. Besides RJR Nabisco, KKR deals include Hospital Corporation of America, TXU, Toys “R” Us, Trakett and TDC.</p>
GS Equity Partners	<ul style="list-style-type: none"> ▪ \$ 17bn under management ▪ 100+ investment professionals ▪ 5 offices in 4 countries ▪ HQ in New York ▪ Founded in 1986 ▪ Investments in over 500 companies since the beginning 	<p>GS Capital Partners enjoy the strong brand name of its parent, Goldman Sachs, the worlds leading investment bank. The firm invests mainly in buyouts, but also in many other fields. It is a global player mainly present in the USA, Europe and Asia. Investments include TXU, Ahlsell, IMG, Kion Group and Frans Bonhomme.</p>
Forstmann Little	<ul style="list-style-type: none"> ▪ \$ 10bn under management ▪ HQ in New York ▪ Founded in 1978 	<p>The firms investment style is more long term and employee friendly compared to other buyout firms. It has counted some well known names in its advisory board including Donald Rumsfeld, Colin Powell, George Shultz and Henry Kissinger. The firm was a contender for the RJR Nabisco deal, won by KKR. Investments made include Gulfstream Aerospace, Topps Playing Cards, Dr Pepper, and General Instrument.</p>

Figure 3.2 – International Buyout Firms

⁴³ ”Vault Guide to the Top Private Equity Employers” – Loosvelt, p.21-74

4 Valuation Methods

In this chapter the three most common valuation techniques used in practice by strategic and financial buyers will be described and discussed. The DCF analysis and relative valuations are traditionally used by strategic buyers, whereas the LBO model is special for financial buyers. The valuation methods aim to find the value of the firm's operating assets or the enterprise value of a firm, but since the firm's operating assets are financed by debt and equity, the equity value can easily be derived by subtracting the debt from the enterprise value.

4.1 Discounted Cash Flow Analysis (DCF)

The DCF analysis is the most thorough way to value a company⁴⁴. Basically one estimates a company's future free cash flows (FCF) and then discounts them, using an appropriate discount rate, to get their net present value (NPV). To calculate the FCF:s one needs forecasts of a company's future financial statements. Those forecasts can either be derived from secondary sources such as research reports from investment banks, from company management forecast or by own estimates. A firm's cost of capital is then used as discount rate. To describe the DCF calculation we will begin by introducing some underlying concepts.

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

Where n is the life of the asset in years, CF_t the cash flow in period t and r the discount rate reflecting the risk associated with the cash flows.

4.1.1 Net Present Value (NPV)

This concept is derived from the Time Value of Money theory, which states that a certain amount of money received today is worth more than the same amount received in the future⁴⁵. The present value of money received in the future is calculated with the following formula:

$$Present_Value = \frac{Future_Value}{(1+r_d)^n}$$

Where r_d is the annual discount rate and n is the number of years. If we have a series of annual cash flows, $FCF_1, FCF_2, \dots, FCF_n$, then the NPV of these cash flows is calculated as follows:

$$NPV = \frac{FCF_1}{(1+r_d)^1} + \frac{FCF_2}{(1+r_d)^2} + \dots + \frac{FCF_n}{(1+r_d)^n}$$

or

$$NPV = \sum_{i=1}^n \left(\frac{FCF_i}{(1+r_d)^i} \right)$$

⁴⁴ "Investment Valuation" – Damodaran, p.11

⁴⁵ "Applied Corporate Finance" – Damodaran, p.616

4.1.2 Cost of Equity and the Capital Asset Pricing Model (CAPM)

The CAPM is used to calculate the expected return on equity r_e for a specific company.

$$r_e = r_f + \beta(r_m - r_f)$$

Where r_f is the risk free rate, r_m the average market return and β = relative volatility to the market.

Risk Free Rate

A common approach when estimating return in finance is to start off with a risk free rate and then add a risk premium⁴⁶. The risk free rate corresponds to the time value of money and is usually determined by an asset that is defined to be risk free. For an asset to be risk free its actual return must always be equal to its expected return and there can be no default risk. Government bonds of western stable economies are used in practice since they approximate these conditions very closely⁴⁷. If, for example, we need the five year risk free rate we use that of a five year government bond. The currency of the risk free rate should be consistent with the currency of the cash flows to be discounted. Thus if the cash flows are in U.S. \$ a U.S. government bond should be used.

Market Risk Premium

The $(r_m - r_f)$ factor in the second term denotes the annual excess market return over the risk free rate. In other words, how much greater the return expected on an equity investment in the stock market is compared to a fixed income investment in a risk free government bond. Damodaran estimates this premium to be around 5% in Sweden⁴⁸. This is inline with what is used in practice⁴⁹.

However, the risk premiums can vary several percents depending on the method used to calculate them. The dominating technique for estimating risk premiums is to compute the annual excess return on stocks over a time period and then take the arithmetic average of these returns. In order to minimize the standard deviation a long time period is usually used (100 years). Depending on the time period used the results can vary greatly. Using 100 years should provide a good estimation as long as the return investors expect has not changed over this period. If we believe that the expected excess returns demanded by investors change over time we could use the last 10 years as our time period. However, this would mean that our standard error would increase severely (might be of the same magnitude as the risk premium itself). The risk premium can also change severely depending on which risk free security we use. Long term government bonds (10 years) are recommended⁵⁰.

An alternative approach is called “Implied Equity Premium”. Here, a simple version of the discounted dividend model is used⁵¹.

$$Value = \text{Expected Dividend next Period} / (\text{Required Return on Equity} - \text{Expected Growth Rate})$$

To illustrate, we take the omxs30 index of the Stockholm Stock Exchange. It is currently trading at 1200. The dividend yield is expected to be around 3% on the index, in 2007. If we assume that

⁴⁶ “Investment Valuation” – Damodaran, p.154

⁴⁷ “Corporate Financial Management” – Arnold, p.194

⁴⁸ “Triumph of the Optimists” – Dimson, Marsh & Staunton, p.289 or damodaran.com

⁴⁹ Otto Hermansson, Danske bank

⁵⁰ “Investment Valuation” – Damodaran, p.160-161

⁵¹ “Investment Valuation” – Damodaran, p.171-174

the dividends will grow 6% annually in perpetuity, our expected return on an equity investment would be 9%. The risk free rate is currently around 3.8%, which would give us an implied equity premium of 5,2%.

Beta

Beta represents the firm specific risk of an investment and measures the relative volatility of the given instrument with respect to the market. A beta of less than 1 indicates that the instrument has historically been less volatile than the market and vice versa. There are three basic ways to find the beta of a company.

1. **Historical betas.** Can be found by using historical data on market prices on an investment
2. **Fundamental betas.** Can be found by using fundamental characteristics of the investment
3. **Accounting betas.** Can be found using accounting data of the investment

Historical Market Betas

The historical market beta for most publicly traded companies can be found in databases such as Bloomberg or in the Monday issue of Dagens Industri, and it is the conventional approach for estimating the beta of a publicly traded firm⁵². The beta is calculated by taking the regression of the returns on the investment against returns on a market index. For a good result weekly or monthly stock and index returns over at least the last couple of years, should be used. By choosing a longer time period more data is provided which statistically improves the result. However, the chance that the risk characteristics of the firm have changed over the period increases with a longer period, which makes the estimation less accurate. Likewise, using daily returns increases the points of entry but does also increase the chance of nontrading bias⁵³. Nontrading bias occurs when a company's stocks are not traded in a period. The volatility of the stock is thereby zero whereas the market may have fluctuated heavily. The index used should also be selected with caution. For example, the Stockholm Stock Exchange indexes were heavily dominated by Ericsson in the late 1990's, which made any beta estimations using that index severely biased. Figure 4.1 plots the returns on Boeing and the S&P 500⁵⁴ and the following formulas are used for the regression.

$$\text{Stock_return} = \frac{P_j - P_{j-1} + \text{Dividends}_j}{P_{j-1}}$$

$$\text{Market_return} = \frac{\text{Index}_j - \text{Index}_{j-1} + \text{Dividends}_j}{\text{Index}_{j-1}}$$

$$\text{Stock_return} = a + b * \text{Market_return}$$

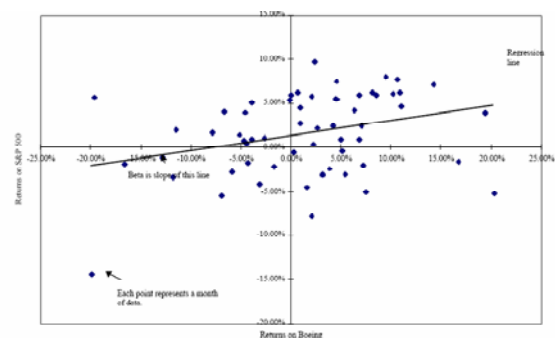


Figure 4.1 – Distribution of Returns

P_j is the stock price at time j . “ b ” is the slope of the regression and hence our beta. “ a ” is the intercept of the regression, which gives us a simple measure of the stock’s performance relative to the market during the period of the regression. R^2 of the regression provides a proportion of the risk of the investment that can be attributable to market risk. The standard error of the beta is

⁵² Claes Jonsson, Calyon

⁵³ ”Valuation” – Koller, Goedhart & Wessels (McKinsey & Company) p.309

⁵⁴ ”Investment Valuation” – Damodaran, p.185

also worth noting. A standard deviation of 0,25 is not uncommon. For a firm with an estimated beta of 1, such a standard deviation would imply that there is a 67% chance that the beta is actually between 0,75 and 1,25 and a 95% chance that it is between 0,5 and 1,5. This suggests that even though betas from regression are the most widely used, they should be considered with caution⁵⁵.

Fundamental Betas

We have seen that betas can be estimated by regression, but we have also seen that this method has its flaws. It can not be used on private firms or divisions of a firm since the price information is not available, and it is vulnerable to the standard deviation. Another way of estimating a beta is to look at the fundamentals of the business. There are three basic determinants of the beta of a business⁵⁶. They are described in figure 4.2.

Beta Determinant	Description
Type of Business	The type of business a firm is involved in obviously plays a vital role in the level of risk it is exposed to. Companies operating in a cyclical industry can be expected to have higher betas than non cyclical firms, whereas firms selling products viewed as necessary, such as toilet paper, should have lower betas than firms selling products that customers can defer or delay buying (discretionary products).
Degree of Operating Leverage	<p>The degree of operating leverage will strongly affect the volatility in operating income of a firm. The operating leverage is the relationship between fixed costs and total costs. A firm with a high level of fixed costs will have a greater variance in operating income than a firm with a low portion of fixed costs, and should therefore have a higher beta. The level of operating leverage can be difficult to measure from the outside of a firm, but a good approximation can be reached by examining the changes in operating income and sales. The degree of operating leverage can then be calculated as follows.</p> $\text{Degree of operating leverage} = \frac{\% \text{ change in operating profit}}{\% \text{ change in sales}}$
Degree of financial leverage	<p>A higher degree of financial leverage intuitively leads us to expect that the firm would be subject to a higher risk. A fixed interest payment on the debt would make our net income vary more compared to sales, and there is also the risk of a change in credit rating, which would increase interest costs in bad times and decrease them in good times. The beta for the equity in a firm with debt is called the levered beta, β_L, and the beta for a firm without debt is called the unlevered beta, β_U. The unlevered beta in a firm is determined by the type of business and the operating leverage. The relationship between the two is illustrated below.</p> $\beta_U = \frac{\beta_L}{(1 + (1 - t)(D/E))}$ <p>Where D/E is the debt-to-equity (market value), t the corporate tax, β_L the levered beta (also referred to as equity beta) and β_U the unlevered beta (also referred to as asset beta since it is determined by the assets owned by the company)</p>

Figure 4.2 – Fundamental Beta Determinants

⁵⁵ "Investment Valuation" – Damodaran, p.185

⁵⁶ "Investment Valuation" – Damodaran, p.192

The beta of two assets put together is the weighted average of the individual betas, with the weights based on market value⁵⁷. Consequently, the beta for a firm is the weighted average of the betas of all the different businesses it is in. If we do not have the market value of the businesses, we can use sales or operating revenue as weights.

We can now estimate the beta in the three steps shown in figure 4.3.

Step	Description
Estimate the Unlevered Beta	<p>Identify the businesses and find peer groups (read about how a peer group is found in the section on relative valuation) of publicly traded firms in each field. By using the regression betas of the firms in the peer groups, we can calculate an average beta for each business line. Calculate the average debt-to-equity ratio of each peer group and unlever the betas using the following formula.</p> $\beta_{U_Business} = \frac{\beta_{L_Average_of_peer_group}}{(1 + (1-t)(D/E_{ratio_of_peer_group}))}$ <p>It is possible to calculate the unlevered betas of each firm in the peer group and then take the average, but this approach is likely to enhance errors in the regression betas.</p>
Estimate the Business Beta	<p>The effects of differences in operating leverage can also be striped out of the unlevered beta. The result is called a business beta since it should depend only on the type of business. If we are able to get the fixed and variable costs of the firms in the peer groups, the following relationship can be used.</p> $\beta_{Business_Beta} = \frac{\beta_U}{\left(1 + \frac{Fixed_costs}{Variable_costs}\right)}$ <p>However, it is often difficult to get the ratio between fixed costs and variable costs form the outside of a firm. Analysts therefore commonly use the following formula.</p> $\beta_{Business_Beta} = \frac{\beta_U}{\left(\frac{\%_change_in_operating_profit}{\%_change_in_sales}\right)}$ <p>We then calculate the operating leverage for the business we are valuing and convert back to get an unlevered beta for that business. Because of the difficulties in calculating the operating leverage, many analysts make the assumption that companies in the same line of business should have similar operating leverage and skip this step altogether.</p>
Estimate the Levered Beta	<p>We have now found the unlevered beta for each business line of the firm we are valuing. By calculating the weighted average of those betas we find the unlevered beta for the firm. We then estimate the current market values of debt and equity of the firm and lever the beta.</p>

Figure 4.3 – Beta Estimation in Three Steps

⁵⁷ "Investment Valuation" – Damodaran, p.196

Betas calculated by this approach are called “Bottom-Up Betas”⁵⁸. One of the greatest advantages with those betas is that the standard error is brought down significantly. One can assume that the standard errors are uncorrelated across firms and therefore the standard error of the bottom-up beta should be.

$$\text{Standard error}_{\text{bottom-up beta}} = \frac{\text{Average standard error}_{\text{peer group}}}{\sqrt{n}}$$

Where n is the number of firms in the peer group.

Another advantage is that we use the current capital structure as opposed to the historical.

Accounting Betas

By regressing the changes in profit of a firm against the changes in profits of an index an accounting beta can be calculated. Since profits are subject to changes in accounting methods and earnings tend to be smoothed out compared to underlying value, this tends to be a worse estimation compared with those described above⁵⁹. Earning measures are usually less frequent as well, normally only quarterly or yearly.

4.1.3 Weighted Average Cost of Capital (WACC)

The cost of capital will be used as our discount rate in the discounted cash flow model⁶⁰. To go from the cost of equity to the cost of capital we take the Weighted Average Cost of Capital (WACC), which is calculated as follows.

$$\text{WACC} = \left(\frac{E}{E + D} \right) r_e + \left(\frac{D}{E + D} \right) r_d (1 - t)$$

Where E is the market value of the firm’s equity (Market Cap), D the market value of the firm’s debt (book value can normally be used), r_e is the cost of equity, r_d is the cost of debt and t is the corporate tax rate.

Estimating the Cost of Debt

The cost of debt is determined by the risk free rate, the default risk of the firm and the tax advantage associated with debt. If the company has bonds outstanding that are traded frequently we can use the yield of those bonds as our cost of debt. If this is not the case we have to estimate a default spread, which we add to our risk free rate to get our cost of debt. If the firm has a credit rating we can take the default spread corresponding to this rating, but if this is not the case we will have to estimate a synthetic rating our selves and then match it to the list. An example of such a list is presented in figure 4.4⁶¹.

⁵⁸ ”Investment Valuation” – Damodaran, p.196

⁵⁹ ”Investment Valuation” – Damodaran, p.203

⁶⁰ ”Valuation” – Koller, Goedhart & Wessels (McKinsey & Company) p.111

⁶¹ ”Investment Valuation” – Damodaran, p.209

<i>Interest Coverage Ratio</i>	<i>Rating</i>	<i>Spread</i>
> 8.5	AAA	0.75%
6.5-8.5	AA	1.00%
5.5 –6.5	A+	1.50%
4.25- 5.5	A	1.80%
3- 4.25	A-	2.00%
2.5-3	BBB	2.25%
2- 2.5	BB	3.50%
1.75-2	B+	4.75%
1.5-1.75	B	6.50%
1.25-1.5	B-	8.00%
0.8-1.25	CCC	10.00%
0.65-0.8	CC	11.50%
0.2-0.65	C	12.70%
<0.2	D	14.00%

Figure 4.4 – Illustrative Example of Spread Ranges

By estimating the interest coverage ratio of the firm we can get an idea of its rating.

$$\text{Interest Coverage Ratio} = \text{EBIT} / \text{Interest Expense}$$

As tax rate we use the marginal tax rate since interest expenses are deducted from our last dollar of income.

4.1.4 Free Cash Flow (FCF)

There are different ways of calculating the FCF depending on whether the cash flow to equity or the cash flow to debt and equity is sought after. We are interested in firm value so the cash flow to debt and equity is what we seek⁶². Thus, we will start with the operating profit or Earnings before interest and tax (EBIT). The EBIT is just above the interest expenses in the income statement so we have not yet paid anything to our debt or equity. From the EBIT we will have to deduct taxes. Effective tax rates can be lower than the marginal tax rates if a company has loss carry forwards, tax credits or if the firm defers taxes. None of which can be sustained in perpetuity⁶³. We will use the marginal tax rate and then compensate then compensate for tax savings afterwards. For multinational firms we calculate a weighted average of the marginal tax rates in the different countries, with the earnings in each country as weights. The problem with this is that the weights may change over time. If we believe that this will alter our cash flows significantly we will have to keep the different income streams separated and apply the appropriate tax rate to each. Another approach is to assume that the income generated in other countries will eventually have to be repatriated to the land of origin. The firm will then have to pay the marginal tax of the country of origin, which makes this tax applicable to all income streams⁶⁴. By deducting taxes from our operating income we obtain our net operating profit after tax (NOPAT)⁶⁵.

$$\text{NOPAT} = \text{EBIT}(1-t)$$

To our NOPAT we will add depreciations and amortizations (D&A), since they do not generate any cash flows⁶⁶. The current D&As are easily found in the company's financial statements but

⁶² "Investment Valuation" – Damodaran, p.247

⁶³ "Investment Valuation" – Damodaran, p.249

⁶⁴ "Investment Valuation" – Damodaran, p.249

⁶⁵ "Valuation" – Koller, Goedhart & Wessels (McKinsey & Company) p.162 & 174

⁶⁶ "Valuation" – Koller, Goedhart & Wessels (McKinsey & Company) p.178

we also need to forecast them into the future. There are two common approaches used in doing this. We can either look at the D&As as a percent of sales and keep this percentage, or we can look at the trend in D&As. If for example the D&As have increased with a compounded annual growth rate (CAGR) of 4% over the last five years, we could use this growth rate in the future as well. As a firm approaches stable growth net investments tend to decrease and D&As approach CapEx.

Next, we will deduct capital expenditures (CapEX). The present value can be found in the financial statements but here too we will have to forecast into the future. Capital expenditures often come as lump sums⁶⁷. A firm may for example make a huge investment in a factory one year and then make very small investments over the next few years. To normalize the capital expenditures we will take the average over an investment cycle, normally around 5 years. We will usually look for the average CapEx as percent of sales or D&As and use this to forecast the future. It can also be useful to look at the Sales-to-Capital ratio⁶⁸. This ratio is the revenue of a firm divided by the book capital invested in the firm. If this ratio has historically been stable we can make the assumption that it will stay this way and hence we have our reinvestment needs relative to our revenue growth. If historical records are not available, an industry average can be used. Should a firm's strategy include significant growth by acquisitions and this growth is included in our forecast of revenue growth, we should normalize the amount spent on acquisitions and add it to the CapEx. In the passage on growth estimates investments, return on investments and growth are linked in a useful way.

Finally we will have to adjust our cash flows to changes in working capital. Working capital is defined as the difference between current assets and current liabilities. We will adjust it by stripping out cash and marketable securities from the current assets and by stripping out interest-bearing debt from the current liabilities⁶⁹. Cash and debt are included when we calculate the cost of capital and they should not be included here. To estimate the working capital needs in the future we can calculate the average percent of sales that the change in working capital has constituted over a historical period, usually 5 years. This is a good approach if there is no clear trend of the working capital increasing or decreasing as a percentage of sales. In the case of such a trend or if the business is changing so that growth occurs in new areas which might have other working capital needs, a better approach is to take the change in working capital divided by the change in revenues. If, for example, our revenues increased by \$100m in the last year and our working capital increased by \$10m, we see that the change in working capital is 10% of the change in revenue and we can use this to forecast the future working capital needs.

The formula for calculating the free cash flow is then.

$$FCF = NOPAT + Depreciations \text{ and } Amortizations - Capital \text{ Expenditures} - Net \text{ Incr. in Working Capital}$$

4.1.5 Estimating Growth during the High Growth Period

Firms can only sustain high growth for a certain period, after which they go into a state of stable growth. This state is characterized by growth rates equal to or below the growth rate of the economy in which the company operates⁷⁰. When we examine the period of high growth of a company our main problems are to estimate the growth rate and the length of the period.

Growth Rate

⁶⁷ "Investment Valuation" – Damodaran, p.256

⁶⁸ "Investment Valuation" – Damodaran, p.298

⁶⁹ "Investment Valuation" – Damodaran, p.261

⁷⁰ "Investment Valuation" – Damodaran, p.303

When estimating growth for a firm we can look at its historical growth rate, analyst and management projections or the firm's fundamentals⁷¹. We normally measure historical growth with the compounded annual growth rate (CAGR), which is calculated as follows.

$$CAGR_{Sales} = \left(\frac{Sales_{year=0}}{Sales_{year=0-n}} \right)^{\left(\frac{1}{n}\right)} - 1$$

Where n is number of years the CAGR is calculated over. While the CAGR gives us valuable information it does not consider growth trends. We will have to look for these trends and take them into consideration ourselves. Past growth rates are of course useful when estimating future growth, but they should be used with caution. Historical growth rates are a better indicator of future revenue growth than of future earnings growth. They work best on large stable firms and, naturally, become less and less accurate the longer into the future we go.

Listening to equity analysts can also be helpful when valuing a firm. The equity analyst can be expected to be better informed than the general market because he follows the company closely and has a certain access to company management. If several analysts follow the same company we can use the consensus forecast of the firm's growth. Generally, a higher number of analysts lead to a more accurate consensus forecast. Analysts are good at forecasting growth in the near future (up to a year), after which their advantage of information seems to deteriorate. Analyst figures should be viewed with caution since the analyst may be driven by the prospect of attracting the company as a client to the corporate finance business or make buy-side clients trade the stock more heavily.

Management has a definitive information advantage and their forecasts should generally be very good. However, management is not independent and the same caution as mentioned above has to be made.

Growth can also be estimated by looking at the fundamentals of a company. Growth in operating income can be related to the investments a firm makes and its return on those investments⁷².

$$Expected\ Growth\ Rate_{EBIT} = Reinvestment\ Rate * ROC$$

Where

$$Reinvestment_rate = \frac{CapEx - Depreciation + \Delta WC}{EBIT(1-t)}$$

$$ROC = \frac{EBIT(1-t)}{Capital_Invested}$$

The reinvestment rate can be measured from the most recent financial statement, but one should take the time to examine a few years back as well in order to estimate the most likely future reinvestment rate. If reinvestments are lumpy, an average should be used. The life cycle of the company should also be considered as reinvestments are likely to decrease as the company matures. With the return on capital (ROC) we use the current return on the book value of debt and equity to estimate the return on future investments. Needless to say this approach might be

⁷¹ "Investment Valuation" – Damodaran, p.268

⁷² "Investment Valuation" – Damodaran, p.288

open to question. Is the book value a good measure of the capital invested? Is the current return on capital a good estimate of the future return on capital? These aspects have to be taken in to account by the analyst.

Looking at the business a firm is in and the average operating margins in this industry, provides us with essential information when estimating the future operating margin of the firm⁷³.

Duration of Extensive Growth

As a firm grows it becomes larger and larger which will eventually make it impossible to preserve the high growth. Another reason why high growth cannot be sustained in perpetuity is that high growth that creates value comes from earning excess returns on marginal investments. These excess returns will eventually make other firms cross the barrier to entry and the competition will make these returns disappear. In determining the length of the high growth period the size of the firm, the existing growth rate and excess returns, the characteristics of the market it is in as well as the magnitude and sustainability of the firm’s competitive advantage should be considered⁷⁴. Figure 4.5⁷⁵ below can be used for guidance.

The Company and its Competitive Position	High Growth Period
A large, slow growing company that operates in a mature, highly competitive, low margin industry.	1 year
A medium sized to large company with good growth, which operates in a growing market, holds a good market position and/or gains market share. The firm operates with advantages such as strong marketing channels, strong brand name or regulatory advantage.	5 years
A small to medium sized company with outstanding growth. The firm operates in a high growth market with very high barriers to entry. It holds or has good prospects of reaching a dominant market position.	10 years

Figure 4.5 – Indicative Range for High Growth Period

When the high growth period ends we have to decide how the company will go from high growth to stable growth. For firms where the shift will not be too dramatic we can jump directly from high growth into stable growth, but for other firms a transition period is a better choice. In this transition period growth rate, risk characteristics, returns on capital and reinvestment rates will all be gradually changed towards stable growth.

Commercial Due Diligence

In order to better asses the growth prospects of a firm to be acquired a commercial due diligence is often performed in addition to the standard legal and financial due diligence. Whereas law firms (such as Mannheimer Swartling) perform the legal due diligence and audit firms (such as Price Waterhouse Coopers) perform the financial due diligence, strategy consultant firms (such as McKinsey) perform the commercial due diligence. This type of due diligence is especially important to financial buyers, who might not have the profound industry knowledge that a strategic buyer operating in the same market might have. In a commercial due diligence the market in which the target operates is defined and its characteristics determined. There after the

⁷³ "Investment Valuation" – Damodaran, p.295
⁷⁴ "Investment Valuation" – Damodaran, p.303
⁷⁵ Otto Hermansson, Danske Bank

competitive position of the target company in this market is assessed. Finally, management is evaluated and the findings are used to evaluate the future prospects of the company. Figure 4.6 summarizes the process⁷⁶.

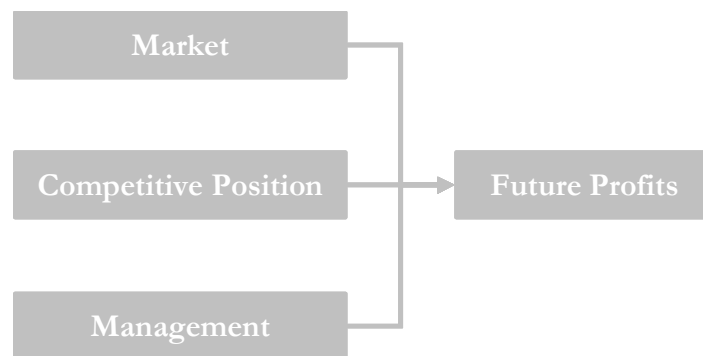


Figure 4.6 – CDD Process

4.1.6 The Stable Growth Period and Terminal Year Calculation

All firms that do not get liquidated, eventually settles into a state of stable and normalized growth. The terminal year represents the year when the growth of the company can be said to have stabilized and the period of high growth and excessive returns has ended. The terminal year free cash flow (TY_FCF) can be calculated with the following formula⁷⁷.

$$TY_FCF = \frac{FCF_{TY}(1+g)}{r_{d_sg} - g}$$

Where r_{d_sg} is the stable growth discount rate (i.e. the WACC), g the growth rate that will be sustained forever and FCF_{TY} is the free cash flow to debt and equity in the terminal year.

The terminal year free cash flow will then be added to the cash flows estimated for the high growth period and discounted back to the present.

$$NPV = \frac{FCF_1}{(1+r_d)^1} + \frac{FCF_2}{(1+r_d)^2} + \dots + \frac{TY_FCF}{(1+r_d)^n}$$

or

$$NPV = \left(\sum_{i=1}^{n-1} \left(\frac{FCF_i}{(1+r_d)^i} \right) \right) + \left(\frac{TY_FCF}{(1+r_d)^n} \right)$$

The value derived from the terminal year free cash flow normally constitutes the majority of the value of the firm. Small changes in the stable growth rate g give important changes to the estimated firm value. Since the growth rate is constant in perpetuity there are, however, strong constraints attached to it. No firm can grow forever at a growth rate higher than that of the economy in which it operates. In fact, a firm in stable growth should grow slower than the economy since the economy is constituted of both firms in stable growth and young firms in high growth. A rule of thumb often used by analysts is that the stable growth rate should not exceed the risk free rate used in the valuation. This is derived from the fact that over time the risk

⁷⁶ "Commercial Due Diligence" – Howson, p.18

⁷⁷ "Investment Valuation" – Damodaran, p.305

free rate will approach the growth rate of the economy⁷⁸. Many analysts also assume that the company will be able to make price raises in line with the inflation. With this assumption the growth rate of the company should be at least equal to the long term inflation rate⁷⁹.

When a firm goes into stable growth its characteristics change. During the high growth period we used the WACC as our discount rate. In stable growth we will continue to do so, but in stable growth the firm's exposure to market risk will have declined (lower beta) and the cost of Equity should therefore be lower. As a firm approaches stable growth its risk should approach the average risk of the market, so one could argue that all firms in stable growth should have their betas set to 1. If we are valuing a company with a beta lower than 1, such as a commodity company, we could leave the beta where it is assuming that the firm will stay in its low risk business. As a rule of thumb terminal growth betas should not exceed 1,2⁸⁰. Another factor that lowers the WACC is that firms in stable growth tend to be financed by debt to a larger extent than high growth firms. Finally, as the firm grows and becomes more stable its default risk will decline, which will lower the cost of debt. Practically we can look at more mature firms in the industry or an industry average to get good estimates of debt ratio and cost of debt. Note that the changes in cost of debt and capital structure will also affect the cash flows.

Excess returns can not be sustained in perpetuity so in stable growth many argue that they should be set to zero. That is return on capital (ROC) should equal cost of capital (WACC). In practice it is hard to estimate when a firm's ability to earn excess return will disappear since many industries earn excess returns over very long periods. A more reasonable assumption is therefore to let the firm's return on capital move towards the industry average⁸¹.

The reinvestment and retention ratios also change when a firm goes into stable growth, as mature firms tend to reinvest less than high growth firms. It is important that we make the adjustments to ensure that the firm reinvests enough to sustain its stable growth rate.

$$\text{Reinvestment rate}_{\text{Stable growth}} = \frac{g}{ROC}$$

By linking the reinvestment rate in stable growth to the stable growth rate we make the valuation less sensitive to assumptions. In fact, if our return on capital (ROC) is equal to our cost of capital, the terminal growth rate will not affect the value of the firm.

As an alternative to the stable growth model, relative valuation can be used to find the value of the firm in the future⁸². If, for example, we believe that the firm should be valued at 8 times EBITDA at the year n when the firm goes into stable growth, this would give us the following terminal value.

$$\text{Terminal Value} = 8 * \text{EBITDA}_{\text{Year } n}$$

This would give us the following firm value.

⁷⁸ "Investment Valuation" – Damodaran, p.306

⁷⁹ Otto Hemansson, Danske Bank

⁸⁰ "Investment Valuation" – Damodaran, p.310

⁸¹ "Investment Valuation" – Damodaran, p.310

⁸² "Investment Valuation" – Damodaran, p.304

$$NPV = \frac{FCF_1}{(1+r_d)^1} + \frac{FCF_2}{(1+r_d)^2} + \dots + \frac{Ter\ min\ al\ _\ Value}{(1+r_d)^n}$$

or

$$NPV = \left(\sum_{i=1}^{n-1} \left(\frac{FCF_i}{(1+r_d)^i} \right) \right) + \left(\frac{Ter\ min\ al\ _\ value}{(1+r_d)^n} \right)$$

4.1.7 Example - A Walk Trough the DCF Analysis

With all the necessary concepts introduced we are now ready to show the DCF model. As an illustrative example a small Swedish industrial company from Ängelholm has been analyzed. Marco AB is a private company that manufactures heavy duty hydraulic lifting tables. The company employs around 150 people and generated sales of SEK 240m in 2006. The analysis will be made in three steps:

1. Forecast Expected Cash Flows
2. Estimate the Discount Rate
3. Calculate the Value of the Company

Forecast Expected Cash Flows

In figure 4.7 we have forecasted Marco's cash flows. The years 2004-2006 are based on actual reported numbers, whereas the figures for 2007 are based on management forecasts for revenue and operating profit. The company operates in a somewhat mature market that does not seem to suffer from extensive price competition. Marco enjoys a very strong market position and management has an optimistic view on the future. We have decided to gradually normalize revenue growth and margins over a five year period, before the company enters stable growth. Capital expenditure needs have been estimated using historical Sales-to-Capital ratios. Depreciations have followed the increase in capital expenditure and they approach each other as the company moves towards stable growth. As of lately, working capital has decreased. We believe that this is the result of a more active working capital management and that the working capital will grow with revenues once a more optimal level is attained. To assure sufficient investments, the reinvestment rate has been linked to growth an ROC in the stable growth period, which the company enters in 2011.

DCF ANALYSIS Year ending 31st Dec - SEKm	Actual		Budget		Projections			
	2004	2005	2006	2007	2008	2009	2010	2011
	-2	-1	0	1	2	3	4	5
Sales	202,0	217,0	240,0	270,0	297,0	311,9	321,2	327,6
Y-o-Y ch.		7,4%	10,6%	12,5%	10,0%	5,0%	3,0%	2,0%
EBITDA	20,5	20,8	24,8	30,7	33,6	34,3	34,5	36,0
As % of sales	10,2%	9,6%	10,3%	11,4%	11,3%	11,0%	10,8%	11,0%
Depreciation	(4,3)	(5,3)	(5,5)	(5,7)	(6,8)	(7,8)	(8,8)	(9,8)
As % of Sales	2,1%	2,4%	2,3%	2,1%	2,3%	2,5%	2,8%	3,0%
EBITA	16,2	15,5	19,3	25,0	26,7	26,5	25,7	26,2
As % of Sales	8,0%	7,1%	8,0%	9,3%	9,0%	8,5%	8,0%	8,0%
Taxes on EBITA	(4,7)	(4,5)	(5,6)	(7,3)	(7,8)	(7,7)	(7,5)	(7,6)
Tax Rate	29,0%	29,0%	29,0%	29,0%	29,0%	29,0%	29,0%	29,0%
NOPAT	11,5	11,0	13,7	17,8	19,0	18,8	18,2	18,6
As % of Sales	5,7%	5,1%	5,7%	6,6%	6,4%	6,0%	5,7%	5,7%
Depreciation	4,3	5,3	5,5	5,7	6,8	7,8	8,8	9,8
Capex	(20,1)	(8,0)	(5,0)	(12,0)	(13,0)	(12,5)	(12,0)	(11,5)
As % of Sales	10,0%	3,7%	2,1%	4,4%	4,4%	4,0%	3,8%	3,5%
Net Working Capital (Incr) Decr	0,6	1,0	-	(1,5)	(2,7)	(2,2)	(1,9)	(1,3)
As % of Incremental Sales		-6,7%	0,0%	5,0%	10,0%	15,0%	20,0%	20,0%
Free Cash Flows to Equity and Debt	(3,8)	9,3	14,2	9,9	10,1	11,9	13,2	15,7
As % of Sales	-1,9%	4,3%	5,9%	3,7%	3,4%	3,8%	4,1%	4,8%

Figure 4.7 – Cash Flow Estimation

Estimate the Discount Rate

To estimate Marco's cost of capital we use a bottom up beta. From the peer group that we will use in the relative valuation we estimated an average unlevered beta. By applying Marco's capital structure and the current risk free rate, tax rate as well as market premium we arrive at a WACC of 7,1%.

WACC CALCULATION		UNLEVERAGED BETA					
1. Cost of Equity		Company	Market Cap (local curr)	2006 Net Debt (local curr)	Tax rate (2006)	24m Beta Leveraged	24m Beta Unleveraged
Risk Free Rate (Rf)	3,80%	BEIJER ALMA AB	2 633	42	29,00%	0,95	0,94
Market Risk Premium (MRP)	5,00%	HALDEX AB	3 861	1 098	29,00%	0,81	0,67
Unleveraged Beta (Bu)	0,71	CARDO AB	8 160	1 114	29,00%	0,79	0,72
Corporate Tax Rate (Tc)	29,0%	KAROLIN MACHINE TOOL AB	1 415	413	29,00%	0,84	0,70
Leverage D/E (=Net Debt / Equity)	0,18	MUNTERS AB	8 296	-24	29,00%	0,67	0,67
Leveraged Beta (B) = [1+(1-Tc)*D/E]*Bu	0,80	NIBE INDUSTRIER AB-B SHS	11 251	1 353	29,00%	0,70	0,64
Cost of Equity (Rf + MRP * (B))	7,8%	HOGANAS AB-B	6 704	978	29,00%	0,70	0,63
2. Pre-tax Cost of Debt		G & L BEIJER AB-B SHS	1 554	376	29,00%	n.m.	n.m.
Net Interest Bearing Debt	4,60%	BONG LJUNGAHL AB	908	1 184	29,00%	n.m.	n.m.
3. After Tax Cost of Debt		HL DISPLAY AB-B SHS	1 412	-2	29,00%	n.m.	n.m.
Corporate Tax Rate	29,0%						
Net Interest Bearing Debt	3,3%						
4. Capitalisation		Average (unweighted)					0,71
Net Interest Bearing Debt	15%						
Shareholders' Equity @ Market Value	85%						
Total	100%						
5. Contribution to WACC							
Net Interest Bearing Debt	0,5%						
Shareholders' Equity	6,6%						
6. WACC	7,1%						

Figure 4.8 – WACC Calculation

Calculate the Value of the Company

Finally, we calculate the net present value of the cash flows to arrive at an enterprise value for Marco. A sensitivity analysis is also performed to see how changes in the WACC and growth rate would affect the value of the company.

WACC Step	7.10%		Perpetuity Rate				
	0.50%		1.00%	1.50%	2.00%	2.50%	3.00%
Present Value of Free Cash Flows 2007-11	49	49	49	49	49	49	49
Present Value of Terminal Value 2010	197	216	238	265	299		
Enterprise Value - Im	246	265	287	314	348		
<i>Implied 2006A Sales Multiple</i>	1.0x	1.0x	1.2x	1.3x	1.4x		
<i>Implied 2007E Sales Multiple</i>	0.9x	1.0x	1.1x	1.2x	1.3x		
<i>Implied 2008E Sales Multiple</i>	0.9x	0.9x	1.0x	1.1x	1.2x		
<i>Implied 2006A EBITDA Multiple</i>	8.9x	10.7x	11.6x	12.7x	14.0x		
<i>Implied 2007E EBITDA Multiple</i>	8.0x	8.6x	9.4x	10.2x	11.3x		
<i>Implied 2008E EBITDA Multiple</i>	7.3x	7.9x	8.6x	9.4x	10.4x		
<i>Implied 2006A EBITA Multiple</i>	12.7x	13.7x	14.8x	16.3x	18.0x		
<i>Implied 2007E EBITA Multiple</i>	9.8x	10.6x	11.5x	12.6x	13.9x		
<i>Implied 2008E EBITA Multiple</i>	9.2x	9.9x	10.7x	11.6x	13.0x		
<i>Cash Flows as a % of EV</i>	20%	18%	17%	16%	14%		
<i>Terminal Value as a % of EV</i>	80%	82%	83%	84%	86%		
<i>Future Value of Terminal Value</i>	259	284	313	349	393		
<i>Implied 2011E EBITDA Multiple</i>	7.2x	7.9x	8.7x	9.7x	11.0x		
<i>Implied 2011E EBITA Multiple</i>	8.9x	10.8x	12.0x	13.3x	15.0x		

WACC	Enterprise Value					
	20%	1.00%	1.50%	2.00%	2.50%	3.00%
6.10%	295	323	358	402	461	
6.35%	281	306	337	376	426	
6.60%	268	291	319	353	397	
6.85%	257	277	302	332	371	
7.10%	246	265	287	314	348	
7.35%	236	253	273	298	328	
7.60%	227	243	261	283	310	
7.85%	219	233	250	270	294	
8.10%	211	224	239	257	279	

WACC	% of Central Value					
	1.00%	1.50%	2.00%	2.50%	3.00%	
6.10%	3%	13%	25%	40%	61%	
6.35%	-2%	7%	17%	31%	49%	
6.60%	-6%	1%	11%	23%	38%	
6.85%	-11%	-3%	5%	16%	29%	
7.10%	-14%	-8%	0%	9%	21%	
7.35%	-18%	-12%	-5%	4%	14%	
7.60%	-21%	-15%	-9%	-1%	8%	
7.85%	-24%	-19%	-13%	-6%	2%	
8.10%	-27%	-22%	-17%	-10%	-3%	

Figure 4.9 – Net Present Value of Marco AB

4.2 Relative valuation

In the discounted cash flow valuation we valued the operating assets of companies according to the cash flows they were expected to generate and the risk associated with these cash flows. Relative valuation aims to value the operating assets of companies according to how the operating assets of similar companies are valued, either on a stock exchange or in recent transactions. In order to do this we will convert prices and earnings data into standardized multiples that can be used to compare how the ability to generate income is valued across firms.

Relative valuation is very widely used in the financial sector and is arguably the dominating technique used by strategic investors⁸³. It is quicker and involves fewer explicit assumptions compared to the discounted cash flow analysis, but the most important advantage is probably that it is easier to present and explain to clients and customers. The greatest disadvantage of relative valuation is that we derive a relative value and not an intrinsic value as we did in the discounted cash flow analysis. This means that even though the valuation might have been flawlessly performed and a good relative value compared with the peer group has been found, the peer group in itself might be under or over valued. Relative valuation changes with the mood of the market.

Conducting a relative valuation includes the two main tasks of finding a peer group and standardizing data into multiples. A third step would be to analyze the multiple to understand what fundamentals determine the multiple and how changes in these fundamentals translate into changes in the multiple.

4.2.1 Identifying a Peer Group

As discussed in the section on discounted cash flow valuation a firm's value depends on cash flows, growth potential and risk. Hence, a comparable firm is similar to the firm being valued with respect to these three characteristics. By comparing firms in the same business these characteristics are often, but not always, quite similar and this is what analysts generally do. Other criteria, such as picking firms from the same country and of the same size are also often applied. Another approach is to look for firms that are in any business but are still similar with respect to the three criteria mentioned above. To find firms with similar risk we could look for firms with similar betas, to find firms with similar growth potential we could look for firms with similar expected growth rates and to find firms with similar cash flows potential we could look for firms with similar return on capital (growth rate and return on capital decides how much of a firm's profits that can be returned as cash flows to debt and equity)⁸⁴.

4.2.2 Data Standardization and Analysis of Multiples

The multiples in figure 4.10⁸⁵ are the most commonly used in mergers and acquisitions⁸⁶. We must make sure that the multiple is defined consistently and measured uniformly across the firms being compared.

⁸³ Otto Hermansson, Danske Bank

⁸⁴ "Investment Valuation" – Damodaran, p.462

⁸⁵ "Investment Valuation" – Damodaran, p.453-572

⁸⁶ Otto Hermansson, Danske Bank

Valuation Multiples Commonly Used in M&As	Description
Enterprise Value / Sales	The EV/Sales multiple has the enterprise value or the value of the firms operating assets as its numerator. The value of the operating assets is what is usually sought after when an integer firm is to be sold or acquired. The revenues are used as denominator and constitutes a variable which is basically unaffected by differences in reporting standards.
Enterprise Value / EBITDA	The EV/EBITDA multiple also uses the enterprise value as numerator, but as its denominator we find the earnings before interests, tax, depreciation and goodwill amortization. A company's ability to generate earnings is the most important driver of the company's value and this multiple is probably the most widely used in the business. It is also fairly close to the operating cash flow.
Enterprise Value / EBIT	The EV/EBIT multiple uses the enterprise value as its numerator as well, and the earnings before interests and tax as its denominator. This multiple is much like the EV/EBITDA multiple, but it is subject to differences in reporting standards regarding depreciation and amortization.
Price-Earnings	The PE multiple uses the (market) price of a company's equity as its numerator. As opposed to the enterprise value, this measure takes into account the capital structure of the firm. The net income is used as its denominator, which is measured after the interest is paid to the company's debtors. While this multiple is the most widely used among investors interested in acquiring stock in quoted companies it is not as important to acquirers of integer firms. The exception being when a firm is to be sold to the public via an IPO.
Price-to-Book Value	The PBV multiple uses the market value of the company's equity as numerator and the book value of the company's equity as denominator. The book value constitutes a fairly stable and intuitive measure of value that can be compared to market value. It can also be used on firms with negative earnings, but is unfortunately affected by differences in accounting decisions and standards. Especially on depreciation and acquisition accounting. Classical value investors, such as Benjamin Graham and Warren Buffett, have been using the multiple to screen markets for undervalued companies.

Figure 4.10 – Valuation Multiples

EV/Sales

The EV/Sales multiple divides the enterprise value of a firm with its revenues. The enterprise value is defined as follows.

$$Enterprise\ Value = Equity_{Market\ Value} + Debt_{Market\ Value} - Cash$$

Minority holdings and market value of management options should be included in the market value of equity and other posts with debt characteristics, such as uncovered pension liabilities, could be considered for the market value of debt. Marketable securities and other cash equivalents should be included in cash.

Revenue multiples can be used on firms with negative earnings and are less volatile with respect to cyclical changes in the economy. The multiple is also largely immune to differences in reporting standards. The key determinant of the EV/Sales multiple is the operating margin. Firms with high operating margins should enjoy a higher multiple than firms with lower margins. The fundamental determinants of the EV/Sales multiple can be derived from the discounted cash flow models described above and the following formula can be derived⁸⁷.

$$\frac{EV}{Sales} = \frac{NOPLAT(1 - Reinvestment\ rate)}{Cost\ of\ capital - g_n}$$

Investors also use the EV/Sales multiple to find the potential of a business, arguing that if no explicit competitive advantages or disadvantages are found the company is likely to enjoy the same margins as its peers in the future.

EV/EBITDA

The EV/EBITDA multiple is widely used in valuations. It is less vulnerable to differences in accounting standards compared to the price earnings multiple and it can be used on firms with negative net income. It is a firm value multiple and does not take capital structure into account. When using this multiple there are a few aspects that need to be taken into consideration.

Cross holdings create a problem when estimating the EV/EBITDA multiple since their value can be over or under represented in the numerator compared to how their income is included in the nominator. The profit from a minority holding is not included in a firm's EBITDA, whereas the value of the holding should be reflected in the market value of equity. On the other hand, the EBITDA includes 100% of the earnings of a majority holding, whereas only the percentage held should be included in the market value of equity. Corrections for cross holdings are tedious and a practical rule of thumb is to consider such assets that do not generate cash flows as cash.

The fundamental determinants of the EV/EBITDA multiple can be derived from the discounted cash flow models described above and the following formula can be derived⁸⁸.

$$\frac{EV}{EBITDA} = \frac{(1-t) - \frac{D \& A}{EBITDA} (1-t) - \frac{Reinvestment}{EBITDA}}{WACC - g}$$

In this equation we can see that the EV/EBITDA multiple essentially depends on the following five fundamentals:

1. Tax rate: Other things remaining equal, a lower tax rate should result in a higher multiple
2. Depreciation and amortizations (D&A): Other things remaining equal, lower D&As should result in a higher multiple
3. Reinvestment requirements: Other things remaining equal, the greater the portion of the EBITDA that needs to be reinvested to generate the expected growth, the lower the multiple

⁸⁷ "Investment Valuation" – Damodaran, p.548

⁸⁸ "Investment Valuation" – Damodaran, p.504

4. Cost of capital: Other things remaining equal, a lower cost of capital should result in a higher multiple
5. Expected growth: Other things remaining equal, a higher expected growth should result in a higher multiple

Price-Earnings

The Price-Earnings multiple is probably the most well known and most widely used multiple in relative valuation. It is used especially for quoted companies and when determining prices for initial private offers (IPO). The nominator in this multiple is the market value of equity and should be adjusted for management options. The denominator is the net income. From the discounted cash flow model we can derive the fundamentals determining the multiple⁸⁹.

$$\frac{P}{E} = \frac{\text{Payout_ratio}(1 + g_n)}{k_e - g_n}$$

The Price-Earnings multiple should increase as the payout ratio increases. An increase in the payout ratio either means that the return on equity has increased or that less money is reinvested which should impede growth. The riskiness of the business is represented by the cost of equity and decreased risk motivates a higher multiple. Finally, a higher growth rate should increase the multiple.

When estimating an expected Price-Earnings multiple for a firm, a comparison is normally made with a peer group. The mean or median multiple in the peer group is then used as the expected multiple for the firm. A perfect peer group is, however, impossible to find and the fundamentals will vary in the peer group. An alternative would therefore be to run a regression on the peer group, or on the market, using the fundamentals in the formula above. In this way we can estimate an expected multiple for our firm⁹⁰.

$$P/E = a + b * \text{Growth in Earnings} + c * \text{Payout Ratio} + d * \text{Standard Deviation in Earnings}$$

Since the growth rate is an important determinant of the Price-Earnings multiple a PEG multiple is used by many analyst. The PEG multiple is the PE multiple divided by the growth rate.

The Price-Earnings ratio is also often used to determine if a market is over or under valued. A comparison of the multiple for the whole market over time is the most common way. If, for example, the present multiple is higher than the average multiple over the last ten years, the market is said to be overvalued. But the fundamentals determining the Price-Earnings multiple also change over time and a higher market multiple might be motivated in a good economic environment. An alternative is therefore to compare the market multiple with a multiple estimated from the underlying fundamentals⁹¹. Using the formula above, our growth rate is the GDP growth and our cost of equity is the sum of the risk free rate and the market premium. Assuming a payout ratio of 50% would give us the following Price-Earning ratio for the Swedish market in 2006.

$$\frac{P}{E} = \frac{0,5 * 1,045}{0,088 - 0,045} = 12,15$$

⁸⁹ "Investment Valuation" – Damodaran, p.471

⁹⁰ "Investment Valuation" – Damodaran, p.484

⁹¹ "Investment Valuation" – Damodaran, p.477

According to this estimation the Swedish market is overvalued if it is trading at a multiple above 12,15. DiTV reported on February 27, 2007, that the Swedish market was trading at a forward PE of 15.

A note should also be made on the leverage effect on the Price-Earnings multiple. The P/E ratio of a levered company depends on its unlevered (all equity) P/E ratio, its cost of debt and its leverage ratio. If the unlevered P/E ratio is less than $1/k_d$ (k_d =cost of debt), the P/E ratio falls as debt increases. Conversely, if the unlevered P/E ratio is greater than $1/k_d$, the P/E ratio increases with increased leverage⁹². That is:

$$\left(\frac{P}{E}\right)_u = \frac{1}{k_d} \Rightarrow P/E \text{ ratio is independent of leverage}$$

$$\left(\frac{P}{E}\right)_u > \frac{1}{k_d} \Rightarrow P/E \text{ ratio increases as leverage increases}$$

$$\left(\frac{P}{E}\right)_u < \frac{1}{k_d} \Rightarrow P/E \text{ ratio decreases as leverage increases}$$

The unlevered P/E ratio is calculated by dividing the enterprise value of the firm by its net operating profit after tax (NOPAT).

$$P/E_u = \text{EnterpriseValue}/\text{NOPAT}$$

With the low interest rates of today most companies on the Stockholm Stock Exchange probably have an unlevered P/E ratio that is less than one divided by their cost of debt. In our example at the end of this section, most companies in the peer group are not very highly levered. If we estimate their cost of debt to 5% this would give us $1/k_d=20$. Only two companies in the peer group had unlevered forward P/E ratios that exceeded 20. If a company can lower its P/E ratio by taking on more debt it implies that a company should be worth more just because its more highly levered. This might be true if it is now operating under a more optimal capital structure, but caution is advised⁹³.

Price-to-Book Value

The basic definition of Price-to-Book Value is the following.

$$PBV = \frac{\text{Market Value of Equity}}{\text{Book Value of Equity}}$$

The market value of equity is the same as the market capitalization of a listed firm, or the share price times the number of shares outstanding. The market value of management options and conversion options outstanding should technically be calculated and added to the market capitalization. But, if the sample is large and the options represent a small portion of equity this step can be overlooked without causing any significant bias. The book value of equity is found on

⁹² "Valuation" – Koller, Goedhart & Wessels (McKinsey & Company) p.715

⁹³ If we start with an all-equity firm with a P/E ratio lower than $1/k_d$, then the P/E ratio will decrease as leverage increases. But as leverage increases, the cost of debt increases as well. This means that our P/E ratio as a function of leverage is a u-shaped curve with a minimum at the point where $P/E=1/k_d$. This is the optimal capital structure for the P/E ratio and it would be interesting to examine if this point coincides with the point that minimizes the WACC.

the balance sheet of the company in question and should be adjusted for differences in acquisition accounting. If some of the firms in the sample use purchase accounting and some use pooling, the goodwill of the firms using purchase accounting should be subtracted from the book equity before making the comparison. For firms with heavy R&D spending it is important that these expenses are either capitalized for all firms or not for any firm, since capitalized R&D assets will augment the book equity. The PBV multiple is normally made up from the latest book value and either the spot price or a weighted average prices over the last three months or so. It can also be meaningful to look at an average PBV multiple over the last one to five years⁹⁴.

For a firm in stable growth, the PBV multiple can be related to the fundamentals used in the discounted cash flow model. The following formula can be derived⁹⁵.

$$\frac{P}{BV} = \frac{ROE - g_d}{k_e - g_d}$$

Where g_d is the growth rate in dividends, k_e the cost of equity and ROE the return on equity. As we can see, a firm with higher return on equity than cost of equity (excess returns) will have a PBV multiple greater than 1. The fundamental determinant of the PBV multiple is hence the difference between the return on equity and the cost of equity. With this in mind we can plot the firms in a sector in a matrix to see which firms that are under valued and which firms that are over valued.

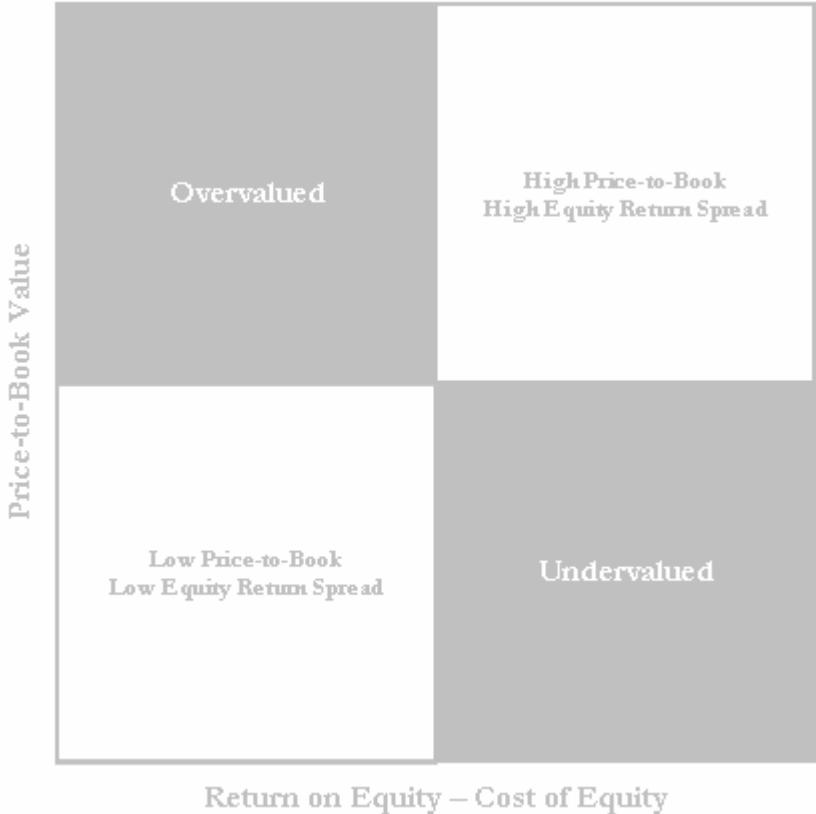


Figure 4.11 – Price-to-Book Value Assessment

⁹⁴ "Investment Valuation" – Damodaran, p.511-513

⁹⁵ "Investment Valuation" – Damodaran, p.515

Alternatively we can run a regression over the firms in the sector to see if the PBV is largely a function of the return on equity⁹⁶.

$$PBV = a + b * ROE$$

If the relationship is strong we can obtain a theoretical PBV multiple, which can then be compared to the actual PBV multiple of a firm to see if the firm is over- or undervalued. We can improve our regression by including the betas of the firms as well. By doing this we account for differences in cost of equity among the firms.

$$PBV = a + b * ROE + c * \beta$$

Studies over entire markets have shown strong relationships in the regressions. Studies have also shown that the regressions could be improved further by adding dividend payout ratio and annual growth over the last five years to the regressions.

4.2.3 Example

As an illustrative example we have performed a valuation on Marco AB. The peer group used is constituted of Swedish engineering companies. To diminish the effect of outliers we have used medians instead of averages for our implied multiples.

Comparable Companies	Sales 2006 SEKm	Market Cap. SEKm	EV SEKm	Enterprise Value /									P / E			Market / Book Equity 2006
				Sales			EBITDA			EBITA			2006	2007e	2008e	
				2006	2007e	2008e	2006	2007e	2008e	2006	2007e	2008e	2006	2007e	2008e	
BEIJER ALMA	1 501	2 633	2 675	1,8x	1,6x	1,5x	8,2x	7,1x	6,7x	10,2x	8,6x	8,0x	14,3x	12,0x	11,2x	3,7x
HALDEX	7 904	3 861	4 959	0,6x	0,6x	0,6x	7,0x	6,2x	5,6x	11,9x	9,8x	8,8x	15,0x	12,4x	10,7x	2,1x
CARDO	8 568	8 160	9 274	1,1x	1,0x	1,0x	11,2x	9,6x	8,3x	15,4x	12,6x	10,5x	20,4x	16,4x	13,6x	2,7x
KAROLIN MACHINE TOOL	1 609	1 415	1 828	1,1x	1,0x	1,0x	10,8x	8,0x	7,0x	14,0x	9,5x	8,2x	18,9x	12,6x	10,5x	2,4x
MUNTERS	5 748	8 296	8 272	1,4x	1,3x	1,2x	11,4x	10,8x	9,9x	15,2x	13,3x	11,9x	24,8x	21,0x	18,8x	5,6x
NIBE INDUSTRIER	4 811	11 251	12 603	2,6x	2,2x	2,1x	18,1x	14,9x	13,7x	22,5x	17,9x	16,2x	31,9x	25,3x	22,2x	9,6x
HOGANAS	5 206	6 704	7 682	1,5x	1,4x	1,3x	8,6x	7,9x	7,4x	12,5x	11,0x	10,1x	16,2x	14,3x	12,7x	2,6x
G & L BEIJER	2 562	1 554	1 931	0,8x	0,7x	0,7x	10,6x	9,4x	9,2x	13,2x	11,5x	11,2x	16,0x	13,9x	13,7x	2,9x
BONG LJUNGDAHL	1 982	908	2 092	1,1x	1,0x	1,0x	11,4x	8,5x	8,0x	29,0x	15,2x	13,4x	22,8x	11,8x	10,0x	1,7x
HL DISPLAY	1 546	1 412	1 409	0,9x	0,9x	0,8x	6,9x	6,2x	6,1x	9,2x	8,1x	8,2x	14,3x	12,1x	12,2x	3,8x
Average				1,3x	1,2x	1,1x	10,4x	8,9x	8,2x	15,3x	11,8x	10,7x	19,4x	15,2x	13,6x	3,7x
Median				1,1x	1,0x	1,0x	10,7x	8,2x	7,7x	13,6x	11,3x	10,3x	17,5x	13,3x	12,5x	2,8x

Marco	Implied Multiples			Implied Enterprise Value					
	2006	2007	2008	2006	2007	2008			
Sales	240	270	297	1,1x	1,0x	1,0x	266	278	293
EBITDA	25	31	34	10,7x	8,2x	7,7x	265	253	258
EBITA	19	25	27	13,6x	11,3x	10,3x	263	282	276
Net Income	14	18	19	17,5x	13,3x	12,5x	258	253	254
Book Equity	66			2,8x			207		
Implied Value Range							207		293
EBITDA, EBITA, 2007-08-Implied Value range							253		282

Figure 4.12 – Relative Valuation of Marco AB

⁹⁶ "Investment Valuation" – Damodaran, p.524

4.3 Leveraged Buyout Analysis

A leveraged buyout analysis is basically an assessment of how much a financial buyer would be interested in paying for a firm. The model is for financial buyers in particular, since they are the ones who conduct the leveraged buyouts, but it could be used by strategic buyers as well to derive a reference value⁹⁷. The same basic projections of growth and profits that were made in the discounted cash flow analysis are used in this model as well, but a few additional parameters need to be estimated. First we need to examine how much of the acquisition that can be financed by debt and what the average interest rate will be. Next, we will have to assess what rate of annual return (internal rate of return, IRR) the financial buyer will require. Finally, we need to determine the length of the time period that the financial buyer will hold the company and estimate an exit multiple.

4.3.1 Debt Capacity

While a wisely run firm actively manages its capital structure towards a sustainable and optimal long term capital structure, a firm in a buyout situation will exhaust its debt capacity. For the latter it is hence the lenders who determine the capital structure and how much debt it can take on. The debt capacity of a firm is measured as a multiple of its EBITDA and has risen in recent years due to good market conditions. As in the case of relative valuation multiples, this multiple depends on the future expected cash flows. It also depends on the amortization schedule demanded by the lenders. The following formula can be used to estimate debt capacity⁹⁸.

$$q = \frac{\gamma * m^{-1} [\tau^n - (1 + g)^n] / (\tau - 1 - g)}{\tau^n * f + (1 - t) * r_B * (1 - f) * (1 - \tau^n) / (1 - \tau)}$$

$$\tau = 1 + (1 - t) * r_R$$

$$\gamma = (1 - t) * m + t * \delta + \eta - \kappa + (1 - t) * r_h * h / (1 + g) - h * g / (1 + g)$$

Where g is the growth rate, m the EBITDA margin, δ is the depreciations as percent of sales, η is other non-cash items as percent of sales, κ is – capital expenditures plus net increase in working capital – as percent of sales, h is cash as percent of sales, r_h is interest on cash, t is the tax rate, f is the percent of total debt that is senior debt, r_R is the interest on senior debt, r_B is the interest on the subordinated debt, n is the number of years the senior debt should be amortized over, a net cash to senior amortization and q is the debt capacity as a multiple of the EBITDA.

Although this formula might be useful to obtain an idea of a company's debt capacity, buyout firms negotiate with a wide range of banks and other lenders to obtain the best possible conditions. Investment banks make huge amounts of money advising buyout firms in transactions etc. and sometimes the debt conditions can be viewed as part of a package where the bank obtains lucrative and prestigious advisory roles⁹⁹. Though debt capacity is determined on a case by case basis figure 4.13 is an illustrative picture to give the reader an idea of how buyouts in Sweden have been structured recently.

⁹⁷ Otto Hermansson, Danske Bank

⁹⁸ "Valuation for Mergers, Buyouts and Restructurings" – Arzac p.118

⁹⁹ Otto Hermansson, Danske Bank

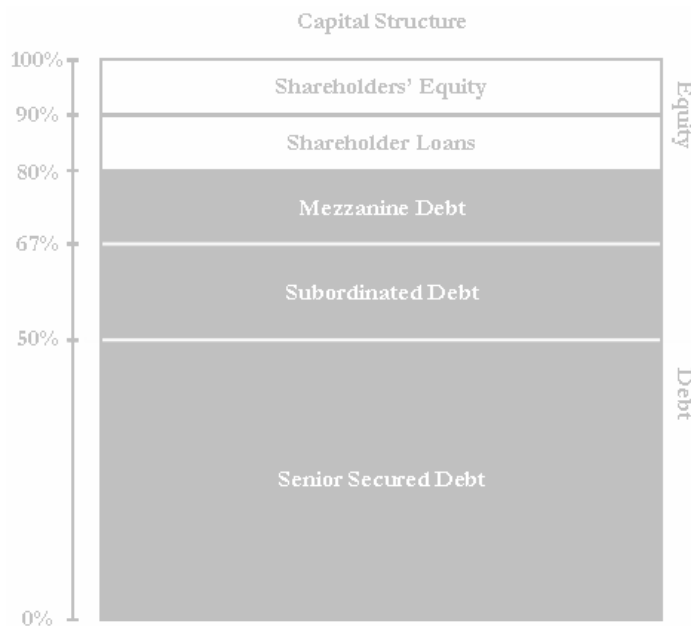


Figure 4.13 – Indicative LBO Capital Structure

Current market conditions give us a risk free rate of around 3,8%. In this environment the interest rate on the senior secured debt would probably fall into a range of 5-7%, the subordinated debt would have interest rates of 7-9% and the mezzanine would find itself somewhere between 10-14%. With a mid-range assumption of 6%, 8% and 12% respectively, this would give us an average interest rate of 7,4%. Although shareholder loans can sometimes create a tax advantage, the main purpose of them is to give an extra kick to the equity available to management. Management is usually given the opportunity to buy a portion of the shareholders' equity without subscribing to any shareholder loans, which other investors normally have to do. Assuming that the buyout fund requires an IRR of 20% the interest rate on the shareholder loans might be set to 15%, which would give an expected annual rate of return on the shareholders' equity of 25%. The shareholder loans are normally in zero coupon bonds and do not effect cash flows.

4.3.2 Internal Rate of Return (IRR)

The internal rate of return is the primary measure of performance in a leveraged buyout. It is the compounded annual growth rate of the equity investor's commitment and it is calculated as follows¹⁰⁰.

$$IRR = \left[\frac{Equity_Value_{Exit}}{Equity_Value_{Entry}} \right]^{\left(\frac{1}{Holding_Period} \right)} - 1$$

Due to increased competition the minimum expected IRR for a buyout firm to undertake a transaction has decreased to 20%. This number does of course vary across firms but is generally used for valuation purposes¹⁰¹.

¹⁰⁰ "Value Creation in Leveraged Buyouts" – Loos, p.60

¹⁰¹ Otto Hermansson, Danske Bank

4.3.3 Holding Period and Exit Multiple

Empirical studies¹ have shown that the IRR is negatively related to the holding period. That is, the longer the holding period the lower the IRR. Most buyout funds intend to hold their investments for 3-5 years some longer. In recent years, however, we have seen many investments being exited within the first year due to strong initial performance. The exit multiple is normally based on relative valuation and can be adjusted if the market is believed to be over or under valued.

4.3.4 Example

As an illustrative example we have performed a leveraged buyout analysis on Marco AB. We have assumed that the bank will provide 5 times EBITDA in senior debt and that mezzanine investors will provide an additional 1,5 times EBITDA. Further more, we assume that equity investors will demand an IRR of 20% estimated on a three year holding period. The implied EBITDA multiple found in the relative valuation is used as exit multiple.

MAIN ASSUMPTIONS														
FINANCING				BALANCE SHEET				MARGINS AND RATES						
		SEK m	%	2006	Target	Adj.	P-F	%						
USES														
Purchase of Equity		244	90,2%	Goodwill	3	170	173	63,9%	Shareholder Loan Interest (PIK)		15,00%			
Plus Interest Bearing Debt Assumed		33	12,0%	Transaction Costs	0	5	5	2,0%	Shareholder Loan Interest (Cash Pay)		0,00%			
Less Cash & Equivalents Assumed		(11)	-4,2%	Fixed Assets	46	0	46	17,0%	Convertible Bonds (Coupon) (PIK)		0,00%			
Total Uses (Excl. Trans. Costs)		265	98,0%	Net Working Capital	46	0	46	17,1%	Base Rate		3,80%			
Transaction Costs		5	2,0%	CAPITALISATION	95	176	271	100,0%	Mezzanine Margin (Cash Pay)		3,20%			
TOTAL USES		271	100,0%	Common Equity	66	(32)	34	12,4%	Mezzanine Margin (PIK)		5,00%			
SOURCES														
Common Equity		34	12,4%	Convertible Bonds	0	0	0	0,0%	Senior Debt Loan A Margin		0,00%			
Convertible Bonds		0	0,0%	Shareholder Loans	0	34	34	12,4%	Senior Debt Loan B Margin		0,00%			
Shareholder Loan		34	12,4%	Mezzanine	0	47	47	17,4%	Senior Debt Loan C Margin		2,70%			
Total Equity Investors		67	24,9%	Sr Debt Loan A	33	(33)	0	0,0%	Revolver Debt Margin		3,50%			
Mezzanine		47	17,4%	Sr Debt Loan B	0	0	0	0,0%	Cash Margin		-0,50%			
Sr Debt Loan A		0	0,0%	Sr Debt Loan C	0	156	156	57,7%						
Sr Debt Loan B		0	0,0%	Revolving Credit	0	0	0	0,0%						
Sr Debt Loan C		156	57,7%	Other Liabilities	8	(8)	0	0,0%						
Revolving Credit		0	0,0%	Less Cash	(11)	11	0	0,0%						
Total Debt		203	75,1%	CAPITALISATION	95	176	271	100,0%						
TOTAL SOURCES		271	100,0%											
PURCHASE MULTIPLES														
<i>(excl. Transaction costs)</i>														
		2006	2007	GOODWILL										
EV/Sales		1,1x	1,0x	Purchase EV			265							
EV/EBITDA		10,7x	8,7x	Target Invested Capital @ Book Value			(95)							
EV/EBITA		13,7x	10,6x	Goodwill (Badwill) Created			170							
EXIT MULTIPLES														
EV/EBITDA (current year)			10,7x	Existing Goodwill			3							
RETURN SUMMARY														
		2009	2010	2011	CREDIT RATIOS				DEBT REPAYMENT					
Exit year		3	4	5	Year	2006	2007	Year	2013	2014	2015	2016		
Equity Investors ⁽¹⁾		35,3%	26,7%	23,9%	Total Net Debt/EBITDA	8,2x	6,6x	Total Sr Debt Less Cash	98	111	122	205		
Mezzanine		12,3%	12,3%	12,3%	Net Sr Debt/EBITDA	6,3x	5,0x	Cumul. Debt Paydown %	37%	29%	22%	-31%		
Notes														
(1) Common Equity, Shareholder Loans and Convertible Bonds														
(2) Revolver Debt not taken into account														
Sr Net Debt Avg. Life 23,4														

Figure 4.14.3 – Main LBO Assumptions

These assumptions give us the following income statement and cash flows

P&L DATA	Projections					
	2006	2007	2008	2009	2010	2011
Year ending 31st Dec - SEK m	0	1	2	3	4	5
Sales	240	270	297	312	321	328
Y-o-Y ch.		12,5%	10,0%	5,0%	3,0%	2,0%
EBITDA	25	31	34	34	35	36
As % of Sales	10,3%	11,4%	11,3%	11,0%	10,8%	11,0%
Depreciation	(6)	(6)	(7)	(8)	(9)	(10)
As % of Sales	2,3%	2,1%	2,3%	2,5%	2,8%	3,0%
EBITA	19	25	27	27	26	26
As % of Sales	8,0%	9,3%	9,0%	8,5%	8,0%	8,0%
Convertible Bonds		-	-	-	-	-
Shareholder Loans (Cash Pay + PIK)		(5)	(6)	(7)	(9)	(10)
Mezzanine (Cash Pay + PIK)		(6)	(6)	(6)	(7)	(7)
Senior Debt Loan A		-	-	-	-	-
Senior Debt Loan B		-	-	-	-	-
Senior Debt Loan C		(10)	(10)	(10)	(10)	(10)
Revolver Debt		(0)	(0)	0	0	1
Cash		0	0	0	0	0
Net Interest Expense		(21)	(22)	(24)	(25)	(26)
PBT		4	4	3	1	(0)
Taxes		(1)	(1)	(1)	(0)	0
% of PBT		29,0%	29,0%	29,0%	29,0%	29,0%
PAT		3	3	2	1	(0)

Figure 4.15 – LBO Income Statement

CASH-FLOW	Projections				
	2007	2008	2009	2010	2011
Year ending 31st Dec - SEK m	1	2	3	4	5
CASH FROM OPERATIONS					
Net Income To Common	3	3	2	1	(0)
Depreciation	6	7	8	9	10
Working Capital (Incr) Decr	(2)	(3)	(2)	(2)	(1)
Total Cash (Uses) Sources From Operations	7	7	8	7	8
OTHER (USES) SOURCES OF CASH					
Capex	(12)	(13)	(12)	(12)	(11)
Convertible Bonds PIK Interest	-	-	-	-	-
Shareholder Loan PIK Interest	5	6	7	9	10
Mezzanine PIK Interest	2	3	3	3	3
Total Other Cash (Uses) Sources	(4)	(4)	(2)	(1)	1
CASH FLOW BEFORE DEBT REPAYMENTS	3	3	5	7	10
DEBT REPAYMENTS					
Mezzanine Mandatory Repayments	-	-	-	-	-
Senior Debt Loan A Mandatory Repayments	-	-	-	-	-
Senior Debt Loan B Mandatory Repayments	-	-	-	-	-
Senior Debt Loan C Mandatory Repayments	-	-	-	-	-
Revolver Debt Additional Borrowings (Repayments)	3	(3)	(5)	(7)	(10)
Total Debt Repayments	3	(3)	(5)	(7)	(10)
NET CHANGE IN WORKING CAPITAL CASH (INCR) DECR	(5)	(1)	(0)	(0)	(0)

Figure 4.16 – LBO Cash Flow Statement

In order to determine the maximum amount a buyout fund would be able to pay for Marco under the conditions stated above we have prepared table 4.17. The aim is to gauge the maximum price by conducting a sensitivity analysis on exit and entry multiples. We see that if we use 10,7 times EBITDA (the implicit multiple found in our relative valuation) as exit multiple, Marco would be valued at slightly above SEK 291m.

		Exit in Year 3 (2009)					
		IRR financial sponsors Exit multiples (EV/EBITDA)					
		35,3%	9,7x	10,2x	10,7x	11,2x	11,7x
Purchase EV (SEK m)	273	11,00x	21,2%	26,2%	30,8%	35,1%	39,2%
	279	11,25x	18,1%	22,9%	27,4%	31,6%	35,6%
	285	11,50x	15,3%	20,1%	24,4%	28,5%	32,3%
	291	11,75x	12,8%	17,4%	21,7%	25,7%	29,4%
	298	12,00x	10,6%	15,0%	19,2%	23,1%	26,7%
	304	12,25x	8,5%	12,9%	16,9%	20,7%	24,3%
	310	12,50x	6,5%	10,8%	14,8%	18,5%	22,0%

Figure 4.17 – LBO Sensitivity Analysis

The value creation process is visualized in figure 4.18 below. We see that the negative multiple spread between 11,75 and 10,7 times EBITDA costs us SEK 36m, whereas the growth in the underlying financials of the company gives us a return of SEK 112m. We have only been able to repay SEK 3m of our debt with our cash flows, which gives us a total return to equity investors of SEK 167m. This is SEK 79m more than the original investment or an increase of 90%, which gives us an IRR of 21,7% over three years. The company's enterprise value has grown 26% over the three years or 8% annually.

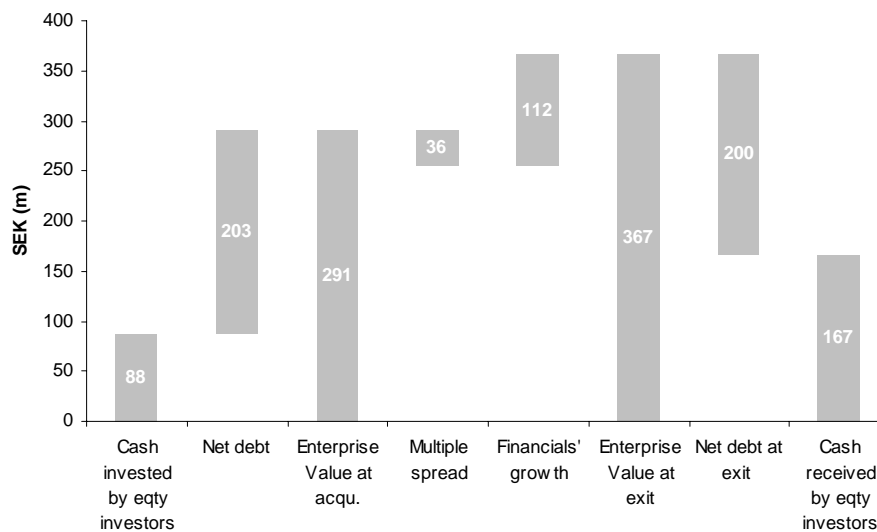


Figure 4.18 – LBO Value Creation

Another way of illustrating where the value creation is derived is by using the simple DuPont formula. This formula state that the equity value of a company is equal to its revenue times its margin times a valuation multiple, less net debt. Instead of subtracting net debt we adjust the formula by introducing a leverage factor. This factor will describe the effect leverage has had on the investment and is calculated as follows.

$$\text{Leverage_effect} = \frac{\frac{\text{Equity}_{\text{Exit}}}{\text{Equity}_{\text{Entry}}}}{\frac{\text{EV}_{\text{Exit}}}{\text{EV}_{\text{Entry}}}}$$

The other factors are calculated by dividing the exit value by the entry value to give us the following formula.

$$Total\ Capital\ Gain = Leverage\ effect * Revenues\ effect * Margin\ effect * Multiple\ effect$$

In order to get the value contribution that each factor generates in percent, we take natural logarithm of each side of the equation. We then divide both sides with the left side, which gives us a sum on the right side and a 100% on the left side. By applying these percentages to our IRR we can see how much each one has contributed¹⁰².

Value Creation - Year 3

	Factor	of Total	of IRR
Leverage effect	1,127	61%	13%
Revenue effect	1,091	44%	10%
Margin effect	1,021	11%	2%
Multiple effect	0,969	-16%	-3%
<hr/>			
Total Capital Gain effect	1,217	100%	21,7%

Figure 4.19 – Alternative Display of LBO Value Creation

¹⁰² "Value Creation in Leveraged Buyouts" – Loos, p.67

5 Value Creation for Strategic Buyers

In this chapter the main ways in which strategic buyers create value through acquisitions will be described. Common operative and financial synergies will be discussed as well as a few doubtful sources of synergy. Finally an approach to valuing synergy is described. By finding ways to create value or improve the target financials, such as future margins or growth, variables can be altered in the valuation models.

5.1 Potential Sources of Synergy

Synergy is the additional value created by combining two firms. It is one of the most widely stated reasons for a company to acquire or merge with another company. Synergy is the reason why a company might be more worth to a strategic buyer compared to a financial buyer. The potential sources of synergy can be divided into operating synergies and financial synergies.

5.1.1 Operating Synergies

Operating synergies allow firms to increase growth and/or to increase operating income from existing assets. The synergies are described in figure 5.1¹⁰³.

Operating Synergy	Description
Economies of scale	Economies of scale occur when an increase in units produced decreases the average cost per unit. Economies of scale may not only occur in production, but in other functions as well. For example, the cost of a TV-add stays the same even if the number of units sold doubles. This synergy is most likely to arise when a firm in the same business is acquired (horizontal acquisition)
Greater pricing power	Gaining a higher market share and reducing competition should result in greater pricing power, which in turn should result in higher margins. This synergy is most likely to occur if a company in the same business is acquired and if the market is consolidated. A consolidated market is dominated by a few large players which can create an oligopoly with pricing power
Combination of different functional strengths	This synergy can occur even if the company acquired is not in the same business, since functional strengths can often be transferred across businesses. A firm with a good product line might, for example, benefit from acquiring a firm with strong marketing skills
Higher growth in new or existing markets	Higher growth in new or existing markets may occur when the two firms utilize each other's distribution network (cross selling) or brand names. Even if the two companies are not in the same business, this synergy could arise. A car manufacturer might for example acquire a snow chain manufacturer and sell the snow chains under its own brand in its auto dealerships and service stations

Figure 5.1 – Operating Synergies

¹⁰³ “The Value of Synergy” – Damodaran, p.4

5.1.2 Financial Synergies

Financial synergies help firms to decrease their cost of capital and/or generate higher cash flows. The synergies are described in figure 5.2¹⁰⁴.

Financial Synergy	Description
Combining access to capital with investment opportunities	This synergy could arise when an established firm acquires a firm in an emerging market. The increase in value comes from the projects that can be taken with the excess cash that otherwise would not have been taken
Debt capacity	Combining two firms might lead to more stable and predictable earnings and cash flows. In turn, this would lead to higher debt capacity and, hence, a lower cost of capital
Tax benefits	A profitable firm might acquire a firm that is losing money and use its losses to shelter income. Alternatively, a firm might be able to write up the target company's assets in an acquisition and then be able to increase the depreciation charges to save taxes
Diversification	RJR Renolds acquired National Biscuit in order to diversify itself away from the tobacco industry, which was not considered to have a bright future. This is a very controversial form of synergy since investors are normally able to diversify at a far lower cost. For private or closely held companies there might, however, be potential benefits

Figure 5.2 – Financial Synergies

5.2 Doubtful Sources of Synergy

Some doubtful sources of synergy are often stated when strategic buyers motivate their acquisitions.

5.2.1 Accretive Acquisitions

Strategic buyers often focus on whether an acquisition is accretive or dilutive¹⁰⁵. An accretive acquisition is one where the target is acquired at a lower multiple than the one the acquirer is traded on. The rationale behind this synergy can be described in a simple example. If a firm that trades on an EV/EBITDA multiple of 10 acquires a company for 8 times its EBITDA, the target will be valued 25% higher in the combined entity provided that the combined entity continues to trade at 10 times EBITDA. The acquisition has hence added value to the acquirer's shareholders. Studies¹ have shown that in the short term this scenario often comes true. But, the target might have been sold at a lower multiple because it had weaker fundamentals. When generalizing over accretive acquisitions we must assume that the target was acquired at a fair price, just as we did with the synergies described above. The reason why the target was sold at 8 times EBITDA might have been that the expected growth was lower than that of the acquirer. This will bring down the growth rate of the acquirer and eventually lower its multiple. Hence, the synergy disappears¹⁰⁶.

¹⁰⁴ "The Value of Synergy" – Damodaran, p.5

¹⁰⁵ Otto Hermansson, Danske Bank

¹⁰⁶ "The Value of Synergy" – Damodaran, p.29

5.2.2 Quick Growth

Another doubtful acquisition strategy is one undertaken by many slow growing firms. With low prospects of organic growth these firms try to raise their growth rate by acquiring high growth firms. Following such an acquisition the expected earnings growth of the combined entity will be higher than that of the acquirer. Provided that a fair price was paid for the target this new growth rate will not lead to the combined entity being more worth than the two companies as standalones¹⁰⁷.

5.3 Valuing Synergy

In order to value synergy we need to pin down the effects on the combined entity's financials and when those effects will kick in. If, for example, two companies are combined and management count on being able to reduce costs with \$100m a year by closing one of the head quarters, the cost of closing a head quarter and the time frame in which those cost reductions will occur must be estimated. Having done this we are ready to estimate the value of this synergy. The valuation is performed in two steps, commencing with the estimation of stand-alone values for each firm. Next we will estimate the value for the combined entity including the synergy. The value of the synergy is then the value of the combined entity minus the stand alone values¹⁰⁸.

In reality it is hard to realize all of the synergies predicted. In a study conducted by McKinsey & Company¹⁰⁹ 37% of the companies were able to deliver 100% of the cost saving synergies promised and only 17% were able to deliver 100% of the growth synergies promised. 62% were, however, able to deliver more than 90% of the cost savings and 34% were able to deliver more than 90% of the growth synergy. With this in mind one might argue for a discount on the value of synergy.

¹⁰⁷ "The Value of Synergy" – Damodaran, p.30

¹⁰⁸ "The Value of Synergy" – Damodaran, p.5-28

¹⁰⁹ "Valuation" – Koller, Goedhart & Wessels (McKinsey & Company), p.441

6 Value Creation for Financial Buyers

In this chapter the main ways in which buyout firms create value will be described. A framework developed by Berg (Mckinsey & Company) & Gottschalg (INSEAD)¹¹⁰ will be used to get an overview over the different value creating levers. Then each measure is discussed along with the variables in the valuation models it can improve.

6.1 A Framework for Value Creation in Leveraged Buyouts

While strategic buyers integrate their targets into existing entities and often motivate their acquisitions by potential synergies, buyout funds seek to increase the value of the target as a stand alone. This is done by a number of actions which can be categorized into financial arbitrage, financial engineering, increasing operational effectiveness, increasing strategic distinctiveness, reducing of agency cost and parenting effect. To see when, why and how these measures can be performed they are put into the framework in figure 6.1¹¹¹ below.

Levers	Dimensions of value generation*							
	① Phases			② Causes			③ Sources	
	Acqui- sition	Hold- ing	Divest- ment	Value capturing	Value creation		Intrinsic	Extrinsic
					Primary	Secondary		
A. Financial arbitrage								
A-1.	x		x	x				x
A-2.	x		x	x				x
A-3.	x		x	x				x
A-4.	x			x				x
A-5.	x	x	x	x				x
B. Financial engineering								
B-1.	x	x			x			x
B-2.	x	x			x			x
C. Increasing operational effectiveness								
C-1.	(x)	x			x		x	(x)
C-2.	(x)	x			x		x	(x)
C-3.	(x)	x			x		x	x
D. Increasing strategic distinctiveness								
D-1.	(x)	x			x		(x)	x
D-2.	(x)	x			x		x	x
E. Reducing of agency cost								
E-1.	x	(x)				x	x	
E-2.	x	x				x		x
E-3.		x				x		x
F. Parenting effect								
F-1.	x	x				x	(x)	x
F-2.	x	x	x			x		x

Figure 6.1 – Frame Work for Value Creation

The first of the three dimensions in the framework is the phase in which the value creation occurs. The buyout investment can be divided into three distinct phases, namely the acquisition phase, the holding phase and the divestment phase. The acquisition phase comprises due diligence, negotiations and business plan building. Decisions on degree of financial leverage and

¹¹⁰ “Understanding Value Generation in Buyouts” – Berg (Mckinsey & Company) & Gottschalg (INSEAD)

¹¹¹ “Understanding Value Generation in Buyouts” – Berg (Mckinsey & Company) & Gottschalg (INSEAD), p.35

management incentive systems are taken. During the holding phase the business plan is implemented and operational as well as organizational changes take place. The divestment phase includes evaluations of divestment options (trade sale, IPO, etc.), negotiations and the realization of returns.

The second of the three dimensions is the cause of the value creation. The equity value of a company can be described by the following formula¹¹².

$$\text{Equity Value} = \text{Valuation Multiple} * \text{Revenues} * \text{Margin} - \text{Net Debt}$$

The value generation can be divided into two categories, namely value capturing and value creating. Value capturing refers to increases in the equity value that are due to increases in the valuation multiple (multiple expansion). The multiple can differ between the acquisition and the divestment transactions if the company is over or under valued at any of those times. It can also differ if the multiples of comparable companies have increased or decreased or if the fundamentals (growth rate, CapEx, risk, etc) have changed. Value creation refers to direct changes in the financial performance of the target company's operations. They include increased revenues, margins or reduction of capital requirements and affects revenues margins or net debt in the formula. Reduced cost of capital due to better financing terms or optimization of the capital structure is also a type of value creation. The value creating measures can be subdivided into primary and secondary factors. The primary factors directly influence the bottom line and the secondary factors influence the primary factors.

The third dimension is the source of the value generation. If the value generation stems from the external equity investor (the buyout fund) it is called extrinsic value generation and if it comes from the target company it is called intrinsic value generation. Naturally, many value creating measures comes from collaboration between the two.

We are now ready to look at the most common measures of value creation in detail.

6.2 Financial Arbitrage

Financial arbitrage is the ability to generate returns from differences in valuation between the acquisition and the divestment. It does not depend on the financial performance of the underlying business. There are five different types of financial arbitrage.

6.2.1 Financial Arbitrage based on Changes in Market Value

The valuation of the target is subject to changes in market valuation of publicly traded companies in the same industry. Investors may also be able to generate returns on arbitrage in private markets or between private and public markets. Buyout firms may be able to more accurately predict the evolution of the public market valuation multiples compared to its counterparts. This is clearly a case of value capturing since it does not change the underlying financials. It is extrinsic in its nature since it comes from the buyout funds expertise (or luck) and it is sometimes referred to as "multiple riding".

6.2.2 Financial Arbitrage based on Private Information about the Portfolio Company

Especially in management buyouts (MBOs) it has been argued that inside information constitute an important value driver. In such transactions management acquires a substantial part of the

¹¹² "Understanding Value Generation in Buyouts" – Berg (Mckinsey & Company) & Gottschalg (INSEAD), p.7

equity and it has been suggested that management might take advantage of private information on the future development of the company. The acquisition price could also be kept down by manipulating reported or forecasted earnings, cutting dividends, increasing long term investments or by withholding information or declining to meet with security analysts. However, with the increase in buyout activity and the increased awareness of all parties to day this is less likely to occur. Private information could also be used to create gains in the divestment phase. The seller might have information that the buyer does not have, which would have impacted the buyers expectations of the future financial performance of the underlying company. This type of financial arbitrage is value capturing and it could be argued whether it is intrinsic or extrinsic, but since management acts as an equity investor we choose to call it extrinsic.

6.2.3 Financial Arbitrage through Superior Market Information

Buyout funds may also have superior market information. They often have extensive experience and network in the financial community. Together with a wide range of companies and managers this allows them to build significant industry expertise, which might give them a competitive advantage compared to an average market participant. Here we have another value capturing and extrinsic value generator, which may occur during the acquisition or divestment phase.

6.2.4 Financial Arbitrage through Superior Deal Making Capabilities

Buyout firms generally possess extensive experience in mergers and acquisitions, which may give them the capability to manage the negotiation and acquisition process in a superior way. They may also possess the ability to identify superior potential targets and to limit competition from other acquirers. Many buyout firms conduct regular screenings of the market for buyout candidates and are part of networks that allow privileged access to transactions. Their deal making capabilities can also be used to get a better price in the divestment phase. Networks can be used to find more suitable buyers and their knowledge can be used to maximize returns from an IPO. This type of financial arbitrage is value capturing and extrinsic.

6.2.5 Financial Arbitrage through an Optimization of Corporate Scope

The sum of the value of each business in a company is sometimes higher than the value of the company as a whole. Buyout funds are sometimes able to identify such companies, sell off the undervalued parts and develop the core (“asset stripping”). This is a value capturing and extrinsic measure that can take place during all three phases.

6.3 Financial Engineering

The optimization of capital structure and the reduction of corporate tax is called financial engineering and constitutes one of the most frequently used measures of value generation in buyouts¹¹³.

6.3.1 Optimization of Capital Structure

In the section on the discounted cash flow model we described the weighted average cost of capital (WACC). The capital structure of a company can be tuned to minimize the WACC. Since the cost of equity always exceeds the cost of debt, an all equity capital structure can be made more efficient by adding debt. As the leverage goes up the cost of debt goes up as well (see

¹¹³ “Understanding Value Generation in Buyouts” – Berg (Mckinsey & Company) & Gottschalg (INSEAD), p.17

section on cost of debt) and so does the cost of equity (see section on CAPM and beta calculation). At any given point in time there is an optimal mix between debt and equity that minimizes the WACC and maximizes the value of the firm. Figure 6.2 shows an illustrative example of this phenomenon¹¹⁴.

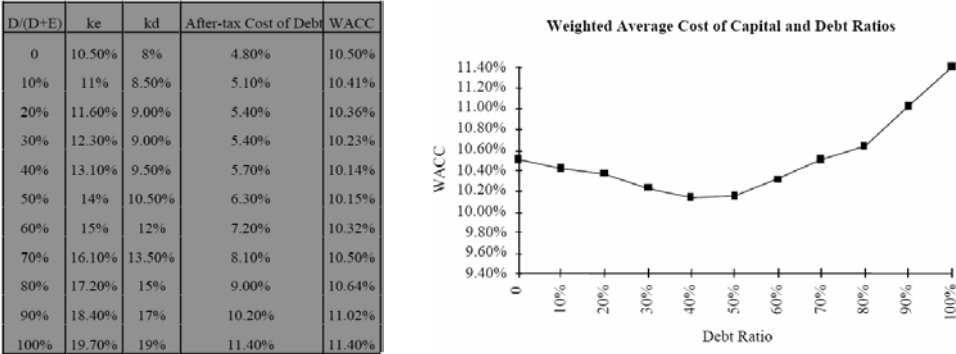


Figure 6.1 – Indicative Leverage Effect on Cost of Capital

Buyout firms often have very good relationships with institutional lenders and they help the portfolio company negotiate advantageous bank loans, bond underwritings etc. Through this they are able to lower the k_d of debt and displace the optimal capital structure towards more debt. Higher debt may also give rise to operational efficiencies through added discipline (will be discussed in the section on increasing operational effectiveness), which would further displace the optimal capital structure towards more debt.

However, most buyout firms leverages their portfolio companies way beyond this optimal point in order to boast their returns (IRR). For example, a debt free firm is bought for \$100m and it generates a profit of \$10m a year. This gives the equity investor 10% in annual returns. If the same firm was financed by \$50m in debt with a 5% interest rate and \$50m in equity, this would give the equity investors $\$10m - (\$50m * 0.05) = \$7.5m$ or 15% in return on their investment. If the company is sold for \$110m the all equity investors would have gained 10% on their investment whereas the debt and equity investors would have gained 20% on their investment. The fact that the capital structure is normally not maintained during the holding phase, but changed towards more equity through debt repayments, suggests that buyout firms are aware that they are not operating under optimal capital structure.

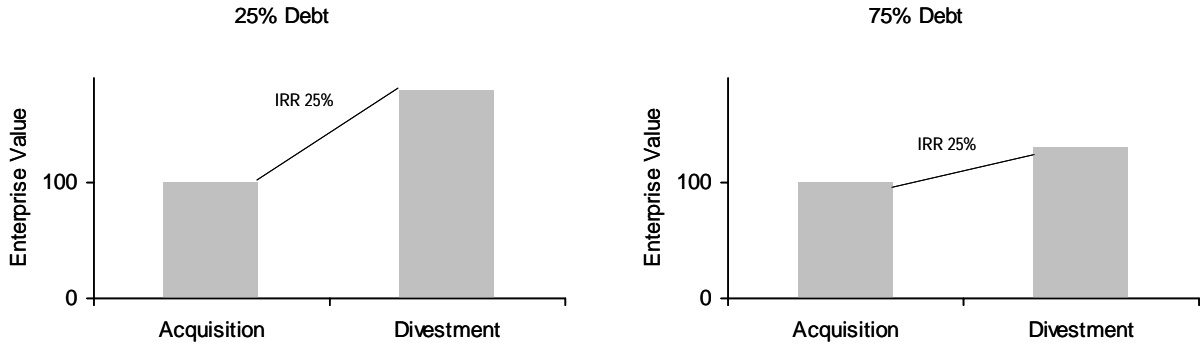


Figure 6.2 – Indicative Leverage Effect on IRR

As we see in figure 6.2¹¹⁵ above, the cost of equity goes up as the leverage goes up. The cost of equity reflects the annual return an investor in this equity would expect and hence the level of

¹¹⁴ “Applied Corporate Finance” – Damodaran, p.346-347
¹¹⁵ ”Commercial Due Diligence” – Howson, p.7

risk to this investment. The exceptional returns enjoyed by buyout firms (IRR of 20-30% or more) can, at least partially, be explained by this risk increase. However, buyout funds argue that they can predict future interest coverage and investment needs more precisely and that the risk increase is not as important as some may suggest.

The optimization of capital structure directly affects cash flows and is hence a case of value creation. It is extrinsic in its nature and especially occurs during the acquisition phase.

6.3.2 Reducing Corporate Tax

Since interest expenses are usually deductible, the increased leverage means that lower tax payments. Buyout funds might also try to write up book value of assets to increase depreciation and save corporate tax (as mentioned in the section on synergies). These tax savings affect cash flows and are hence value creating. They are also extrinsic in their nature.

6.4 Increasing Operational Effectiveness

Increasing operational effectiveness aims to put the company's resources to better use and to improve margins and cash flow. The measures can be divided into cost cutting and margin improvements, reducing capital requirement and removal of managerial inefficiencies.

6.4.1 Cost Cutting and Margin Improvements

Following a leveraged buyout, it is common that management immediately tightens control on corporate spending and initiates a series of cost reduction programs. Research and development expenses may be cut overheads are often reduced through a leaner management structure. These measures are implemented during the holding phase, they directly affect cash flows, which make them value creating and they are predominately intrinsic.

6.4.2 Reducing Capital Requirements

In a buyout, equity sponsors and management try to make more efficient use of corporate assets in order to reduce capital requirements. Improved working capital management is a common way to achieve this. Inventories are reduced and a tougher control on accounts receivable is introduced to bring these down as well. Negotiations may also be initialized with suppliers to extend the payment period, which increases accounts payable. Another way of reducing capital intensity that often follows a leveraged buyout is much stricter control on capital expenditures. Unsound investment programs are cut and unnecessary or underutilized assets are divested. While all measures mentioned lead to additional cash flows to repay debt they may severely damage the company if over utilized. Customer and supplier relationships may be severely damaged and the firm's ability to compete may be undermined by underinvestment. These measures are primarily intrinsic, they take place during the holding period and they are value creating.

6.4.3 Removing Managerial Inefficiencies

The reason why a firm is underperforming might be that the management team is not up for the task. A buyout fund may be able to identify and acquire such a company, change management to improve performance and sell the company with a profit. Such actions are value creating and both extrinsic and intrinsic with respect to the new management team.

6.5 Increasing Strategic Distinctiveness

Following buyouts, strategic reviews are often carried out. They focus on questions such as which products and markets to be in as well as pricing, quality, customer service, customer mix and distribution. Such reviews often lead to changes in the portfolio of corporate assets. Two common approaches are the refocusing on core activities and the buy and build strategy¹¹⁶.

6.5.1 Corporate Refocusing

To refocus a company's operations towards its core business is a measure often taken following a buyout. Diversification is decreased and peripheral activities divested to third parties with competitive advantage in the field. Resources are concentrated on projects that aim to enhance or maintain competitive advantage in the company's core business. These measures usually take place during the holding period. They are value creating and predominately extrinsic.

6.5.2 Buy and Build Strategy

Another strategy pursued by buyout firms is to buy a company in a fragmented market and use it as a base to lead the consolidation of that market. By providing cash and know how to the company and the help it to undertake a series of acquisitions an industry leader. With a strong market position established, economies of scale pricing power etc. follows. This directly affects margins and cash flows and makes the measures value creating. Although often planned in the acquisition phase, the strategy is carried out in the holding period and is both intrinsic and extrinsic in its nature.

6.6 Reducing Agency Cost

Agency costs arise because of diverging goals between the company's owners and its professional managers. When the owners (the principals) engage another person (the agent) to perform some services (manage the company) on their behalf, they also delegate decision making authority to this person. However, it might not always be in the agent's best interest to act according to the principal's best interest. An example would be the treatment of excessive cash in the company. While management might not have any investment opportunities with adequate expected returns, there might not be any real incentives to give the cash back to the owners as dividends. Giving the cash back to the owners would provide the owners with the opportunity to invest it in other projects with higher expected returns, but would leave management less flexibility and might force a stricter regime on corporate spending. There are several governance mechanisms that can reduce the agency conflict, including improved monitoring and reduction of the agent's discretionary decision space, managerial equity ownership and other incentive alignment devices. These measures are costly for the principal and the sum of these costs and the residual loss from divergent behavior has been termed agency cost¹¹⁷. Reducing agency costs does not directly affect the cash flows of a company, but constitutes a secondary lever of value creation.

¹¹⁶ "Understanding Value Generation in Buyouts" – Berg (McKinsey & Company) & Gottschalg (INSEAD), p.23

¹¹⁷ "Value Creation in Leveraged Buyouts" – Loos, p.19

6.6.1 Reducing Agency Cost of Free Cash Flow

The increased debt levels in buyouts severely limit managerial discretion over corporate expenditure. Managers are forced to use cash flow to service debt in stead of ineffectively spending it within the firm. Bankruptcy is very costly for management since they lose both their jobs and their reputation. Consequently, the increased default risk that comes with high leverage creates an incentive for managers to work harder and be more cost efficient.

6.6.2 Improving Incentive Alignment

Management are usually encouraged (if not forced) to buy important equity stakes in a buyout. This aligns management incentives with owner incentives and probably constitutes the most crucial measure in reducing agency costs. Being a co-owner might also add extra motivation to managers and help enhance performance. One of the downsides of this measure is that performance might deteriorate if management becomes too risk averse. Following a buyout fixed pay is decreased while variable pay is increased to a large number of employees. With performance based pay motivation increases. Employee stock ownership programs are also common in buyouts.

6.6.3 Improving, Monitoring and Controlling

Firms held by buyout funds have few and very active investors as their owners. Compared to a publicly traded company these investors are much more likely to exercise a closer monitoring and control over the company. This measure reduces the managements discretionary decision space.

6.7 Parenting Effect

Just as a company might benefit from being a part of a conglomerate, it might also benefit from being a part of a buyout funds portfolio. Value creation in portfolio companies is supported in several ways.

6.7.1 Restoring Entrepreneurial Spirit

Companies that constitutes non-core assets of larger entities or have been held back for other reasons may benefit from the entrepreneurial spirit induced by a buyout. With the company acting on a stand-alone basis managers feel that their performance is of the highest importance and that they get the chance to realize their ideas in order to let the company live up to its full potential. Management equity stakes and employee stock ownership programs further increase the infusion of this spirit in the organization.

6.7.2 Advising and Enabling

Investment manager in buyout associations are usually much closer to management than the board of directors in traditional organizations. They stay clear of day-to-day operations but are able to advice and discuss with management through direct channels. The wide network of buyout associations can be used to the portfolio company's advantage. The creation of so called "stretch budgets" by buyout investors also raise the minimum acceptable performance by management and force them to work harder.

7 Summary & Reflections

This chapter provides a summary of the main valuation and value creation techniques used by strategic and financial buyers. The author's reflections on the differences between strategic and financial buyers, with respect to valuation and value creation, follow.

7.1 Summary

The purpose of this study has been to describe valuation and value creation techniques used by strategic and financial buyers. Strategic buyers acquire companies as a way to reach their long term strategic goals. Through acquisitions they can improve their market positions, their competitive advantage and/or their growth. These buyers are normally companies in the same business and the targets are integrated in the acquiring company. Financial buyers acquire companies for purely financial reasons. They do not integrate the acquired companies into any acquiring entity and their investments have a time limit. These buyers are normally buyout funds which manage capital for pension funds among others. The goal is to make a profit either by selling the company at a higher price compared to when it was acquired or by collecting dividends during the holding period. Although their investment horizons are short term (3 to 5 years) compared to investment horizons among strategic buyers, the actions they provoke within the acquired companies, may very well be long term.

7.1.1 Valuation methods

In the section on valuation techniques, we described the three most common models for acquisition valuation used by strategic and financial buyers. The discounted cash flow analysis and the relative valuation are traditionally used by strategic buyers, whereas the leveraged buyout analysis is special for the financial buyers (buyout funds), since they are the ones performing highly leveraged buyouts. A company's intrinsic value depends on its future expected cash flows and the risk associated with those cash flows. A company's relative value is derived by looking at how those expected cash flows are presently valued for other comparable firms.

The DCF analysis is the most thorough model. Basically, we forecast all future cash flows (FCF) to the investors in a company (debt and equity) and then discount them to get a net present value of the company. To estimate future cash flows we introduced ways to predict future growth, margins, reinvestment rates, working capital requirement and depreciation. Corporate tax was also briefly discussed. The company is expected to have a period of high growth after which it enter a state of stable growth, allowing for a terminal value to be calculated. As discount rate we use the weighted average cost of capital (WACC) of the company since it blends the required rates of return to debt and equity based on market values. In order to find the WACC we described ways of estimation cost of debt and used the capital asset pricing model (CAPM) to estimate the cost of equity. The CAPM is a linear model which adds a market premium to a risk free rate. The market premium depends on a factor called beta, which reflects the riskiness of the company compared to the market as a whole. This section ended with an illustrative example to make it easier for the reader to grasp the concepts.

Relative valuation is probably the most widely used valuation technique among strategic buyers. It is easy to explain and does not include as many explicit assumptions as the discounted cash flow analysis. A weakness is, however that it provides a relative value as opposed to the intrinsic value derived in the DCF analysis. In the section on relative valuation we described the five multiples most commonly used in acquisition valuation. Those multiples were Sales/Enterprise

Value, EBITDA/Enterprise Value, EBIT/Enterprise Value, Price-Earnings and Price-to-Book Value. By comparing the company to be valued with a peer group we were able to derive a value. We described ways to find a peer group, how to standardize the multiples and the fundamentals behind each multiple.

The leveraged buyout analysis is special to the financial buyers (buyout funds) because they are the ones who perform highly leveraged buyouts. It is basically an assessment of how much a buyout fund would be willing to pay for a company based on three main assumptions. These assumptions were the minimum expected annual return (IRR), the debt capacity and the exit multiple. The minimum expected annual return is normally around 20% (we used 20% at Calyon), which was confirmed by Otto Hermansson at Danske Bank. The debt capacity is usually expressed as a multiple of EBITDA and is determined on a case by case basis. However, we presented a formula that can be used to estimate it. The exit multiple is normally determined by relative valuation. The future cash flows are estimated in the same way as in the discounted cash flow analysis and the length of the buyout period is determined (usually 3 to 5 years). A maximum price that a buyout fund would be willing to pay is then gauged in.

7.1.2 Value creation methods

In chapters 5 and 6 the main ways in which strategic and financial buyers create value through acquisitions were described. The ways in which strategic buyers create value can be divided into operating synergies and financial synergies, where operating synergies increase cash flows from operations and financial synergies decreases cost of capital, provides better investment opportunities or improves non-operating cash flows. The ways in which financial buyers create value is described through a framework developed by Berg (McKinsey & Company) & Gottschalg (INSEAD). They can be divided into financial arbitrage, financial engineering, increasing operational effectiveness, increasing strategic distinctiveness, reducing agency costs and parenting effects.

Operating synergies can be divided into four different types. Namely, economies of scale, greater pricing power, combination of different functional strengths and higher growth in new or existing markets. Economies of scale occur when an increase in units produced decreases the average cost per unit. Greater pricing power can be gained through an increase in market share or a reduction of competition. A combination of functional skills can, for example, occur when a firm with a good product line acquires a firm with great marketing skills. Higher growth in new or existing markets can be achieved if two firms utilize each other's distribution networks.

Financial synergies can also be divided into four categories. Namely, combining access to capital with investment opportunities, debt capacity, tax benefits and diversification. A combination of access to capital with investment opportunity could arise when an established firm acquires a firm in an emerging market. Debt capacity could increase if the combination of two firms leads to more stable and predictable cash flows. Tax benefits could arise if a firm that loses money is acquired and those losses can be used to shelter the acquirer's income. Finally, an acquirer could lower its risk by diversifying itself through the acquisition of a company in another business.

Financial arbitrage is the ability to generate returns from differences in valuation between the acquisition and the divestment. This can be achieved through changes in valuation of the market, superior information, superior deal making capabilities or optimization of corporate scope.

Financial engineering is the optimization of capital structure and the reduction of corporate tax. Since the cost of equity is always greater than the cost of debt, the weighted average cost of capital (WACC) should be lower if a firm is financed by debt to a larger extent. However, both the cost of equity and the cost of debt increase as the leverage goes up. This makes the WACC as

a function of leverage a u-shaped curve and an optimal mixture of debt and equity can be found. By taking on huge amounts of debt, taxes are reduced in leveraged buyouts.

Operational effectiveness could be increased by cost cutting, reducing capital requirements or by removing managerial inefficiencies. Following a buyout the firm is highly leveraged and it is common that the management tightens corporate spending. Inventories may be reduced and extended payment periods to suppliers negotiated to decrease working capital. If management is perceived to be weak, it might be replaced.

Strategic distinctiveness might be increased through corporate refocusing or buy and build strategy. Following buyouts, extensive strategic reviews are often carried out. They focus on questions such as which products and markets to be in as well as pricing, quality, customer service, customer mix and distribution. Such reviews often lead to changes in the portfolio of corporate assets.

Agency costs are normally reduced in buyouts. Agency costs arise because of diverging goals between a company's owners and its professional management. Since managers are usually encouraged (if not forced) to buy important equity stakes in buyouts, their incentives are aligned with the owners'.

A company in a buyout may experience a positive parenting effect. Just as a company might benefit from being a part of a conglomerate, it might also benefit from being a part of a buyout funds portfolio. Value creation in portfolio companies might be supported through advising and enabling as well as through the restoration of entrepreneurial spirit.

7.2 Reflections

In this section the differences between strategic and financial buyers, in terms of valuation and value creation, are considered.

7.2.1 Valuation Differences

To analyze the differences between our three valuation models we look at the effects of change in the underlying fundamentals. We ask ourselves what effect changes in interest rates, GDP growth, lending policies, volatility, market premium and tax rules would have on our models.

Change in Interest Rates

Increasing interest rates affect both cost of debt and cost of equity in our discounted cash flow model. Since leverage is quite low it is especially the change in cost of equity that raises the weighted average cost of capital and hence the discount rate. The value of the company decreases as the present value of its future cash flows goes down.

In the section on relative valuation we saw that a raise in cost of capital should theoretically result in a lower multiple. As interest rates go up, markets should react by trading on lower multiples and hence decrease the valuation on our company.

In our leveraged buyout model, raised interest rates increase the cost of borrowing and hence decrease cash flows. Lower cash flows negatively affect the internal rate of return of the buyout and hence lower the valuation of the company. With higher interest costs, coverage ratios go down and debt capacity decreases. Debt capacity was one of our three main assumptions and decreasing it leads to a lower valuation of the company. Raised interest rates normally lead to a slow-down in the economy, which might also encourage stricter lending policies among banks. The second of our main assumptions was the exit multiple. Since this multiple is normally derived from relative valuation it should decrease as well, lowering the value of the company.

One might also argue that the third main assumption, the IRR demanded by buyout funds, should increase with increased interest rates. However, the hurdle rate on private equity investments has been very slow to change with changing interest rates and it is likely that the competition for deals and the need to invest are of greater importance to the demanded IRR.

Change in GDP Growth

Lower growth of the economy might lead to lower growth forecasts for the company being valued. During the company's high growth period it might be able to grow at a high pace even though the economy is not. But in stable growth the company cannot grow faster than the economy. If the economy is expected to grow at a slower pace in the long term, the eternal growth rate must be lowered and the DCF valuation of the company goes down.

Lower growth should also negatively affect relative valuation and the market should react by trading on lower multiples.

As mentioned above, a company might be able to sustain high growth in the short term even though the growth of the economy is slowing down. This means that the cash flows during the holding period of an LBO might be unaffected. However, the LBO valuation of a company should still decrease since the exit multiple would experience a negative effect.

Change in Lending Policies

Stricter lending policy might be the result of regulatory changes or a harsher economic climate. It is likely to increase the spread between the risk free rate and the rate companies borrow at. It would hence increase cost of debt and have a negative effect on DCF as well as relative valuation of a company.

This effect would be greater on a highly leveraged company in an LBO. But the main concern in a prospective LBO would be decreased debt capacity. If banks demand a higher interest coverage buyout funds would not be able to indebt their targets as hard and valuation would decline.

Change in Volatility

An increase in volatility (risk) negatively affects our DCF valuation and should also drive multiples down. If volatility increases in a sector including a peer group for the company to be valued, our bottom-up beta would increase. This would give us a higher cost of capital and affect our DCF valuation negatively. Our LBO model is also negatively affected since the expected exit multiple should decrease.

Change in Market Premium

The market premium is normally measured over a long historical period and does not change rapidly. Should the expected future market premium increase, our cost of equity would increase as well. This would severely affect the DCF model with its high equity capital structure. Relative valuation would also be negatively affected as well as the LBO model through a lower expected exit multiple.

Change in Corporate Tax Rates or Tax Rules

Tax deduction on interest payments is important to buyout funds and a change in regulation for the worse would impede their borrowing capacity. One such change that has been discussed is to limit gearing in a company's capital structure. Simply put, interest expenses from a gearing over a certain level would not be tax deductible.

Raised corporate tax would have a negative effect on valuation in all three models, since cash flows would suffer.

7.2.2 Value Creation Differences

In determining what price to pay for a company, the acquirer's ability to create value in the transaction plays an important role. To analyze the differences between financial and strategic buyers with respect to synergies and other value creation we compare the aspects described in chapters 5 and 6.

Advantages Experienced by Strategic Buyers

The value creating synergies are normally only available to strategic buyers since they arise from the combination of two entities. However, financial buyers may be able to create similar advantages in some cases.

As we described the synergies a strategic buyer could enjoy, we divided them into operating and financial synergies. The operating synergies described are generally not available to financial buyers, whereas the financial synergies are more likely to be assimilated. Economies of scale, for example, is an operating synergy that can arise when a firm acquires a firm in the same business and is hence out of reach for most financial buyers. The same goes for greater pricing power. The combination of functional strengths is another operating synergy, where a good product line is combined with a good distribution network, for example. In this shape this synergy is seldom available to a financial buyer, but if we count the strategic and financing skills fund managers bring to the table as functional strengths, it is open to buyout funds as well. Finally, higher growth in new or existing markets aims at giving a company a foothold from which to expand in a new market or a similar growth advantage in an existing market. It is normally not available to a financial acquirer. The exception, which applies to the operating synergies mentioned above, is when a buyout firm makes acquisitions as part of a buy and build strategy for one of its portfolio companies. In this case, however, it acts as a strategic buyer and should not be seen as a financial buyer.

Financial synergies does not constitute as much of an advantage to strategic buyers as the operating synergies, when compared to a financial buyer. Financial buyers usually have very good access to capital and can hence assimilate the benefits created by combining access to capital with investment opportunities. Strategic buyers are also normally able to increase debt capacity, although not in the same way. The stability induced by combining two cyclical firms with cycles out of phase is, however, hard to assimilate by a financial buyer. Stability means less risk and a lower cost of capital. Strategic buyers may also create a tax benefit by acquiring a company that is losing money and use its losses to shelter income. Although financial buyers enjoy tax benefits from their high leverage this type of tax benefit would generally not be interesting for them. Financial buyers normally look for stable firms with solid cash flows to service the debt, which rules out firms in the red.

Advantages Experienced by Financial Buyers

Some of the value creating levers described in chapter 6 can be enjoyed by strategic buyers as well, whereas others are very hard to assimilate. We commence by discussing the latter ones.

Financial buyers normally reduce agency costs very effectively. As discussed in chapter 6 this is usually accomplished by granting management an important equity stake. Strategic buyers are typically publicly traded firms and this makes it very hard for them to offer the same terms to management. Although stock option and employee share holder plans exist in many companies, their effect is usually limited compared to firms in leveraged buyouts. It is politically challenging

to offer substantial option grants to management and when they turn out well management is often heavily criticized in media and by unions.

The financial engineering performed by buyout firms is also fairly hard to copy for most strategic buyers. Most asset management institutions have restrictions on investments in non investment grade firms. Should a publicly traded firm take on the same amount of debt as a firm in a buyout, it might lose its investor base following the down grading of its credit rating. Buyout funds also enjoy very good relations lenders in many cases and are hence able to reduce cost of debt and increase borrowing capacity.

Financial arbitrage is similar to the accretive acquisitions pursued by strategic buyers and should generally be equally available to strategic and financial buyers. The exception is when a financial buyer has access to superior information, which might be the case if the fund is a part of a network with privileged transaction information. It is also reasonable to assume that financial buyers possess superior deal making capabilities in many cases. This gives them a competitive advantage.

Although it might sometimes be true, it is hard to argue that fund managers in general are more competent than management and boards of other companies. As a result, increasing operational and strategic distinctiveness should be equally possible for strategic and financial buyers.

7.2.3 Final Reflections

In section 7.2.1 we examined how a change in several parameters affected our valuation models. We saw that the changes affected all models in the same direction. However, the magnitude of the change in valuation may differ between the models. It is hence very likely that a given set of parameters will lead to differences in valuation between the models. Low interest rates and loose lending policies from banks would, for example, increase debt capacity for a financial acquirer, which might lead to a higher valuation in the LBO model compared to DCF and relative valuation. In our illustrative example, the three valuation models gave us the value ranges in figure 7.1. The centers of the DCF and LBO value ranges are about the same in this case, whereas the relative valuation gives us a slightly lower value.

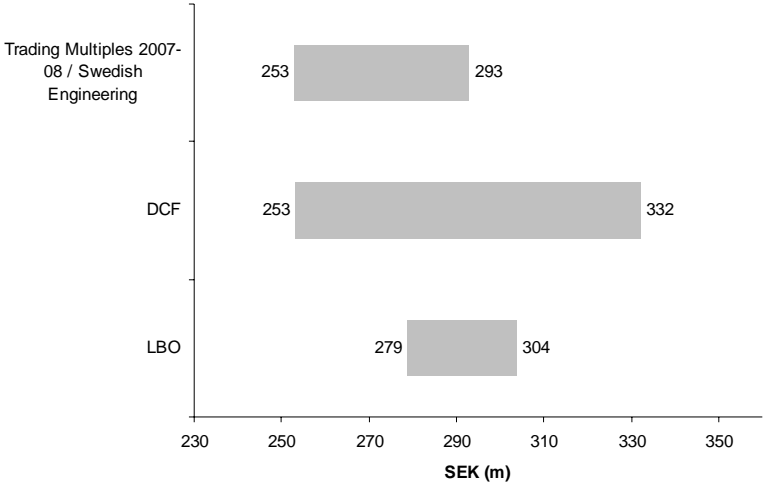


Figure 7.1 – Indicative Value Ranges for Marco AB

The potential for value creation in a transaction, discussed in section 7.2.2, must be determined on a case by case basis. Clearly there can be cases when a company is worth more to a strategic buyer than a financial buyer and vice-versa.

Even though a company can be worth more to one of the buyer categories in some cases it is hard to imagine that companies would be more worth to one particular buyer group in general. In spite of this, I have experienced a feeling from both colleagues and strategic buyers of that it is very hard to out bid financial buyers without very strong synergies. This feeling was confirmed by Per Hillström (Head of Nordic M&A at Morgan Stanley) in an article in Dagens Industri¹¹⁸. If this is true it means that strategic buyers undervalue targets or that financial buyers overvalue targets. The fact that great companies such as Assa Abloy or Securitas have been built largely on acquisitions would suggest that their targets might have been undervalued. This undervaluation might be the result of a lack in competition. When the strategic buyers started to compete for the acquisitions, prices went up and margins decreased for strategic buyers. There are also indicators of overvaluation among financial buyers. In recent years these buyers have thrived in a very strong market. The rise of the markets has enabled them to sell their investments at a higher multiple than they acquired them for. Their good performance has made it easy for them to attract enormous amounts of capital that they can invest and collect fees on. Together with more and more relaxed lending policies this has made financial buyers compete harder for deals and has thereby driven-up prices further. What we see today might very well be a bubble and if this is true a downturn in the economy is likely to have devastating effects on many financial buyers as well as the companies they own. It is very hard for any one person to say whether strategic or financial buyers are right in their valuations. One thing is for sure though. Time will tell.

¹¹⁸ "Tvärstopp i Europa för bolagsaffärer" – March 28, 2007, Dagens Industri

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