Problems with the Discounted Cash Flow method

Discrepancy between theory and practice

Martin Seijdell

Master Thesis

Business Administration

Thesis

Master Business Administration – track Financial Management

Martin Seijdell (s1003402)

Final version

22 June 2015

Supervisors:

First supervisor: Ir. H. Kroon University of Twente

Second supervisor: Dr. B. Roorda University of Twente

UNIVERSITY OF TWENTE

Faculty Behavioural, Management and Social sciences

Department Finance & Accounting

Preface

After finishing my bachelor Public Administration, I have chosen to do the master Business Administration. I had become more interested in the financial courses and therefore I choose the Financial Management specialization. During one of the lectures the valuation of companies was discussed. This topic draws my attention and I was interested to write my thesis about the valuation of companies.

This thesis is written for completing my master Business Administration at the University of Twente. In this preface I would like to thank the people that have guided and supported me during this thesis and my whole studentship. First of all, I want thank my parents for their (financial) support. During my time as a student they have supported me in the general as well as in the academically way. Secondly, I would like to thank my girlfriend Monique for her support. Her support and motivation have helped me enormously to finish my study. In addition, I would also like to thank my supervisors Ir. H. Kroon and Dr. B. Roorda for their guidance during this thesis and the given feedback. At last I would like to thank the respondents for their time and the interesting conversation that we have had concerning the valuation of companies.

Martin Seijdell,

June 2015

Abstract

This research focused on the issues that rise when valuating companies with the Discounted Cash Flow method (DCF method). Though it is one of the most popular methods for valuation, it has also received quite some critics. In the literature these critics are often described as issues. These opposed issues are not covered by the DCF method, but could affect the valuation of a company. Though very little is written about the question whether these issues are perceived the same in practice as in they are in theory, let alone the question whether practitioners require and adjusted DCF method. Literature often focuses on adjusting the DCF method by incorporating the issues into the method. The aim of this research is to indicate whether the problems stated in theory are perceived the same as in practice and which issues should be incorporated into the DCF method. The main research question is formulated as follows: "*Which problems that can be found in both theory as well in practice which influence the valuation of Small and Medium Enterprises when using the Discounted Cash Flow method, should be incorporated into the formula or model of the Discounted Cash Flow (and if so how)?*" The contribution of this research to the existing literature is threefold. First, based on the findings in literature, a table has been formed (table 3 Issues Discounted Cash Flow method), which to the best of the researcher knowledge's summarizes all the issues that can be found in literature. Second, this research has indicated to what extent the issues are perceived the same in theory as in practice. Third, there is indicated to what extent incorporation of the issues is needed in practice.

This research can be described as an explorative study with a cross sectional design focussing on qualitative data. Through semi open interviews with valuators mostly focused on valuation of Small and Medium Enterprises (SME), data was collected for the analysis about the selected issues. The issues were selected on the assumption whether they were major issues for valuating SME's. The main results that can be derived from those interviews indicate that most issues are perceived the same in theory as in practice. Valuators stressed that although these issues could influence the valuation, incorporation of those issues is not needed in practice. This is due to the fact that for each valuation has adjusted to the specific case and situation. However, a checklist would be appreciated in practice. It can be concluded that none of the issues found both in theory as well as in practice, should be incorporated into the DCF method. By constructing a checklist, the valuators will have a tool that provides suggestions how to deal with the issues and to check whether all the issues are taken care of.

Table of Contents

List of used abbreviations

APV = Adjusted Present Value

CAPEX = Capital Expenditures

CCF = Capital Cash Flow

DCF = Discounted Cash Flow

EBIT = Earnings Before Interest and Taxes

EP = Economic Profit

EVA = Economic Value Added

FCF = Free Cash Flow

FCFE = Free Cash Flow to Equity

FCFF = Free Cash Flow to the Firm

GDP = Gross Domestic Product

IPO = Initial Public Offering

NCT = Noticing, Collecting and Thinking

NOPAT = Net Operating Profit After Tax

NWC = Net Working Capital

PPE = Property, Plant and Equipment

SME = Small and Medium Enterprises

WACC = Weighted Average Cost of Capital

List of tables, figures and formulas

Formulas

Figure

Tables

1 Introduction

1.1 The Discounted Cash Flow method and valuation

The Discounted Cash Flow (DCF)[1] method is a well-known and accepted method for valuing companies (Hongjiu, 2008; Steiger, 2008; Uzma, Singh, & Kumar, 2010). In this research the DCF method is not seen as just the formula of the DCF method, but also as the whole process of valuation. This process and the formula will be more elaborated in chapter 2 'Theoretical framework' (paragraph 2.3 The Discounted Cash Flow method explained). The DCF method is also called the 'McKinsey valuation model' (Jennergren, 2011), and is used since the 1970s (Reis & Augusto, 2013). According Jennergren (2008) the DCF method is popularized by the McKinsey consulting company, through the influential book: 'Valuation: measuring and managing the value of companies'[2]. Steiger (2008) describes DCF method as a "standard procedure in the modern finance". The general goal in valuation is to give an estimate of the value of a company (Steiger, 2008). In addition, the DCF method can also be used to value for instance IPO's (Initial Public Offerings) and financial assets (Steiger, 2008). For example in the oil industry, the DCF method is one of the most common methods for the valuation of oil projects (Emhjellen & Alaouze, 2003). The DCF method is seen as the most dominant and mature method for the valuation of companies (Hongjiu, 2008; Jennergren, 2008). Jennergren (2008) states that although the method had some competition from the Residual Income model, it remains a dominant method in the world of valuation.

The supporters for this method claim that this method is one of the most accepted and well-known methods, because it looks at the future for valuing companies (Uzma et al., 2010). The DCF method looks at the future free cash flows[3] in order to valuate a company, rather than looking at results from the past. The DCF method begins with a forecasted period (referred to as explicit period), usually seven till ten years[4] (Jennergren, 2011). After this period the DCF method looks at the post horizon phase, in this phase the value is computed till infinity (Jennergren, 2011). This is the part where most of the problems arise for the valuation, according to Reis & Augusto (2013). This post horizon phase, the so-called terminal value or continuing value takes a large part in the total estimated value of a

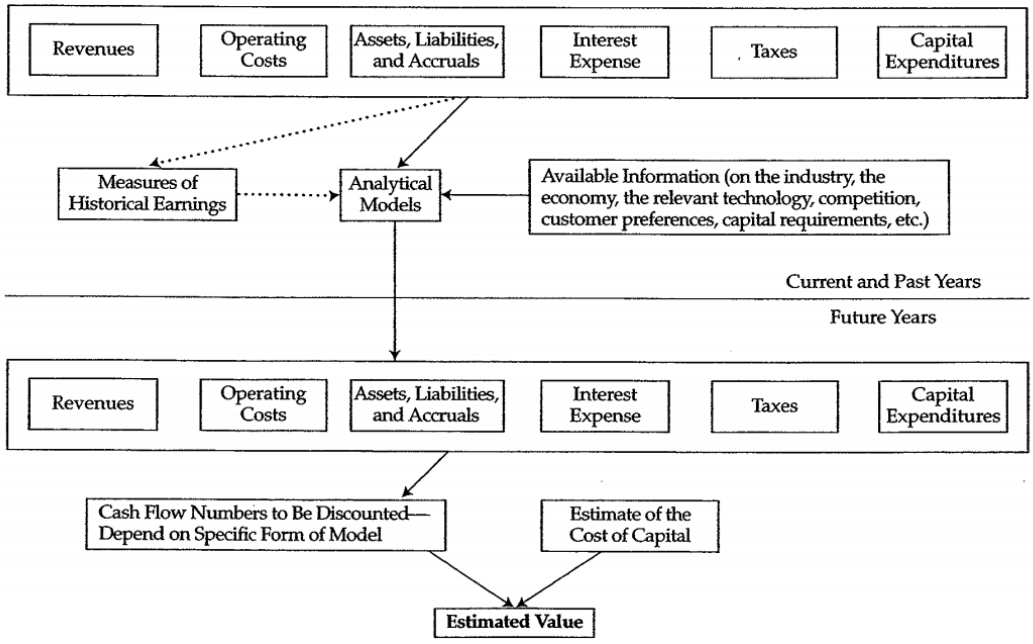
[1] Henceforth named as DCF method
[2] (Copeland, Koller, & Murrin, 1990)
[3] See paragraph 2.3 for more information
[4] The period for the forecasted years diverge, mostly a period of arround 10 years is taken. According Leach & Melicher (2012) a period between two till ten years.

company (Reis & Augusto, 2013). Though it takes a large part in the valuation, this calculation of the terminal value is based on assumptions that are hard to predict (Reis & Augusto, 2013). While the forecasted period is based on more predictable assumptions, but takes a smaller part in the total estimated value of a company (Reis & Augusto, 2013). Steiger (2008) adds that because the DCF method is a forward looking method it has to deal with many assumptions and predictions. Minor changes in the predictions lead to huge differences in the total value of company. Thus, errors in those underlying assumptions can have a great impact on the value of companies (Reis & Augusto, 2013; Steiger, 2008). The problem concerning the predictability of the assumptions in the terminal value part are somewhat refuted by Hering, Olbrich, & Steinrücke (2006). According to them, the DCF method is a method that has a future orientation. Therefore there will always be problems with uncertainty (Hering et al., 2006). In addition to the problems with the terminal value, there are also other problems concerning the DCF method. Different authors claim that there are some variables that are not taken into account when using this method, while those variables can have an effect on the value of a company (Armitage, 2008; Hongjiu, 2008; Reis & Augusto, 2013). To overcome this problem, the standard formula of the DCF method is often adjusted to tailor to a specific situation or case[5]. These adjustments are often made to add the missing [6], in order to compute better estimates of the value of a company. Analysts also seem to adjust their valuation methods to a specific industry issue, so they tailor the valuation methods and models to specific situations (Demirakos, Strong, & Walker, 2004). This may imply that the standard formula of the DCF method is too general to estimate a fair value of a company. It seems that this formula gives mere a backbone; a starting point for the valuation process. Svetlova (2012) confirms that models, such as the DCF method, are facilitating in the decision making process. The outcomes of the DCF model were used as a signal for over- or undervaluation (Svetlova, 2012). The model was not solely used as decision instrument. Furthermore, the DCF model could be seen as a starting point, because the outcomes as well as the underlying assumptions are not taken for granted (Svetlova, 2012). Svetlova (2012) stresses that the DCF model is more or less a supportive tool, because the final decision has to be made by humans. Due to the fact that humans can provide qualitative overlay (Svetlova, 2012). So the standard formula seems not only to be too general, it seems also to rely on assumptions that are hard to predict. When valuating a company, the stated problems above can pose a problem for valuators. So should valuators in practice rely on the DCF method, or should they also take other variables into account

[5] See for example the case of the oil projects (Emhjellen & Alaouze, 2003).
[6] See chapter conceptual frame work for more details about the missing variables.

when valuing a company? In other words, is there a discrepancy between theory and practice: is the standard formula of the DCF method too general and does it not cover all the variables? If so, are the variables that are addressed, by for example, Reis & Gusto (2013), Hongjiu (2008) and Armitage (2008), the missing variables that can explain the discrepancy between theory and practice? As seen in figure 1, it seems that the valuation models do not explain the value of companies by solely looking at the discounted cash flows. Other issues can also influence the value.

Figure 1 Accounting Information and Valuation (Cornell & Landsman, 2003)



1.2 Research question

This research will focus on the topic of valuation of companies through the Discounted Cash Flow method. More exactly, this research will focus upon the discrepancy between theory and practice concerning the issues for the DCF method. This is still quite general. In order to keep this research feasible and doable, the main question will have to be scoped further. One of the main concerns is the access for the data collection. Respondents for the interviews will be chosen based on the network of the first supervisor (see chapter 3 'Methodology' for more details about the research design and data collection). The valuators in this network are mainly focused on the valuation of Small and Medium Enterprises (SME), the focus of this research will therefore be on the valuation of SME's. Another reason for focusing on SME's is that the size of the companies will determine whether some of the issues have an effect on the valuation.[7] To answer the question if there is a discrepancy between practice and theory concerning the use of Discounted Cash Flow method for valuating SME's, the following research question can be stated:

> *Which problems that can be found in both theory as well as in practice influencing the valuation of Small and Medium Enterprises when using the Discounted Cash Flow method, should be incorporated into the formula or model of the Discounted Cash Flow (and how)?*

The main question can be divided in sub questions. These sub questions will focus on the following items: first of all, which problems can be found in theory and which can be found in practice? Such a sub question is necessary in order to show the discrepancy. Secondly, what are the reasons to deviate from the method? While sub question one gives insights in where there is a discrepancy, sub question two will answer the reasons for the deviation. Third, how do they deviate? This sub question will give more insights where valuators deviate from the method. The last question concerns the question whether the DCF method has to be adjusted in order to incorporate the issues. It is of importance to incorporate this question, because it can indicate where further research should be focusing upon. So the following sub questions can be stated in order to answer the main research question:

1. Which problems are there in theory and in practice when using the DCF method for valuation of SME's and where do theory and practice converge or diverge?

[7] For instance one of the issues that is discussed in the literature are currency developments. This might be a issue for large enterprises and multinationals, but for SME's this will probably less of an issue.

2. What are the reasons for valuators to diverge from the theory in practice when valuating SME's?
3. How do the valuators diverge in the calculation of the valuation of SME's?
4. Is there a need for incorporating the issues into the existing formula or method according the valuators? (If there is a need for incorporation, how to incorporate those issues?)

In order to answer sub question one, the different issues in theory and practice should be clear. This can be done by first describing the issues that can be found in the literature. Once this is done, these issues will serve as items for the framework upon which the interview question will be based. The second sub question can be answered by adding question about diverging to the interview. The third and fourth sub question will also be incorporated in the same way. So to summarize, theory will partially answer sub question one and the interview questions will answer the remainder of the sub questions.

1.3 Contribution to the existing literature

In the literature attention is paid to problems and issues concerning the DCF model (see chapter 2 'Theoretical framework'). These issues are mainly approached from a theoretical point of view. There are just a few studies that focus on the issues that can be found in practice. Furthermore literature focuses only on a few issues at the time, and provides some solutions in the form of modified formulas. These modified formulas only incorporate a few issues at the time. To the best of the researcher knowledge's, there are no studies looking at multiple issues and that compares those multiple issues with the problems encountered in practice. While it is argued that the outcome of the DCF model can only be seen as an indication of the value (Svetlova, 2012), literature is mainly focusing on how to 'fix' the DCF formula. The first contribution of this research to the existing literature is therefore to compare the findings from the literature with practice. The second contribution focuses on the question whether there is a need in practice for incorporation of the issues. The last contribution that is made to the existing literature is the summarizing of the issues concerning the DCF method. Articles only focus on a few issues at the time, therefore this research will also provide a summary of all the issues found in theory.

1.4 Outline & approach

This paragraph discusses the structure/outline of this thesis. First of all, the theoretical framework will be discussed. The theoretical framework will focus on four items. First the models of valuation will be discussed. Then the DCF method and the process of valuation will be further elaborated. After these two sections the issues concerning the DCF method will be discussed. Though the research question will focus on the issues that influence the valuation for SME's, the theoretical framework will not be narrowed down to SME's. The theoretical framework will give an overview of all the issues that can be found in the literature. In this way there is a complete overview as possible of all the issues that are discussed in literature, as was one of the aimed contributions. In the methodology chapter a distinction is made between the different issues and whether they apply to SME's or not. The methodology chapter will first focus on the research design. Then the methods and procedures of the data collection will be presented. This includes the deviation and motivation of the issues that concerns the valuation of SME's. The interview questions will also be presented in this section. The methodology chapter will end with the data analysis, in this section the codes for the analysis will be discussed.

The chapter 'Results' will present the findings of the conducted interviews. This chapter will first focus how the respondents perceived the interview questions. Afterward the main results will be discussed, which will start with the diverging of the valuators in practice. Afterward, the main results for the issues will be discussed. Then the analysis will continue to analyse some issues more in depth. This includes issues, which had remarkable results or were deviant compared to the main results. Once this analysis is done, the new issues will be discussed. During the interviews, respondents have stated some issues that were not discussed in the theoretical framework. Then the chapter will put the DCF method in perspective by discussing the larger process of valuating, because valuators had argued that more general problems also influence the valuations (e.g. the problem of price vs. value). The chapter will continue with discussing the last part of the results about the need for incorporation. Subsequently there will be a conclusion of this chapter.

The chapter 'Conclusions' will answer the main research question. This thesis will end with the Discussion of the results as well as reflecting on the contribution that have been made to literature. Furthermore this chapter will propose a solution to the issues in the form of a checklist; though this was not the main goal, results have revealed some clues and ideas on how to construct a certain checklist. The chapter will end with the limitations of this research and the ideas for future research.

2 Theoretical framework

2.1 Introduction

The main part of this theoretical framework will be focusing on the issues that can be found in the literature concerning the DCF method. Before these issues can be addressed, it is important to first focus on valuation methods and models in general. Which models and methods for valuation can be found in theory, and what do they have in common? Afterward, the theoretical framework will focus on explaining the DCF method. This answers the questions how the method works and how the valuation process looks like. These two sections will give more insight in valuation; its models and methods (paragraph 2.2), and how the DCF method works. This will serve as background knowledge to understand better where the issues concerning the DCF method come from and how these issues influence the valuation. The third section will be the discussion of the issues that are found in theory. The fourth section of this chapter will shortly discuss some alternative methods for the DCF method that are opted in the literature. This chapter will end with a concluding paragraph.

2.2 Valuation methods and models

In this paragraph different valuation models will be discussed. This paragraph will dive into the similarities and differences between some models. Furthermore, this section will also divide the different models into categories.

The DCF method is one of many methods that can be used to value a company (Jennergren, 2008; Steiger, 2008). Jennergren (2008) states that the Discounted Dividend model and for example the Residual Income model can be placed in the same family; all the models estimate the same equity value, but under different assumptions (Jennergren, 2008). Reis & Augusto (2013) identify five families of models and methods for valuing a company. First Reis & Augusto (2013) define the family of models that are based on the discount of cash flows. Besides the Free Cash Flow (FCF), other cash flows are also used in order to value a company; for example the Equity Cash Flow (ECF) or the Capital Cash Flow (CCF) (Reis & Augusto, 2013). Although Reis & Augusto (2013) acknowledge that there are some different views, they qualify the second family of valuing models based on models and methods that concern dividends. Some literature state that these models could also be placed among the first group (Free Cash Flow) (Reis & Augusto, 2013). The third group are

models that focus on value creation; for example the Economic Value Added model (EVA) and the Economic Profit (EP) (Reis & Augusto, 2013). The fourth family is identified by Reis & Augusto (2013) as the models that are based on accounting elements; one can think of the goodwill method. The fifth and last group can be described as the sustaining models in Real Options (Reis & Augusto, 2013). Thus besides the DCF method there are a lot of other models and methods to value a company. All use other assumptions and look at different aspects. Fernández (2007) discusses ten methods and nine theories, including the DCF method, EVA, Economic Profit and Capital Cash Flows. Fernández (2007) states that all ten methods come up with the same result, because they all look at the same reality with the same assumptions and differ only how the cash flows are determined. However, Plenborg (2002) contradicts this by comparing the Residual Income model and DCF model. Results showed that the Residual Income model performed better in some situations than the DCF model (Plenborg, 2002). This difference is also observed by Hess and colleagues (2008). They state that the Residual Income model tends to outperform the DCF method on bias and accuracy. This is a remarkable observation, because both the Residual Income model and DCF model are based on the Discounted Dividend model. Therefore, in theory they should estimate the same value (Hess, Homburg, Lorenz, & Sievers, 2008; Plenborg, 2002). As described above, this assumption is also made by Fernández (2007). According to Hess et al. (2008) these differences arise because the conditions that are assumed are not met in reality. The methods calculate the value by discounting expected future pay-offs and use assumptions such as cost of capital. So in theory all the methods should all yield the same value (Hess et al., 2008). However, the conditions are almost never met in reality, which result in the differences between the valuation methods (Hess et al., 2008). Russell (2007) adds that in theory a rehearsed valuation in the future would not be different from earlier made valuation, because the prior knowledge was perfect. In practice this is not the case, because of the assumption that business will continue into perpetuity (Russell, 2007).

Demirakos et al. (2004) focus in their article upon the question which methods and models valuators use. They state that the choice for a model should be determined by the data that is available, but that the choice is also driven by the instinct of the user (Demirakos et al., 2004). Demirakos et al. (2004) distinguishes three categories of valuation methods and models. Besides the multi-period models such as the DCF method, there are also single comparative models such as price-earnings ratios. The other category that Demirakos et al. (2004) identify is the hybrid models, which are a combination of the single comparative and multi-period methods (e.g. Cash Recovery Rates). Demirakos et al. (2004) conclude that although the DCF method is widely used in practice, single period comparative models are

used more often in practice. The multi-period valuation models are preferred more due to their superiority than the single period comparative models (Demirakos et al., 2004). The single period comparative models are probably used because of the low cost and the ease of use, according to Demirakos et al. (2004). The authors conclude that the use of Option Pricing models was very limited in practice (Demirakos et al., 2004). Copeland & Tufano (2004) describe these options as investments in projects that are multi-staged. There are multiple decision moments to push ahead or pull out (Copeland & Tufano, 2004). The conclusion of Demirakos et al. (2004) contradicts in some way with the argument of Trigeorgris & Ioulianou (2012). They claim that the Option Pricing model is a good alternative for the companies that deal with flexible investment opportunities. Due to the rigid assumption in the DCF method, these options are not captured in the value (Trigeorgis & Ioulianou, 2012).

As stated in the introduction and in this paragraph, the DCF method is one of the more dominant methods in the practice of valuating (Jennergren, 2008), but it is important that the wider picture of valuing models has been clarified in order to place the DCF method in the rest of the valuing techniques. It has also become clear that different methods should estimate the same value in theory, but in practice this is not always the case. This probably caused by assumptions that are made, but not met in practice. The different valuation models can be categorized into three different categories; single comparative, hybrid and multi-period methods. In the next paragraph, the DCF method will be further elaborated: the process of valuation will be discussed.

2.3 The Discounted Cash Flow method explained

This paragraph will focus on the process of valuation, so it becomes clear how the valuation process goes and how the DCF formulas are applied in this process. This will give more insight in the DCF method, which is needed before addressing the different issues concerning the DCF method.

The value of a company can be estimated by looking at two periods (Copeland, Koller, & Murrin, 1990), the forecasted period and the period there after, called the terminal value or continuing value. In essence, the value of a company is the sum of the present value of the cash flows in these two periods (Copeland et al., 1990). The process of the valuating a company with the DCF method can be split into different stages. The first step is making different scenarios for the future free cash flows (Steiger, 2008). Three different scenarios are developed: the base or management case, the bull case and the bear case (Steiger,

2008). Copeland et al. (1990) do not explicit name these scenarios, but also stresses on developing different scenarios. The base case uses management estimations, the bull case takes optimistic assumption, and the bear case takes pessimistic assumptions (Steiger, 2008). Russell (2007) adds that the first step should always be to secure reliable financial statements. These financial statements should be specific enough to identify the nature of the incomes. Expenses should be according to the industry norms. If this is not the case, the valuator have to adjust this (Russell, 2007). This step is followed by determining the discount rate, so that the future free cash flows can be discounted (Steiger, 2008). This is been done by the following formula:

Equation 1 DCF formula: Forecasted period (Brealey, Myers, & Allen, 2010; Steiger, 2008)

$$\sum_{t=0}^{n} \frac{FCF_t}{(1+r)^t}$$

In this formula, *t* stands for the years, and FCF is the free cash flow (Brealey et al., 2010). The discount factor *(r)* is often been determined by the Weighted Average Cost of Capital (WACC). This formula is the first part of the calculation, the so-called forecasted period or explicit period (Reis & Augusto, 2013). After this step the terminal value is been determined. Steiger (2008) describes the terminal value as the "net present value of all future cash flows that accrue after the time period that is covered by the scenario analysis". In order to calculate the terminal value a growth factor *(g)* should be determined. Together with the last free cash flow in the last year of the forecasted period, this determines the terminal value. The growth factor should reflect the expected inflation as well as the real growth (Kaplan & Ruback, 1995). The assumption is that this growth will go on for infinity. Therefore the mathematically formula is equal to the following formula (Steiger, 2008).

Equation 2 DCF formula: Terminal Value (Leach & Melicher, 2012; Steiger, 2008)

$$Terminal\ Value = \sum_{n=1}^{\infty} \frac{FCF_{TV} * (1+g)^n}{(1+r)^n} = \frac{FCF_{TV}\ (1+g)}{r-g}$$

The last step is to add all the discounted cash flows from the forecasted period and the terminal value together. This will give the value for the company (Steiger, 2008). Then the complete formula can be shown as:

Equation 3 DCF formula: Company value (Steiger, 2008)

$$Company\ Value = \sum_{t=0}^{n} \frac{FCF_t}{(1+r)^t} + \frac{\frac{FCF_{TV}\ (1+g)}{r-g}}{(1+r)^{n+1}}$$

with *r* = $WACC = \frac{E}{D+E} * R_E + \frac{D}{D+E} * R_D * (1-Tc)$,
and with FCF = $Cash\ flow\ (operations) - CAPEX$

Steiger (2008) states that one can chose between two different sorts of cash flow, either the Free Cash Flow to the Firm (FCFF) or the Free Cash Flow to Equity (FCFE). The choice that has to be made, is if one would like to know the value of the company, including liabilities and debt, or the value of the equity (Steiger, 2008). Steiger (2008) states that the differences lie in the accounting figures that are used. In most cases the Free Cash Flow to the Firm will be used, according to Steiger (2008). This is due to the fact that an acquirer will usually take over the whole company, including debt and liabilities (Steiger, 2008). In order to calculate the FCFF, Steiger (2008) uses the following formula:

Equation 4 DCF formula: formula free cash flow to the firm (Steiger, 2008)

$$FCFF = NOPAT + D\&A - CAPEX - Increase\ in\ NWC$$

The 'Net Operating Profit After Taxes' (NOPAT) is calculated by taking the Earnings Before Interest and Taxes (EBIT) and deduct the company's taxes, giving the NOPAT (Steiger, 2008). Cost such as depreciation and amortization are added, because they do not reflect actual cash outflow. Capital expenditures (CAPEX) are subtracted while it is a cash out flow, but it is not reflected in the income statement as such (Steiger, 2008). Finally the increase in Net Working Capital (NWC) is corrected, it is not actual cash out flow (Steiger, 2008).

This is in short the process of the valuation through the DCF method. This process is summarized by Demirakos et al. (2004) in five steps. First knowing the business, second analyse information (accounting and non accounting), third specify measuring and forecasting of value relevant payoffs, fourth convert forecast to valuation and last trading the valuation (Demirakos et al., 2004). The last step, trading the valuation, can also be described as the decision value of the company (Hering et al., 2006). This is a value that lies between a minimum and maximum. The minimum is what the seller at least wants to receive and the maximum is the amount that the buyer can pay the most (Hering et al., 2006).

This paragraph has described in short the process of valuation and the use of the DCF method. This is necessary for addressing the issues of the DCF method. Before addressing those issues, the steady state assumption will be further elaborated in the next paragraph.

2.4 Steady state assumption

There remains an issue that is not yet clarified. It is clear that the DCF method can be divided into the forecasted period and terminal value. The so-called horizon is where the forecasted period ends and the terminal value begins. This paragraph will focus on how to determine where the first period ends and where the second period starts.

The idea of the concept of the horizon is to simplify the valuation process (Zhang & Ohlson, 1999). The simplification should only give minor valuation errors and would be cost benefit effective (Zhang & Ohlson, 1999). Zhang & Ohlson (1999) state that prior the horizon all-available information is used and past the horizon the financial outcomes are simply extrapolated. This raises the question: when does the horizon appear? The duration of the forecasted period should be determined by the steady state assumption, according Copeland et al. (1990). The horizon, which is determined by the steady state assumption, is the point were the forecasted period ends and the terminal value period begins (Hess et al., 2008; Levin & Olsson, 2000). The steady state assumption is a requirement for accounting driven equity models (Meitner, 2013). Levin & Olsson (2000) state that a company enters it steady state when the company stays qualitatively the same each year. The steady state implies the point where the parameters and balance sheet and income statement remain constant (Levin & Olsson, 2000). There are different types of the steady state, in table 1 these different states are summarized.

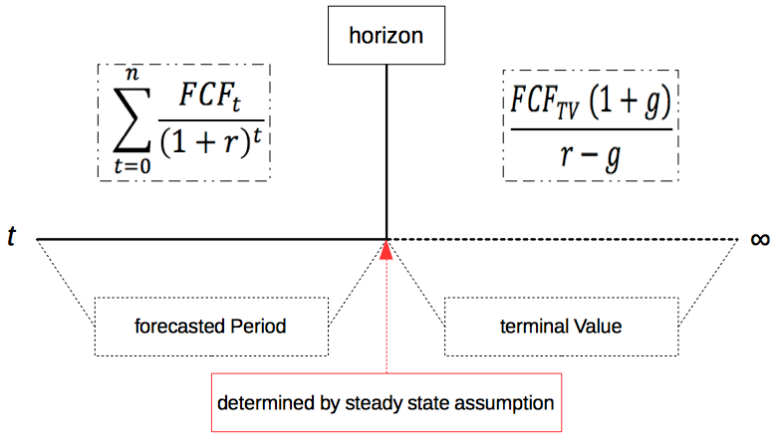
Steady State	Definition
Parameter Steady State	Constant growth is revenue and profit margin
Earnings Steady State	Predicted earnings grow at constant rate
Free Cash Flow Steady State	Predicted Free Cash Flows grow at constant rate
Dividends Steady State	Predicted dividend grow at steady rate
Residual Income Steady State	Residual income grow at steady rate
Balance Sheet Items Steady	Balance sheet items grow at constant rate

Table 1 Forms of Steady State (Hess et al., 2008; Levin & Olsson, 2000)

Earlier it is mentioned that in theory the different models should arrive at the same value, but in practice they deviate. Levin & Olsson (2000) argue that this is because of the different steady state assumptions. Hess et al. (2008) complement this statement. In practice there are non-ideal conditions, which can lead to the violation of the steady state assumptions. These violations will be further elaborated in the next paragraph. Hess et al. (2008) also state that an inadequate and short forecasted horizon lead to inaccurate assumptions.

These inaccurate assumptions affect the value significantly (Hess et al., 2008). The steady state assumptions should therefore be used as a check against inconsistencies in the parameter values as well as a tool to determine the horizon (Hess et al., 2008). The following figure (Figure 2 DCF method approach) summarizes the DCF method approach.

Figure 2 DCF method approach



In this paragraph the steady state assumption has been clarified and thereby answered the question where the first period (forecasted period) ends and the second period (terminal value period) begins. So now the process of valuation has been explained and the working of the DCF model has been elaborated, the different critics can be addressed.

2.5 Problems with the Discounted Cash Flow method

The different issues that can be found in literature, which can influence the valuation when using the DCF method, will be discussed in this paragraph. This paragraph will divide the issues into different categories and sub categories. Once all the issues are addressed, there will be a summarizing table that give an overview of the different issues. This paragraph will end with some opted solutions that are stated in theory.

In the introduction it is stated that there are problems with the DCF model. These problems/issues can be sorted into two main categories: internal issues and external issues. This distinction is not explicitly made in the literature. In this research this distinction is made to sort the issues. In the internal category issues are placed that concern the formula itself. The external category focuses on issues that are not covered by the DCF method. The internal issues can be further divided into issues relating to different parts of the DCF method (e.g. forecasted period, the terminal value or discount rate). Then, the issues can be divided into sub categories. The rest of this paragraph will elaborate more on the sub categories and the issues that belong to those sub categories.

2.5.1 Internal issues

The internal issues focus on the problems that occur within the different parts of the DCF formula. The different parts are the forecasted period with the sub category 'Input data', terminal value with the sub categories 'Assumptions' and 'Growth factor' and the discount rate with the sub category 'WACC' (see table 2 and 3).

Input data: In the forecasted period part of the DCF formula there can be found only one sub category. The issues within this sub category can be clustered as 'Input data'. The issues concern problems that arise when looking at the data that is used to calculate the forecasted period. The issues in this sub category are 'data quality', 'negative numbers or losses' and 'dirty surplus accounting'.

The first issue is 'data quality'. Steiger (2008) notes that the DCF method is a good tool to evaluate and estimate the value of company, but it heavily relies on the quality and validity of the information that is used as input (Steiger, 2008). Every model has to deal with this problem, garbage in is garbage out (Svetlova, 2012). Svetlova (2012) argues that all models in nature are imperfect and based on unrealistic assumptions. To conclude, the DCF method has serious limitations due to the uncertainty of the input information (Vimpari & Junnila, 2014). Besides the problems concerning the quality of the information, Reis & Augusto (2013) also state that for early start-up companies and companies with losses, the valuing process encounters problems when using the DCF method, because the DCF method relies on the free cash flow. This is the second issue in the sub category of 'Input data'. By adjusting through taxes, companies can be valued with losses in one or more years (Fernández, 2007). Demirakos et al. (2004) add that the losses can be a cause of differences in the use of the DCF method. Russell (2007) advises that valuators should abandon the DCF method in case when there are not profitable operations. Phillips (2003) concludes that for non-profit organizations the DCF method is also hard to use, this due to the lack of positive forecasted cash flows. Furthermore it is harder to calculate the discount rate (Phillips, 2003). Though this is a limitation of the DCF method, it cannot be seen as an issue, because the DCF method is not developed to valuate not-for-profit organizations. The last issue that can be clustered in this sub category is the issue of missing cash flows. The non-ideal condition in the steady state assumption causes valuation errors, one of those errors is the missing cash flows (Hess et al., 2008; Lundholm & O'Keefe, 2001). The missing cash flow error is described as 'dirty surplus accounting', while ideal this would be clean surplus accounting (Hess et al., 2008; Isidro, O'Hanlon, & Young, 2006; Wang, Buijink, & Eken, 2006). The DCF method should correct for those missing cash flows; the issue of 'dirty surplus accounting' (Hess et

al., 2008). Wang et al. (2006) describe dirty surplus accounting as write-offs that bypass the bottom-line earnings and are directly written-off from the shareholders equity. The clean surplus accounting relationship means that all gains and losses are included in the net income (Isidro et al., 2006). When dirty surplus accounting happens, it influences the completeness of the accounting information, while this information is important for valuation purposes (Wang et al., 2006). Isidro et al. (2006) add that the issue of 'dirty surplus accounting' could be an error in the (accounting-based) valuation models. However, there is a conflicting view about the dirty surplus accounting. It is also argued that the dirty surplus accounting actually enhance the quality of the reported earnings (Wang et al., 2006). This view contradicts with the first issue that is described in this sub category, the data quality.

Assumptions: The second sub category in the internal category is 'Assumptions'. This sub category belongs to the terminal value part of the DCF formula. Within this sub category there is one issue: the 'change in the assumptions'.

Steiger (2008) states that small changes in the assumptions, seemingly to be insignificant, can lead towards large differences in the outcomes. This, together with the fact that the terminal value takes a great part in the total value[8], can make it vulnerable to small changes in order to achieve a desired outcome (Steiger, 2008). The vulnerability of the terminal value calculation can be explained by looking at the WACC. The WACC is one of the most important input factors in the DCF method (Steiger, 2008). According to Steiger (2008), the problem is that small changes will cause large changes in the firm value.

Growth factor: The second sub category that belongs to the in the terminal value part of the DCF formula can be described as the 'Growth factor'. In this sub category issues concerning the growth factor are clustered. These issues are the 'exit multiple', 'sustainable growth', 'capacity', 'merger' and 'reinvestments'.

Reis & Augusto state that the perpetual growth factor should not exceed cost of capital. This is not possible to maintain, according to Reis & Augusto (2013). Steiger (2008) states that in most cases the perpetual growth lies between 0 and 5 per cent. Higher growth factors are not sustainable according to economists and the growth cannot be negative, because on the long term the economy is always growing (Copeland et al., 1990; Steiger, 2008). The constant growth is seen as a useful rule of thumb, but should always taken for granted (Brealey et al., 2010). Brealey et al. (2010) state that naïve trust in the formula will

[8] Steiger (2008) points out in the case study that the terminal value can take up to two thirth of the total estimated company value.

lead to silly conclusion. The perpetual growth factor has a great influence on the terminal value (Steiger, 2008). Jiménez & Pascual (2010) state that the terminal value has a great weight in the calculation and that after four till five years it is more a educated guess work than precise forecasting. The exit multiple is therefore very subjective and can be used as an ad hoc approach to reach the desired value (Jiménez & Pascual, 2010). Simplifying the assumptions lead to an arbitrary growth assumption in the calculation of the terminal value (Plenborg, 2002). Russell (2007) stresses that it is important that the growth rate should be aligned with the capacity of the company, otherwise the valuation results in wrong outcome. Furthermore, the growth rate is influenced by merger (Ramanathan & Rappaport, 1971). They conclude that when two companies merge and having different growth factors, the combined value will be less than the sum of the separate companies (Ramanathan & Rappaport, 1971). This is a result of bias in the valuation models, which derives from the growth factor of the combined earning that is underestimated (Ramanathan & Rappaport, 1971). In cases where the derived cash flows are reinvested, the traditional DCF method may overvalue the true cash flows (Dapena, 2003). According to Dapena (2003) the present value of business is determined by the present value of assets and the growth opportunities.

WACC: The sub category 'WACC' is the last sub category of the main category 'internal Issues'. In this sub category different issues are clustered that influence the WACC. These issues are the 'circularity problem', 'changes in capital' and the 'net interest relation'. The 'WACC' is the only sub category that relates to the discount rate part of the DCF formula.

One of the problems that occur in the DCF model is the circularity problem. This issue can be described as the problem that the discount rate used for discounting the cash flows, in most cases the WACC, is depending on those same cash flows. This leads to a circularity problem (Armitage, 2008; Mejia-Pelaez & Velez-Pareja, 2011; Reis & Augusto, 2013). According to Mejia-Pelaez & Velez-Pareja (2011), the problem is that in order to calculate the WACC, the value of the company is needed. But to calculate the value of the company the WACC is needed, thus this creates a circularity problem. Hess et al. (2008) describe circularity as the inconsistent discount rates. Reis & Augusto (2013) add that changes in the capital are common overtime, but could affect the WACC. Armitage (2008) states that the DCF method can be seen as a set of contingent cash flows, and therefore the WACC should be calculated separately due to fact that changes in financing lead to different discount factors. Plenborg (2002) adds that due simplifying assumptions in the DCF model, the capital structure is seen as fixed; used for long-term. Furthermore, the costs of capital

are assumed to be constant. They do not take the changes in the debt into account to equity ratio of the company (Plenborg, 2002). Lundholm (2001) describes the issue concerning of changes in the WACC as one of the three errors in the DCF model, so called incorrect discount rate error. Hess et al. (2008) already mentioned that due to non-ideal condition valuation errors appear. These errors should be adjusted, one was the adjustment for the clean surplus accounting, and the second adjustment for the missing cash flows is the adjustment of the net interest relation (Hess et al., 2008). In the table 2 the internal issues are summarized as discussed above.

Issues Discounted Cash Flow method - Internal Issues

Main category	Part of formula	Sub category	Issues
Internal	Forecasted period	Input data	Data quality
			Negative numbers
			Dirty surplus accounting
	Terminal value period	Assumptions	Change in assumptions
		Growth factor	Exit multiple (desired value)
			Sustainable growth
			Capacity
			Merger (companies with different growth percentages)
			Reinvestments
	Discount rate	WACC	Circularity
			Changes in capital
			Net interest relation

Table 2 Issues Discounted Cash Flow method - Internal Issues

2.5.2 External issues

The external issues are issues that are not incorporated in the DCF formula, but are issues that can have an effect on the value of a company. Therefore, these issues should be incorporated into the DCF formula or should paid attention to in valuation process, according to the literature. The sub categories are: 'Merger & Acquisition (effects)', 'Non-quantifiable factors', 'Role of management & ownership', 'Assets' and 'Industry factors'. Below, these sub categories are further elaborated with the corresponding issues that are clustered in these sub categories.

Merger and Acquisitions effects: The first sub category in the external category is 'Merger and Acquisition (effects)'. The issues in this cluster are linked towards effects that arise when company's merge or a company acquires another company. These effects are: 'synergy', 'integration costs', 'effect of competitors' and 'transaction & agency costs'. Besides these effects, the 'minority discount' is also an issue that can be placed in this sub category.

The first issue in the sub category of Merger & Acquisition (effects) is synergy. Hongjiu (2008) formulates synergy as one of the flaws that is not covered by the DCF method. One of the motives for takeovers is the synergy motive. It assumes that it maximize

the shareholders wealth for both acquiring and targeting companies (Berkovitch & Narayanan, 1993). The synergy can be explained by looking at economies of scales. Companies aim to achieve this advantage by merging the resources (Ghauri & Buckley, 2003). There are three types of synergies to be identified: financial, operational and collusive synergy (Chatterjee, 1986). Hongjiu (2008) states that synergy effects can occur after merger or acquisition, because the cash flow of operations is not the same when the merger or acquisition is happened; compared to the two separately cash flows of operations before the merger or acquisition (Hongjiu, 2008). Steiger (2008) contradicts this in a way. Steiger (2008) states that due to the fact that synergies effect can arise, because an acquirer runs a similar business. This acquirer can offer a higher price. Where Hongjiu (2008) states that the synergy effect should be incorporated in the DCF method, Steiger (2008) states that the acquirer already corrects for the synergy effects, if the acquirer can realize synergy effects. Hering, Olbrich & Steinrücke (2006) are looking at synergies in another way. They focus on the principle of valuing a company as an entity. According to them the sum of assets is not the same as the value of the company (Hering et al., 2006). Due to synergy effects between different parts of the company, the value will be more or less than the sum (Hering et al., 2006). Synergies can also arise in the discount rate, after a merger or an acquisition the discount rate changes due to lower risks (Chatterjee, 1986). Therefore, this can be seen as one of the motives for merger or acquisition, the financial synergy which results in a lower cost of capital (Brealey et al., 2010; Chatterjee, 1986; Ghauri & Buckley, 2003). The second issue in this sub category, 'integrations costs', is also discussed by Hongjiu (2008). The integration costs of two merging companies are not considered in the DCF method (Hongjiu, 2008). To realize synergy effects, capital and employees have to be rearranged. This will lead to costs for the acquirer (Hongjiu, 2008). It will take a lot of effort and cost to align two merging companies (Hongjiu, 2008). This is not the case when a financial bidder (e.g. investment fund) becomes the acquirer, but then synergy effects will also not occur (Steiger, 2008). Furthermore, Hongjiu (2008) states that the merger of two companies can have an effect on the strategy of the competitors. This is the third issue in the sub category. The competitors may take action to reduce the competitive advantage of the combined companies, thus reducing the value of the combined companies (Hongjiu, 2008). The fourth issue 'transaction costs and agency costs', should also be taken into account in the valuation process (Armitage, 2008). This adjustment captures the gain or loss towards the shareholders due to information asymmetry. In order to achieve the right value, complete disclosure has to be given (Armitage, 2008; Russell, 2007). Agency costs can be described as costs that derive from the principal-agent problem (Jensen, 2005). Jensen (2005) makes the

assumption that there is a conflict between the managers (agents) and the equity and debt holders (principals). Agency cost are the cost (e.g. contracting, monitoring and bonding costs) that are made to reduce the cost of conflicts between the principal and agent (Jensen, 2005). Berkovitch & Narayanan (1993) argue that the problem related to the agency cost is in fact one the reasons merger and acquisition occur. Managers (agents) acquire a stronger position towards the principal due to merger and acquisitions. The success of the combination depends on the skills of the managers (Berkovitch & Narayanan, 1993). In other words, the company becomes more dependent on the skills of the agents. Therefore the principals become more dependent on the agents, which increase the agency costs. Cornell & Liu (2001) describe agency cost as the difference between the cost and benefits of management. The agency cost can arise when looking at a holding structure. The different parts could be more worth separately then the whole parent company (Cornell & Liu, 2001). Though agency cost can influence the value of a company, it only explains for a part the differences in valuations (Cornell & Liu, 2001). The fifth and last issue in this sub category is the 'minority discount'. Russell (2007) argues that when shareholders sell a minority part it is less worth, because a minority share does not give a decisive vote in a company.

Non-quantifiable factors: The second sub category in the external category can be described as 'Non quantifiable factors'. This sub category clusters issues that have an effect in the value of companies, but these are hard to quantify. Issues in this sub category are: 'legislation', 'local culture', 'GDP growth', 'tax policy', 'currency developments' and 'inflation'.

Non-quantifiable factors are mentioned as possible problems concerning the input for the DCF model (Svetlova, 2012). These non-quantifiable factors are factors that can influence the input and thus the output of the DCF model. These factors are GDP growth, inflation, currency developments and tax policies (Svetlova, 2012). Gains or losses due to foreign currency can be hard to determine without additional information. Therefore, these should be treated as non operating cash flows if there is no additional information present (Copeland et al., 1990). These so-called macro-economic conditions are soft factors that cannot be incorporated into a spreadsheet (Svetlova, 2012). Russell (2007) adds that legislation and local culture are also factors that should be taken into account when valuating a company.

Role of management & ownership: The third sub category of the external category is the 'Role of management & ownership'. This sub category clusters issues that focus on implication that can arise due to management and/or the owner. Issues within this sub category are: 'personal incentive management', 'competent management' and 'responsible ownership'.

The role of the manager is not included in the valuation of a company, though this should be taken into account (Reis & Augusto, 2013; Steiger, 2008). Management often provides the figures and data that is used to estimate the value of a company, but may also have personal incentives to alter the outcome of the takeover price (Steiger, 2008). Russell (2001) adds that valuators also have to look at competence of the management. This could also influence the value of the company. Responsible ownership is also an issue that influence the value of a company (Russell, 2007).

Assets: The fourth sub category is 'Assets'. This sub category captures all issues concerning assets that can influence the value of a company. The issues that are clustered in this sub category are; 'asset replacement', 'asymmetrical payoff', 'valuing intangible assets', 'high volatility assets' and 'multiple-period asset lifetime'.

Lally (2008) states that there two problems that occur in the field of asset replacements that are not covered by the DCF model. The first problem is not recognizing the timing of the asset replacements. The second problem is the age profile of the companies assets (Lally, 2008). This may influence the value of a company if not taken into account. Besides the asset replacements, assets can also have an asymmetrical pay-off. This cannot valued by the DCF model (e.g. options and derivatives) (Dapena, 2003). The traditional DCF model fails to give a correct value of projects when options are embedded, the DCF model undervalues those projects (Dapena, 2003). When looking at intangible assets there also problems concerning the valuation. Intangible assets such as brands, advertising R&D and human resource can generate value for a company in the future, but due to their intangible form it is hard to value those assets (Uzma et al., 2010). Volatility also could pose a problem. Some businesses deal with activities that have a high volatility. This is an issue that is not covered by the DCF method (Reis & Augusto, 2013). These assets are dynamic in nature, but are treated in the method as passively (Reis & Augusto, 2013). The last issue in this sub category is the issue of 'multiple period assets lifetime'. Meitner (2013) argues that assets have typically a lifetime that takes longer than one period. More realistic is a period of at least two periods (Meitner, 2013).

Industry factors: The last sub category of the external category is 'Industry factors'. This sub category incorporates issues that are industry specific, but can have an influence on the value of the company. Issues that are clustered in this sub category are 'obsolesce', 'sustainability', 'new opportunities' and 'competition'.

The first issue, 'obsolesce', is an issue that focus on the question whether the current mix of services will still be required in the future (Russell, 2007). Closely related to this issue is the issue of 'sustainability'. Valuators should keep in mind by the valuating process, if the company is situated in geographic location that will support continuance of the business and if the company relies on a single modality (Russell, 2007). Competition can also have an influence on the value of company, which are the barriers for entrance (Russell, 2007). The last issue that Russell (2007) adds is the issue of 'new opportunities'.

On the next page a summarizing table (table 3 Issues Discounted Cash Flow method) is presented which includes all the issues discussed in this chapter. Though this research will focus on issues that concern the valuation of SME's, this table gives an overview of issues that are mentioned in theory. This was also one of the aimed contributions of this research to summarize the issues of the DCF method found in the literature.

Issues Discounted Cash Flow method

Issues			
Main category	**Part of formula**	**Sub category**	**Issues**
Internal	Forecasted period	Input data	Data quality
			Negative numbers
			Dirty surplus accounting
	Terminal value period	Assumptions	Change in assumptions
		Growth factor	Exit multiple (desired value)
			Sustainable growth
			Capacity
			Merger (companies with different growth percentages)
			Reinvestments
	Discount rate	WACC	Circularity
			Changes in capital
			Net interest relation
External	None*	Merger & Acquistion (effects)	Synergy
			Integration cost
			Effect of competitors
			Transaction & Agency cost
			Minorty discount
		Non quantifiable factors	Legislation
			Local culture
			GDP growth
			Tax policy
			Currency developments
			Inflation
		Role of management and ownership	Personal incentive management
			Competent management
			Responsible ownership
		Assets	Asset replacement
			Asymmetrical payoff
			Valuing intangible assets
			High volatility assets
			Multiple period asset lifetime
		Industry factors	Obsolesce
			Sustainability
			New oppertunities
			Competition

** Currently the issues in sub categories; M&A, Non quantifiable factors, Role of management and ownership, Assets and Industry factors aren't incorporated in the standard DCF formula*

Table 3 Issues Discounted Cash Flow method

2.5.3 Three stage model and other solutions

Traditionally the DCF method is a two-stage method, namely the forecasted period and the terminal value period. In the literature it is suggested that a three-staged period method is a solution for some of the discussed issues. Jiménez & Pascual (2010) discuss such a staged method. The first stage should focus on the sales and ratio change. The second stage should cover the growth of the company towards the industry average. In the third stage the growth of the company would become constant and follow the long term trend in the economy (Jiménez & Pascual, 2010). Penman (1998) has a different view on the three-stage method. The suggested third period is to determine the weight of the first two periods; forecasted and terminal value period (Penman, 1998).

Hess et al. (2008) suggest that the literature and future research should focus on improving the future pay-off. This would make the valuations more accurate. In the literature also some solutions are presented for a few issues. Hongjiu (2008) for example incorporated three different issues into the DCF formula. In this way, the formula becomes quite extensive. Besides the question rises whether such formulas are usable. In practice, it only covers a few issues. So these solutions only partially solve the problems concerning the DCF method. The three-staged model appears to cover some more issues, but also lacks to incorporate all the issues that are discussed in the literature.

This paragraph has focused on the different issues that are discussed in theory. In this thesis a deviation is made between internal and external issues. Table 3 (paragraph 2.5.2) gives an overview of all the issues that were discussed in this paragraph. This paragraph has ended with the three-staged models as opted solution for some of the problems.

2.6 Conclusion

In this chapter the general valuation methods are discussed. This showed that there are three different categories of valuation models: single comparative models, hybrid models and multi-period models. The DCF method can be placed in the last category, the multi-period models. Another distinction between the models is the basis upon which the models are developed. For the DCF method this is the discounting basis. It can also be concluded that in practice the different models and methods do not give the same valuation. This is a strange observation due to the fact that the models are based upon the same assumption, so in theory they should estimate the same value. This is not the case in practice, due to

uncertainty and quality of the assumptions. Besides the different valuation models this chapter also gives some insight in the valuation process and how the DCF model works.

The main part of this chapter focused on the different issues that are discussed in the literature. The first distinction that could be made among the presented issues is the internal and external issues. This distinction is not explicitly made in literature, but can be derived from it. The literature is discussing either issues that focus upon the different parts of the formula, or issues that are not yet covered by the DCF model. The second distinction that could be derived from these findings is the distinction towards the parts of the formula. The different parts are; forecasted period, terminal value and discount rate. In order to make a last distinction the issues were clustered into the sub categories, which are the overarching themes that cover the issues. This all could be summarized into table 3 “Issues Discounted Cash Flow method”. The last part of this chapter focused upon some solutions, such as the three-staged model, that are suggested by some authors.

3 Methodology

3.1 Introduction

This chapter will focus on the methodology of this research. First the research design will be described. After the description of the research design the sampling will be discussed. The paragraph will furthermore focus on threats to this research design. Then the data collection shall be described. This will be divided into the 'instruments' and 'procedures'. Where the instruments will focus on how the data for this research will be collected, the procedures will focus on the description on how the data collection will proceed. In the section of instruments, the interview question will also be presented. The data analysis will focus on the manner how the collected data is analysed. This will primarily focus on the way of analysing and the developing of the codes used for the coding of the interviews.

3.2 Research design

This research design will be described by looking at the type of research, the time dimension, the units of observation and analysis and the sample. This description will end with the limitations of this research considering the reliability and validity of this research.

The aim of this research is explaining the discrepancy between theory and practice, concerning the different issues of the DCF method. So therefore this research can be described as an explanatory research type (Babbie, 2010). When looking at the time dimension this research is aimed to have an observation at one point in time. Such designs can be described as a cross sectional study: observations made at one point in time of a phenomenon (Babbie, 2010). Furthermore, cross sectional designs can be characterized as non randomized designs (Gerring, 2012). These designs are either with a large or small sample. Large samples will be indicate quantitative design and small samples indicate qualitative designs (Gerring, 2012). This research tries to answer the question why there is a discrepancy between theory and practice and which issues cause this discrepancy. In order to answer this, a qualitative research design will be the best option. This will give the opportunity to discover the reasons for valuators to diverge in practice, and so create discrepancy between theory and practice. The units of observations can be described as individuals. The aim is to interview valuators, so these are the units of observations. It is expected that they have to diverge form the theory (standard DCF method) in order to deal

with the issues. The unit of analysis will be the issues. These are the issues that are discussed in the theory section, those variables that might explain the discrepancy between theory and practice. Perhaps other issues might derive in practice, which are not covered by the issues discussed in theory. Either way the interviews with the valuators will explain which issues are being dealt with in practice.

The cross sectional design in combination with a qualitative aim suggest that a small sample will be sufficient (Gerring, 2012). The question is how small that sample should be. Bryman & Bell (2011) suggest that the researcher should continue until there is data saturation. Guest, Bunce & Johnson (2006) add that after six observations (interviews) the basic concepts will be clear, around twelve interviews is enough to arrive at data saturation (Guest, Bunce, & Johnson, 2006). The aim of this research is to give an indication whether issues in theory are perceived the same as in practice. Therefore, the amount of interviews will be around six. The precise amount of interviews will depend on the information that is given by the respondents. The sampling strategy that is chosen can be described as judgmental sampling; this is also called purposive sampling (Babbie, 2010; Bryman & Bell, 2011). This means that the sample is chosen by the researcher self. This enables the researcher to choose a sample that will answer the research question. Due to the small number of observations, around six, this form of sampling is chosen. The sample units will be chosen from different companies that value other companies for mergers and acquisitions and mainly focus on SME's. Purposive or judgmental sampling is a non-probability form of sampling. This means that the researcher does not seek participants on random basis (Bryman & Bell, 2011). This will have as consequence that this sampling does not allow to generalize, which is also described as the loss of external validity (Bryman & Bell, 2011; Gerring, 2012). Due to the small size of the sample and the non-probability sampling, there can be no statistical description (Babbie, 2010). To conclude the following can be stated: the external and internal reliability are low and the external validity is also low (Bryman & Bell, 2011). The internal validity though can be indicated as high. The different threats are not a problem for this research. The aim of this research is not to accomplish external an internal reliability and neither an external validity. The focus lies on indicating whether issues in the theory are perceived the same as in practice, and thus focusing on the internal validity, which is high in this form of research (Bryman & Bell, 2011).

A qualitative research design is the most suitable option for this research, because this research is aimed at explaining and exploring why there is a discrepancy between theory and practice, and which factors contribute to it. Through a qualitative research the reasons why there might be other variables involved in the valuation process can be found. This is

due to the fact that in this case the qualitative data will tell more about the discrepancy between theory and practice. Where as quantitative research could also indicate this same discrepancy, qualitative research will tell more about the reasons why theory and practice differ and perhaps indicate other problems that are not covered by the theoretical framework. According to Babbie (2010), there are different stages in the qualitative research design. There are seven steps: thematize, designing, interviewing, transcribing, analysing, verifying, and reporting. The thematize phase reflects the developing of the theoretical framework and the introduction of the phenomenon that is being researched. The designing phase will reflect the developing of the methodology. The interviewing and transcribing are the outcomes of the designed methodology. The last steps are analysing, verifying and reporting. This is reflected in the chapters; 'Results', 'Conclusion' and 'Discussion, limitations & future research'.

3.3 Data collection

In the data collection the issues for the collection of the data will be discussed. First this paragraph will focus on the instruments. In this section the form of interviews will be described and the actually interview question will be developed; this will be done by using a framework (see table 3, paragraph 2.5.2), which is derived from theory.

3.3.1 Instruments

Interviews can in general be divided into unstructured or semi structured (Bryman & Bell, 2011). The semi structured interviews are often referred to as an interview guide (Bryman & Bell, 2011). This allows the interviewer to ask further questions (follow-up questions). Bryman & Bell (2011) underline that semi structured interviews should have a certain amount of order, but the interviewer should be prepared to alter questions during the interview. The formulation should be not to specific and also not be leading questions (Bryman & Bell, 2011).

The data will thus be derived by semi-structured interviews. This seems the best way to collect the data that is needed for answering the research question. The choice is made for semi structured interviews, because there is some knowledge about the possible variables that might explain the discrepancy between theory and practice. This form of interviews gives the freedom of asking additional questions (e.g. follow-up questions).

3.3.1.1 Developing the interview questions

Using a framework, the interview questions will be developed. This framework can be seen in table 3 (paragraph 2.5.2). This will connect the theory with interview questions, and will help to analyse the data. The findings that are presented in this table are issues that can be find in the theory. It is the question whether all these issues apply to the SME's. Some issues might only be a problem for multinationals and do not affect the value of the SME's. To sort the issues for the SME's, the issues will be divided into major and minor issues. Major issues are issues that probably will influence the value of SME's. The minor issues have probably less influence on the value of SME's. The major issues will be used to serve as basis for the interview questions. It is expected that the issues that are found in the terminal period and in the external category will represent the large part of the total major issues, because the issues that are placed in the terminal period and external period are most stressed upon in theory.

In table 4 (table 4 Issues Discounted Cash Flow method: Major & minor issues for SME) the issues that are found in theory are presented as either major or minor issues for SME's. There is also a third classification of issues. For these issues it is not clear whether they are major or a minor Before this summarizing table is presented, an explanation for choice of labelling (major, major-minor and minor) will be given for each issue.

Input data: Data quality is a concern for each valuation. It does not matter if the valuated company is a multinational or a small company. It is also indicated that the model is as good as the used information in the model (Svetlova, 2012). Therefore this issue is assumed to be a major issue. Negative numbers are a problem for the DCF method, but it can also be argued that the DCF method was not developed for cases where negative numbers are presented. This can be argued based on the statements that when negative numbers arise, the valuator should deviate from the DCF method and pursue with an alternative method of valuation (Russell, 2007). It is also indicated that in the case of just a few years of negative numbers it is not a problem to use the DCF method (Fernández, 2007). The negative numbers can be corrected. Therefore, this issue is assumed to be a major-minor issue. The last issue 'dirty surplus accounting' is assumed to be a minor issue. The reason for this assumption is that although this issue might influence the value it is not much emphasized on in theory.

Assumptions: Change in assumptions can be seen as a major issue. The impact of the change in assumptions can be great, while the changes are relatively small (Steiger, 2008). Therefore, due to its impact, this issue is assumed to be a major issue.

Growth factor: Exit multiple is an issue that is assumed to be major. This is assumed, because either the buying or selling side pays the valuators. This makes the valuator dependent and increases the chance of valuating in favour of their client. The sustainable growth and capacity are also assumed to be a major issue. The size of the company does not matter, for every company a fair growth should be assumed. This is a growth that can be sustained. The capacity is an issue related towards the sustainable growth. The company could on paper grow endless, but in practice this must also be feasible. Therefore, these two issues are assumed to be major issues for SME valuations. The issue of merger in sub category growth factor is assumed to be major-minor issue. Though it is stated in theory that it could influence the value of the merged company, it does not influence the value of the company that is sold. So, therefore this issue is seen as major-minor. It has influence on the valuation of companies, but only after the companies has merged. The issue of reinvestments is seen as a minor issue. Though this is an issue that could influence the value of a company, the buyer eventually decides whether the cash flows in the future will be reinvested or not.

WACC: The circularity problem is assumed to be a major issue for the SME's. The size of the company does not matter whether this issue arises. This issue has an effect on all companies. The second reason is that the literature emphasizes quite a lot on this issue. The changes in capital are also an issue that is not dependent on the size of the company, and therefore is assumed to be a major issue. However, the 'net interest relation' however is seen as a major-minor issue. Due to the non-ideal assumptions the WACC will change overtime. But it is hard to correct for this issue. So it is assumed that though it is an issue that influence the value of SME's, it is not taken into account in reality, and therefore labelled as major-minor.

M&A (effects): The first sub category of issues in the external category is 'merger and acquisition (effects)'. Within this sub category the issues synergy integration costs are seen as major issues. The minor issues in this sub category are the issues 'minority' and 'transaction & agency costs'. The effect of the issue 'competitors' is seen as a major-minor issue. Synergies are not dependent on the size of the company, they happen for each

company. In the literature, there are also indicated different forms of synergies in combination with the large focus on synergy. In theory this issue is assumed to be a major issue. Integration costs are also independent when looking at the size of a company, so therefore it is assumed that this is also major issue. The effect of competitors can be an issue for large companies in the valuation. But in the SME sector it is assumed that this issue will not be of great importance. Therefore it is labelled as a major-minor issue. The 'transaction & agency costs' are assumed to happen within the valuation process for large companies, but for SME's it is assumed to be of little importance. The minority discount is assumed to be a minor issue in the valuation of SME's. In large companies this would be assumed to be a greater issue.

Non-quantifiable factors: The issues in the second sub category, 'Non quantifiable factors', of the external category are all seen as minor issues. Reasons for assuming this are that the SME will be probably less influenced by factors such as GDP growth, inflation or tax policy. Furthermore, it is hard to determine to what extent the GDP growth for instance has an effect on a single company. The issue of the local culture is likely more to happen with the valuation of larger companies that buy companies with a different culture (e.g. European company that buys a Asian company). Currency developments are also assumed to be less of a problem for SME, because in this research the valuators are assumed to operate within the borders of the European monitory union. Legislation can be of influence on the valuation of companies (e.g. medicine business), but it is assumed that for the main SME legislation will not have a great influence on their value.

Role of management & ownership: Within the sub category 'Role of management & ownership' the issues 'personal incentive management' and 'competent management' are assumed to be major issues for the valuation of companies. In theory it is stated that the role of the management should not be forgotten in the process of valuation. The management often hands the data, while they could have their own incentives for a certain outcome. As mentioned earlier, the data quality is important in order for a method or model to generate a fair value. So this seems also a big issue when valuating a company; are the figures and numbers right? The management makes decisions that are of a great impact to the company. So it is important to look at the quality of management team. In larger companies, it is assumed to be less of a problem due to the fact of more management layers. SME are assumed to have less of these layers, which make the competencies of the management more important. Responsible ownership is seen as a minor issue. It is assumed

that owners are dependable on the performance of their company, thus striving towards responsible ownership.

Assets: In the sub category 'Assets', the valuation of intangible assets is seen as a major issue for the valuation of SME's. It is assumed that the valuation of intangible assets is an issue for each company and not dependent on the size of the company. The other issues in this sub category are all labelled as minor issue for the valuations of SME's. While in theory these issues could affect the value of a company, literature about this limited. Second reason for labelling these issues as minor is the assumption that these issues will not play a large role in SME's.

Industry factors: The last sub category is 'Industry factors'. Obsolesce is considered as a minor issue. Though it is the question whether a company will endure in the future, and thus affect the value of a company, it is hard to determine why and when a company with its current services or products is not needed anymore. Further, when it is already known that a service/product will probably obsolesce in the future, it is assumed that this is already correct by the growth and/or forecasted cash flows. However, sustainability is seen as a major issue. Sustainability covers the question whether the company lies in geographical location that allows the company to exist. More important, it also looks at whether a company is dependent on a single large modality (customer). This second reason is why it is assumed to be a major issue. When the company relies heavily on one big customer, this decreases the value of the company, while the incomes of such a particularly company could fluctuate enormously. New opportunities are seen as a minor issue. For this issue the same reasoning as the first issue in this sub category applies. It is hard to determine where and how new opportunities will arise. It is even harder to determine the effect of these new opportunities. Therefore, this issue is labelled as a minor issue. Competition is an issue that affects every business, because the threats of new entrants are always present. So for the valuation of SME this is an issue. The intensity of the competition determines in a way the profitability for both the forecasted period as well as the terminal value period. Therefore, this issue is seen as a major issue.

The table on the next page presents the issues (coloured in blue) that are chosen for this research (Table 4 Issues Discounted Cash Flow method: Major & minor issues for SME). The major issues will serve as an input for the interview questions.

Issues Discounted Cash Flow method

Issues				Theory
Main category	**Part of formula**	**Sub category**	**Issues**	**Degree of issue for SME****
Internal	Forecasted period	Input data	Data quality	Major
			Negative numbers	Major-Minor
			Dirty surplus accounting	Minor
		Assumptions	Change in assumptions	Major
	Terminal value period	Growth factor	Exit multiple (desired value)	Major
			Sustainable growth	Major
			Capacity	Major
			Merger (companies with different growth percentages)	Major-Minor
			Reinvestments	Minor
		WACC	Circularity	Major
	Discount rate		Changes in capital	Major
			Net interest relation	Major-Minor
External	None*	Merger & Acquistion (effects)	Synergy	Major
			Integration cost	Major
			Effect of competitors	Major-Minor
			Transaction & agency cost	Minor
			Minorty discount	Minor
		Non quantifiable factors	Legislation	Minor
			Local culture	Minor
			GDP growth	Minor
			Tax policy	Minor
			Currency developments	Minor
			Inflation	Minor
		Role of management and ownership	Personal incentive management	Major
			Competent management	Major
			Responsible ownership	Minor
		Assets	Asset replacement	Minor
			Asymmetrical payoff	Minor
			Valuing intangible assets	Major
			High volatility assets	Minor
			Multiple period asset lifetime	Minor
		Industry factors	Obsolesce	Minor
			Sustainability	Major
			New oppertunities	Minor
			Competition	Major

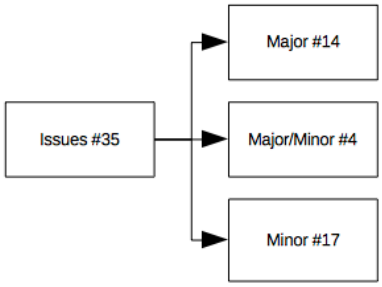
** Currently the issues in sub categories; M&A, Non quantifiable factors, Role of management and ownership, Assets and Industry factors aren't incorporated in the standard DCF formula*

*** Percieved in this research as major issues for SME (not percieved in theory as such).*

Table 4 Issues Discounted Cash Flow method: major & minor issues for SME

The major issues will serve as the input for the interview questions. In figure 3 the outcomes of the sorting of the issues are presented. It is seen that from the thirty-five issues, fourteen issues are labelled as major, while seventeen issues are seen as minor. The remaining four issues cannot be sorted. These issues are marked as minor-major issue.

Figure 3 The number of issues sorted



In the sub category 'Growth factor' the most number of issues are labelled as major issue. The major issues for the internal as well as the external category are both seven. The expectation that the most major issues would be found in the terminal value period and in the external category seems to be correct. From the fourteen issues, eleven belong to in the external category and terminal value period part. Only three fall in the forecasted period and the discount rate. In table 5 the distribution of the major issues per sub category is shown.

Sub Category	#
Input Data	1
Assumptions	1
Growth Factor	3
WACC	2
M&A Effects	2
Role of Management and Ownership	2
Assets	1
Industry Factors	2

Table 5 Major issues for SME: number of major issues for each sub category

The issues presented in table 3 as major issues are not the only input for the developing of the interview questions. These issues are primarily used to answer sub question one. And in a way are also needed to answer the remaining sub questions. There are also additional inputs needed in order to answer the sub questions. The items 'reasons for diverging' and 'how to diverge' are needed to answer sub question two and three. In order to answer these sub questions the interview questions also have to focus on the reasons for diverging from theory and how this is done in practice. The items 'need for incorporation of the issues' and

'how to incorporate the issues' are needed to answer sub question four. Therefore, the interview questions should also focus on the need for incorporation of the issues of the DCF method and if so, how the incorporation of the issues in the DCF method should be done. In figure 4, the needed input for the interview questions is illustrated. So to conclude this section, the interview question will be presented below. These interview questions are divided into three main parts;

- The reasons for diverging from theory.
- Issues from the theory.
- The need for incorporation of those issues.

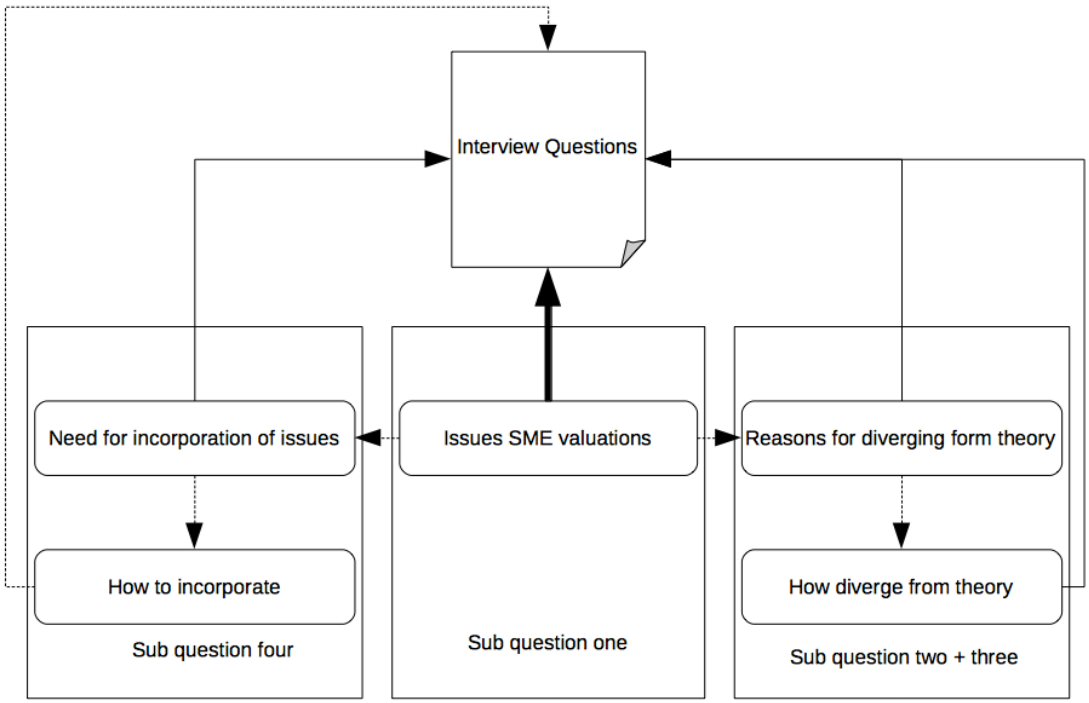


Figure 4 Needed input for the interview questions

3.3.1.2 Interview questions

The questions in the first part will give more insight in the reasons of valuators and the way of diverging from practice. This will give an answer to sub question two and three. The question in the second part will give an insight to which extent the problems, that are found in theory, are also experienced the same in practice. It also shows whether these problems are major or minor. Thus, this will provide the second part of information that is needed to answer sub question one. The questions in the last part will give answer to what extent the issues that are found in practice and in theory should be incorporated. Additionally it will give answer to question how the issues should be incorporated. This reflects sub question four. The interview questions are presented on the next page. The Dutch version can be found in the appendix (Appendix B).

Interview questions that relate to the deviation from theory in practice.

1. Do you diverge from the standard Discounted Cash Flow method in the valuation of companies?
    a. What are the reasons for you to diverge?
    b. In which way do you diverge as valuators?

Interview questions concerning the selected issues from theory, and how these issues play a role in practice.

Input data – Data quality

2. In which way does the quality of the needed data influence the valuation of companies when using the Discounted Cash Flow method?

Assumptions – Changes is assumptions

3. In which way do the changes in the assumptions for the Terminal Value period have an influence on the value of the company?

Growth factor – Exit multiple, sustainable growth & capacity

4. Are there problems concerning the growth factor in the Terminal Value period that influences the value of a company?
    a. In which way does the exit multiple, desired value, have an effect in the valuation of a company?
    b. Is the sustainable growth a problem that influences the valuation, if so how does it influence the value?
    c. In which way is the capacity of the company to realize the forecasted growth in the Terminal Value considered?

WACC – Circularity & Changes in capital

5. Are there problems concerning the WACC as discount rate that influence the valuation of companies?
    a. In which way do circularity problems in the Discount rate influence the value of a company (explain what circularity problems are)?
    b. Can changes in the capital structure of a company (proportion of equity and debt) over time, and with it changes in the discount rate, have an effect on the value of a company?

M&A effects – Synergy & Integration costs

6. In which way do you take in account the effects of merger and acquisitions?
    a. In which way do synergy effects have a part in the valuation?
    b. To what extent are integrations costs a problem in the valuation?

Role of management en ownership – Personal incentives & Competent management team

7. To what extent do you take the role of management and owners in account?
    a. Personal incentives for the management concerning the information that is handed by that same management?
    b. In which way do the competence of the management team have an effect in the valuation of a company?

Assets – Valuation of intangible assets

8. In which way does the valuation of intangible assets have an effect on the valuation of a company?

Industry factors – Sustainability & competition

9. To what extent do you take specific industry factors in account when valuating a company?
    a. Sustainability of a company
    b. Competition in a industry sector

Interview questions concerning the incorporation of issues from the Discounted Cash Flow method, in that method .

10. To what extent should the problems concerning the Discounted Cash Flow method that are discussed above, should be incorporated?
    a. How should those problems be incorporated in the Discounted Cash Flow method?

3.3.2 Procedures

As stated above the data will be collected through interviews. The interviews will be audiotaped to ensure that no data will be lost and the researcher can fully concentrate on conducting the interview. Before the start of the interview, permission will be asked if the interview may be audiotaped. The selection of the respondents is done with the cooperation of the first supervisor. The selection was focussed on valuators that valuated SME's. In the research design it is stated that the number of interviews is depended on the response of the interviews. After four interviews it became clear that there were not any new things mentioned. Thus enough data was gathered to give an indication whether the issues in theory are perceived the same as in practice. All the interviews were conducted in a setting where the respondent and researcher could speak freely and where not disturbed. Three interviews took about one hour to finish, one interview had a duration of 1,5 hour. In the table below (Table 6 Respondents) the names of the respondents are given.

Name	Organizations	Function	Duration
Mark Westerhof	Westerhof Advies	Owner	1,5 hour
Piet Hein Sluiter	Hogeschool van Amsterdam	Teacher	1 hour
Jeroen Weimer	KPMG	Head corporate finance	1 hour
Theo de Cock	De Jong & Laan	Partner	1 hour

Table 6 Respondents

3.4 Data analysis

In this paragraph the data analysis of this thesis will be discussed. The paragraph will first focus on the method of analysing. After this is clear, the paragraph will elaborate more on the structuring of the codes that are used in coding the transcribed interviews

In order to analyse the qualitative data, the data will first have to be coded and categorized. This will be done through the program Atlas.Ti. Before this process can begin, all the interviews will be transcribed. After the interviews are coded, the analysis process will start. When all the data is analysed, the results can be compared with findings in the theoretical framework. So it is possible to see if there are any similarities with the theory and/or if there are new issues found. The analysis of the data will follow the 'Noticing', 'Collecting' and 'Thinking about things' model (NCT model). This model will be used to ensure a structured approach in analysing the data (Friese, 2014). The first part, 'Noticing',

implies the finding of interesting things in the data. The second step is 'Collecting' all the interesting things that are noticed. The last step, 'Thinking', is analysing the data.

The NCT model has two main phases in analysing the data: the descriptive-level analysis and the conceptual-level analysis (Friese, 2014). In this thesis, these two phases can also be identified. The descriptive-level analysis can be seen as the Noticing things and the Collecting things part of the NCT model, while the conceptual-level analysis is focusing on the Thinking about things. The descriptive-level analysis focus on the coding of the data, where the coding is done in two stages (Friese, 2014). The first stage is aiming at developing the codes for the qualitative data and the second stage is aimed at coding the whole data according to that coding scheme. In this thesis, this process is somewhat different. The codes are already developed before conducting the interviews, because for some question there are limited options of answers available (e.g. the question whether the valuator deviates from the DCF method). Other questions can have a broad variety of answers, (e.g. the reasons of valuators for diverging from the DCF method). In this case, all the reasons are first coded under one code. In the second stage, these codes are further categorized. Then, the second main phase will take place: the conceptual-level analysis. In this phase the coded data is analysed. The analysis of qualitative data can be done by looking at different aspects in the data. These different aspects are frequencies, magnitudes, structures, processes, causes and consequences (Babbie, 2010).

The NCT method does not prescribe a specific way of coding (e.g. initial coding of axial coding). The way of coding depends on the aim of the research, research questions and overall methodology (Friese, 2014). As said above, this thesis has some question that have a limited category of answers, though other question can have a broad category of answers. Therefore an initial coding scheme is made. In order to develop a structured initial coding scheme, the layout of the interviews is used. Therefore, this scheme is also divided into three sections. The first section focuses on the topic of diverging, the second section focuses on the issues and the third section focuses on the incorporation. Finally, there is added a fourth section, which captures interesting quotes that may be used in data analysis. This last section is also used when new issues are mentioned, and when issues are mentioned that are perceived in this research as major-minor or minor issue. In the appendix (appendix C) the actually coding scheme can be found. There, it is also mentioned that some codes need some further categorizing (last column). This is due to the fact that it is not known which answers will be given. So these answers are firstly collected in one code and can then be categorized when the coding is finished. This chapter will now end with the conclusion of this chapter.

3.5 Conclusion

This paragraph has focused on the description of the methodology for this research. The design is described and can be identified as a cross sectional research design. This research is focusing on qualitative data to answer the sub question and thus the main research question. The form of sampling that is chosen is purposive sampling. This form of sampling can be seen as non-randomized sampling and brings some issues concerning validity and reliability. Only the internal validity can be seen as high, the reliability and external validity are low. The data collection is also described in this chapter. This has led to the developing of the interview questions. In the data analysis the way of analysing the data has become clear: the analysing will be done by following the NCT model. The codes for analysing the transcribed interviews can be found in the appendix (appendix C).

4 Results

4.1 Introduction

This chapter will focus on the analysis of the data that has been collected in the interviews with the respondents. The analysis will follow the interview layout and will start with the reasons and way of diverging. Then, the analysis will continue to give a short overview on how the issues are perceived in practice. The most deviant and remarkable results will be discussed more in depth. Afterwards, the analysis will continue with the discussion of the issues that are found in practice, but are not covered by the theoretical framework. After the analysis of those results the third part of the interview, need for incorporation, will be analysed. Then, the analysis will finish with placing the valuation as a part of a bigger process. Before the analysis will be addressed, first the response on the interview questions will be discussed.

4.2 Response

The response of the valuators will be discussed in this paragraph. All respondents valuate or have valuated companies and therefore could relate to the different issues that were covered by the interview questions. Two subjects in the interviews were somewhat unclear and caused confusion. The respondents often perceived sustainability in the environmental way, while it was meant if a company would survive on the long term. This could have been due to the translation of the interview question from English to Dutch. After rephrasing the question and explain the aim of the question the confusion was taken away. Coincidently this error led to an issue (‘environmental sustainability’) that was not perceived as such in the theoretical framework. This issue was also perceived as whether company’s services or products would be wanted in the future. This was in theory described as ‘obsolesce’ and labelled in the methodology chapter as a minor issue. The second issue that was unclear for the respondents was the circularity problem. This subject was presented in the question as an item that would be clear for the respondents. This issue is often discussed in the literature. After explaining the issue more in detail, the respondents could understand the problem and relate to it. Overall it can be said that the respondents had no difficulties in answering the questions and could often relate these issues to their own experience in valuating. Respondents often mentioned cases or examples to clarify their answers.

4.3 Diverging from Discounted Cash Flow method

This paragraph will focus on the results concerning the diverging in practice from the DCF method. The reasons and ways of diverging will be discussed. In the first part of the interview, questions were asked concerning diverging from the DCF method. The aim of this part was to answer sub question two and three. Subsequently: *"What are the reasons for valuators to diverge from theory in practice when valuating SME's?"* and *"How do valuators diverge in the calculation of the valuation of SME's?".* In order to answer these questions the degree of diverging had to be known as well as the reasons for diverging and the way of diverging.

All of the respondents did diverge from the DCF method in a way. The main reason for diverging was that the way of valuation really depends on the specific situation or case. One valuator stated that the size of a company that had to be valuated was a reason for choosing either the DCF method or another valuation technique/method. The reasoning behind this choice was that smaller companies often did not have the knowledge or skills to hand over projections for the coming years. This is due to the fact that often tasks are combined (e.g. owner is the managing director and financial manager), which results in less accurate forecasts or even no forecasts at all. In these cases the DCF method cannot be used for valuation. The following quote illustrates this issue:

> *Respondent: "Yes we have actually a kind of a checklist, like which items has to be fulfilled in order to apply to the DCF. Certain size, the ability and knowledge to make future forecasts. Budget system, control on that system. Those are the most important conditions" (Quote 1)9.*

This also closely relates to comments of other valuators, that the lack of information and forecasts were reasons for diverging from the DCF method. Bankruptcy was also seen as a reason for diverging. This is also acknowledged in theory (Reis & Augusto, 2013). Russell (2007) already suggested that valuators should diverge form DCF method when valuating companies with losses. Another main reason for valuators to diverge from the DCF method was the question whether it was fair to assume that a company would exist till eternity, which the DCF method assumes. This will be discussed more in depth in sub paragraph 4.3.3. 'New issues',

One of the respondents argued that he did not diverged from the DCF method (company policy that DCF method is leading), but on the same time he did. This might seem to contradict in a way. But what the respondent meant was that in general the DCF method should be used to valuate companies. In some cases the DCF method had to be adjusted.

[9] All Quotes and Examples are translated from Dutch in the best possible way.

When looking at sub question two concerning the reasons for diverging, it can be concluded that in practice valuators diverge from the DCF method due to lack of information, knowledge and forecasts. The second reason is that it depends on the specific case and situation. The following quote summarize these findings quite well:

> *Respondent: "Yes and no. The DCF is our policy, that is our leading valuation method and we support that a lot with multiple analysis. But if you say: "should you diverge", then the answer is also yes, because the basis is DCF, but it depends on the specific case that adjustments could be made. Which adjustments that are, is very case specific" (Quote 2).*

The valuators had three ways of diverging. One was to adjust the periods in either the forecasted period or in the terminal value period. Another way of diverging that was mentioned by the respondents is the use of two staged growth models for fast growing companies. This is also been addressed by Jimínez & Pascual (2010) and Penman (1998), which also introduce three-staged models in order to compensate for certain issues. This timing of the periods will be discussed hereafter (see sub paragraph 4.3.3. 'New issues'). The last way was using other methods and techniques to provide some additions to the DCF method or to use other methods for valuating. One of the additions was for instance multiple analyses, see quote above (Quote 2). Other additions/methods are the use of intrinsic value, profitability value and the use of the Adjusted Present Value (full equity financing). To conclude, valuators diverge by adjusting the timing of the periods in the DCF method or by complementing the DCF method with other valuations methods, till completely using another valuation method. Again, it all depends on the case and the situation, in which manner the valuators diverge.

4.4 Perceiving issues of the Discounted Cash Flow method in practice

In this paragraph the different issues will be discussed, which were selected in the methodology chapter. First, this paragraph will focus on the degree to which the respondents perceived the issues the same as in theory. Then, the paragraph will continue to discuss some of the issues more in depth. It is chosen to focus on the deviant and remarkable issues. After these issues are analysed more in depth, this paragraph will end with describing issues that were perceived by the respondents, but are not covered by the theoretical framework. After these issues are discussed, this chapter will continue with the question whether the perceived issues should be incorporated in the DCF method.

4.4.1 Perceiving of the internal issues

The table (Table 7 perceiving internal issues by respondents) on the next page has the same layout as the table presented in the theoretical framework and methodology chapter (Table 3 and 4 paragraph 2.5.2 and 3.3.1.1). The count column shows the number of times respondents indicated if they perceived the issue as a major, major-minor or minor issue. Some respondents had made more than one statement on an issue; in some cases even contradicting statements. This clarifies why the count can be eleven in the case of the issue 'Change in Capital' with four respondents. The total column gives the number of total statements that were made by the respondents concerning each issue. The column of percentage indicated the proportion on how the issues are perceived. The last column represents how the respondents perceive the different internal issues. This indicates if an issue is seen as a major, major-minor or a minor issue. It shows that three out of seven internal issues are indeed perceived as major issues ('data quality', 'change in assumptions' and 'sustainable growth'), while one out of the seven issues is perceived as a minor issue ('circularity'). The other issue, 'exit multiple', 'capacity' and 'change in capital' are perceived between major and minor issue.

The 'data quality' is one of the issues that scored quite remarkable; all the respondents stated that this is a major issue. Therefore, this issue will be discussed more in depth in sub paragraph 4.4.3. This also is the case of the two issues belonging to the sub category 'WACC', the issues 'circularity' and 'change in capital'. The circularity issue is perceived as a minor issue, while change in capital is perceived as a major-minor and a minor issue. The other issues will not be discussed in detail, but the reasons and explanations why respondents perceived a certain issue can be found in the appendix (appendix D). Interesting was that the issue of 'sustainability' often was perceived as was meant as the issue 'obsolesce'. Perhaps these two issues should be merged.

Main	Sub	Issue					Perceived as
		Issue	Percieved	Count	Total	Percentage	
Internal	Input Data	Data Quality	Major	4	4	100,00%	Major
			Major-Minor	0		0,00%	
			Minor	0		0,00%	
	Assumptions	Change in Assumptions	Major	5	6	83,33%	Major
			Major-Minor	1		16,67%	
			Minor	0		0,00%	
	Growth	Exit Multiple	Major	2	7	28,57%	Major-Minor
			Major-Minor	4		57,14%	
			Minor	1		14,29%	
		Sustainable Growth	Major	2	4	50,00%	Major
			Major-Minor	1		25,00%	
			Minor	1		25,00%	
		Capacity	Major	4	9	44,44%	Major-Minor
			Major-Minor	3		33,33%	
			Minor	2		22,22%	
	WACC	Circularity	Major	0	5	0,00%	Minor
			Major-Minor	1		20,00%	
			Minor	4		80,00%	
		Change in Capital	Major	1	11	9,09%	Major-Minor to Minor
			Major-Minor	5		45,45%	
			Minor	5		45,45%	

Table 7 Perceiving of internal issues by respondents (e.g. the issue 'data quality' was perceived by all respondents as a major issue)

4.4.2 Perceiving of the external issues

The table below (table 8 Perceiving of external issues by respondents) is also constructed in the same way as the pervious table (Table 7).

Main	Sub	Issue					Perceived as
		Issue	Percieved	Count	Total	Percentage	
External	M&A (effects)	Synergy	Major	3	9	33,33%	Major-Minor to Minor
			Major-Minor	2		22,22%	
			Minor	4		44,44%	
		Integration costs	Major	3	6	50,00%	Major
			Major-Minor	2		33,33%	
			Minor	1		16,67%	
	Role of Management & Ownership	Personal Incentive Management	Major	3	8	37,50%	Not clear
			Major-Minor	2		25,00%	
			Minor	3		37,50%	
		Capacity Management	Major	7	10	70,00%	Major
			Major-Minor	3		30,00%	
			Minor	0		0,00%	
	Assets	Valuing Intangible Assets	Major	1	9	11,11%	Major-Minor to Minor
			Major-Minor	4		44,44%	
			Minor	4		44,44%	
	Industry factors	Sustainable	Major	2	10	20,00%	Major-Minor
			Major-Minor	8		80,00%	
			Minor	0		0,00%	
		Competition	Major	6	10	60,00%	Major
			Major-Minor	4		40,00%	
			Minor	0		0,00%	

Table 8 Perceiving of external issues by respondents (e.g. the issue 'capacity management' is perceived by the respondents largely as a major issue)

The respondents perceived the external issues in somewhat more variety compared to the internal issues. The most remarkable result can be found when looking at the issue of 'personal Incentive Management'. It is not clear how this issue is perceived in practice. All the issues are perceived more or less the same with a slight favour for either major or minor degree. Furthermore, it can be noticed that again three of the seven issues are seen as major issues ('integrations costs', 'capacity management' and 'competition'). The remaining three issues are seen as major-minor issues or combination of major-minor and minor issues

(synergy, Valuing intangible assets and sustainable). The issues 'synergy' and 'valuing intangible assets' will be analysed more in depth in the next sub paragraph. This is also the case for the issue 'personal incentive management'. While the first two issue are being discussed more in depth because the tend to be perceived as minor issues, the personal incentive management issue will be discussed because it is not really clear how these results should be interpreted. The reasons and explanations for the other issues can be found in the appendix (appendix E).

4.4.3 Deviant and remarkable results

In this sub paragraph some of the issues will be more discussed in depth. These issues are deviant in comparison to what was expected based on theory or have remarkable results. First, the issues 'data quality', 'circularity' and 'change in capital' from the internal category are discussed. Followed by the issues from the external category, namely 'synergy', 'personal incentive management' and 'valuing intangible assets'. The discussion will focus on some of the reasons whether an issue is perceived in a certain way. For a complete list of the reasons for each issue see appendix D and E.

Data quality: The issue 'data quality' scored quite remarkable. All the respondents stated that it was a major issue concerning the valuation with the DCF method. None of the other issue from either the internal or the external category was unanimous stated as a major, major-minor or minor issue. Data quality is an issue that has a great influence on the quality of the valuation according to Steiger (2008). This is also perceived in the same way in practice, which is summarized by the following quote:

> *Respondent: "If you don't have high quality information you could just throw a dart or come up with a random number, because high quality information is just needed to valuate a company" (Quote 3).*

This is also reflected by the fact that all the respondents argued that it was a major issue. Respondents stated that the quality of the information determines the quality of valuation and that the reliability of the DCF methods relies on the data that is used. This is somewhat put in perspective by Svetlova (2012). Though garbage in is garbage out, this is a problem that every model has to deal with (Svetlova, 2012). The main reasons for stating it as a major issue are that it determines the quality of the valuation, and it is simply needed to valuate at all. Another reason that data quality is important, is that assumptions have to be made based on this data. It also serves as a check to see how realistic the forecasted performance of the company is, by checking if the performance of the company is in line with the

forecasted performance. That valuation has to be realistic is also stated for other issues, for example 'assumptions' and 'growth'. To conclude: the 'data quality' is a major issue that influence also other issues such as 'assumptions'. Furthermore, it is an always-present issue. It does not depend on the valuated company, which is often the case with other issues (e.g. 'synergies' and 'valuing intangible assets').

Circularity and Change in Capital: Both issues that concerned the sub category 'WACC' seem not perceived as major issues as they were expected to be. The respondents see 'circularity' as a minor issue and 'change in capital' is seen as major-minor to minor issue. Especially for 'circularity' this is a deviant result when comparing it with theory. In theory[10] many emphasis is placed on the circularity issue, but in practice it is not seen as such a major issue. The respondents stated that they use market estimates for the discount rate, and not have thought about this issue. One of the valuators stated that they did not use the WACC anymore for some time, but assumed full equity financing. Another respondent argued that they mathematically determined the most optimal solution for the circularity problem in combination with fixed proportions for the capital structure. This closely relates to the issue of 'change in capital'. This issue is also seen in practice as an issue that does not really affects the DCF method. Though, Armitage (2008) states that WACC should be determined each year, because the contingent cash flows could cause changes in the capital structure. One of the stated reasons was that the possible change in capital has a minimal influence on the total value of the company as is expressed as follows:

> *Respondent: "I think if you calculate it, it would only have a tenth of influence on the WACC, and actually for the total value it would be minimal" (Quote 4).*

The valuators stated that they used fixed proportions for the capital structure in DCF method. According to Plenborg (2002), this is due to the simplifying assumptions in the DCF method. One of the respondent stated that correcting upon one issue would create a kind of fake reliability, because the DCF method is based on estimated and assumptions.

> *Respondent: "Then you will calculate the value according the DCF method, that is based on assumptions and estimates. Then you, if you concentrate on a single issue in depth, get a sort of fake reliability. While the bigger picture depends on estimates and assumptions, you could create the impression that you have made a accurate valuation, but you haven't " (Quote 5).*

[10] See for example Armitage (2008), Mejia-Palaez & Velez-Pareja (2011), Reis & Augusto (2013) and Hess et. Al (2008).

To conclude, though in theory the issues 'circularity' and 'change in capital' are supposed to have a major impact on the valuation. In practice it shows that the influence of these issues are minimal and are not considered as major issues. If one would correct for these issues, it is said to cause fake reliability.

Synergy: Synergy effects as issue tend to be perceived as a minor issue, but there is not a real strong preference for one of the categories by the respondents. It might be explained by the fact that it depends on the case; synergy effects do not always apply. Another reasons for perceiving synergy effects as a minor issue is, according to one of the respondents, that the synergy effects and integrations costs could be scored out to each other. In other words, synergy effects minus the integrations costs are zero. However, the other respondents, when asked to comment on this statement, did not agree to this. According to them, it was jumping to conclusions and that synergy was the only reason for a merger or acquisition. This last reason somewhat contradicts with other statements that are made. One of the respondents stated that not in all cases synergy effects were the primary motivation for a merger or acquisition, sometimes emotion could play a role. In addition, not in all cases synergy effects apply, for instance in generation transfers (e.g. when children take over the company from their parents).

Horizontal integrations and economies of scale were mentioned as one of the examples of synergies that could be achieved, as it is also mentioned in theory by Ghauri & Buckley (2003). Hongjiu (2008) states that the DCF method should be adjust to incorporate the synergy effects. In practice, valuators argued that initially a standalone valuation had to be made. Reason for this is that a buyer will probably not state that he or she can achieve synergy effects. It could also be argued that although seller and buyer would be aware of the possible synergies, both could not achieve them separately. Although, through competition the price of a company could rise, it would be justified when synergy effects could be achieved. This supports Steiger (2008) that contradicts Hongjiu (2008) by stating that an acquirer already corrects for synergy effects if they could achieve it. Though both authors and practice acknowledge that if synergies effects apply, it could be of influence on the valuation of a company. It can be concluded that synergy effects can have an effect on the valuation, but it depends on the case. Second, synergy effects are initially in practice left out in the valuation, making the so-called standalone valuation. When present, valuators would valuate again with the possible synergy effects. The following example catches the analysis that is made above quite good.

> *Respondent: "In this case was it the time that everything went well in the construction business. You have to imagine a wholesaler in building materials. That market is quite divided in the country. There are a couple of big players in the country that fulfil a regional function. I don't know exactly, but say there are eight in the Netherlands, everybody has it's own piece on the map as a service area. Then there are a couple of relative smaller players that are stand-alone business, with a certain market share in a smaller region that is for sale. You can imagine that there are three till four players surround it that say that is nice for me. Once that is taken over it is done, the market is divided. At that moment, if you offer what it is worth standalone you probably won't do any business, because there are other players that will buy it for a higher price. Then you want to know what it is worth standalone and you know that you probably have to do something more. That is possible, because to you it is then also more worth" (Example 1).*

Personal Incentive Management: In theory Reis & Augusto (2013) and Steiger (2008) argue that the role of management should be incorporated in the DCF method, while management provide the information that is used for valuating the company. They argue that management might have personal incentives for a certain outcome (Steiger, 2008). In practice it is not clear how this is perceived. Respondents tend to argue that is either a major issue or a minor issue, but the spread among the degree of importance is quite even. The respondents argue that it is hard to determine as an outsider, but that one should be aware of the problem and try to get the right information. For example:

> *Respondent: "Yes that happens. We do a lot of work in the valuations area where we act as an expert for a side. That we act for a certain shareholder that has a conflict with a another party and are not in agreement about the way of valuation. Due different information that is being used, is fact of life to put it that way. I think it is our job as professional to "cut the crap" and take care that the right information is presented" (Quote 6).*

When information is presented that might be too optimistic, valuators asking critical to the management for instance how they tend to achieve the forecasts. Another way for compensating was to adjust the risk premium, which corrected the value in some way. In the end, it was said that the market eventually determines what will be paid for the company. To conclude: the issue of 'personal incentive management' is recognised, but in practice it is not perceived as a major issue. Valuators have to be aware of it and rely more or less on their professional judgement. Important is to gather the right information.

Valuing Intangible Assets: Valuation of intangible assets tends to be perceived as major-minor to minor issue in practice, which contradicts in someway with theory. Uzma et al. (2010) argued that due to their form intangible assets are hard to value, but can generate value for a company. In practice, valuators stated that it depends on the case if it creates value. For instance when does a patent expire? More important was what a company tends to do with the intangible assets, if it is not used it is nothing worth. A respondent compared it with gold that is placed in a box and nobody can open it, which is worth nothing. If it could be utilized or sold, then it could be valuated. While Uzma et al. argue that it is hard to determine the value, in practice there are tools available that can estimate the value of an intangible assets. Due to regulations, Purchase Price Allocation (IFRS), intangible assets have to be valuated. One of the methods was for instance the relief of royalties. But the licensing of intellectual property is also being used to determine the value. It was also mentioned that for instance goodwill is just an accounting definition and that it cannot be seen as a part of the valuation. It can be concluded that the valuation of intangible assets really depends on the situation, but valuing intangible assets is an issue that is not perceived as a major issue. Although theory suggest that it is hard to determine the value, practice shows that there are methods to value intangible assets. Important to know as a valuator is if the specific intangible assets actually represent something.

4.4.4 New issues

The respondents have mentioned new issues during the interviews. These issues are new in the term of that they are not covered by the theoretical framework in this research and to the best of my knowledge are not discussed in the literature. In total ten new issues were stated, namely: 'bankruptcy', 'continuity of family business', 'the timing of the periods', 'strong growth of companies', 'steady state', 'sustainability in the environmental way', 'continuity of management', 'historic low interest', 'dependence of major client' and 'personal'.

The issue of 'bankruptcy' and 'continuity of family business' cannot really be seen as major issues. Though bankruptcy is indeed an issue when valuating with the DCF method, as is also stated in theory by Demirakos et al. (2004), it can also be argued that the DCF method was not intent to valuate companies with losses. Russell (2007) advises to abandon the DCF method in such cases. The continuity of family business was stated by one of the respondents as an issue. It was argued that family business often tend to focus on survival of the business and not focussing on profit maximisation, though when valuating such a company it could result in a lower value.

The issues of 'strong growth', 'steady state' and 'the timing of the periods' can be more or less being placed in the same category. All these issues concentrate on how the different periods in the DCF method should be addressed and interpreted in different cases. The strong growth of companies was also discussed at the beginning of this chapter; valuators diverged in the case of fast growing companies by implementing two staged growth models in the terminal value period. With the timing of the periods, it was meant that if it was realistic that the valuation assumes a period till infinity. The valuator thought it would be more realistic to assume that all the cash flows after five years would be due to effort of the buyer and not the previous owner. Another valuator also thought that the timing of the periods was an issue, but had another explanation. He argued that he did not know any company that lasted forever. This closely related with the issue of 'the steady state'. Although in theory it seems quite measurable (see table 1 paragraph 2.4), in practice it is perceived as an issue. The respondents stated that in practice it was hard to determine a steady state. The lifecycle of a product or services for instance can influence the projections in the terminal value period. Another reason mentioned was that companies often underestimated the need of investments that were necessary to reach the steady state. One of the respondents put this issue somewhat in perspective, which can be seen in the following quote:

> *Respondent: "I cannot name a company that in continuity states now we have reached that (steady state). It does not means that they have reached continuity, but is means that R&D costs, the development costs and the revenues are parallel of it. That is what you say, you can see that medium and large enterprises rise and fall" (Quote 7).*

Another issue that was also discussed at the beginning of this chapter was the issue concerning 'sustainability in the environmental way'. Due to misunderstanding of the question, this issue was discussed during the interviews. According to the respondents, this issue becomes more and more important, because it can actually influence the performance and even existence of a company. The following example illustrates this quite well:

> *Respondent: "Last week I have started with the valuation of a large conglomerate that processes iron ore and bauxite. They have large investments in China, but are quite polluting. They suffer from the public opinion to put it that way. But also there are restrictions due to legalisation that interfere with business that lead to delays, high clean up costs or other things. This specific party has even trouble raising capital, because they are so polluting. This influences the expanding proposals and so on. Thus there are real consequences, sustainability of companies has therefore influence in the valuation" (Example 2).*

The 'competence of management' is one of the issues in the sub category 'Role of management and ownership'. However, the respondents stated that the continuity of the management team is an issue that is even important as the 'competence of management'. One of the respondents argued that the continuity of the management team is one of the factors to assess the financial forecasts. The dependency of the company to persons in a management team was also stated as a reason for this issue. This could be described as crucial roles within a management team, which is also mentioned as a reason for the degree of importance in the issue 'competence of management'.

The historic low interest was a point of concern for one of the respondents. Although there was only one respondent that stated this as an issue, the respondent emphasised heavily on this issue. The respondent argued that due to the low interest, it was hard for valuators to use the WACC without questioning. In the case where the interest lies beneath the growth percentage that is used in the terminal value period, it could put, mathematical, pressure on the calculation. Another issue that was mentioned was the 'dependency of a single client' and how this influences the valuation. The issue of 'personal' was also mentioned. Does a company take care for its personal, or not and can important personal (easily) be replaced.

4.4.5 Conclusion perception of issues & new issues

It can be concluded that theory and practice converge in most issues that can be present when valuating SME's. It really depends on the case if certain issues could influence the valuation. Not all the issues are perceived in same way, but the valuators did acknowledge that most of the issues that were discussed during the interviews are present in reality. Only one issue was perceived as a minor issue, this was the issue of 'circularity'. The issue of 'personal incentive management' was not clear in which way it was perceived. There was not a strong indication which degree was dominant, but it looks like that it is either perceived as a major or a minor issue. There were three issues that were perceived as major-minor to minor. This concerns the issues 'change in capital', 'synergy' and 'valuing intangible assets'. The 'change in capital' did not influence the total value of a company in great manner. The synergy effects really depended on the situation and 'valuing intangible assets' were an issue, but could be valuated by the use of different methods. Again, it really depends on the case. The other nine issues were either perceived as major or major-minor. This answers the second part of the first sub question: *Which problems are there in theory and in practice when using the DCF method for valuation of SME's and where do theory and practice converge or diverge?* The first part, which issues can be found in theory and

practice, was already answered in a way. In the theoretical framework the issues that are stated in theory were discussed. In practice there could also be found some new issues. The most important are the issues that focus on the forecasted period and terminal value period: 'the timing of the periods', 'strong growth of companies' and 'steady state', and the issues 'sustainability in the environmental way', 'continuity of management' and (historic) 'low interest'. Other issues that were mentioned were 'dependence of major clients' and 'personal'. This is where theory and practice diverge, because to the best of the researchers knowledge these issues are not discussed in theory.

4.5 Valuation as part of bigger process

Besides the new issues that are discussed in the sub paragraph (4.4.4) above, the respondents also stated that the issue of 'price vs. value'. The ability financing a merger or acquisition and the ability of a company to carry the debts and interest costs after the merger or acquisition. Strictly, these issues cannot be seen as problems that concern to the DCF method, but the issues do affect the valuations of companies. The valuation does not stop with the outcome of the DCF method as can be seen in the following quote:

> *Respondent: "No that is not the question, but when you guide a management buy-out and we have to make a valuation then we do put it in the report. I have also seen different reports of colleagues, that in the case of management buy-outs, they do take the financing issue into account. Otherwise you are making nice calculations, but there isn't any way to finance it" (Quote 8).*

The respondent above stated that for management buy-outs, the financing of the buy-out was the case. Other respondents stated more in general that it was an issue that they addressed. Another issue that was mentioned was the ability of the buyer to pay the interest costs in the future as well as the redemptions. This more or less lies in line with the ability to finance a merger, acquisition or management buy in or out. The issue of 'price vs. value' was also mentioned multiple times during the interviews, but is strictly not an issue that is part of the DCF method. The issue of price vs. value closely relates to the last step that needs to be taken in valuation. This is described as the decision value that lies between the minimum that the seller want to receive and the maximum a buyer can pay (Hering et al., 2006). The following two quotes summarize this issue:

> *Respondent: "Value and price are two different things. How badly does someone want it and how much can he spend" (Quote 9).*

> *Respondent: "Of course, and also to state correctly why you are of the opinion that this should be the assumptions. Of course you don't come with a definitive, it is an approach to hear both sides of the story. You discuss with the entrepreneur the assumptions and try to get a realistic value of that company, in the end that is what the entrepreneur is expecting" (Quote 10).*

Although these issues, 'the ability of financing' and 'price vs. value', are strictly not part of DCF method, they could influence the valuation and thus can be seen as a part of the valuation process. It is for valuators important to keep in mind that the value, which is calculated through the DCF method, is not always the price that is ultimately paid. The outcome of the DCF method should more or less be seen as a starting point for further discussion, as is stated in Quote 9. This closely relates to the need for incorporation as will become clear in the next paragraph.

4.6 Need for incorporation of issues in the Discounted Cash Flow method

The need of incorporation will be discussed in this paragraph. This part of the interview was used to determine the need of incorporation of the discussed issues concerning the DCF method. In theory, attempts are made to incorporate issues in the DCF formula, but is it needed and wanted in practice? When discussing it with the respondents, it became clear that in practice there is not a need for incorporating and thus adjusting the DCF method or formula. When looking at the reasons for not incorporating, different reasons can be stated. One of the respondents argued that the DCF method had to remain a tool. Another reasons that was opted, was that the valuator had to keep thinking and it should remain a think model. Svetlova (2012) also argues that the DCF method is a supportive tool and should not be used as a decision model. It is also argued by Svetlova (2012) that DCF method should be used as a starting point for the valuing process. This is corresponds with the previous paragraph (e.g. value vs. price) and with the argument that the outcomes of the DCF method should be used as a starting point for the discussing with entrepreneur, as is said by one the respondents as follows:

> *Respondent: "DCF method itself, I think is a good starting point for having a discussion with a company and with a entrepreneur about the future developments" (Quote 11).*

Other reasons were that the DCF method should be easy to use and that most issues are covered by the DCF method, but that valuators have to keep thinking. This also relates to the comments that were made concerning to incorporate the issues in some extent into the DCF method. Again, it was mentioned that a valuator had to keep thinking and not take every

assumption for granted, because the valuation should be tailor made to each specific situation and case, as one of the respondents formulated it:

> *Respondent: "At the same time I think that every specific case also needs specific tailor made adaptions to the DCF method. Again it really depends on the situation which adaption it is and to what extent it should applied" (Quote 12)*

Though the respondents were quite hesitated to adjust the DCF method, they did give some ideas on how the issues could be incorporated in the DCF method. The most opted idea was to construct some kind of checklist to see if certain issues are addressed. Other respondents add that the model of Porter (competitive strategy) could be incorporated in such a checklist as well as a balanced scorecard. Other options were to look at exit multiples, looking at two staged growth models, but also to rely on rule of thumbs. To conclude and answer the last sub question: *Is there a need for incorporating the issues into the existing formula or method according the valuators? (If there is a need for incorporation, how to incorporate those issues?),* it can be said that there is not a real need for incorporating the issues in the DCF method, which contradicts with the efforts that are made in theory. The valuators did opted that a checklist would be a good way to ensure that the issues would be thought about. But, in essence the model should remain as it is, due to the fact that it should be easy to use. Furthermore, it should remain a think model, and in the end it should remain a tool.

4.7 Conclusion of the results

The results show that the valuators diverge to some extent from the DCF methods, though it really depends on the case to what extent and manner the valuators diverge. Adjusting the timing of the periods and the use of other valuations methods or techniques as addition or replacement of the DCF method were stated as ways to diverge. When focussing on the issues it can be stated that practice is in accordance with theory in the most issues. Only the issue of 'circularity' was perceived as a minor issue. Also not all issues are perceived in the same degree, but overall it can be said that the issues are present and could influence the valuation. According to the valuators, it does depend on the case and situation which issues are present. Besides the validation of the issues that are discussed in theory, the respondents also stated some new issues. The new issues focused on the forecasted period and terminal value, 'WACC', 'Role of management and Ownership' and 'Sustainability in the environmental way'. Other issues were 'dependence of major clients' and 'personal'. Concerning these issues, practice is not in accordance with theory. Though most issues are seen as a problem when valuating companies, valuators do not have a need for

incorporation of those issues in the DCF method, which contradicts with theory. Main reasons were that it should remain a tool and able to be used in a simple way. Furthermore, it should also remain a think model. On the other hand, a checklist would be helpful according to some of the valuators. This could be used to ensure that valuators keep all the possible issues in mind. Furthermore, it can be concluded that the valuation of companies is a part in a larger process. In this process the issues of 'price vs. value' and 'the ability to finance' can be placed. Though strictly not an issue of the DCF method, valuators should be aware of this. The outcome of the DCF method should be more or less seen as a starting point in the process of selling/buying a company. The following table (see next page, table 9 Issues Discounted Cash Flow method: perceiving issues in practice) summarize the findings concerning the issues. All the issues that are known are stated in this table, including the new founded issues. The black coloured issues are the issues that were not perceived is this research as major issues for the valuation of SME's. The issues that were considered as major issues (coloured blue in table 9) are all placed in a category (major, major-minor and minor) on how they were perceived in practice. Some issues are categorised in multiple categories, either it was not clear till which category the issue belonged or the issues are perceived between two categories. This table is based on the table 4 paragraph 3.3.1.1. (Issues Discounted Cash Flow method: major and minor issues for SME) which can be found in chapter 3. Besides the addition of the new issues (also coloured blue in table 9) and the degree the issues were perceived in practice, there is also added a new sub category, namely 'duration of periods'. This sub category can be linked to both the forecasted period as well as the terminal value part of the DCF formula. In appendix F a larger resolution of table 9 is presented.

Issues Discounted Cash Flow method

Issues				Theory	Practice		
Main category	**Part of formula**	**Sub category**	**Issues**	**Degree of issue for SME****	**Major**	**Major-Minor**	**Minor**
Internal	Forecasted period	Input data	Data quality	Major	x		
			Negative numbers	Major-Minor		N/A	
			Dirty surplus accounting	Minor		N/A	
	Forecasted & Terminal value periods	Duration of periods	Timing of the periods	N/A	x		
	Terminal value period	Assumptions	Change in assumptions	Major	x		
			Determination steady state	N/A	x		
		Growth factor	Exit multiple (desired value)	Major		x	
			Sustainable growth	Major	x		
			Capacity	Major		x	
			Merger (companies with different growth percentages)	Major-Minor		N/A	
			Reinvestments	Minor		N/A	
			Fast growth	N/A	x		
	Discount rate	WACC	Circularity	Major			x
			Changes in capital	Major		x	x
			Net interest relation	Major-Minor		N/A	
			Low interest costs	N/A	x		
External	None*	Merger & Acquistion (effects)	Synergy	Major		x	x
			Integration cost	Major	x		
			Effect of competitors	Major-Minor		N/A	
			Transaction & Agency cost	Minor		N/A	
			Minorty discount	Minor		N/A	
		Non quantifiable factors	Legislation	Minor		N/A	
			Local culture	Minor		N/A	
			GDP growth	Minor		N/A	
			Tax policy	Minor		N/A	
			Currency developments	Minor		N/A	
			Inflation	Minor		N/A	
		Role of management and ownership	Personal incentive management	Major	x	x	x
			Competent management	Major	x		
			Responsible ownership	Minor		N/A	
			Continuity of management	N/A	x		
		Assets	Asset replacement	Minor		N/A	
			Asymmetrical payoff	Minor		N/A	
			Valuing intangible assets	Major		x	x
			High volatility assets	Minor		N/A	
			Multiple period asset lifetime	Minor		N/A	
		Industry factors	Obsolesce	Minor		N/A	
			Sustainability	Major		x	
			New oppertunities	Minor		N/A	
			Competition	Major	x		
			Personal	N/A		x	
			Environment	N/A	x		
			Dependency on major customer	N/A	x		

** Currently the issues in sub categories; M&A, Non quantifiable factors, Role of management and ownership, Assets and Industry factors aren't incorporated in the standard DCF formula*

*** Percieved in this research as major issues for SME (not percieved in theory as such).*

Table 9 Issues Discounted Cash Flow method: perceiving issues in practice

5 Conclusion

This research has first focused on the framing of the problem and developing the main research question and sub question. The contributions to the existing literature were also described in this part. These contributions will be part of the discussion in the next chapter. In order to put the DCF method in perspective this research has discussed valuation models and methods in general. It shows that three types of valuation methods could be distinguish,

- single period comparative methods,
- hybrid methods and
- multi-period methods.

The DCF method belongs to the latter, multi-period methods. The 'Theoretical framework' is focused on the valuation process, and gives some more insights on how the DCF method and its formulas work. In this part it also became clear that when the so-called steady state assumptions applies, the forecasted period ends and the terminal value begins. The issues that are stated in literature were subsequently discussed. By first focussing on the working of the DCF method it became clear where and how the issues would influence the valuation. The issues were divided in the categories internal and external issues. These categories are in theory are not explicitly stated, but were used in this thesis to create some order in all the discussed issues. The theoretical framework ended with the description of the three-staged method approach that is argued to serve as a solution to some of the problems. In the methodology chapter it became clear that this research could be described as explanatory research, aimed to give an indication to which extent the issues in theory are perceived the same as they are in practice. And which of those issues that are perceived in the same way, should be incorporated in the method of the Discounted Cash Flow. Preferably it would also be helpful to get an indication on how these issues should be incorporated into the DCF method.

The results shows that in practice the valuators diverge from the DCF method. The main reason was that it depends on the situations and the case. For instance the lack of information, or the size of the company. By using other valuation methods as additions to the DCF method or as replacements, the valuators diverged from the standard DCF method. The issues were more or less perceived in the same way, though the degree on how the issues were perceived did differ. This research has also brought some new issues to light that to the best of the researcher knowledge are not discussed in theory. While most issues were present in practice, valuators did not embrace the idea of incorporation. Some kind of checklist was the most opted choice on how to deal with the issues. Reasons for the

negative reaction on the incorporation were that it should remain a tool that is explainable, and keeps the valuator thinking, and is easy to use. It was also argued that the outcomes are only an indication of the value of the company, which links to the idea that the DCF method is just a part in the whole process of valuation. The outcomes are a starting point and give an idea on the value of the company, but does not have to be the actually price that is ultimately paid. The financing is an issue that also have to be taken into account, as well as the price vs. value problem. This is accordance with Svetlova (2012) that argued that the DCF method should not be a decisions model.

The main research question is: *Which problems that can be found in both theory as well as in practice influencing the valuation of Small and Medium Enterprises when using the Discounted Cash Flow method, should be incorporated into the formula or model of the Discounted Cash Flow (and how)?* It can be concluded that none of the issues, that are both present in theory and practice, should be incorporated in the DCF formula or method. The valuators did not see any benefits in adjusting the formula or method. Due to the fact that each case is different it would not make any sense to incorporate all the issues in the DCF method. In literature a lot of issues are stated that influence the valuation of companies when using the DCF method, in practice it really depends if and to what extent the issues are present. While literature is focussing in theory on adjusting the DCF method to incorporate the different issues, practice shows that each valuation has to be tailor made to the valuated company. The DCF method should therefore remain as it is, but valuators should be aware that these issues could influence the valuation. It has been argued that a checklist would be a good tool to deal with the different issues, and enabling the valuator to adjust the DCF method for each case while keeping all the issues in mind. Another conclusion is that the DCF method should be put in perspective. It is acknowledged in theory that after the outcomes of the DCF method, the last step is negotiating on the valuated company. Furthermore, the value based on the DCF method should be seen as an indication, and starting point of the final valuation (Demirakos et al., 2004; Hering et al., 2006; Svetlova, 2012). Though this is acknowledged, theory also tends to forget that the DCF method should be placed in the whole process of valuating. In practice the valuators tend to put the DCF method and its outcomes more in perspective by looking at the larger whole, thus reducing the importance of the outcomes of the DCF method.

6 Discussion, limitations & future research

6.1 Discussion of main results

The main results show that the respondents acknowledged that most of the issues in theory exist in practice. This provide a strong indication that the other issues would also be perceived in the same matter, but of course further research is needed to confirm this indication. The degree in which way the issues are perceived is a point of discussion. First of all this research has only been focussing on issues that were assumed to influence the valuations of SME's. But the data did not tell if this assumption is valid. It can only be stated that the issues that are discussed in theory are acknowledged by the valuators to have an effect on valuation of companies. It cannot be stated that this is only the case for SME's. The way the respondents perceived the issues is also a point of discussion. The respondents have given sometimes arguments about the same issues that contradicted each other. This is the reasons that it was sometimes hard to determine if an issue was perceived as major, major-minor or minor. Therefore the results of this research can only be seen as an indication to which degree the respondents perceived the different issues. In table 9 (paragraph 4.7) it is seen that the issue of 'personal incentive management' for instance is perceived as a major, major-minor and minor issue. Due to the fact that only four respondents were interviewed it cannot be stated that these issues are perceived in a certain way. It can only be indicated, as was the aim of this research.

6.2 Contribution to literature

In the introduction it was stated that this thesis would make a couple of contributions to the current literature. First, by comparing the findings from literature with practice. Thus indicating if practice and theory converge or diverge from each other. This research was also aimed at the question how valuators perceived the attempts in literature to incorporate these issues in the DCF method. The third and last contribution is the summarizing of the issues that are stated in theory.

The first two aimed contributions have been completed to some extent. This research indicates that theory and practice converge and at the same time diverge from each other. When looking at the issues it can be seen that the stated issues in theory are perceived in more or less the same way as in practice. This is where theory and practice

converge. However, the need for incorporation is a point where theory and practice diverge. Theory tends to incorporate the issues into the DCF method, see for instance Hongjiu (2008). Hongjiu (2008) made an attempt to incorporate the issues of 'synergy', 'effect of 'competitors' and 'integration costs' into the DCF formula. In the adjusted formula[11] three new variable are added (Hongjiu, 2008). However, Hongjiu (2008) states for instance that the variable 'effect of competitors' is hard to determine in practice. In practice an expert should estimate this variable, according Hongjiu (2008). Valuators do not share the idea of incorporating the different issues into the DCF method, such as Hongjiu (2008) attempts. They would like to maintain the current DCF method as it is. It seems that the first two aimed contributions are achieved, but the prove is very thin. Only four respondents were interviewed so there can only be given an indication that theory converge on the subject of the issues, and diverge on the subject of incorporation. The last stated contribution, concerning the summarizing of the issue that are found in theory and practice, has been completed. This contribution is made in the form of a table (see table 3 and 9 in paragraph 2.5.2 and 4.7). These tables subsequently show the issues that are found in theory, and the issues in theory complemented with issues that are found in practice. The tables are divided into internal and external categories, and sub categories. There is also indicated to which part of the formula the different sub categories and issues belong. This deviation is not made in theory, but is formed in this thesis. It created a more clear view on how the issues influence the DCF method.

6.3 Theoretical and practical Implications

Literature is mainly focussing on the theoretical discussion of the issue and trying to improve the DCF method by adding some issues in the form of variables. (See paragraph 1.3 'Contribution to the existing literature'). Literature is not focussing on the fact if these incorporations tend to be used in practice, while the main reason for diverging in practice lies within the problem of the case itself. This puts the whole DCF method and issues in an other perspective. One of the most made statements by the respondents, whether asked to comment on reasons of diverging or on the issues, was 'it depends on the case'. In practice each case asks for a tailored made approach, but in essence the DCF method is leading as one of the respondents argued. It can be argued that based on these arguments that the attempts that are made in literature to incorporate some issues in the DCF method will not find any practical use. Due to dependence of the case whether issues apply it is useless to

[11] See appendix A

incorporate all the issues in the DCF method. Second, it would make the DCF method probably less easy to use, which is not preferred in practice. Third, the method should be explained to the buying and selling parties and therefore kept simple. Fourth, the valuator should keep thinking, and not tempted to take the outcomes for granted. Fifth, the whole model depends on assumptions; adjusting the DCF method for one issue causes fake reliability. Sixth, the outcomes serve in practice as a starting point for the further process of negotiating. The DCF method outcome is not the last step in the negotiating process.

Therefore the theoretical attempts in literature to adjust and correct the DCF method seem to be useless. Pure theoretical it is a good exercise, but the indication of this research shows that in practice it will not find any use. Literature could better focus on developing a checklist that will help the valuators to identify all the issues, and give them some ideas on how to deal with those issues. The respondents argued that this is a welcome tool. Furthermore, the respondents often gave examples and clues on how they deal with the issues in practice. Or how they would deal with the issues if confronted with them. Though not the main goal of this research a checklist (see table 10) is made that valuators can use in practice. Table 10 is based on the pervious tables that were presented in this thesis, such as table 4 and 9. In table 10 a part has been added that shows the possible actions, which valuators can take to deal with the issues. Besides, it serves as a check to see if all the possible issues are addressed. The actions that can be taken by the valuators are divided into two kinds of actions. There are actions that can be taken with regard to the formula, assumptions, WACC etc. These are the actions within the DCF method. There are also actions outside of the DCF method, such as interviews with management. After table 10 more detailed explanations are given on how to deal with the issues. The roman numbers in table 10 correspond with the explanation on the next pages. In practice these actions will already be known and used. However, this table is meant as an overview, and memory support for valuators. The following quote of one of the respondents summarized pretty well the way the respondents put the DCF method in perspective, and opted a checklist.

> *Respondent: Yes, look at the things you have just mentioned. Basically you should with the things you have mentioned, the possible risks, have some kind of checklist. Did you thought it through, are there things that you haven't thought about, but certainly could influence your forecasts?" (Quote 13).*

6.4 Limitations & future research

As any research this research has it limitations. The attempt has been made to provide a link between theory and practice. Some indications can be made on how theory and practice diverge and converge, but the prove of this is still very thin. This research had an explorative setup, but further research (on a larger scale) is needed to come to statistical conclusions. This will enable to make more grounded statements about the issues, such as in which way the issues are perceived. Future research should also focus on whether other issue, which in this research were assumed as not major issues for SME, are in fact not major issues for SME's. The choice was only based on arguments and sound logic, it could be very well that the issues, that were not selected for this research, also influence the valuation of SME's. Furthermore, research should also focus on the perceiving of the issues when valuating large companies, such as multinationals. While it is assumed that whole other issues could influence the valuation in those cases, it cannot be said fore sure. By focussing research on these subjects more generalized and grounded statements can be made concerning the issues of the DCF method. To summarize, additional research is needed to improve the reliability of the results, and to enhance the external validity. This research only focused on the internal validity for the selected issues. Additional research is also needed to improve the internal validity of thee issues that were not subject in this research. Besides, future research could focus on the issue 'personal incentive management'. While it still remains the question how this issues is perceived in practice. Another specific issue where research can focus on is the issue of 'obsolesce'. In this research it was not seen as a major issue, but in practice it was. It was mentioned when discussing the issue 'sustainability'. With the issue 'sustainability' theory describes in which way a company can exist in the future by looking at a geographical en demographical level. Future research could focus on the fact if these two issues could be merged, or that a more explicit deviation should be used. In addition, the issue 'sustainability' was also thought more in the environmental way. Perhaps these three issues should be merged, perhaps an explicit distinction has to be made, but that should be up to future research to determine.

The use of big data and social media was also opted as a way to improve the valuation of companies, for instance by including trends in social media to the forecasts of sales. Another way could be to determine through social media and big data the public opinion concerning a company. It would also be good to assess the DCF method from the point of view of the sellers and buyers. How did they perceive this method?

Table 10 (Issues Discounted Cash Flow method: proposed checklist) has been constructed to serve as a checklist with suggestions on how to deal with certain issues, but more research is needed to validate this table to make sure that it actually can serve as a checklist. The table also shows some question marks, which future research have to complement, or rule out. Besides, it also shows that still a lot of issues are only stated in theory, but it is not clear on how these issues are perceived in practice. This checklist was developed in way to put the DCF method in perspective. It may seem that the DCF method has such many issues that it can be argued if it is a good method at all to valuate companies. The main idea that most respondent seem to give was that there are issues present, but the DCF method still remains a good method for valuating, as is nicely formulated in the following quote:

> *Respondent "I think that the issues that you discuss are all there, but I think in basis that the DCF method is still the most optimal methods to value companies" (Quote 14).*

While it was not the main goal of this research, results revealed some bits of the puzzle. I would like to invite other researchers, but also valuators to fill in the other bits of the puzzle by further focussing on the issues that are not covered in this research. Furthermore, I want to invite them to discuss the actions/adjustments that are opted in table 10. So that ultimately the checklist can be complemented and validated with tools that can be used to deal with the different issues.

Issues Discounted Cash Flow method

Issues				Theory	Practice			Adjustment / Incorporation DCF method	
Main category	Part of formula	Sub category	Issues	Degree of issue for SME**	Major	Major-Minor	Minor	Within DCF method	Outside DCF method
Internal	Forecasted period	Input data	Data quality	Major	x			Due dilengence & Trend analysis (I)	Use market estimates & Benchmarking (II)
			Negative numbers	Major-Minor		N/A		N/A	N/A
			Dirty surplus accounting	Minor		N/A		N/A	N/A
	Forecasted & Terminal value periods	Duration of periods	Timing of the periods	N/A	x			Shorter periods (III)	?
	Terminal value period	Assumptions	Change in assumptions	Major	x			Scenarios & Valuation expires (IV)	Compare with market estimates & Lifecycle (V)
			Determination steady state	N/A	x			Explicit state assumptions (VI)	Compare with market estimates (VII)
		Growth factor	Exit multiple (desired value)	Major		x		Standalone valuation, Trend analysis & Scenarios (VIII)	Interviews (IX)
			Sustainable growth	Major	x			Forecasts of cash flows & Trend analysis (X)	Check with market estimates & Legal due dilengence (XI)
			Capacity	Major		x		Scenarios, Forecasts of cash flows & Investments (XII)	Check with market estimates (XIII)
			Merger (companies with different growth percentages)	Major-Minor		N/A		N/A	N/A
			Reinvestments	Minor		N/A		N/A	N/A
			Fast growth	N/A	x			Two staged growth models (XIV)	Check needed investements (XV)
		WACC	Circularity	Major			x	Optimal capital structure (XVI)	Check with market estimates (XVII)
			Changes in capital	Major		x	x	Use fixed proportions & APV method(XVIII)	Compare with market estimates (XIX)
			Net interest relation	Major-Minor		N/A		N/A	N/A
			Low interest costs	N/A	x			?	?
	Discount rate	Merger & Acquisition (effects)	Synergy	Major		x	x	Make standalone valuation & Cash flows (XX)	?
			Integration cost	Major	x			Cash outflow (XXI)	Try to name it, not quantify it (XXII)
			Effect of competitors	Major-Minor		N/A		N/A	N/A
			Transaction & Agency cost	Minor		N/A		N/A	N/A
		Non quantifiable factors	Minority discount	Minor		N/A		N/A	N/A
			Legislation	Minor		N/A		N/A	N/A
			Local culture	Minor		N/A		N/A	N/A
			GDP growth	Minor		N/A		N/A	N/A
			Tax policy	Minor		N/A		N/A	N/A
			Currency developments	Minor		N/A		N/A	N/A
			Inflation	Minor		N/A		N/A	N/A
		Role of management and ownership	Personal incentive management	Major	x	x	x	Adjust through risk premium (XXIII)	Interviews & Be aware of it (XXIV)
			Competent management	Major	x			Part of integrations costs & Scenarios(XXV)	Interviews (XXVI)
			Responsible ownership	Minor		N/A		N/A	N/A
			Continuity of management	N/A	x			Scenarios (XXVII)	Interviews (XXVIII)
		Assets	Asset replacement	Minor		N/A		N/A	N/A
			Asymmetrical payoff	Minor		N/A		N/A	N/A
			Valuing intangible assets	Major			x	Purchase Price Allocation (IFRS) & Goodwill (XXIX)	Unlocked value potential & Utilisation (XXX)
			High volatility assets	Minor		N/A		N/A	N/A
			Multiple period asset lifetime	Minor		N/A		N/A	N/A
			Obsolesce	Minor		N/A		N/A	N/A
		Industry factors	Sustainability	Major		x		Product portfolio, Lifecyle & Adjusted in process (XXXI)	Market information, Commercial & Legal due dilengence (XXXII)
			New opportunities	Minor		N/A		N/A	N/A
			Competition	Major	x			Adjusted in process (XXXIII)	Interviews & Market information (XXXIV)
			Personal			x		?	Interviews & Contracts (XXXV)
			Environment		x			?	Legal due dilengence & Impact public opinion (XXXVI)
			Dependency on major customer		x			Scenarios (XXXVII)	Model of Porter (XXXVIII)

** Currently the issues in sub categories; M&A, Non quantifiable factors, Role of management and ownership, Assets and Industry factors aren't incorporated in the standard DCF formula*

*** Percieved in this research as major issues for SME (not percieved in theory as such).*

Main tools

Developing scenarios
Interviews
Due dilengence (financial, commercial and legal)
Market information
Trend analysis
Model of Porter

+

Check financing
Check when sold if the combination can bear it's interest and redemption payments

Table 10 Issues Discounted Cash Flow method: proposed checklist (roman numbers correspond with the numbers on the next page) – see appendix F for a larger resolution of table 10

(I) Compare with market estimates to assess if data is not out of the ordinary. Determine the trend, do past, present and future diverge, if so why?

(II) Normalisation of balance sheet, determine if nothing is out of the ordinary. If possible compare through benchmarking.

(III) Decrease the time spawn of the forecasted period, thus adjusting the value.

(IV) Develop different scenarios (bad - normal - good) and check financial forecasts. Inform client that the valuation expires fast.

(V) Compare with market estimates. Determine lifecycle of product/services.

(VI) State explicitly on which assumptions the forecasts are made.

(VII) Does the competition also have reached steady state?

(VIII) Make standalone valuation to temper the expectation. Make trend analysis to validate the forecasts. Develop different scenarios.

(IX) How are forecasts made; bottom-up or top-down, do the forecasts look feasible by lower management, how does management think to realise forecasts?

(X) Determine how realistic the forecasted cash flows are (e.g. what does the growth mean for your sale). Check realism through trend analysis.

(XI) Determine the realism of growth by checking with market estimates. Determine whether product or services are influenced by developments in regulations.

(XII) Determine the maximum capacity and check with forecasts. Determine which investments are needed in Property Plant and Equipment (PPE).

(XIII) Check with industry estimates (e.g. growth of industry, growth of the demand).

(XIV) Look at the possibility to apply a two staged growth models.

(XV) Check the needed investments in PPE to facilitate the forecasted growth.

(XVI) Determine the optimal capital structure by iteration.

(XVII) Check with market information, what is optimal capital structure.

(XVIII) Use fixed proportions equity/debt (determine what has been average in the past). Use APV (adjusted present value) method = 100% equity financing.

(XIX) Check with market estimates to determine if it is a common proportion.

(XX) Is not always the case (e.g. generation transfers and management buyouts).
If it is the case split advantage: buying party cannot achieve synergies on itself, and neither does the selling party. Adjust through cash flows.

(XXI) Treat as a cash outflow, so check if applicable and if it is included into the forecasts.

(XXII) It is hard to determine the actually costs and timing, so name it but not quantify it.

(XXIII) Is risk of forecasts, but could be compensated by adjusting the risk premium when serious doubt of the quality of information through possible personal incentives.

(XXIV) It is fact of life, try to be aware of it and try to get the right information. How are forecasts made; bottom-up or top-down, does it look feasible by lower management, how does management think to realise forecasts?

(XXV) Can be seen as integration costs, training of management, replacing management etc. Develop scenarios what will happen when crucial persons leave company. Or when entrepreneur is not responsible for operational tasks, but can focus on product development.

(XXVI) Determine crucial roles, roles within team, distribution of tasks, and how management thinks it can realise the forecasted growths.

(XXVII) Develop scenarios on what will happen when management should be replaced or leaves (e.g. what happens with sales, production etc.).

(XXVIII) Determine crucial roles

(XXIX) Methods such as relief of royalties exist to determine the value of intangible assets. In case of activated goodwill, write it of and determine again.

(XXX) Inform client of unlocked value potentials if this is the case. Determine whether an intangible assets will/can be used.

(XXXI) Determine whether new products/service are being developed, or current products/services are changed. Buying party is often aware of the degree of sustainable.

(XXXII) Check with market information, examine to what degree the products/service is needed in the long term. Determine if your product/services could be influenced through new regulations (e.g. medicines).

(XXXIII) Buying party is often aware of the degree of competition.

(XXXIV) Determine the degree of competition through either interviews or market information/estimates. Determine if it is a growth market, if there are niche markets opportunities -> SWOT analysis.

(XXXV) Determine to what degree employees are replaceable (e.g. specialisation, skills and sales) For instance, to which degree can advisors take clients with them when switching to the competition.

(XXXVI) Examine in which way legal issues could affect production, or your product (when operating in more then one country determine for each country). Assess the possible impact of public opinion.

(XXXVII) Develop scenarios based on sales forecasts, what happens when major customer is left out the forecasts.

(XXXVIII) Does the company depend on large customer? How loyal is the customer and can the customer leave (e.g. contracts, or offering specialised services/products). Are there threats of new entrants?

References

Armitage, S. (2008). Incorporating financing-related determinants of value in the discounted cash flow model. *Journal of Economic Surveys*, *22*(2), 274–298. http://doi.org/10.1111/j.1467-6419.2007.00535.x

Babbie, E. (2010). *The Practice of Scoial Research* (Twelfth (International Edition)). Wadsworth CENGAGE Learning.

Berkovitch, E., & Narayanan, M. P. (1993). Motives for takeovers: An empirical investigation. *Journal of Financial and Quantitative Analysis*, *28*(03), 347–362.

Brealey, R. A., Myers, S. C., & Allen, F. (2010). *Principles of Corporate Finance* (Global Edition (Tenth)). McGraw-Hill / Irwin.

Bryman, A., & Bell, E. (2011). *Business Research Methods* (3rd Edition). Oxford University Press.

Chatterjee, S. (1986). Types of synergy and economic value: The impact of acquisitions on merging and rival firms. *Strategic Management Journal*, *7*(2), 119–139.

Copeland, T., Koller, T., & Murrin, J. (1990). *Valuation : measuring and managing the value of companies*. New York etc: Wiley.

Copeland, T., & Tufano, P. (2004). A real-world way to manage real options. *Harvard Business Review*, *82*(3), 90–99.

Cornell, B., & Landsman, W. (2003). Accounting valuation: Is earnings quality an issue? *Financial Analysts Journal*, *59*(6), 20–28.

Cornell, B., & Liu, Q. (2001). The parent company puzzle: when is the whole worth less than one of the parts? *Journal Of Corporate Finance*, *7*(4), 341–366.

Dapena, J. P. (2003). On the valuation of companies with growth opportunities. *Journal of Applied Economics*, *6*(1), 49–72.

Demirakos, E. G., Strong, N. C., & Walker, M. (2004). What valuation models do analysts use? *Accounting Horizons*, *18*(4), 221–240.

Emhjellen, M., & Alaouze, C. M. (2003). A comparison of discounted cashflow and modern asset pricing methods - Project selection and policy implications. *Energy Policy*, *31*(12), 1213–1220. http://doi.org/10.1016/S0301-4215(02)00181-7

Fernández, P. (2007). Valuing companies by cash flow discounting: ten methods and nine theories. *Managerial Finance*, *33*(11), 853–876. http://doi.org/10.1108/03074350710823827

Friese, S. (2014). *Qualitative data analysis with ATLAS. ti.* (Second). SAGE.

Gerring, J. (2012). *Social Science Methodology: A Unified Framework* (Second). Cambridge University Press.

Ghauri, P. N., & Buckley, P. J. (2003). International mergers and acquisitions: Past, present and future. *Advances in Mergers and Acquisitions*, *2*(1), 207–229.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, *18*(1), 59–82.

Hering, T., Olbrich, M., & Steinrücke, M. (2006). Valuation of start-up internet companies. *International Journal of Technology Management*, *33*(4), 406–419. http://doi.org/10.1504/IJTM.2006.009252

Hess, D., Homburg, C., Lorenz, M., & Sievers, S. (2008). Empirical Equivalence of Dividend, Free Cash Flow and Residual Income Equity Value Estimates: Valuation Errors Resulting from Implementation Approximations. Retrieved from http://www.mfa-2008.com/papers/HHLS_MFA.pdf

Hongjiu. (2008). Study on flaws and improvement of discounted cash flow theory in mergers and acquisitions.

Isidro, H., O'Hanlon, J., & Young, S. (2006). Dirty surplus accounting flows and valuation errors. *Abacus*, *42*(3-4), 302–344.

Jennergren, L. P. (2008). Continuing value in firm valuation by the discounted cash flow model. *European Journal of Operational Research*, *185*(3), 1548–1563. http://doi.org/10.1016/j.ejor.2006.08.012

Jennergren, L. P. (2011). A Tutorial on the Discounted Cash Flow Model for Valuation of Companies. *SSE/EFI Working Paper Series in Business Administration*, (1998), 1.

Jensen, M. C. (2005). Agency costs of overvalued equity. *Financial Management*, *34*(1), 5–19.

Jiménez, L. G., & Pascual, L. B. (2010). Enterprise valuation with track-record ratios and rates of change. *The European Journal of Finance*, *16*(1), 57–78. http://doi.org/10.1080/13518470902853343

Kaplan, S. N., & Ruback, R. S. (1995). The Valuation of Cash Flow Forecasts: An Empirical Analysis. *Journal of Finance*, *50*(4), 1059–1093. http://doi.org/10.1111/j.1540-6261.1995.tb04050.x

Lally, M. (2008). Free cash flow models, terminal values and the timing of asset replacements. *New Zealand Economic Papers*, *42*(1), 79–102. http://doi.org/10.1080/00779950809544414

Leach, J. C., & Melicher, R. W. M. (2012). *Entrepreneurial Finance* (4th ed.). South-Western Cengage Learning.

Levin, J., & Olsson, P. (2000). Terminal value techniques in equity valuation–implications of the steady state assumption. *SSE/EFI Working Paper Series in Business Administration*, *7*. Retrieved from http://swoba.hhs.se/hastba/papers/hastba2000_007.pdf.zip

Lundholm, R., & O'Keefe, T. (2001). Reconciling Value Estimates from the Discounted Cash Flow Model and the Residual Income Model. *Contemporary Accounting Research*, *18*(2), 311–335.

Meitner, M. (2013). Multi-period Asset Lifetimes and Accounting-based Equity Valuation: Take Care with Constant-growth Terminal Value Models! *Abacus*, *49*(3), 340–366. http://doi.org/10.1111/abac.12013

Mejia-Pelaez, F., & Velez-Pareja, I. (2011). Analytical solution to the circularity problem in the discounted cash flow valuation framework. *Innovar-Revista De Ciencias Administrativas Y Sociales*, *21*(42), 55–68.

Penman, S. H. (1998). A synthesis of equity valuation techniques and the terminal value calculation for the dividend discount model. *Review of Accounting Studies*, *2*(4), 303–323.

Phillips, J. F. (2003). The dilemma of valuing not-for-profit hospitals - Is free cash flow the answer? *Journal of Accounting and Public Policy*, *22*(4), 347–374. http://doi.org/10.1016/S0278-4254(03)00038-3

Plenborg, T. (2002). Firm valuation: Comparing the residual income and discounted cash flow approaches. *Scandinavian Journal of Management*, *18*(3), 303–318. http://doi.org/10.1016/S0956-5221(01)00017-3

Ramanathan, K. V., & Rappaport, A. (1971). Size, Growth Rates, and Merger Valuation. *The Accounting Review*, *46*(4), 733–745.

Reis, P. M. N., & Augusto, M. G. (2013). The Terminal Value (TV) Performing in Firm Valuation: The Gap of Literature and Research Agenda. *Journal of Modern Accounting and Auditing*, *9*(12), 1622–1636.

Russell, P. J. (2007). Valuation of Imaging Centers: Alternative Methods and Detailed Description of the Discounted Cash Flow Approach. *Journal of the American College of Radiology*, *4*(1), 53–64. http://doi.org/10.1016/j.jacr.2006.08.019

Steiger, F. (2008). The Validity of Company Valuation Using Discounted Cash Flow Methods.

Svetlova, E. (2012). On the performative power of financial models. *Economy and Society*, *41*(3), 418–434. http://doi.org/10.1080/03085147.2011.616145

Trigeorgis, L., & Ioulianou, S. (2012). Valuing a high-tech growth company: the case of EchoStar Communications Corporation. *The European Journal of Finance*, 1–26. http://doi.org/10.1080/1351847X.2011.640343

Uzma, S. H., Singh, J. P., & Kumar, N. (2010). Discounted cash flow and its implication on intangible valuation. *Global Business Review*, *11*(3), 365–377. http://doi.org/10.1177/097215091001100304

Vimpari, J., & Junnila, S. (2014). Value influencing mechanism of green certificates in the discounted cash flow valuation. *International Journal of Strategic Property Management*, *18*(3), 238–252. http://doi.org/10.3846/1648715X.2014.940615

Wang, Y., Buijink, W., & Eken, R. (2006). The value relevance of dirty surplus accounting flows in the Netherlands. *The International Journal of Accounting*, *41*(4), 387–405.

Zhang, X.-J., & Ohlson, J. A. (1999). On the theory of forecast horizon in equity valuation. *Journal of Accounting Research*, *37*(2), 437–449.

Appendix A – Formulas

Formula Discounted Cash Flow method

$$Company\ Value = \sum_{t=0}^{n} \frac{FCF_t}{(1+r)^t} + \frac{TV}{(1+r)^{n+1}}$$

$$TV = \sum_{n=1}^{\infty} \frac{FCF_{TV} * (1+g)^n}{(1+r)^n} = \frac{FCF_{TV}\ (1+g)}{r-g}$$

$$Terminal\ Value = \frac{FCF_{TV}\ (1+g)}{r-g}$$

with $r = WACC = \frac{E}{D+E} * R_E + \frac{D}{D+E} * R_D * (1-Tc)$

and with $FCF = Cas\ flow\ (operations) - CAPEX$

$$Company\ Value = \sum_{t=0}^{n} \frac{FCF_t}{(1+r)^t} + \frac{\frac{FCF_{TV\ (1+g)}}{r-g}}{(1+r)^{n+1}}$$

Adjusted formula of Hongjiu (2008)

$$V_{A+B} = \sum_{t=1}^{n} \frac{\zeta_t CFt}{(1+K_t)^t} + \frac{TV}{(1+K_n)^n} - C_{ig}.$$

Where,

ζ_t — discount coefficient, interval is (0, 1)

In the analysis of this part,

$$\zeta_t = \frac{u_t}{u_0} = \frac{\phi_t c_{2,t}^2 + \varphi_t c_{1,t}^2 + \theta_t c_{1,t} c_{2,t} + \rho_t c_{1,t} + \sigma_t c_{2,t} + \lambda_t}{\phi_0 c_{2,0}^2 + \varphi_0 c_{1,0}^2 + \theta_0 c_{1,0} c_{2,0} + \rho_0 c_{1,0} + \sigma_0 c_{2,0} + \lambda_0}.$$

Appendix B – Interview Questions (Dutch)

Vragen met betrekking tot afwijken van de theorie omtrent de Discounted Cash Flow methode in de praktijk (Sub vraag 2 & 3).

1. Wijkt u in praktijk af van de standaard Discounted Cash Flow methode voor de waardering van bedrijven?
    a. Wat zijn voor u redenen om als waardeerder af te wijken?
    b. Op welke manier wijkt u als waardeerder af?

Vragen met betrekking tot de geselecteerde problemen in theorie en in hoeverre deze een rol spelen in de praktijk (Sub vraag 1).

Input data - Data Kwaliteit

2. In welk opzicht speelt de kwaliteit van de benodigde informatie een rol bij het waarderen van bedrijven via de Discounted Cash Flow methode?

Assumpties – veranderingen in assumpties

3. In welke mate hebben veranderingen in de assumpties voor de Terminal invloed op de bedrijfswaardering?

Groei factor – Uitgangswaarde, duurzame groei & capaciteit

4. Spelen er problemen m.b.t. de groei factor in de Terminal Value periode die de waarde beïnvloeden?
    a. Op welke manier heeft de gewenste uitgangswaarde van een bedrijf een effect op waardering van een bedrijf?
    b. Is de duurzaamheid van de groei een probleem dat speelt in de waardering, en in hoeverre heeft dit invloed op de waarde
    c. In hoeverre wordt er rekening gehouden met de capaciteit van een bedrijf om de voorspelde groei te realiseren in de Terminal Value periode?

WACC – Circulariteit & Veranderingen in de kapitaal structuur

5. Zijn er problemen m.b.t. de WACC als discount rate die de waardering van bedrijven beïnvloeden?
    a. In welke mate heeft de circulariteitsproblemen in de Discount Rate een invloed op de waarde van het bedrijf (uitleggen wat circularity inhoud)?
    b. In hoeverre hebben veranderingen in de kapitaal structuur (verhouding eigen vermogen en schuld) over tijd en daarmee veranderingen in de discount rate een effect op de waarde van een bedrijf?

M&A effecten – Synergie & integratie kosten

6. Op welke manier houdt u rekening met effecten van fusies en overnames?
    a. Op welke manier spelen synergie effecten een rol in de waardering?
    b. In hoeverre zijn integratie kosten een probleem bij een waardering?

Rol van management en eigenaren – Persoonlijke voordelen & Kwaliteit management team

7. In hoeverre neemt u bij het waarderen van een bedrijf ook de rol van het management team en de eigenaren in achting?
    a. Persoonlijke voordelen/stimulansen voor het management m.b.t. de aangeleverde informatie door dat zelfde management?
    b. In welke mate spelen de competenties van het management team een rol in de waardering van een bedrijf?

Activa – Waardering immateriële activa

8. Op welke manier heeft de waardering van immateriële activa een effect op de waardering van het bedrijf?

Industrie factoren – duurzaamheid & concurrentie

9. In hoeverre houdt u rekening met specifieke industrie factoren bij de waardering van een bedrijf
    a. De duurzaamheid van een bedrijf?
    b. Concurrentie in bedrijfstak?

Vragen met betrekking tot het incorporeren van de problemen van de Discounted Cash Flow methode in die methode (Sub vraag 4).

10. In hoeverre zouden de problemen die hier boven geschetst zijn in de Discounted Cash Flow methode moeten worden geïncorporeerd?
    a. Hoe zou u die problemen dan incorporeren in de Discounted Cash Flow methode?

Appendix C – Codes

Part of Interview	Main	Sub	Answer	Code	Cat.	
Part I						
PI	Diverge	Extend	Yes	PI_Diverge_Extend_Yes		Diverge
			In a Way	PI_Diverge_Extend_In a Way		
			No	PI_Diverge_Extend_No		
	Diverge	Way	Reas.	PI_Diverge_Way_Reas	x	
			W.o.D	PI_Diverge_Way_WoD	x	
Part of Interview	**Main**	**Sub**	**Answer**	**Code**	**Cat.**	
Part II						
PII	Internal Issues	DQ	MA	PII_II_DQ_MA		Input Data
			MA/MI	PII_II_DQ_MA/MI		
			MI	PII_II_DQ_MI		
		DQ-MA	Expl.	PII_II_DQ-MA_Expl	x	
		DQ-MA/MI	Expl.	PII_II_DQ-MA/MI_Expl	x	
		DQ-MI	Expl.	PII_II_DQ-MI_Expl	x	
		CA	MA	PII_II_CA_MA		Assumptions
			MA/MI	PII_II_CA_MA/MI		
			MI	PII_II_CA_MI		
		CA-MA	Expl.	PII_II_CA-MA_Expl	x	
		CA-MA/MI	Expl.	PII_II_CA-MA/MI_Expl	x	
		CA-MI	Expl.	PII_II_CA-MI_Expl	x	
		EM	MA	PII_II_EM_MA		Growth
			MA/MI	PII_II_EM_MA/MI		
			MI	PII_II_EM_MI		
		EM-MA	Expl.	PII_II_EM-MA_Expl	x	
		EM-MA/MI	Expl.	PII_II_EM-MA/MI_Expl	x	
		EM-MI	Expl.	PII_II_EM-MI-Expl	x	
		SG	MA	PII_II_SG_MA		
			MA/MI	PII_II_SG_MA/MI		
			MI	PII_II_SG_MI		
		SG-MA	Expl.	PII_II_SG-MA_Expl	x	
		SG-MA/MI	Expl.	PII_II_SG-MA/MI_Expl	x	
		SG-MI	Expl.	PII_II_SG-MI_Expl	x	
		CAP	MA	PII_II_CAP_MA		
			MA/MI	PII_II_CAP_MA/MI		
			MI	PII_II_CAP_MI		
		CAP-MA	Expl.	PII_II_CAP-MA-Expl	x	
		CAP-MA/MI	Expl.	PII_II_CAP-MA/MI_Expl	x	
		CAP-MI	Expl.	PII_II_CAP-MI_Expl	x	
		CI	MA	PII_II_CI_MA		WACC
			MA/MI	PII_II_CI_MA/MI		
			MI	PII_II_CI_MI		
		CI-MA	Expl.	PII_II_CI-MA_Expl	x	
		CI-MA/MI	Expl.	PII_II_CI-MA/MI_Expl	x	
		CI-MI	Expl.	PII_II_CI-MI_Expl	x	
		CC	MA	PII_II_CC_MA		
			MA/MI	PII_II_CC_MA/MI		
			MI	PII_II_CC_MI		
		CC-MA	Expl.	PII_II_CC-MA_Expl	x	
		CC-MA/MI	Expl.	PII_II_CC-MA/MI_Expl	x	
		CC-MI	Expl.	PII_II_CC-MI_Expl	x	

Part of Interview	Main	Sub	Answer	Code	Cat.	
Part II						
PII	External Issue	SY	MA	PII_EI_SY_MA		M&A (Effects)
			MA/MI	PII_EI_SY_MA/MI		
			MI	PII_EI_SY_MI		
		SY-MA	Expl.	PII_EI_SY-MA_Expl	x	
		SY-MA/MI	Expl.	PII_EI_SY-MA/MI_Expl	x	
		SY-MI	Expl.	PII_EI_SY-MI-Expl	x	
		IC	MA	PII_EI_IC_MA		
			MA/MI	PII_EI_IC_MA/MI		
			MI	PII_EI_IC_MI		
		IC-MA	Expl.	PII_EI_IC-MA_Expl	x	
		IC-MA/MI	Expl.	PII_EI_IC-MA/MI_Expl	x	
		IC-MI	Expl.	PII_EI_IC-MI_Expl	x	
		PIM	MA	PII_EI_PIM_MA		Role of Management & Ownership
			MA/MI	PII_EI_PIM_MA/MI		
			MI	PII_EI_PIM_MI		
		PIM-MA	Expl.	PII_EI_PIM-MA_Expl	x	
		PIM-MA/MI	Expl.	PII_EI_PIM-MA/MI_Expl	x	
		PIM-MI	Expl.	PII_EI_PIM-MI_Expl	x	
		CM	MA	PII_EI_CM_MA		
			MA/MI	PII_EI_CM_MA/MI		
			MI	PII_EI_CM_MI		
		CM-MA	Expl.	PII_EI_CM-MA_Expl	x	
		CM-MA/MI	Expl.	PII_EI_CM-MA/MI_Expl	x	
		CM-MI	Expl.	PII_EI_CM-MI_Expl	x	
		VIA	MA	PII_EI_VIA_MA		Assets
			MA/MI	PII_EI_VIA_MA/MI		
			MI	PII_EI_VIA_MI		
		VIA-MA	Expl.	PII_EI_VIA-MA_Expl	x	
		VIA-MA/MI	Expl.	PII_EI_VIA-MA/MI_Expl	x	
		VIA-MI	Expl.	PII_EI_VIA-MI_Expl	x	
		SUS	MA	PII_EI_SUS_MA		Industry Factors
			MA/MI	PII_EI_SUS_MA/MI		
			MI	PII_EI_SUS_MI		
		SUS-MA	Expl.	PII_EI_SUS-MA_Expl	x	
		SUS-MA/MI	Expl.	PII_EI_SUS-MA/MI_Expl	x	
		SUS-MI	Expl.	PII_EI_SUS-MI_Expl	x	
		COM	MA	PII_EI_COM_MA		
			MA/MI	PII_EI_COM_MA/MI		
			MI	PII_EI_COM_MI		
		COM-MA	Expl.	PII_EI_COM-MA_Expl	x	
		COM-MA/MI	Expl.	PII_EI_COM-MA/MI_Expl	x	
		COM-MI	Expl.	PII_EI_COM-MI_Expl	x	

Part of Interview	Main	Sub	Answer	Code	Cat.	
Part III						
PIII	Incorp	Extend	No	PIII_Incorp_Extend_No		Incorporation
			In a Way	PIII_Incorp_Extend_In a Way		
			Yes	PIII_Incorp_Extend_Yes		
	Incorp	Way	In Formula	PIII_Incorp_Way_IF	x	
			In Method	PIII_Incorp_Way_IM	x	

Part of Interview	Main	Sub	Answer	Code	Cat.	
Other						
Other	Interesting	Quotes	-	Other_Interesting_Quotes	x	Other
		Examples	-	Other_Interesting_Examples	x	
	Other Issues	Minor and Major/Minor	-	Other_OI_Minor_&_Major/Minor	x	
		Issues not covered by theory	-	Other_OI_Issues -not-coverd	x	

Appendix D – Analysis of internal issues

Data Quality

Input Data	Reasons
Major	• Growth in the future result of new owner (not pervious owner) • Assumptions that have to be made • Due diligence – in order to normalise of balance sheet • Trend in de past bases for valuation in the future • In small business private/company assets are hard to distinguish • It is needed for valuation – otherwise it just guessing • Quality of information determines the quality of valuation • Has to be a realistic valuation • Serves as an explanation for the performance

Assumptions

Change in assumptions	Reasons
Major	• Deviation in assumptions • Due diligence • Tend to focus on information that is close/present • End of lifecycles product/service – no new products • Valuations expire fast • Has to be a realistic valuation • Steady state, when does the steady state assumption apply

Growth

Exit multiple	Reasons
Major	• Small changes have great impact • Has to be a realistic valuation
Major-Minor	• Range (maximum vs. minimum price) • Has to be a realistic valuation
Minor	• Range (maximum vs. minimum price)

Sustainable growth	Reasons
Major	• Has to be realistic growth • Legal analysis (which investments are necessary) • Commercial due diligence • Benchmark with market information & professional judgement
Major-Minor	• Has to be realistic growth

Capacity	Reasons
Major	• Capacity of assets and people • Judgement of owner vs. judgement of valuator • Has to be a realistic valuation
Major-Minor	• Status of assets • Fast growing companies

WACC

Circularity	Reasons
Major-Minor **Minor**	• Optimal solution • It is known but compensated for • Stopped using WACC • Calculate based on estimates • Not thought about it • Used market estimates

Change in Capital	Reasons
Major	• Each year determined new proportion equity/debt
Major-Minor	• Fixed proportions • Has to be realistic valuation • Minimal influence total value
Minor	• Just not an issue • Fake reliability • Fixed proportions • Minimal influence on total value

Appendix E – Analysis of external issues

M&A Effects

Synergy	Reasons
Major	Possible buyer can have synergies
	First standalone
	Synergy is DCF (fusion is done to accomplish synergies)
	Integration horizontal or economies of scale
	Synergy is only reason in some cases for the buyer
	Competition influence the price
Major-Minor	Standalone (do not discuss it with buyer)
	Both seller and buyer are aware of synergy effects
	Separately buyer as well as seller can not achieve it, so share profit due to synergy
Minor	Standalone
	Synergy minus integration costs is zero
	Feeling of clients
	Synergy is not only reason for buying
	Not applicable in generation transfers

Integration costs	Reasons
Major	Cash outflow
Major-Minor	Try to name it, not to quantify it
	Synergies should be higher
Minor	Synergies minus integration costs is zero

Role of management and ownership

Personal interest management	Reasons
Major	Try to get the right information
	Be aware of it
Major-Minor	Risk of forecast, adjust by risk premium
	Try to get the right information
Minor	Hard to determine as outsider
	Try to get the right information

Competence management	Reasons
Major	Persons in team and distribution of tasks
	Making own scenarios
	Crucial roles
	Realising growth with current team
Major-Minor	Size
	Persons in team and distribution of tasks
	Depends on the case
	Crucial roles

Assets

Valuing intangible assets	Reasons
Major-Minor	Depends on the case (expire date/use)
	Specific method: Purchase Price Allocation (IFRS)
	Unlocked value potential
	Just an accounting definition: Goodwill
	Not a part of valuation
	Return, what is the expected return of the investment
Minor	Does it represent something
	Licence (brand name) – depends on the case

Industry factors

Sustainability	Reasons
Major	Product en service development
Major-Minor	How to maintain cash flows
	Clients know it better
	Changing environment
	Has to be a realistic valuation
	Limitation due to pollution restrictions

Competition	Reasons
Major	Depends on economy
	Compensated in the process
	Depends on the degree of competition
	Niche markets
	Depends on position and size
Major-Minor	Depends on the degree of competition
	Compensated in the process
	Horizontal integration
	Market information tells a lot about competition
	Depends on the growth of the market

Appendix F – Proposed checklist

Issues Discounted Cash Flow method

Issues				Theory	Practice			Adjustment / Incorporation DCF method	
Main category	**Part of formula**	**Sub category**	**Issues**	**Degree of issue for SME****	**Major**	**Major-Minor**	**Minor**	**Within DCF method**	**Outside DCF method**
Internal	Forecasted period	Input data	Data quality	Major	x			Due dilengence & Trend analysis (I)	Use market estimates & Benchemarking (II)
			Negative numbers	Major-Minor		N/A		N/A	N/A
			Dirty surplus accounting	Minor		N/A		N/A	N/A
	Forecasted & Terminal value periods	Duration of periods	Timing of the periods	N/A	x			Shorter periods (III)	?
	Terminal value period	Assumptions	Change in assumptions	Major	x			Scenarios & Valution expires (IV)	Compare with market estimates & Lifecycle (V)
			Determination steady state	N/A	x			Explicit state assumptions (VI)	Compare with market estimates (VII)
		Growth factor	Exit multiple (desired value)	Major		x		Standalone valuation, Trend analysis & Scenarios (VIII)	Interviews (IX)
			Sustainable growth	Major	x			Forecasts of cash flows & Trend analysis (X)	Check with market estimates & Legal due dilengence (XI)
			Capacity	Major		x		Scenarios, Forecasts of cash flows & Investments (XII)	Check with market estimates (XIII)
			Merger (companies with different growth percentages)	Major-Minor		N/A		N/A	N/A
			Reinvestments	Minor		N/A		N/A	N/A
			Fast growth	N/A	x			Two staged growth models (XIV)	Check needed investements (XV)
	Discount rate	WACC	Circularity	Major			x	Optimal capital structure (XVI)	Check with market estimates (XVII)
			Changes in capital	Major		x	x	Use fixed proportions & APV method(XVIII)	Compare with market estimates (XIX)
			Net interest relation	Major-Minor		N/A		N/A	N/A
			Low interest costs	N/A	x			?	?
External	None*	Merger & Acquistion (effects)	Synergy	Major		x	x	Make standalone valuation & Cash flows (XX)	?
			Integration cost	Major	x			Cash outflow (XXI)	Try to name it, not quantify it (XXII)
			Effect of competitors	Major-Minor		N/A		N/A	N/A
			Transaction & Agency cost	Minor		N/A		N/A	N/A
			Minorty discount	Minor		N/A		N/A	N/A
		Non quantifiable factors	Legislation	Minor		N/A		N/A	N/A
			Local culture	Minor		N/A		N/A	N/A
			GDP growth	Minor		N/A		N/A	N/A
			Tax policy	Minor		N/A		N/A	N/A
			Currency developments	Minor		N/A		N/A	N/A
			Inflation	Minor		N/A		N/A	N/A
		Role of management and ownership	Personal incentive management	Major	x	x	x	Adjust through risk premium (XXIII)	Interviews & Be aware of it (XXIV)
			Competent management	Major	x			Part of integrations costs & Scenarios(XXV)	Interviews (XXVI)
			Responsible ownership	Minor		N/A		N/A	N/A
			Continuity of management	N/A	x			Scenarios (XXVII)	Interviews (XXVIII)
		Assets	Asset replacement	Minor		N/A		N/A	N/A
			Asymmetrical payoff	Minor		N/A		N/A	N/A
			Valuing intangible assets	Major		x	x	Purchase Price Allocation (IFRS) & Goodwill (XXIX)	Unlocked value potential & Utilisation (XXX)
			High volatility assets	Minor		N/A		N/A	N/A
			Multiple period asset lifetime	Minor		N/A		N/A	N/A
		Industry factors	Obsolesce	Minor		N/A		N/A	N/A
			Sustainability	Major		x		Product portfolio, Lifecylce & Adjusted in process (XXXI)	Market information, Commercial & Legal due dilengence (XXXII)
			New oppertunities	Minor		N/A		N/A	N/A
			Competition	Major	x			Adjusted in process (XXXIII)	Interviews & Market information (XXXIV)
			Personal	N/A		x		?	Interviews & Contracts (XXXV)
			Environment	N/A	x			?	Legal due dilengence & Impact public opinion (XXXVI)
			Dependency on major customer	N/A	x			Scenarios (XXXVI)	Model of Porter (XXXVIII)

** Currently the issues in sub categories; M&A, Non quantifiable factors, Role of management and ownership, Assets and Industry factors aren't incorporated in the standard DCF formula*

*** Percieved in this research as major issues for SME (not percieved in theory as such).*

Main tools
Developing scenarios
Interviews
Due dilengence (financial, commercial and legal)
Market information
Trend analysis
Model of Porter

+

Check financing
Check when sold if the combination can bear it's interest and redemption payments