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DISCOUNTED CASH-FLOW AND ECONOMIC VALUE ADDED METHODS IN CORPORATE VALUATION

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ABSTRACT

This thesis introduces and compares the two most popular valuation methods in corporate finance: DCF and EVA by applying both of these into the Case Company.

It employs the deductive approach and quantitative research method to analyze the Case Company financial statement. While the theoretical part includes only the secondary type of sources such as published books, journals, and articles, primary type sources will be included in the empirical part.

In order to achieve the goal, in the theoretical part, the author has focused on the valuation principles. After that, two chosen valuation methods which are DCF and EVA are described more.

The Case Company can use this thesis to analyze their own financial situation as well as to attract new investors. It can also add more advantages in acquisition or merging negotiation. All relevant data is exacted from the Case Company's financial report concerning the year 2011 and 2012 to forecast the company financial situation in the near future. After the calculating process, the value of the company is 33.225.072€ ± 10%. That is the average result of the two valuation methods. It is concluded with the comparison between the two valuation methods. The EVA valuation method seems to have more advantages since it is based on a simple concept, less estimating numbers and simpler to implement.

Keyword: DCF, EVA®, corporate valuation, corporate finance, and valuation approaches

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GLOSSARY

APT	Arbitrage pricing theory
CAPEX	Capital expenditure
CAPM	Capital assets pricing model
CFO	Chief financial officer
DCF	Discounted cash flow valuation
EBIT	Earnings before interests and taxes
EBITDA	Earnings before interests, taxes, depreciation and amortization
EMH	Efficient market hypothesis
EVA®	Economic value added
FCFF	Free cash flow to firm
LBO	Leverage buyout
MBO	Management buyout
NOPAT	Net operating profit after taxes
NPV	Net present value
NWC	Net working capital
ROA	Return on assets
ROE	Return on equity
ROIC	Return on invested capital
SOTP	Sum of the part
SMEs	Small and medium enterprises

1 INTRODUCTION

1.1 Research background

Financial management helps a company to face two broad financial questions: What investments should the firm make? How should it pay for these investments? In a simple way, it concerns spending money wisely in order to raise it as much as possible. (Meyers 2003, 3)

At the beginning of the 2010s, the EU has faced recession. Many companies have become insolvent and been deep in debt As a result, the role of financial management is more important than ever. In order to manage the money for the whole organization, understanding how to invest, and when to invest, turns to be the biggest question. Lack of financial management skills may lead to losses and bankruptcy of the company.

Although suffering from the European economic crisis, Finland has tried not only to save its own economic situation but also to help other countries in the EU. It had applied smart policy such as negotiating efficiently for collateral, government saving package and suitable taxation. As the Bank of Finland stated in Finnish financial stability report, Finland's financial system has operated reliably in a worldwide challenging situation report (Heikkinen, et al. 2012, 3-5). This stability was even improved in the early months of 2012 and the sovereign debt crisis entered a calmer phase in the European area. Moreover, although 2012 was a bad economic year for the EU, Finnish government bonds are still rated as AAA with stable outlook by Moody's while Germany, the Netherlands and Luxembourg are rated as negative outlook (Carlson & Oosterveld 2012, 1). That gives a reason for the author to choose Finland as the environment where this thesis will take place, since Finnish government and companies provide reliable resources, and stable financial movement. Table 1 below shows the ten most valuable companies in Finland and the first three companies in table 1 are also in the list of 500 most valuable companies based on their market values in the world ranked by Financial Times in July, 2012.

TABLE 1. Ten most valuable brands in Finland (BrandWorxx Oy 2012)

OMX Helsingin arvokkaimat brändit 2012

Sija 12 (11)	Yritys	Brändin arvo 2012 MEUR	Brändin arvo 2011 MEUR	Yrityksen arvo 2012 MEUR	Yrityksen arvo 2011 MEUR	Brändin arvo/ yrityksen arvo	Brändin vahvuus 2012	Brändin vahvuus 2011
1 (1)	TeliaSonera	**8 499 €**	8 407 €	19 892 €	18 104 €	43 %	4,77	4,69
2 (3)	Nordea Bank	**5 387 €**	5 156 €	31 346 € *	24 040 € *	17 %	5,08	5,34
3 (2)	Nokia	**5 129 €**	7 955 €	10 755 €	25 313 €	48 %	4,63	5,01
4 (5)	Kone	**1 747 €**	1 664 €	10 017 €	10 077 €	17 %	5,89	5,93
5 (4)	Fortum	**1 520 €**	1 752 €	21 484 €	27 777 €	7 %	5,12	5,30
6 (6)	Nokian Renkaat	**1 222 €**	1 139 €	3 222 €	3 506 €	38 %	5,29	5,24
7 (7)	Elisa	**961 €**	891 €	3 228 €	3 320 €	30 %	5,06	4,97
8 (8)	Wärtsilä	**826 €**	866 €	4 543 €	5 567 €	18 %	5,21	5,38
9 (9)	Metso	**602 €**	696 €	4 748 €	6 635 €	13 %	5,19	5,23
10 (11)	Fiskars	**560 €**	554 €	237 €	711 €	237 %	5,77	5,76

In general, it is important to collect data to support financial decisions. Knowing the company's value is an effective way to consider any further financial strategies. In addition, if a company has an appraising file, it can have more advantages in acquisition or merging negotiations. Being aware of the difficult situation for investors when making investment decisions, this study shows what business valuation is in details. Different related aspects are also included as a guideline for investors to choose their own appraisal method.

Figure 1 below shows the theoretical background of this thesis. As can be seen, corporate valuation is one part of corporate finance. There are also plenty of valuation approaches in corporate valuation. However, the two most popular approaches of corporate valuation that are discounted cash flow valuation (DCF valuation) and economic value added valuation (EVA® valuation) are chosen. They are applied to the valuation process of the Case Company based on the suitability of them applying to the Case Company. Other approaches will be explained shortly in the theoretical part with the reasons why they are excluded.

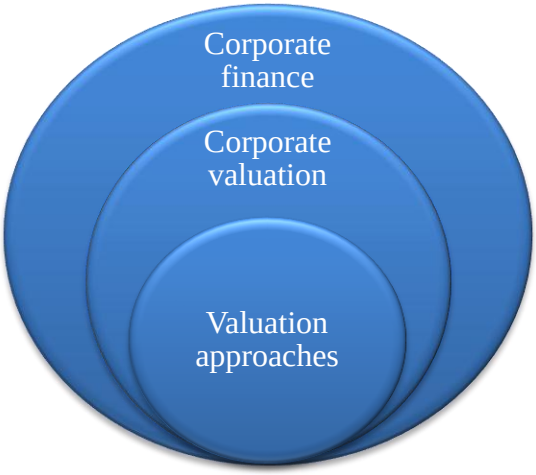

FIGURE 1. Theoretical background

The Case Company manufactures demolishing facilities. Its market is worldwide but mainly domestic and within EU. It was chosen because the Case Company needs to use company valuation profile to be persuasive in raising capital from the banks and to add more advantages in acquisition negotiations in the near future. Therefore, this thesis is exactly what they are looking for. The Case Company provides clear financial statements internally every year. Due to the contract between the author and the Case Company, the name of the company will not appear. The term "the Case Company" will refer to it instead.

1.2 Thesis objectives and research questions

The aim of this study is to appraise the Case Company's financial performance. Relevant information will be extracted from their annual reports concerning the years 2011 and 2012. This study also applies predictions, assumptions and different valuation methods to give a precise output. Information provided in this thesis will be of interest to other companies' financial departments in Finland having the same plan to appraise their company.

The purpose is to provide the Case Company an exact value, how much the company is worth in the market. It gives the future prospect for the Case Company's financial operations. The details of valuation process involve as little

bias as possible. Hence, the output tends to be such an honest result that the case company can use to raise capital, for tax, litigation or transaction purposes.

In order to achieve the objectives, the main research question is: What is the value of the Case Company? In order to answer the main question, sub-questions are identified as:

1. What are the suitable valuation approaches?
2. What relevant information is required for applying those valuation methods?
3. What are the difficulties involved in implementing valuation process in practice?
4. Which valuation method is the more reliable in this case?

This research will answer those questions in the following chapters.

1.3 Research methods

There are two different types of research: deductive and inductive. The deductive type presents research from a previous study to a recent issue. On the other hand, an inductive research works in an opposite way. It begins with an observation to a broader hypothesis. These two approaches are also known as top-down and bottom-up approaches (Burney 2008, 3-7). Figure 2 below illustrates the research process using deductive method.

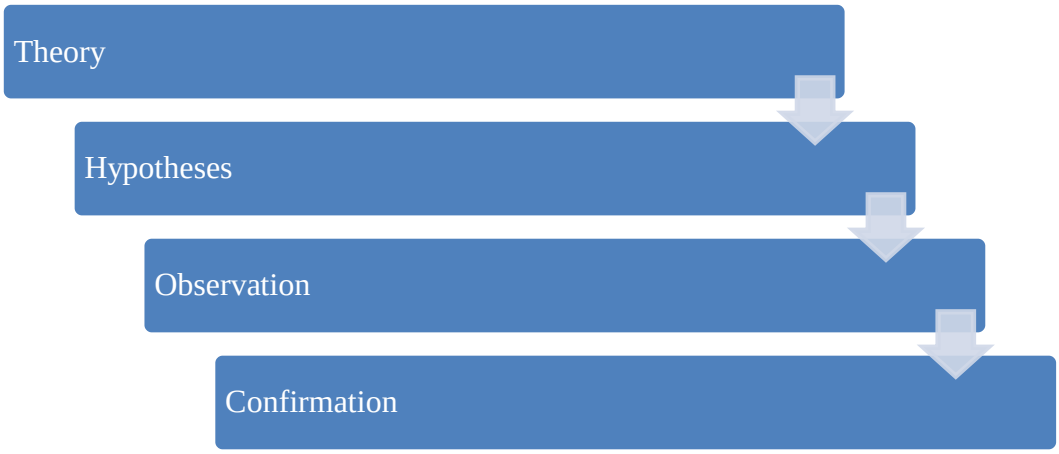

FIGURE 2. Deductive research processes

The purpose of this study is to describe the two valuation methods in practice. It also shows the extent of the gap between theory and practice based on collected data and knowledge. Therefore, the deductive process will be applied in this case.

In addition, Creswell (2003, 19-20) stated that there are three foremost types of research paradigms which are qualitative approach, quantitative approach and mixed methods approached. Qualitative approach paradigm builds assumptions in knowledge claims. On the other hand, quantitative research measures the cause-effect relationships by explaining the connections between different related variables. This type of research method is concerned with number and it contains a systematic or mathematic process. (Research design 2003, 19-20). This thesis's input is in numerical data form extracted from annual financial report of the Case Company, the analysing process in this thesis also includes of various mathematical formulas and the output is a number showing the Case Company's value. Accordingly, it employs the quantitative research method as the priority. Even though qualitative research method is also conducted when gathering various empirical data sources in this thesis, it is just considered to be the supporting tool.

Sources of information are divided into 2 types: primary sources and secondary sources. While primary sources are original manuscript, documents or records which are used in preparing a published or unpublished works, secondary sources are what rely on primary sources (Leibensperger 2005, 1-2). Different types of sources have their own strength and weaknesses. Thus, the author uses both types of information sources (Swanson 2007, 167-168). The theoretical part will collect only secondary sources of information that are published books, journals, and articles. However, in the empirical part, both types of sources will be collected. Primary sources such as author's personal observations and the Case Company's financial statements are included in order to gain adequate information for the thesis.

1.4 Scope and limitations

This thesis aims to help the Case Company in knowing its value. The Case Company can use the result of this thesis as the selling price of its operations.

Throughout the appraisal process, it can give some advice for the Case Company in terms of managing the business. In a broad scope, this research shows how difficult it is to implement corporate valuation in practice. From the appraising process, it also gives suggestion for further equivalent research about the framework of valuation process.

The first limitation of this research is that it restricts its analysis to one company having basic financial statements and balance sheets. Therefore, it cannot apply in other cases with the same models and same research method because there is not a fixed formula for every company. There are some indicators (stock market prices, general market development, bad debt or temporary debt) and tools to calculate the pre money value, but they may have different values for different companies. The real valuation determined by the amount of investment for the share of the company is always a plug-in number. This empirical research is concerned with establishing the relationships between variables, thus, when one variable changes, the other variable changes too (a plug-in number). Moreover, the whole research and valuating process is totally based on the honesty of the company's financial reports and ability of the author to handle that information.

Even if information sources are impeccable, the writer still needs to convert raw data and information into inputs and use these inputs in models. Any mistakes or wrong assessments that the writer makes at any stage of the valuation process will cause estimation error and bring larger range of value.

In addition, the real uncertainties can be divided into 2 types: firm-specific uncertainty and macroeconomic uncertainty. Firm-specific uncertainty happens because the path that the author predicts for the Case Company can prove to be hopelessly wrong. The Case Company can do much better or worse than the author's expectation. Hence, the real resulting earnings and cash flows might be slightly or remarkably different from the estimations. Even if a firm involves exactly the way it is supposed to, the macroeconomic environment can change in unpredicted ways, which causes macro-economic uncertainty. Interest rates can go up and down; the economy can do much better or worse than forecasted. These macroeconomic changes will affect the value.

In addition, model development in finance has the common assumption that capital markets are perfect, which means that it has a large number of investors and an absence of frictions such as taxes and transaction cost. Therefore, there is always a gap between theoretical and empirical testing because the ideal condition does not usually exist in practise.

For the purpose of this study, only relevant and related contents of financial statements will be explained and discussed briefly or particularly based on the priority and importance of that content to the process. Other basics terminologies are ignored.

Finally, this study only uses and compares 2 valuation methods due to its ease and popularity. The other valuation methods are only explained briefly in the theoretical part.

1.5 Thesis structure

This study follows a classical approach towards examining issues and methods. The first part mentions the basic concepts, terminological explanations and theoretical background. The second part is empirical part in which will be applied all theory to appraise the Case Company. The figure 3 in the next page shows the thesis structure.

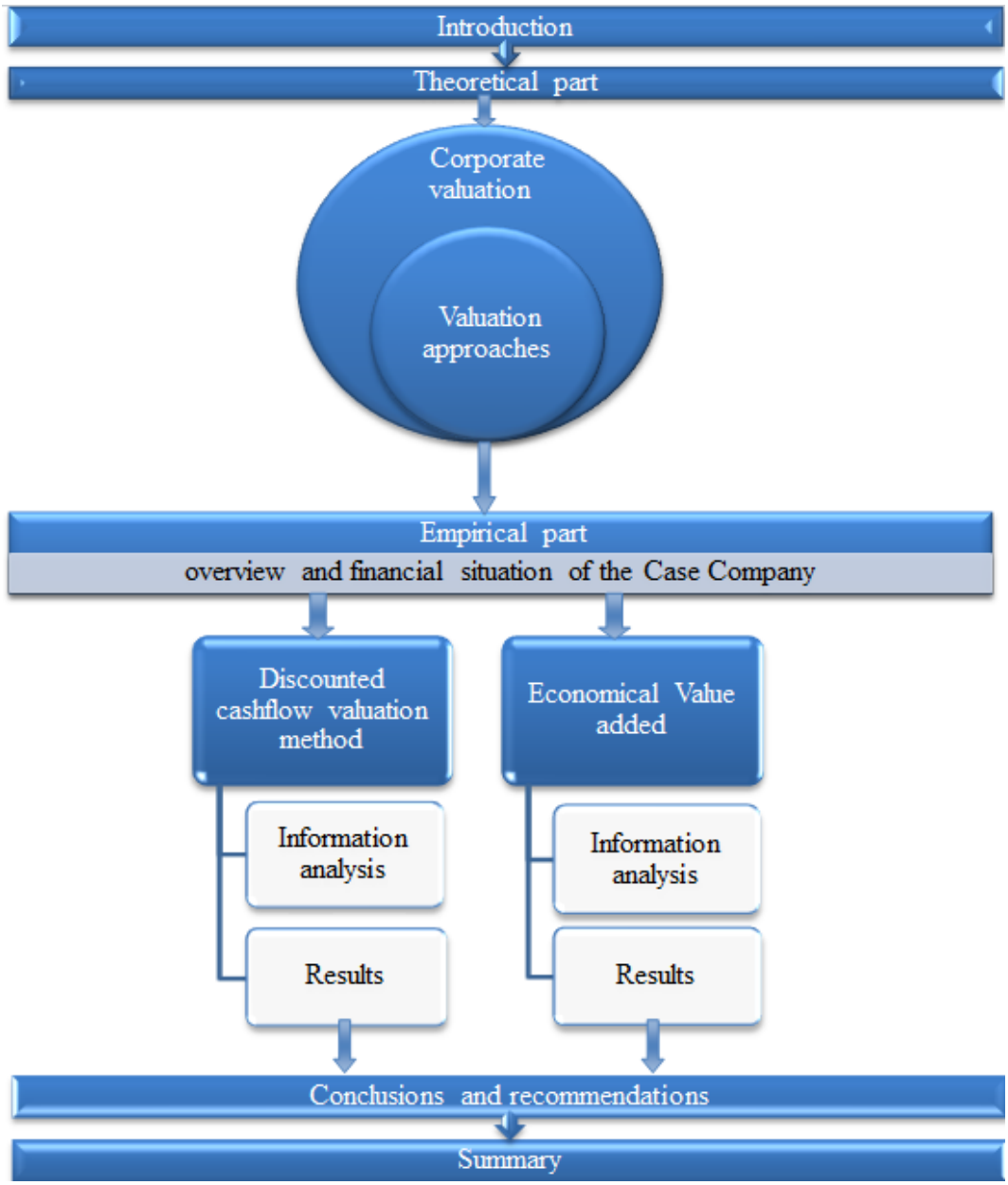

FIGURE 3. Thesis structure

The theoretical part includes chapters 2 and 3. Chapter 2 gives a basic idea of what corporate finance is. Efficient market hypothesis, where the valuation takes place, will be illustrated clearly as the foundation for the whole later process. It also concerns about corporate valuation, why it is necessary for the company to know their value, when company should be appraised, what the misconceptions of corporate valuation are and how to deal with uncertainty during the valuation process and some basic conditions appraising processes requires.

Chapter 3 presents corporate valuation in detail. All corporate valuation approaches will be discussed. However, the discounted cash flow and economic value added valuation methodologies will be explained more deeply than other valuation techniques because the empirical part will use those two methods only.

After that, chapter 4 examines the Case Company in terms of its financial characteristics and value. A brief introduction of the Case Company will be given with their financial situation at the moment in the world recession background. There are two different valuation approaches applying in this case study. Both of the methods calculate the results by taking relevant financial data from 2011-2012 and 5 years forecasting period. However, these two valuation approaches use different inputs and formulas. It finishes off the study with the conclusions about the two valuation methods. It shows which approach is better in this case and the reason why there is a range of differences between two results. Based on those conclusions, some recommendations are given to the Case Company in terms of management.

Chapter 5 is the summary of this study in order to have an overview of the whole process and synopsize the main idea of the study. Some suggestions for later equivalent study as well as the reliability and validity of this thesis will be given in the end.

2 PRINCIPLES OF VALUATION

In order to understand the necessity of corporate valuation, it is essential to know the environment where the appraisal process takes place and who needs the result of appraisal and why specific financial decisions are made. In order to make it clear, the beginning will sum up the principal points of corporate finance which takes place in equity capital market and the role of financial manager in one corporation.

Not all businesses are corporations. A corporation is defined as a group of stockholders who have limited liability up to the limit of his or her investment (Pik & Neale 2009, 1-3). For example, Fiskars and Nokia are corporations. Although stockholders have shares and invest in the corporation, they are not allowed to manage or control it. A board of directors is elected to be the presenters of shareholders. This action's purpose is to make sure that managers act in the shareholders' sake. In addition, in terms of existing time of a corporation, it can be immortal because of the separation between ownership and management. In case managers are dismissed or quit, the corporation still can survive. On the other hand, if stockholders sell their shares to new owners, the operations of the business are not interrupted and still maintain. (Meyers 2003, 5).

The financial department in every corporation is the place where monetary decisions are made. Corporate finance brings the tools and analysis to make those decisions. It can be also said that everything a business does fit under the rubric of corporate finance because the primary goal is to maximize the shareholder value. The three principal decisions in corporate finance are allocation decision, financing decision and dividend decision. The allocation decision answers the questions of where to invest the scarce resources of the business. The financing decision finds the sources to raise for these investments and a suitable ratio of owner's equity and borrowed money. Finally, dividend decision deals with the amount of money a firm should reinvest in business or distribute to shareholders. (Khan M.Y & Jain P.K 2005, 8-11).

2.1 Definition and theoretical background

When a corporation is appraised, it is necessary to find suitable valuation methods to apply based on the company's internal and external conditions.

Firstly, a company should separate its non-operating assets and operating assets. Operating assets are fundamentally the principal sources of a company's cash flows. The valuation of operating assets applies two different fundamentals concepts: a liquidation assumption and a going concern assumption. While most of the analysis values a business as a going concern, liquidation valuation fundamental is used occasionally, especially when considering distressed companies. (Macabacus beta 2011)

In a liquidation scenario, all assets of a distressed company will be valued independently. These assets should be in place and generate cash flows today. Shortly it can be said that liquidation valuation concerns only about investments that are already made. Besides, in going concern assumption, the business continues existing for the foreseeable future so that accountants can prepare for a realistic financial report. When applying the going concern assumption, auditors can value the earning power and cash generating capability of the assets. These assets, owned by the company, can make up operating business and non-operating business. They can be intangible or tangible assets. Going concern valuation is applied more frequently than liquidation valuation. In addition, there is a surplus between the going concern value and the liquidation value because an operating business usually makes a greater return of assets than a separating business in liquidation assumption. (Macabacus beta 2011).

Normally, the use of valuation models in investment decisions is also based upon an assumption that markets are inefficient. It makes mistakes in assessing the value. These mistakes will be corrected after a certain time. (ValuTech Pty Ltd. 1992)

A market is considered as efficient when it is able to correct price of securities automatically by the time the latest information available. It cannot make economic profit on the basis of the available information. Shortly, it conceives that financial markets are "informationally efficient" (Downing, Underwood &

Xing 2007, 3). Professor Eugene Fama (1965, 1), who brought the phrase "efficient market", defined market efficiency as all participants making excellent decisions. This leads to the situation that the actual price of securities equals to its intrinsic value. Therefore, there is no undervalued stock because every stock is always traded at an intrinsic value of it. Economic profits term here is known as the profits after actual return deduces all risk and transaction cost such as brokerage fees, investment advisory fees. In an efficient market, the market price equals to company value and the purpose of valuation model is the only justification of this value. No investors can use any technical analysis to beat the market.

There are three categories of the hypothesis. These are weak form, semi-strong form and strong form. The figure 4 below shows different forms of efficient market hypothesis with each circle represents the amount of information that each form includes.

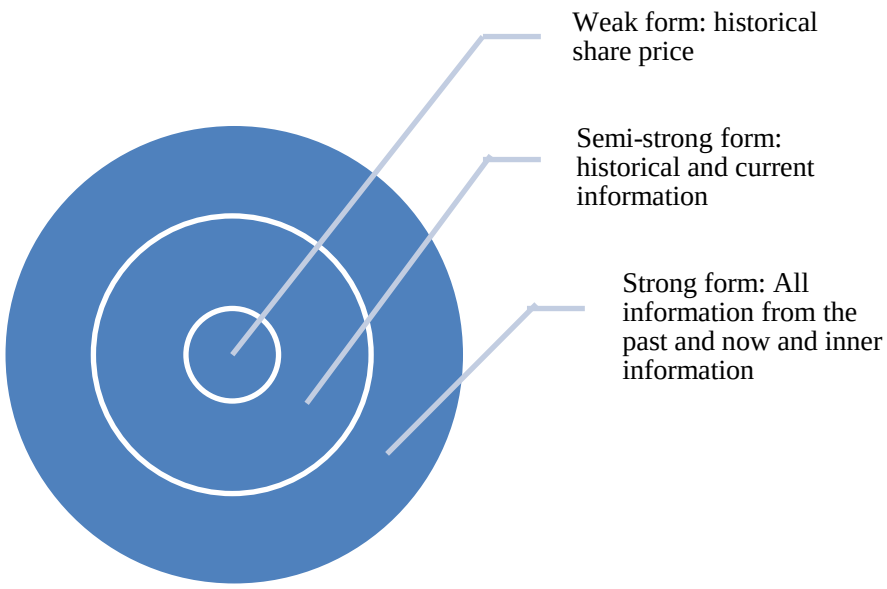

FIGURE 4. EMH Forms (Samuelson 1983, 127)

According to Stefan Palan, in weak form efficiency, part prices of stock and past information of companies are reflected in stock prices today. (Palan 2004, 5). Thus, any technical analysis or valuations are useless to predict or to win the market. Future prices cannot be predicted, and the excess returns cannot be earned in the long run by any investment strategies based on historical data because

everyone knows the same strategies and applies the same assumptions to buy stocks. If the stock price changes randomly, past prices cannot be used to forecast future prices. It has been approved in many researches that the markets are weak form efficient. (Palan 2004, 4-6).

In semi-strong form efficiency, share prices are reflected in publicly available new information to buy and in an unbiased way. Therefore, no excess returns can be earned by trading on that information. Neither fundamental nor technical analysis can be used to achieve superiors gain. Investors can only earn excess returns on investments when they know information that no one else knows. Semi-strong form can be tested in event studies like stock splits, earning announcement and analysis recommendations or cross-sectional return prediction such as firm sizes, market values of firms and price-to-earnings ratio. (Palan 2004, 7).

Finally, in strong-form efficiency, share price asserts both public and private information and no investors have more advantage from earning excess returns. If there are legal barriers to private information becoming public as with insiders trading lays, strong-form efficiency does not seem to happen. Strong-form efficiency appears only in a market where investors cannot consistently earn excess returns in a long run. If some money managers are even consistently to win the market, no refutation even of strong-form efficiency follows with hundreds or even thousands of fund managers out there in the money market. (Fama 1970, 383-417). On the other hand, inefficient market has stock prices that do not reflect all the publicity available information about a security and valuation in this assumption will be a more useful source of information.

2.2 Misconceptions about valuation

There is some significant confusion when appraising a company. Dr. Aswath Damodaran showed in the books “Damodaran on valuation” that auditors need to understand the misconceptions of valuation order to get the basic background idea of every valuation method. (Damodaran A. 2006, 35-50). He claims that there are basically 3 misconceptions that auditors should be aware of during the valuation process.

1. Myth 1: A valuation is an objective search for a “true value”

The truth is all valuations are biased. It depends on how truthful consultants or financial managers are. The only questions concerning bias are how much and to which direction. CFO or inside financial employees will evaluate the company with the positive prediction. In contrast, competitor's financial employee will evaluate in the negative way. Hence, in order to have the most exact value, out-sourcing consultant tends to have the clearest mind.

Therefore, valuation results would rather be in a range of values than to be a number. Whenever an output of valuation has been made, it should be plus or minus the percentage of true value which is also just estimation.

2. Myth 2: A good valuation provides a precise estimate of value

There are no precise valuations. Based on myth 1, even outsourcing consultants have the clearest minds and do not tend to be biased. However no consultants can predict the future 100% accurately. Future here can be the market situations, world trade affection, new competitors or inside company problems that make the estimation might be wrong.

3. Myth 3: The more quantitative a model is, the better the valuation

The more input required, the more prediction should be made. As the result, the output will be manipulated and less precise. In addition, auditors would rather use simple valuation instead of complex one. It means that complicated models need more inputs and estimations. It may lead to input fatigue and cause problems with the output. That will make consultant more confused and might make mistakes during the valuation process. Professional analyst should aggregate in order to make simpler models to follow.

All in all, no valuation is exact and true 100%, therefore, the result should be a range of value. In order to keep the range of value as small as possible, valuation should be simple and less estimation.

2.3 Reasons for valuation application and using situation

People do valuate in daily life. For instance, when selling an old computer, we remember the price of the computer when we bought it and then minus the depreciation and any broken items to see the selling price. When auditors want to know how much stock is in the portfolio worth, they look up the price of the stock and multiply with the amount of shares. Indeed, we have valued the computer and auditors value their stock to see how much we can get in cash if we sold the item at that moment.

The reasons for business valuation can be divided into 3 categories which are: tax purpose, litigation purpose and transaction purpose. Each of these purposes has different approaches and methodologies in order to determine a company's value accurately. (Frykman & Tolleryd 2003, 11-15).

1. Tax purposes: Normally, companies need to know about their fair market values in order to know the amount of tax they have to pay. Valuations for tax purposes should seriously take the changes of laws and regulations into consideration. (Business appraisal, Litigation support and Corporate Finance 2007, 1-3). If a company wishes to donate or give all or part of their business away, tax offices needs to determine the value of the business to support the deduction for a year in which the gift was given.

2. Litigation purposes: There are cases in which shareholders do not agree with the share price or they want to exit the business with reasonable sale price or suspect about the best course of action for a company. In these cases, a business appraisal may need to be attached in a formal buy - sell agreement in order to settle disputes on the shares value. In a joint ownership of a closely-held business, if one or more owner wants to split up, they will also have to retain the business and allocate the value of the shares. (Selvaraj A. 2012)

3. Transaction purposes:

- Mergers and acquisition: Business owners who are considering selling their business need business valuation to see how much their company is worth, thus

giving a suitable price. It can also bring involved parties the final values that might encourage them to invest or to reconsider.

- Employee stock ownership plans (ESOP): because regulations prohibit paying more than fair value of the shares. Therefore, the formation of an ESOP and the subsequent selling of shares to the related trust require an independent appraisal. These plans must be independently appraised every year to publish fair market value for administrative purposes, purchase price and the value of contributions. (Bigelow L.2010)

- Financing: when obtaining debt or equity financing, often the lender or investors will obtain an independent business valuation to validate their investment. For smaller business interest, a loan might be an option for debt financing. A certain loans package usually requires an independent business appraisal file. (Frykman & Tolleryd 2003, 11-15)

3 VALUATION APPROACHES

There are many different valuation approaches that can be applied to determine the value of a business. However all of those valuation methods can be categorized into 4 types of approaches based on the sources of input and valuation processes: income approaches, market approaches, asset-based approaches and option pricing approaches (Koller, Goedhart & Wessels 2005, 47). The Figure 5 shows the list of four mains valuation approaches and different main models involved in each approach.

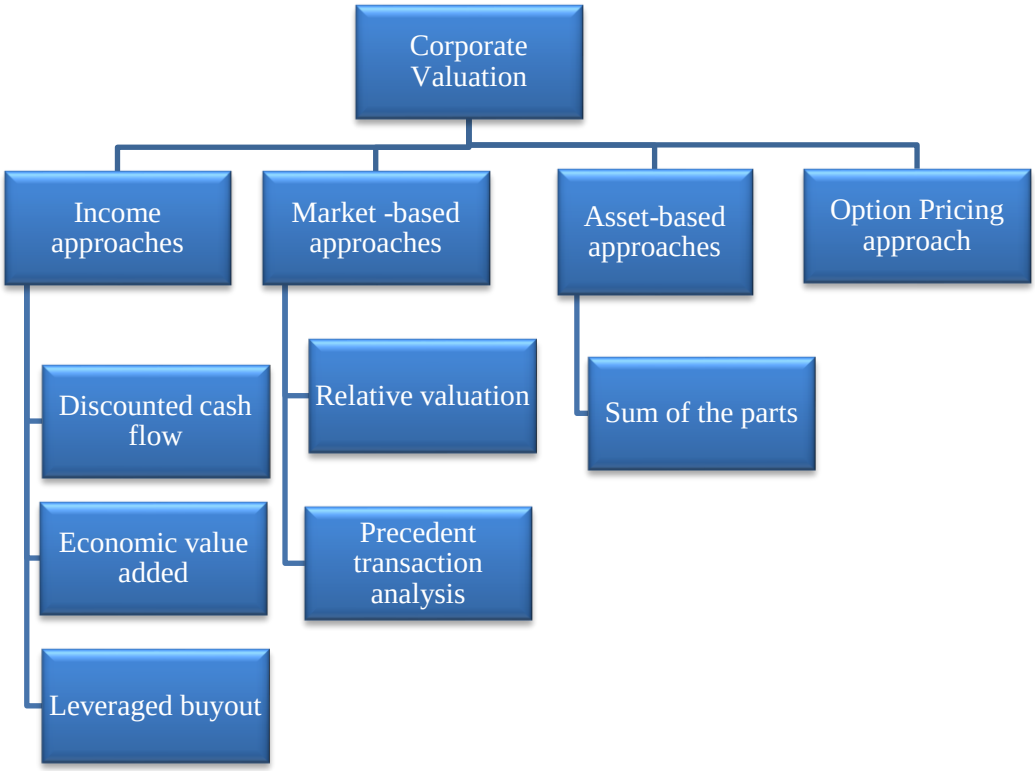

FIGURE 5. Valuation approaches and models

The next chapter concerns the definition and the using situation of different approaches. However, the income approaches will be reviewed more specifically because the case study will use its two techniques that are discounted cash flow valuation and economic value added valuation. Other valuation approaches will be discussed briefly in order to see the differences among them and to show the reason why this thesis excludes other approaches.

The two sub-chapters will clearly by far determine in detail two valuation techniques that will be used in the empirical part. All the definitions, processes,

key factors and hypothesis are explained in this part so that it is easier to appraise the Case Company.

3.1 Different valuation approaches

The most common approaches in business valuation are income approaches, market-based approaches, asset-based approaches and option pricing approach which is also known as contingent valuation.

The income approaches determine the fair market value of targeted company by multiplying cash flows brought by the subject and then multiplied by a discounted factor or rate. The discount rate helps to discount the cash flows value to be the present value. The output after the appraisal process will be the fair market value of the subjected company. This value is minus or plus a range of value of uncertainties which were discussed in the limitation of this thesis. The philosophical basis of income approach is that every asset has an intrinsic value that can be estimated based upon its characteristics in term of cash flows, growth and risks. The market inefficiency hypothesis is applied in this category as market are assumed to make mistakes in pricing assets across time and are assumed to correct themselves over time as new information comes out about assets. (Hack 2012, 10).

The market-based approach estimates the value of an asset or company by evaluating the pricing of comparable assets such as sales, cash flows, earnings and book value. The comparable assets or companies can be in the same industry or have the same size or/and within the same region. The philosophical basis of market-based valuation is that it is extremely difficult to estimate a precise value of assets. The real value of an asset is whatever the market is willing to pay for it based upon its characteristic. (Hack 2012, 16). In another way, in a free market, supply and demand forces will drive the price of the business assets to certain equilibrium. Therefore, it is very difficult to have in intrinsic value given in the output of an appraisal method using calculation only. In order to apply the market-based approach, comparable assets of the subject should be identified and converted to standardized values. Finally, auditors can compare this standardized value or multiple of the assets to others. Mostly analysts use this approach to find

weak points in the calculation process of other approaches and fix them. It is difficult to find an absolute similar company or asset to carry on the comparing process. As a result, this thesis does not use the market-based approach.

The third approach is called asset-based and concerns the sum of the different parts of company fair market value minus the total liability. According to James R. Hitchner, the asset approaches are based on the principle of substitution. It is assumed that a buyer will not pay for a particular investment more than its costs. In contrast to the income-based approaches, the adjusted netbook value method is more likely objective and assets approaches assume that the business will no longer exist or not be a going concern any more. These methods are typically used for valuating tangible assets because tangible assets have reliable historic costs associated with their development. (Hitchner 2011, 1169). However the Case Company has quite many intangible assets, hence, these approaches are not suitable for the Case Company.

The last approach is contingent claim valuation method which applies option pricing models. The assets in this model have to have share option characteristics. Scholes and Black in 1973 in their paper "The Pricing of Option and Corporate Liabilities" published in the Journal of Political Economy, so it is also known as Black-Scholes model. (Scholes & Black 1973, 637-654). This model was built in 6 assumptions that:

- There is no arbitrage opportunity. It is possible for investors to take advantage of the surplus between two securities price. Making riskless profit is impossible.
- Borrowing and lending cash at a constant risk-free rate is always possible.
- Buying and selling all kind of stock in a frictionless market, where there are no transaction costs.
- There is a geometric Brownian motion (GMB) which has constant volatility.
- Security does not pay a dividend.

However, in reality, these assumptions make the application of the model difficult to apply because the proper application requires understanding each assumption's

limitation. In short, while the Black-Scholes model can hedge option easily by all of their assumption, there are lots of other sources of risk in reality such as tail risk, liquidity risk, volatility risk and yield gap risk that makes the application impossible to apply in this thesis. This is the reason why this special approach is excluded.

3.2 Discounted cash-flow valuation

The discounted cash-flow (DCF) valuation is one of the income approaches. Therefore it is based on the same philosophical basis and market inefficiency assumption as the income approach. Further details will be discussed in the below chapters.

3.2.1 Definition

This valuation method is applied to estimate the value of a firm or an asset. It uses future cash flows projections and discounts them with a suitable rate in order to calculate the present value of the target. In a simple illustration, a company's value is equal to all the cash they have that could make future investment and generate more money. However, cash in the future always worth less than cash today due to the inflation. As the result, the net present value should be multiplied with a discounted factor.

There are three pathways to carrying on DCF valuation approach: classic DCF valuation, adjusted present value approach and excess returns approach. The classic DCF valuation is considered to be the most popular one due to its ease. Analysts simply discount cash flows (to firm or equity) at the appropriate discount rate (cost of capital or cost of equity). The sum of net present value of the cash flows is the value of equity or firm. The effects of debt financing are built either into the cash flows in equity valuation or into the cost of capital in firm valuation. The second pathway values the firm by combining the assumption that the company is funded all by equity, present value of expected tax benefits of debt and deducted to the expected bankruptcy costs. The final way of valuation values the company by the sum of capital invested. It presents value of excess return cash

flows from current and future projects. (Hack 2012, 25). This research will carry out the valuating process of the Case Company by the classic way.

The following part will show advantages and disadvantages of DCF valuation in detail. It also describes more about factors required for DCF valuation and the relationships between them.

3.2.2 Advantages and disadvantages

Because DCF valuation approach is done based on the asset's fundamentals, it should be less exposed to the market moods and perception. If good investors buy businesses rather than stocks, DCF valuation is the suitable tool to choose. It can determine what the company is getting when it buys an asset. DCF valuation forces the company to consider the underlying characteristic of the company. (The Basics of Business Valuation: What Matters and Why 2010)

However, DCF valuation has some disadvantages as well. It requires a higher volume of input than other valuation approaches because the output is an attempt to estimate intrinsic value. The company should also exist in a long time, so it is easier to estimate the value in the future based on the performance of it in the past. In addition, the inputs data are not only quite difficult to forecast or estimate but also manipulated in the bias of analyst. In addition, in an intrinsic valuation model, there is no guarantee that it will emerge as under or over-valued. (Damodaran A. 2005, 8).

In order to use DCF in an appropriate way, analysts should understand the advantages and disadvantages of DCF. As the result, DCF valuation should be applied for firms that cash flows are currently positive and data allows analysts to estimate easily in the future periods. The company should have an indicator for risks that can be used to estimate discount rate. Moreover, DCF valuation works best for investors who either have a long time tracking the market to correct its valuation mistakes. (Damodaran A. 2005, 9).

3.2.3 Key components

In this context, there are basically five components mentioned: Free cash flow to firm (FCFF) and net present value; net operating profit after taxes (NOPAT); current assets, current liabilities and net working capital; weighted average of cost of capital (WACC); capital expenditure (CAPEX); capital assets pricing model (CAPM) and terminal value. Because the research only concerns about the value of the Case Company, all other components related to valuing bond or equity will be excluded.

NOPAT is one essential input for DCF valuation approach. It shows the profit generated from a company's operations after subtracting the income taxes. It is the net operating income of a company including its shareholders and debt-holders. It is equivalent to earnings before interest and taxes (EBIT) adjusted for the impact of taxes. (Bhattacharyya 2007, 434).

$$\boldsymbol{NOPAT = EBIT \times (1 - tax\,rate)}$$

The tax rate is the marginal rate of tax which is the corporate tax rate legally.

Current assets, current liabilities and net working capital: If an asset can be sold in the normal operating cycle of the enterprise, it is considered as a current asset. In addition, even cash or cash equivalent is also current assets if it is freely to use, not restricted to the exchange. Normally, current assets can be seen in the balance sheet as account receivables, stock, prepayment short-term investments or/and work in progress. Likewise, a liability is current if it exists in a normal operating cycle. For example, current liabilities can be accounts payable, tax due, payment or short-term loans. The difference between current assets and current liabilities is net working capital. Consequently, net working capital is considered as one of the classic metric of firm operating liquidity. (Bhattacharyya 2007, 33, 42).

FCFF and net present value: FCFF is the basis for measuring any company's ability to meet continuing capital requirements. In other words, it is the hypothetical equity cash flows without company's debt. It shows the available cash to pay investors after a company pays for its costs and invests in short-term or long term assets. Because a company has to invest in order to keep operating, a

positive value would indicate that the firm still has cash after investments and expenses. In contrast, a negative value of FCFF would show that the firm is in inability of generating more cash to pay for its operating costs and raise more money. In order to calculate the FCFF, the combination of EBIT, tax and depreciation deducting to change in net working capital and capital expenditure is determined (Mills, Bible and Mason 2002).

$$FCFF = NOPAT + Depreciation - changes\ in\ net\ working\ capital - CAPEX$$

Cost of debt, Capital Assets Pricing models (CAPM) and cost of equity: Cost of debt is calculated as the cost of acquiring debt capital at a certain time. It is simply the current rate of a company's debt or it can be estimated as the average debt level of the whole industry (G. Bennett Stewart 1991, 434). However, cost of equity is more difficult to distinguish. It takes risks in the overall market and on the enterprise itself into consideration. This is the reason why it is difficult to forecast or calculate a precise number. In other words, cost of equity is determined based on the unpredictable behavior of investors and certain assumptions regarding their decisions making. Although risks are often unavoidable, investors always try to minimize it in order to increase the value of the company. Consequently, the riskier the company, the less it is worth. In short, the risk-return relationship is positive. However, there are some methods to calculate the cost of equity based on three components: the risk-free rate, the market risk premium, and a company-specific risk adjustment. Those are capital asset pricing model (CAPM), Fama-French and arbitrage pricing theory model. In this research, only CAPM will be used. CAPM is developed independently by William F. Sharpe, John Linter and Jan Mossing and based on the portfolio theory of Harry Markowitz which shows that investors cannot avoid risk but can be diversified away when combining multiple investments in a portfolio. In that sense, CAPM is calculated by taking the risk-free rate of a security plus risk premium. The risk premium equals to the beta of security times a risk premium of the security. (Kuerschner 2008, 10).

$$\boldsymbol{E(R_i) = R_f + \beta\,(E(R_m) - R_f)}$$

β: a measure of systematic risk which shows the volatility of an asset return (or a security) to the volatility of the market returns since the beta of the market portfolio is always equal to 1.
$E(R_i)$: the expected return on asset given its beta
R_f: risk free rate of return
$E(R_{m)}$: Expected return of the market portfolio
$E(R_{m)} - R_f$: Market risk premium

Gross investment in operating capital (or capital expenditure or CAPEX) is the fixed assets amount rise from the previous year to the most recent year. This factor can be the alternative approach to the net investment in operating capital. Net investment in operating capital is the surplus between total investment in operating capital generating today and last year. Hence, the different between gross investment in operating capital and net investment in operating capital is depreciation (Michael C. Ehrhardt 2011).

$$Gross\ investment\ = \\ fixed\ assets\ (today) - fixed\ assets\ (past) + change\ in\ depreciation$$

Weighted average cost of capital is the discount rate applied to FCFF in this approach. This element is considered as the smallest acceptable return on investment. Cost of capital is an invisible indicator of good or bad corporate performance. (G. Bennett Stewart 1991, 431). Stewart describes it as the "opportunity cost" for investors to invest to the firm in terms of time and money (Stewart 1991, 431). If costs of capital do not worth money and time investors make, they will invest to somewhere else (Mäkeläinen and Roztocki 1998, 10). Mathematically, it is the combination of rate of return and rate of debt. Consequently, it is neither a cost nor a required return but a weighted average of both components (G. Bennett Stewart 1991, 432). Figure 6 shows the relation presents the relations of WACC with cost of debt and cost of equity.

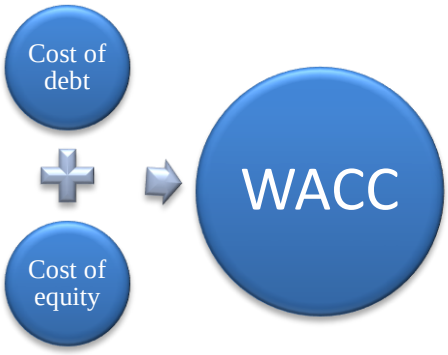

FIGURE 6. Two components of WACC

In general, the discounted factor of free cash flow is calculated by the below formula (Koller, Goedhart and Wessels 2005):

$$WACC = \frac{D}{D+E} . K_d(1 - T_m) + \frac{E}{D+E} \times K_e$$

D: Value of debt

E: Value of equity

K_d: rate of returned by debt holders

K_e: rate of return by equity holders

T_m: marginal tax rate

Terminal value is the concept that is applied to all kinds of valuation methods. However it is impossible to know an exact value of the asset over an infinite time period, we assume that the asset in the future will have a steady growth or conditions. Such conditions will show the end of the explicit forecast period. The general formula to calculate discounting approach is:

$$V = \sum_{n=1}^{n=\infty} \frac{Z_n}{(1 + discount\ rate)\text{^}n}$$

Because we assume that Z_n has a steady growth (g), the above equation changes to:

$$V = \sum_{n=1}^{n=\infty} \frac{Z_0 \times (1 + z_n)}{(1 + discount\ rate)\text{^}n}$$

After some changing steps, we can get:

$$V = \frac{Z_1}{Discount\ Rate - g_z}$$

We assume the asset has an infinite life, the terminal value of the asset is:

$$V = \frac{Z_1}{Discount\ rate}$$

V: value of all future value of asset Z

g_z: perpetual growth rate of value of asset Z

n: period of time

This is also called the value of an annuity. (Wilson 1997, 44-45).

The relation among the above components will be discussed further in the below chapter.

3.2.4 Steps

The inputs of DCF are shown clearly in the figure 7. In order to get the result of inputs, the financial statements and balance sheets should be reorganized clearly so that we can calculate ROIC and FCF easily.

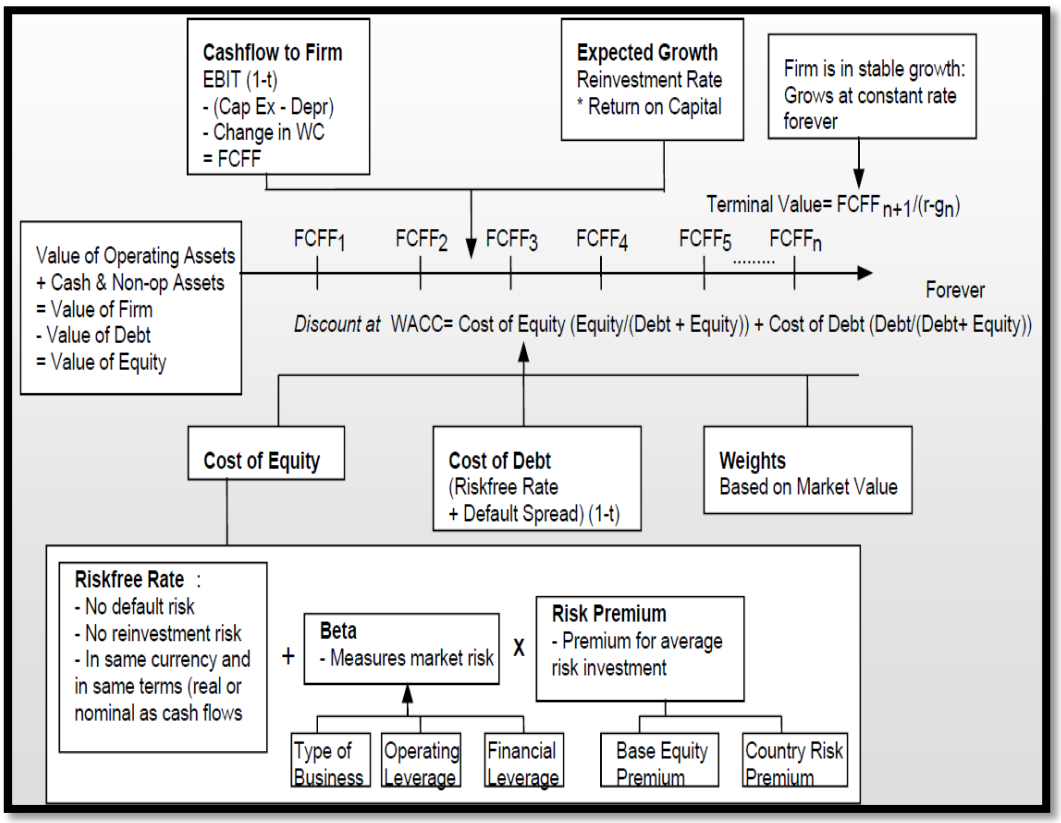

FIGURE 7. DCF valuation approach inputs (Hack 2012)

Firstly, the 'free cash flows to firm' (FCFF) needs to be identified with different components from financial statements such as EBIT, depreciation and amortization, current assets and current liabilities. Then the expected growth is applied to free cash flow to firm results, and it is calculated based on reinvestment rate and return on capital. Secondly, the discount rate is identified as being mentioned in the last chapter. However, discount rate can be in either nominal terms or real terms depending on the terms of cash flows. After that, the firm's stable growth is estimated, and we have to forecast when the firm can reach that growth rate and what characteristics it will have when it does. (Hack 2012).

In order to forecast the growth rate and the company's characteristics, auditors evaluate the company's historical performance because from that, we can estimate whether the performance of the company is good or bad, how much it has created and grown. The company's performance can be compared to its competitors. Some key factors can be compared are return on invested capital, sales growth, ROE and free cash flow. "Understanding how these drivers behaved in the past will help to make more reliable estimates of future cash flows". (Koller, Goedhart and Wessels 2005).

After having estimated cash flows, the next step is to determine the value of the discount factor per year. The discount factor is WACC which is applied to the projected financial and operating performance of the business in the period of 5 – 10 years. The below formula show how to calculate the value of the business using FCFF and discounted factor. (Barlow 2008)

$$Value_t = \sum_{t=1}^{t=x} \frac{FCFF_t}{(1+WACC)^t}$$

After adding the terminal value, we have the value of the asset in an infinite life. The formula is:

$$Value_t = \sum_{t=1}^{t=x} \frac{FCFF_t}{(1+WACC)^t} + \frac{FCFF_x}{WACC}$$

Finally, in order to see the company performance, we look at the result of the above formula. A constant positive result of DCF over time gives the company a good future and increases the company value. However, if a company is failed to earn a positive result of DCF through years, its management should employ the division's asset elsewhere in order to prevent the company from distress.

3.3 Economic value added valuation

Economic value added valuation is one of the income approaches helping auditors to calculate an intrinsic value for the company. It has the same philosophical basis and market inefficiency assumption as discounted cash flow valuation. The below chapters will show more details of this valuation method.

3.3.1 Definition

EVA® is an analytical tool to estimate a company's economic profit. It is developed in 1982 by Joel Stern and G. Bennett Stewart III (Grant 2003). Since then, EVA® became a registered trademark owned by Stern Stewart & Co. Throughout this paper, EVA® appears without the '®' symbol but will still be understood as a registered trademark of Stern Stewart & Co. It has excellent

metric for monitoring a firm's profitability and use of capital. Accordingly, it was soon accepted as one of the most useful analytical tools for appraising a company's financial performance. (Blair 1997, 42-45).

The basic underlying concept of EVA is that if the company's actual return is greater than it is expected, the value has been added. In general, EVA measures the economic profit of the company. It is based on its residual profitability which is computed by net operating profit after taxes (NOPAT) subtracts the opportunity cost of invested capital. The opportunity cost of invested capital, which is also known as the capital charged, determined by multiplying WACC and the capital invested. (Wilson 1997). Figure 8 illustrates graphically the basics concept of EVA.

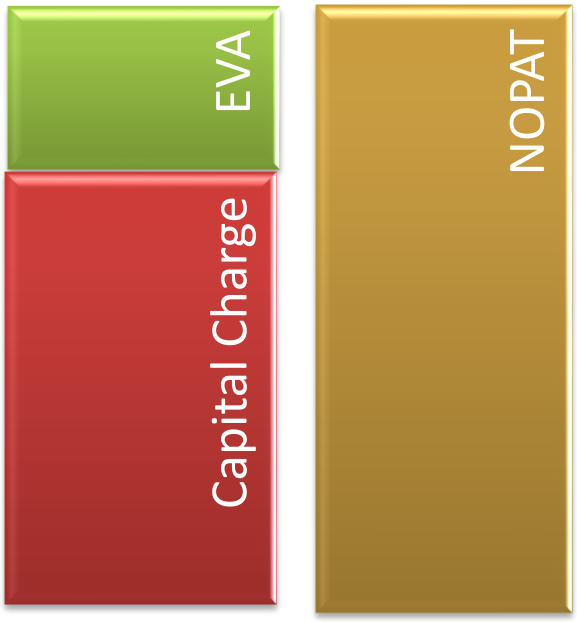

FIGURE 8. EVA underlying concept (Stewart 2013)

After that, all future EVA results need to be added together, and this will give the total value added to the invested capital of the company. Therefore in order to see the fair market value of the company, we only have to sum up invested capital and the total future annual EVAs.

3.3.2 Advantages and disadvantages

Like DCF, the result of EVA valuation is also to give an intrinsic value from which company owners can see their own business management performance. This helps managers to make a better investment decisions in both long-term and short-term (Stewart 2013). EVA is considered as one of the most reliable measurement of managerial skills of company owners as well as a good indicator of a company's value growth in the future. With relatively unsophisticated principles, business owners can convey the result of EVA to their employees and show them what they should contribute to enhance the company competitiveness. Instead of using the market price per share which business owners cannot control, EVA gives the top managers a full vision of what they should do to use as little capital as possible because the return on equity and the cost of foreign capital are affected by their decisions directly. In addition, through the calculation process, EVA can be a diagnostic tool showing managers where the firm needs to improve to increase its value in the future. (Wilson 1997, 12).

Consequently, while EVA can give users some useful insights for the companies, it also has disadvantages that need to be considered. Although the principle of EVA valuation is easy to understand, its application is quite complex which needs accurate estimations of cost of capital after tax, and accurate forecasts of capital spend on assets, investments or acquisitions. Furthermore, EVA valuations are mathematically identical to DCF valuations, but it does not involve future cash flows forecasting and does not measure the present value like DCF valuation does (Wilson 1997, 12). Therefore, EVA valuation does not encourage who invests in a long period projects or start-up companies but rather rewards managers who take on business with quick paybacks since it concerns about the earning level at the moment. Likewise, there is no official standard for EVA valuation, so different companies implement different EVA metrics to valuate. As a result, the EVA output might not fair comparability among them. In addition, positive EVA results through years does not mean that the company operates well, but it might be the situation occurred when the invested capital used in accounting return is too small. Unlike DCF-approach, which concerns about both internal and external factor to the formula, EVA does not take external effects like inflations into

consideration of accounting value in capital and accounting profit. (Wilson 1997, 13).

Understanding the above advantages, the case company uses EVA as one tool to evaluate company financial management and track the growth in earnings. Although the disadvantages might bring to this research some difficulty during the valuation process, it is still chosen because it is a supreme application incentivizing management to do the best for shareholders.

3.3.3 Key components

The EVA input is less than DCF valuation. The metric needs data exacted from income statement and balance sheet to calculate the surplus value between NOPAT and capital cost rate (Mäkeläinen & Roztocki, 1998, 7). There are several pathways to get the final value of the company using EVA but all of them based on the foundation of Stern Stewart which needs NOPAT, company's capital (C), Capital cost rate, Cost of debt capital, cost of equity capital and tax (Rago 2008, 8).

Company capital: in order to determine capital cost rate, we need to identify the company's capital. The company's capital is interest bearing liabilities which is equal to total liabilities deducts non-interest liabilities (Mäkeläinen and Roztocki, evanomics 1998). It is basically as below formula.

$$C = Total\ liabilities - Account\ Payable - Accrued\ Expense$$

However, in the normal financial statement, company capital does not only concern liabilities but also shareholder's equity. Therefore the formula that will be used further is (Roztocki and Needy n.d., 3):

$$C = Adjusted\ shareholders'equity + Interest\ bearing\ liabilities$$

For terminal year, capital invested is computed as:

$$C = \frac{NOPAT - gross\ CAPEX - \Delta working\ capital - depreciation}{Net\ sales\ growth\ rate \times NOPAT}$$

The corporate income tax in the empirical part is liable to tax on the Case Company's income. In 2011, the tax rate was 26% but from 2012 forward, the 24,5% tax rate will be applied based on the current Finnish tax law.

Present value of capital base change: The capital base change is the difference between capital invested in the terminal year and capital invested in the last forecasted year. In order to compute the present value of the capital base change, capital base change is multiplied with a discount factor (Mäkeläinen 2001).

$$Present\ value\ of\ capital\ base\ change = Discount\ factor(last\ forcasted\ year) \times capital\ base\ change$$

3.3.4 Steps

This method includes of five key steps which are: Reviewing the company's financial report, identifying the company's capital (C), determining the company's WACC, calculating the company's NOPAT, and finally calculating its EVA (Roztocki and Needy n.d., 2-4).

The first step requires auditors to reorganize the financial statement and balance sheet from where relevant information is extracted. Usually the most current data is sufficient (Roztocki and Needy n.d., 3). After that, all the capital that has been invested to the company needs to be determined by summing up all interest-bearing debt to owners' equity. Step 3 needs the same calculation of WACC in DCF. This is one serious challenge of both methods because it requires two components that are: cost of debt and cost of equity. In reality, cost of debt is not usually public in SMEs, so it is difficult to estimate. In addition, cost of equity is also difficult to distinguish in a precise number in practice. The reason is that it includes of three different estimating components that are beta, market risk premium, and risk free rate (Roztocki and Needy n.d., 4).

After that, auditors need to calculate the company's NOPAT and the final step is to compute the company's value by using EVA formula. The EVA can be calculated by deducting the NOPAT with capital charge (Mäkeläinen, Economic value added as managment tool 1998, 15)

$$EVA = NOPAT - capital \times capital\ cost\ rate$$

The results of EVA in the forecasted year are adjusted to the suitable discounted factors in order to get the net present value of future EVA. This calculation process is the same as the DCF valuation final step. It also uses WACC as the input of discounted factor. The sum of net present value of EVA in the forecasted years and terminal year less the present value of capital base change is the value of the firm.

$$Value_t = \sum_{t=1}^{t=x} \frac{EVA_t}{(1+WACC)^t} + \frac{EVA_x}{WACC} - PV\ of\ capital\ base\ change$$

Interpreting the result of EVA formula is indispensable. Its result shows the management performance of the company. If the EVA is positive, the company creates more value than the capital owners invested. On the other hand, if the EVA is negative, the owners are making less than what they have invested. Furthermore, the performance of the company in recent time can be compared to the past, to other company in the same sectors to see its development and competitiveness in the market. Table 2 shows how to interpret the results of an EVA analysis.

TABLE 2. The results of an EVA assessment (Wilson 1997)

EVA measure	Magnitude	Conclusion/ comments
Annual EVA related to previous years	High/low	Management has developed or procedures that are improving (destroying) shareholders. Management is using the full latitude of accounting practices to artificially enhance EVA. Capital investment has been reduced (increased). Inflation has reduced (increased). Currency distortions are present. Adjustments to accounting profit and capital have changed as the result of changed business. Profits forecasts are optimistic (pessimistic)
EVA related to comparable company or sector	High/low	Company is larger (smaller). Company has reduced (increased investments) Company has different accounting policies Company has reduced (increased) capital expenditure. Assets and profits are derived from different countries Profit forecast are optimistic (pessimistic)
EVA value relative to current price	High/low	Optimistic (Pessimistic) forecasts Discount rate too low (high) Company is cheap (expensive)

This is the end of theoretical part which covers all theory about the two most popular valuation methods which are DCF and EVA. The next chapters will apply these theories to appraise the Case Company.

4 VALUATION OF THE CASE COMPANY

4.1 The Case Company

This chapter introduces general information and the financial situation of the Case Company. After that, DCF and EVA valuation methods will be applied to appraise the Case Company's financial performance.

4.1.1 General information

The Case Company is operating in manufacturing and trading demolishing devices. It is located in Lahti, southern part of Finland. The company was established in the 1970s and eventually became part of Sandvik Mining and Construction, when it was sold the cutter-crushers and hydraulic hammer housing factory of the Case Company's management by Management buyout (MBO). Now the Case Company wants to be an independent company since the mother company does not tend to invest more to its operation.

From its beginning, the operations were focused on growth and innovation. Its self-owned facilities always have up-to-date technology in order to provide quality and cost-effective solutions for customers' needs. The production is focused on machining and assembling welded structure.

The Case Company produces hydraulic breakers, crushers, grapples and screening devices. The world's largest exhibition held annually in Munich, Germany marked the genuine international launch for the Case Company's products. It brought to the exhibition the master samples of all the product groups. It is now being very competitive in the international market.

Now, the Case Company has taken further steps to improve its corporate identity, marketing and the company's image by actively utilizing trade magazines, international fairs participation and expanding distributor networks. For the time being, the company has sold products and found dealers in Sweden, Norway, Estonia, the Netherlands, Ukraine, Poland, Russia, Hungary, Romania, Bulgaria, Australia, New Zealand, China, Germany and the US.

The company now keeps finding more distributors in different countries, especially in Asia, Germany and United Arab Emirates. The most important target in 2013 of the Case Company is to be the leading demolishing device suppliers in the world.

4.1.2 Financial situation

The company is in good financial situation currently. The growth rate in terms of market and profit has remarkably increased in the two most recent years. Many new product groups are added in the company's product portfolio. In addition, there are many new distributors in various countries which sign the contract to start selling their products.

The financial year of the company begins on the first day of November annually and ends at the end of October. In 2012, the company's turnover was 8.524.033€ and its profit was 150.233€ which increased more than 3.43% compared to 2011. Due to the good financial state of the company at the moment, the forecasts will be positive in the near future.

Table 3 below is the adjusted P&L account of the company in the two most recent years.

TABLE 3. Adjusted income statement of the Case Company 2011 - 2012

	2011	2012
Turnover	7906723	8524033
Changes in finished and unfinished products	-1659	-2100
Other operating income	138279	123011
Total operating income	**8043343**	**8644944**
Material cost	-3799858	-4011206
Purchasing	44353	43101
Services	-381766	-355020
Wages and salaries	-1498911	-1744221
pension cost	-353278	-353400
Other operating expense	-36677	-38677
Other social security costs	-42062	-43530
EBITDA	**1975143**	**2141991**
Depreciation	-410408	-510500
Amortization	-895	-895
EBIT	**1563840**	**1630596**
Other financial expense	-1011998	-1080867
Tax deducts	-406598	-399496
Net income	**145243**	**150233**

This research will use the above adjusted income statements as well as the balance sheets of the company to exact the relevant data for the two valuation methods in further chapters.

4.2 DCF Valuation

In order to carry on DCF valuation for the company, the first section in this chapter will exact all relevant data from the financial statement, and then the second chapter will show different steps to calculate the value of the company based on the DCF valuation framework shown in the theoretical chapter. The result of the calculation process is explained in the last section.

4.2.1 Key data

This chapter will select all relevant data from the income statement and balance sheet of the company and forecast the next financial year data. It is based on the estimated sales growth in historical terms as well as world economics movement

in near future and company's potential sales. After that, it puts data in a logical order so that it is easier to carry on the calculation process in further sections.

The 2011 data gives the author the idea of the growth rate of different indicators such as sales, EBIT, EBITDA, current assets and current liabilities so that it is easier to estimate the upcoming years indicators. In this case study, all forecasting data is based on the ratios between these indicators and turnover in the past. After that, the ratios are applied approximately to the future.

The terminal value assumption applied in this case study is shown in table 4.

TABLE 4. Terminal value assumption

Market risk premium (appendix 5)	5,4%
Risk-free rate (appendix 4)	1%
Cost of equity	8,5%
Cost of debt	4,2%
Terminal WACC	5,82%
Fundamental beta (mother company's index – appendix 6)	1,42
Taxes	26% in 2011; 24,5% in 2012; 20% in 2013 and forward
Terminal growth rate of sales	5%
Terminal EBIT margin	19,5%

The market risk, taxes and risk-free rate in 2011 are published in external reports, and cost of debt is calculated by the company's financial department. However, cost of equity here is just estimation with beta, and risk premium taken from the previous mother company's index and risk-free rate of Finnish government bond

in 2011. In addition, terminal growth rate of sales and terminal EBIT margin are estimated based on historical data and the good business coming up in the near future.

Besides, there is just some information in the financial statement that will be applied to the further process. The table 5 will list these numbers and give forecasting based their terminal growth rates.

TABLE 5. Relevant information from income statement

Year	2011P	2012P	2013E	2014E	2015E	2016E	2017E
Sales	7906723	8524033	8722863	9400000	9870000	10363500	10881675
Sales growth		7.8%	2.3%	7.8%	5.0%	5.0%	5.0%
depreciation	411303	510500	514000	525972	552270	579884	608878
EBITDA	1975143	2142011	2185497	2355153	2472910	2596556	2726384
EBITDA growth		8.4%	2.0%	7.8%	5.0%	5.0%	5.0%
EBIT	1563840	1630596	1696946	1828677	1920110	2016116	2116922
EBIT growth		4.3%	4.1%	7.8%	5.0%	5.0%	5.0%
						Average	
EBITDA ratio	25.0%	25.1%				25.1%	
Depreciation %	5.2%	6.0%				5.6%	
EBIT ratio	19.8%	19.1%				19.5%	

As can be seen from the table, sales in 2012 increased 7.8% more compared to sales in 2011. However, in 2013, the company starts to focus on finding more new dealers therefore it is expected to grow more slightly than the previous year.

The next step is to start calculating free cash flows and discount factors with the above key data.

4.2.2 Calculating process

The calculating process can be divided into 3 steps: calculating FCFF and calculating WACC and getting the final value of the firm.

Firstly, in order to get FCFF result between 2011 and 2016, we have to know the value of NOPAT, changes in net working capital, capital expenditure, depreciation and amortization. Table 6 gives the tax rate, the result of NOPAT,

depreciation and amortization and changes in net working capital in the 5 years period.

TABLE 6. NOPAT in 5 years period

	2011P	2012P	2013E	2014E	2015E	2016E	2017E
EBIT	1563840	1630596	1696946	1828677	1920110	2016116	2116922
Taxes	0.26	0.245	0.2	0.2	0.2	0.2	0.2
NOPAT = EBIT*(1-tax)	1157242	1231100	1357557	1462941	1536088	1612893	1693537

Table 7 shows the result of net working capital (NWC) over 5 years with current assets and current liabilities forecasting based on its ratio with sales. Change in net working capital in the two continual years will be applied to the FCFF formula.

TABLE 7. Changes in net working capital (NWC) calculation in 5 years period

	2011P	2012P	2013E	2014E	2015E	2016E	2017E
Current assets	4000898	4512829	4515985	4866551	5109879	5365373	5633641
Sales %	51%	53%	52%				
Current liabilities	2523255	2957161	2904923	3130426	3286947	3451295	3623859
Sales %	32%	35%	33%				
NWC	1477644	1555669	1611062	1736125	1822931	1914078	2009782
Change in NWC		78025	55393	125063	86806	91147	95704

In order to get the gross investment in operating capital, we take sum of the changed amount of fixed asset and the changed amount of depreciation between 2011 and 2012. The result is 355.386€ in 2012 and it is assumed to increase approximately 50.000€ more every year.

Then FCFF is calculated with the formula in chapter 3.2.3 in which the inputs are NOPAT, changes in net working capital, gross investment and depreciation. This step is described in table 8.

TABLE 8. FCFF from 2012 to 2017

	2011P	2012P	2013E	2014E	2015E	2016E	2017E
NOPAT	1157242	1231100	1357557	1462941	1536088	1612893	1693537
ΔNWC		78025	55393	125063	86806	91147	95704
Gross IOC		355387	405387	455387	505387	555387	605387
Depreciation	411303	510500	514000	525972	552270	579884	608878
FCFF		1308189	1410777	1408463	1496166	1546244	1601325

The next step is to calculate discount factor. The WACC needs to balance two factors which are debts and equity. In this case, cost of debt and cost of equity has been estimated in table 5, debt and equity in 2011 and 2012 are listed in the balance sheet. In the next 5 years, debt and equity are estimated with the margin to sale are 71% and 44% respectively. The WACC calculation is described in table 9 below.

TABLE 9. WACC Calculation

	2011P	2012P	2013E	2014E	2015E	2016E	2017E
totalDebt	5550527	6155765	6211405	6693584	7028263	7379676	7748660
Sales %				71%			
TotalEquity	3511322	3681556	3820597	4117182	4323041	4539193	4766153
Sales %				44%			
Cost of debt		4.2%					
Cost of equity		8.5%					
WACC	5.85%	5.80%	5.83%	5.83%	5.83%	5.83%	5.83%

After that, it is easy to get the net present value. We take the FCFF one by one divided by WACC plus 1, as the exponent, with the power is the time period of the FCCF. Then, the value of the company is the sum of 5 year period forecasting plus the terminal value. This final step will be revealed in table 10.

TABLE 10. Value of the firm

	2011P	2012P	2013E	2014E	2015E	2016E	2017E
NPV		1236512	1259737	1188441	1192952	1165016	1140103
Sum NPV			5946249				
Terminal value (= FCFF/WACC)			27489460				
Cumulative DCF			33435709				
Total debt			-6155765				
Value of equity			27279944				

4.2.3 Result

This result shows that the company is worth 33.435.709€ including debt and equity. After deducting debt from the firm's value, the equity value is 27.279.944€. This is a positive value showing the potential future of the Case Company. In addition, net present value of the company is forecasted to be increased regularly. This means that the company is expected to generate more money from its investment and decrease the debt amount.

4.3 EVA Valuation

This method begins also from exacting all relevant information of the Case Company's financial statement. After that, the data are the input to the formulas that were shown in chapter 3.3.3. Finally, the result will be analyzed in the last section.

4.3.1 Key data

Basically, EVA needs EBIT, NOPAT, WACC, tax rates are the same as in the previous DCF valuation process. However, getting EVA result is much easier with less assumption and forecasting.

In this case, all assumption of EVA valuation model will be taken from table 4 in chapter 4.2.1.

4.3.2 Calculation process

There are mainly 2 steps in calculating EVA: NOPAT and cost of capital calculation. NOPAT was calculated previously in chapter 4.2.2.

In order to get capital invested through the next 5 years, total liabilities, accounts payable and accrued income are exacted from the balance sheet. The result is shown in table 11.

TABLE 11. Capital invested from 2012-2017

	2012P	2013E	2014E	2015E	2016E	2017E
Equity capital	470000	460000	470000	470000	470000	470000
Retained earning	3031963	2704087	2914000	3059700	3212685	3373319
Total Equity	3501963	3164087	3384000	3529700	3682685	3843319
Bank Loans	3198604	2965773	3196000	3355800	3523590	3699770
Short-term loans	499109	436143	470000	493500	518175	544084
Interest Liabiity	3697714	3401916	3666000	3849300	4041765	4243853
Invested Capital	7199677	6566004	7050000	7379000	7724450	8087173

The final step is to take the WACC estimated and we multiply it to invested capital which was calculated in the first step to get the amount of capital charge. After that, the capital charge is deducted from the NOPAT results taken from table 6. In order to be clear, table 12 below illustrates in detail how to get EVA results.

TABLE 12. EVA results

	2011P	2012P	2013E	2014E	2015E	2016E	2017E
Invested Capital	6822104	7199677	6566004	7050000	7379000	7724450	8087173
WACC	5.9%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%
Cost of capital	399361	417346	382485	410679	429844	449967	471097
EVA	757880	813754	975072	1052262	1106244	1162926	1222441
Present value of I	715968	769168	870679	887884	882052	876205	870347
terminal year = last EVA /last WACC							20985270
Capital based change							-8087162
Present value of capital based change							-7641998
Cumulative discounted EVA							33014435
Total debt							-6155765
Value of equity							26858670

4.3.3 Result

The company has a value which is 33.014.435€ and after deducting interest bearing debt, the value of equity claiming the business is 26.858.670€. This positive result gives investors a good impression about the company performance. In addition, annual EVA increased regularly every year. Accordingly, it may predict a good management performance with capital investment increasing, too. Thus, profit may be optimistic.

4.4 Comparision

Many previous studies have pointed out that EVA and DCF produce identical results (Wrisberg & Haes 2002, 81-82). Unexceptionally, the two results produced had less than 500.000€ difference. The reason for this gap is that both of these two methods are easy to manipulate no matter how the author tries to be unbiased. The most sensitive steps are sales forecast, other factors estimation based on sales forecast, cost of debt and cost of equity estimation. Therefore, this difference between two valuation methods results is acceptable.

The table 13 below will abbreviate the differences in calculating process between the two methods.

TABLE 13. Calculating processes of DCF and EVA

DCF valuation	**EVA valuation**
EBIT x (1 – tax rate)	**EBIT** x (1-tax rate)
NOPAT + Total depreciation	**NOPAT** − Cost of capital
Gross cash flow − Change in net working capital − Gross Investment	**EVA** + (Present value of future EVA x discount factor) − Present value of capital base change
Free Cash Flow to Firm x Discount factor + Terminal value	**Cumulative of discounted EVA** − Interest debt
Cumulative of discounted FCFF − Interest debt	**Value of equity** (26.858.670€)
Value of equity (27.279.944€)	

Although these two valuation methods are somewhat identical, there are some different basic points. While DCF uses FCFF, EVA valuation tracks EVA for each of the projected years based on the NOPAT deducted by capital costs.

As to what the above table illustrates, DCF shows clearer the cash flows of the firm annually. Therefore, DCF is more helpful if the company tends to build a

profile of cash flows for funding. However, EVA-based valuation has less estimation inputs and less calculating steps. It is one advantage that DCF does not have. Moreover, EVA can assess clearly how good management performance is in this year by looking at the absolute level of EVA or change in EVA from this year to next year. Finally, EVA-based valuation is what shareholders want to see because it gives shareholders the idea of how much is the value-added amount they can get in each period.

4.5 Conclusions and recommendations

The next chapter will answer the biggest question and sub-questions of this thesis. It will also give comments from the author about the performance of the company and some advice for further research.

In order to get more investment from different sources, companies should show how attractive and potential their business is. Having an appraisal file is one of the easiest way to attractive investors and persuasive to shareholders. The author has chosen EVA and DCF valuation methods to apply to one company operating in Finland. While the DCF valuation methods outcome is 33.435.709€, EVA gives a smaller result that is 33.014.435€. The gap between the two valuation method results is less than 500.000€. This is an acceptable number because there are many assumptions made during the appraising process. This study ends with the answer of the main question: the company is worth approximately **33.225.072€ ± 10%** as the average result between the two valuation processes. After deducting interest bearing debt, the equity of the company equals to **27.069.307€ ± 10%**. It can give the company a good impression to their investors or shareholders about the company valuation. The company can use this report to sell its equity, acquisition, separation or for tax purpose. Due to the uncertainty factors mentioned earlier in chapter 1.4, the company should plus or minus 5% – 10% on the result, depending on their purposes, to get a final price.

During the valuation process, there are three main difficult problems. Firstly, the company's financial statement is in Finnish which makes the author confused about financial terms and tax issue. After that, it is difficult to give a precise forecast of sales, cost of debt and cost of equity. As the result, it makes the value

of the company just an approximate number. Finally, there are plenty of sources about valuation, but it is difficult to implement those 100% from theory to practice since different companies have different financial characteristics and strategy.

The author takes the financial statements of the company in 2011 and 2012 to get the sales ratio, and different factors' margin to forecast. Sales and EBIT margin to sales are expected to increase 5% per year. The key factors used in both valuation methods are EBIT, WACC and tax rate. However, while DCF valuation discounts free cash flows which are taken from operating profit, changes in net working capital, depreciation and CAPEX, EVA-based valuation deducts capital invested from NOPAT.

According to the writer's own observations, EVA valuation is more reliable than DCF since it has less forecasting factors and is based on a very simple concept. The management's goal is to increase the market value of the company. In order to do so, managers need to increase the difference between the invested capital and the market value instead of obsessing about sales. Therefore, EVA-based valuation can be a tool that will align management and shareholders' interests. With EVA approach, managers can assess the value of their own decisions year-to- year by looking at the EVA results. Finally, it is easier to implement EVA valuation because it has less calculating process. Because of many advantages, since Stern Stewart & Co. invented EVA in the early 1990s, they have applied it to appraise over 400 companies in the world and EVA became the trend of the corporate valuation (Stewart 2013).

The company has done a good job in management and operation. During the two nearest fiscal years, the company has earned good profits and high EBIT which reward the company good DCF and EVA valuation. However, in order to ensure this happens in the near future, the company should pay more attention to the balance of saving and spending.

It might save thousands of euros for the company if the operating expenses can be decreased wisely. Buying office supplies in bulk or keeping good business relationships with suppliers can give the company opportunity to negotiate for a

better cost. In addition, the Case Company now employs, in the EU, many middlemen who work ineffectively but are costly. Hence, the company should recruit only one or two salesmen who have communication and sales skills. Finally, the company should consider leasing business equipment whenever it is possible because this way allows them to improve cash flows, decrease taxes and upgrade equipment regularly.

Nevertheless, only saving is not an effective way to improve the business. The Case Company should increase investment in R&D because innovation can bring competitiveness in this industry, even though R&D is usually costly. At the same time, buying more patents and copyrights could give the Case Company an exclusive negotiating advantage. Finally, the quality of the customer service should be improved because its products usually have long life expectancy. The Case Company can invest more in customer service by training more maintenance staff and providing whole-life insurance products.

5 SUMMARY

The practical aim of this study is to assist the Case Company in its financial report by appraising it. The result could give the company a price in merging, acquisition event or attract investors in the near future. Theoretically, this thesis showed the difference between the two most popular valuation methods which are DCF and EVA approach which are applied to the company valuation process. Consequently, there are the two main parts presented in this thesis.

The first part is the theoretical framework supporting the Case Company valuation. All information mentioned in this part is collected from reliable sources, books, lectures and financial journals. It begins with the definition, the misconception and the purpose of valuation. These are the underlying foundations of all valuation methods. After that, all valuation approaches available in recent times were introduced. Among various types of valuation, the author picked DCF and EVA approaches which were explained in more detail in further parts. The definition and limitation of the two valuation methods were collected and illustrated in the two last sections of the theoretical part. Because these valuation approaches were applied to the Case Company in the empirical part, the relevant inputs and calculating processes of DCF and EVA were described and explained in detail.

The later part shows the Case Company valuation process. The author firstly introduced the general information followed by the financial situation of the Case Company. From the financial status of the Case Company and the world economic development, the author forecasted the financial data of the company for the next 5 years period. Then, each valuation process was applied to appraise the company. Both of these approaches had the same outline beginning with key data exacting from the Company financial statements and the data forecasted earlier. After different calculating steps, the results of DCF and EVA valuations were 33.435.709€, and 33.014.435€ respectively. Comparing these two processes, the author highly recommends auditors, who will appraise the Case Company in the future, using EVA-based valuation. It suggests to the Case Company that they should save operating cost, enhance investment in R & D, and take care of customer service in order to improve the financial situation. The Case Company

can use the result of this thesis as a price in the acquisition or selling event in the near future.

5.1 Reliability and validity

The reliability and validity part is essential for quantitative research because these two factors help researchers to design the study, and evaluate the accuracy of the result. From reliability, the author can measure the consistency overtime to know whether the reproducibility produces similar outcome or not. Concerning validity, it tests the research whether it determined the concept that it should. In a quantitative research, the reliability factor is usually the consequence of the validity (Golafshani 2003, 600-604).

The author believes that the results of this thesis will be useful for the Case Company in decision making in terms of operating and managing. It is also a good example for further studies. Despite the fact that different companies have different business characteristics and purposes, the basic framework of making a business valuation is still the same. The reliability of this thesis is affected by firm-specific uncertainties and macro-economic uncertainty. These uncertainties cause the measurement uncertainty in forecasted figures and the final result of this thesis. In general, this thesis is reliable.

Concerning the validity of the thesis, the author researched exactly what the Case Company needs. All of the concepts about corporate finance, corporate valuation and different valuation approaches have been gathered to evaluate an appraisal solution for the Case Company. In the empirical parts, we chose two suitable valuation approaches to apply to the Case Company financial statement. It allowed the author to calculate the value of the Case Company business which is the answer of the primary research question.

5.2 Suggestions for further studies

There are three main points in further research should be considered carefully before appraising a company.

Firstly, researchers should choose a suitable valuation method for the company depending on the company business characteristics and the purpose of the valuation. For instance, if the company operates in a risky industry, it will have higher beta-coefficient, which will affect the discount rate and the cumulative DCF. Before carrying out the valuation process, researchers should discuss and agree with the business owner about the scope and goals of the business appraisal. Depending on that, they can choose a suitable valuation method.

At the beginning of the valuation process, it is necessary for researchers to draft an outline and gather all relevant information supporting the analysis. A good preparation could help them to analyze the company in a short time. We can utilize existing software as a Service (SaaS) such as ValuAdder, ValuSource or ValueExpress which provides research solutions and systems to the business to apply to the calculating process. It highly recommends one Finnish software program named Valuatum Platform. It can help companies to apply EVA and DCF valuation to appraise their business. This tool is easy to use because of its ready-made interfaces to many reliable sources in Finland and internationally (Mäkeläinen, Valuatum Oy 2011).

Finally, researchers should be aware of the reliability of sources regarding theories and valuation framework. There are various methods to calculate a factor of the valuation process, but not all of them are suitable to the financial characteristics of the company. Before choosing a formula application, we should evaluate whether the company can provide enough input or not.

All in all, we should carefully evaluate the internal and external factors related to the valuation process in order to give to the company a reliable financial report. Later equivalent studies should understand the foundations of valuation theoretically. Empirically, discussing with the company managers about the purpose of business appraising and business risks is also crucial. Finally, choosing

a suitable valuation method for the company and being aware of the external environment is the key point to make a good valuation process.

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APPENDICES

APPENDIX 1. The Case Company's balance sheet 2011 – 2012

[redacted] Oy TASE Sivu 3.1
Y-tunnus 0000000-0

Rahayksikkö EURO	01.11.2010 -31.10.2011	1.1.2011 -31.10.2012
V A S T A A V A A		
PYSYVÄT VASTAAVAT		
Aineettomat hyödykkeet		
Aineettomat oikeudet	44 901,46	48 988,46
Muut pitkä vaikutteiset	10 351,25	12 510,25
Ennakkomaksut	3 000,00	5000,00
	58 282,71	66 498,71
Aineelliset hyödykkeet		
Maa- ja vesialueet		
Omistelut	182 022,05	186 028,05
Rakennukset ja rakennelmat		
Omistelut	976 782,69	986048,6
Koneet ja kalusto	2 219 903,73	2 400 913,7
Muut aineelliset hyödukkeet	4 774,82	5 794,8
Ennakkomaksut ja keskener	1 619 214,45	1 679 207,44
	5 002 697,74	5 257 992,59
	5 060 950,45	5 324 491,3
VAIHTUVAT VASTAAVAT		
Vaihto-omaisuus		
Aineet ja tarvikkeet	1 228 362,30	1 585 512,25
Keskeneräiset tuotteet	34 894,00	46 394
Valmiit tuotteet/Tavarat	276 515,65	327 519,65
Ennakkomaksut	29 269,59	29 080
	1 569 041,54	1 988 505,9
Saamiset		
Lyhytaikaiset		
Myyntisaamiset	1 714 724,15	1 850 224,14
Lainasaamiset	46 792,36	48 793,23
Muut saamiset	104 225,17	105 201,17
Siirtosaamiset	533,134,29	520 104,98
	2 398 875,97	2 524 323,52
Rahat ja pankkisaamiset	32 980,79	35 204,79
	4 000 898,30	4 512 829,42
VASTAAVAA YHTEENSÄ	**9 061 848,75**	**9 837 320,72**

Rahayksikkö EURO	01.11.2010 -31.10.2011	1.1.2011 -31.10.2012
V A S T A A V A A		
OMA PÄÄOMA		
Osakepääoma		
Osakepääoma	450 000,00	470 000,00
	450 000,00	470 000,00
Edellisten tilitkausien voitto (tappio)	2 886 719,82	3 031 963,26
Tilikauden voitto (tappio)	145 243,44	150 233,8
	3 481 963,26	3 652 197,06
PAKOLLISET VARAUKSET		
Muut pakolliset varaukset	29 358,25	29 358,5
	29 358,25	29 358,5
VIERAS PÄÄOMA		
Pitkäaikainen		
Lainat rahoituslaitoksilta	3 027 272,43	3 198 604,43
	3 027 272,43	3 198 604,43
Lyhytaikainen		
Lainat rahoituslaitoksilta	458 111,42	499 109,28
Ostovelat	941 709,93	1 353 300,15
Muut velat	310 435,46	252 293,55
Siirtovelat	812 997,75	852 457,75
	2 523 254,56	2 957 160,73
	5 550 526,99	6 155 765,16
VASTATTAVAA YHTEENSÄ	**9 061 848,75**	**9 837 320,72**

APPENDIX 2. The Case Company's income statement 2011 – 2012

[redacted] Oy TULOSLASKELMA Sivu 3.3
Y-tunnus 0000000-0

Rahayksikkö EURO	01.11.2010 -31.10.2011	1.1.2011 -31.10.2012
LIIKEVAIHTO	7 906 723,16	8 524 033,12
Valmiiden ja keskeneräisten tuotteiden varastojen lisäys (+) tai vähennys (-)	-1 659,00	-2 100
Liiketoiminnan muut tuotot	138 278,72	123 011,3
Materiaalit ja palvelut	-3 799 857,81	-4 011 205,84
Aineet, tarvikkeet ja tavarat	44 352,58	43 100,76
Ostot tilikauden aikana	-381 766,24	-355 020
Varastojen lisäys / vähennys		
Ulkopuoliset palvelut		
	-4 137 271,47	-4 202 214,78
Henkilöstökulut		
Palkat ja palkkiot	-1 498 910,89	-1 744 221,32
Henkilösivukulut		
Eläkekulut	-353 278,46	-353 400
Muut henkilösivukulut	-42 061,91	-43 530
	-1 894 251,26	-2 141 151,32
Poistot ja arvonalentumiset		
Suunnitelman mukase poistot	-410 408,24	-510500
Konserniliikearvon poisto	-894,75	-894,75
	-411 302,99	-511 394,75
Liiketoiminnan muut kulut	-36 677,26	-38 677
LIIKEVOITTO (-TAPPIO)	**1 563 839,18**	**1 630 596,27**
Rahoitustuotot ja –kulut		
Tuotot muista pysyvien vastaavien sijoituksia		
Muilta	-353 611,24	-354 988,45
Muut korko- ja rahoitustuotot		
Muilta	-325 800,86	-371 262,2
Korkokulut ja muut rahoituskulut		
Muille	-332 586,18	-354 531,97
VOITTO (TAPPIO) ENNEN SATUNNAISIA ERIÄ	**551 841**	**549 734,73**
VOITTO (TAPPIO) ENNEN TILINPÄÄTÖS-SIIRTOJA JA VEROJA	**551 841**	**549 734,73**
Tuloverot		
Tilikauden verot	-406 598,44	-339 500,92
TILIKAUDEN VOITTO (TAPPIO)	**145 243,44**	**150 233,81**

APPENDIX 3. Finland with impressive ratings and stable outlook (Nordea 2012)

Country	Moody's	Outlook	Standard & Poor's	Outlook	Fitch	Outlook
Austria	Aaa	Negative	AA+	Negative	AAA	Stable
Belgium	Aa3	Negative	AA	Negative	AA	Stable
Finland	**Aaa**	**Stable**	**AAA**	**Stable**	**AAA**	**Stable**
France	Aa1	Negative	AA+	Negative	AAA	Negative
Germany	Aaa	Negative	AAA	Stable	AAA	Stable
Luxembourg	Aaa	Negative	AAA	Stable	AAA	Stable
Netherlands	Aaa	Negative	AAA	Negative	AAA	Stable

Source: Bloomberg

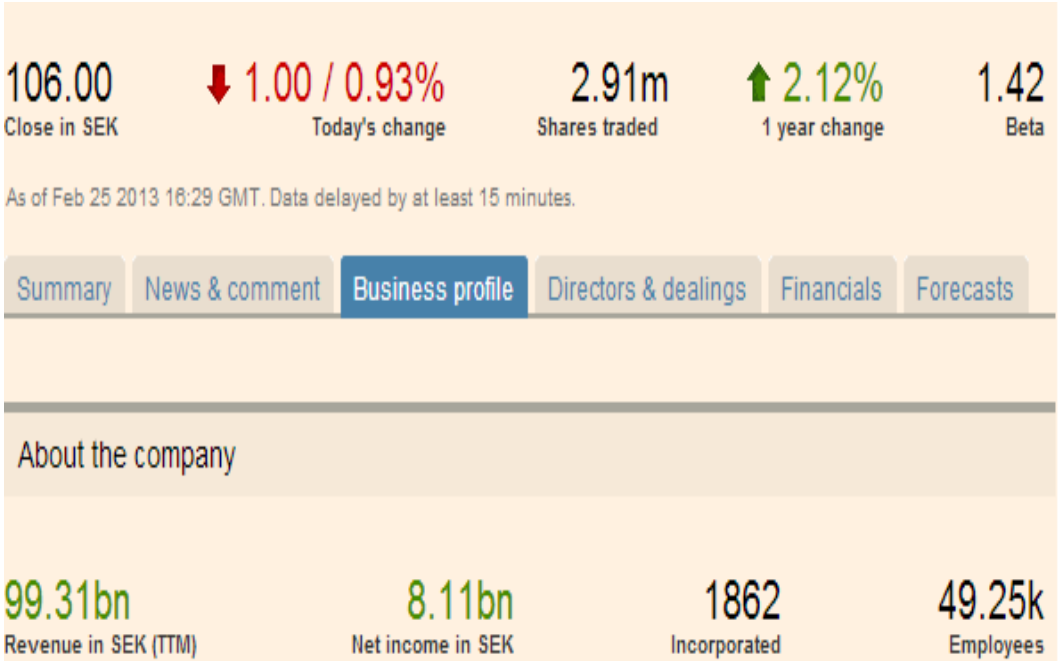
APPENDIX 4. Benchmark interest rate in Finland (Trading economics 2012)

APPENDIX 5. Risk Premium in Finland 2011 - 2012 (Fernandez, Aguirreamaloa and Corres 2011, 3)

Fernandéz et al (2012) Market risk premium 2011 and 2012

	2012			2011		
Country	Average	Median	Number	Average	Median	Number
France	5.9%	6.0%	82	6.0%	6.0%	45
Sweden	5.9%	6.0%	58	5.9%	5.5%	38
Norway	5.8%	5.5%	58	5.5%	5.0%	30
USA	5.5%	5.4%	2 223	5.5%	5.0%	1 503
Denmark	5.5%	5.0%	43	5.4%	4.5%	12
Finland	6.0%	6.0%	37	5.4%	4.7%	18
Germany	5.5%	5.0%	281	5.4%	5.0%	71
UK	5.5%	5.0%	171	5.3%	5.0%	930

APPENDIX 6. The Mother Company index (Financial Times 2013)



APPENDIX 7. Cost of equity in 2012 calculation

$\boldsymbol{E(R_i) = R_f + \beta\,(E(R_m) - R_f)}$
$R_f = 1$
$\boldsymbol{\beta} = 1{,}4$
$E(R_m) = 5{,}4$

$$\boldsymbol{E(R_i) = 1 + 1{,}4 \times 5{,}4 = 8{,}5}$$