



# BUSINESS VALUATION FOR SMALL AND MEDIUM-SIZED ENTERPRISES

Master thesis

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## Preface

In the framework of completing my study Business Administration I performed research at the University of Twente into business valuation methods. The past months were used extensively in order to complete my study, moreover the writing of this thesis.

The period from February 2016 till August 2016 I have followed an internship at Factor Bedrijfsovernames. Factor Bedrijfsovernames is an independent merger and acquisition specialist ([www.factorbedrijfsovernames.nl](http://www.factorbedrijfsovernames.nl)). In addition, advice on Management Buy Outs and Management Buy Ins (MBO/MBI), valuations and debt advisory (raising capital) are part of the activities of Factor Bedrijfsovernames. During my internship I have gained a lot of experience and insights in the whole process of mergers and acquisitions in the SME market. Hereby, I would like to thank Bas Brusche and Waldo Zuiderveld for the very interesting internship, as well for the valuable lessons and insight. All this valuable information helped me a lot with the realization of this thesis. Furthermore, I thank all (other) colleagues for their help and pleasant collaboration.

Grateful thanks are given to my supervisors Peter Schuur and Henk Kroon. From the beginning, Henk Kroon guided me with the structure of thesis. Subsequently, Peter Schuur helped with the final realization of this master thesis in the last months. The advices, guidance and feedback of both supervisors helped me with the completion of this study.

At last I would like to thank my family and friends for their support in the busy past months.

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## Management summary

This research aims to examine the accurate business valuation methods for Dutch small and medium-sized enterprises. The existing business valuation methods have been discussed in this research. In order to examine the accurate business valuation methods, a case study has been conducted, in which two cases were studied.

The results of the case study show that the DCF-methods are accurate business valuation methods. The APV-method is even more accurate than the traditional DCF-method because of the separation of the tax shield.

However, business valuation still has a subjective nature based on several assumptions and opinions. So, accurate inputs are always essential for a proper and accurate valuation.

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## List of abbreviations

<b>APV</b>	Adjusted present value
<b>CAPM</b>	Capital asset pricing model
<b>CCF</b>	Capital cash flow
<b>DCF</b>	Discounted cash flow
<b>DDM</b>	Dividend discount model
<b>ECF</b>	Equity cash flow
<b>EBIT</b>	Earnings before interest & taxes
<b>FCF</b>	Free cash flow
<b>FCFF</b>	Free cash flow to firm
<b>FCFE</b>	Free cash flow to equity
<b>M&amp;A</b>	Mergers & acquisitions
<b>NOPLAT</b>	Net operating profit less adjusted taxes
<b>NPV</b>	Net present value
<b>SME</b>	Small and medium-sized enterprise
<b>WACC</b>	Weighted average cost of capital
<b>WACCbt</b>	Weighted average cost of capital before tax

# 1. Introduction

The last years the number of merger & acquisition (M&A) deals are increased over the whole world. More and more companies are nowadays acquiring and merging with other companies. Since 1990 the M&A activity has shown a strong increase, a global merge wave is perceived (di Giovanni, 2005). According to (Bruner, 2002) it's the largest merger wave in the history (at that time), spanning the years 1992-2000. Even after the merger wave the value and number of M&A deals are still of a huge number, "mergers and acquisitions continue to be a highly popular form of corporate development" (Cartwright & Schoenberg, 2006). The development in M&A deals can be seen in figure 1.<sup>1</sup>

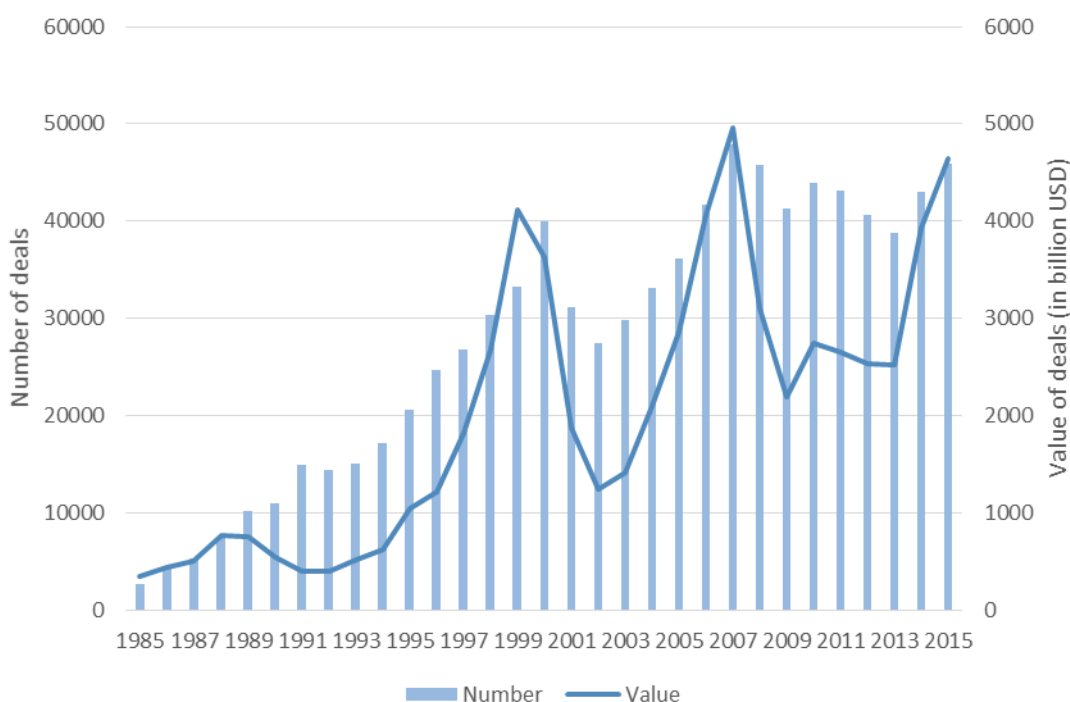


Figure 1: Development in M&A deals 1985 – 2015

Just like the amount of deals, the value of the deals has increased during the years. In 2015, companies announced almost 46.000 transaction with a total value of more than 4.6 trillion USD. In comparison with the GDP of countries, only the United States and China are exceeding this number in 2015.<sup>2</sup>

## 1.1 Relevance

The past mergers waves and the increasing numbers in combination with their values shows the importance of M&A and thereby the need for accurate valuations. M&A deals includes two parties, the selling and the buying company. Logically, both parties have different ideas and assumptions about the value of the target company. Whereby the selling company tries to achieve a maximum

<sup>1</sup> Numbers are obtained from Instute for Mergers, Acquisitions and Alliances (<https://imaa-institute.org/statistics-mergers-acquisitions/>)

<sup>2</sup> Numbers are obtained from IMF World Economic Outlook (WEO)

price and the buying company wants to pay as little as possible. Irrespective of a possible acquisition, some entrepreneurs could be interested in their business value. Business valuation give all the stakeholders (owners, potential buyers etc.) an overview of what a company is worth.

Next to its practical relevance, business valuation is a much debated topic (with a wide range) in the literature (a.o. Damodaran, 2005; Kazlauskienė & Christauskas, 2015; Aluko & Amidu, 2005; Healy & Palepu, 2012). Several business valuation methods are stated in the existing literature, while most of these studies are focused on the United States (i.e. Dittmann & Maug, 2008; Frankel & Lee, 1998) and the United Kingdom (i.e. Imam, Barker, & Clubb, 2008; Demirakos, Strong, & Walker, 2004). To my knowledge there is no or hardly any literature based on business valuation in The Netherlands.

Secondly, multiple errors can occur during the valuation of a business. This is due to the huge amount of methods that can be used to value companies, i.e. Fernández (2004) stated 80 of possible errors in company valuation. In order to prevent errors a solid framework is required to provide correct business valuations.

## 1.2 Research goal

There is practical and theoretical need for proper business valuations. This research focus particularly on the Dutch small and medium-sized enterprises (SME) and will contribute to the existing literature about the business valuation in The Netherlands. Another reason for this scope is the main area of Factor's clients, specific knowledge is gained from my internship at Factor Bedrijfsovernames. The goal of this research is to determine the accurate business valuation methods for the Dutch small and medium-sized enterprises. So, the research question of this research is:

*“What are accurate business valuation methods for Dutch small and medium-sized enterprises?”*

In order to answer this research questions, three sub questions are formulated:

1. *Which companies belong to Dutch small and medium sized enterprises?*
2. *Which different business valuation methods exist?*
3. *Which factors explain the accuracy of a business valuation method?*

## 1.3 Outline

The definition of small and medium-sized enterprises is given in the theoretical framework. As already called there are several business valuation methods, the commonly used methods are also described in the theoretical framework. A further focus is lied on the business valuation methods used in this research with a comprehensive explanation of it. Chapter 3 is about the used methodology of the research and will describe how the accuracy of the valuation methods is researched. The results of the research are presented in the fourth chapter. Limitations will be presented in the fifth chapter. At last the conclusion, the answer to the research question, is given.



## 2. Theoretical framework

As mentioned in the previous chapter, different valuation methods are discussed in the literature. This chapter will briefly present the valuation methods described in the existing literature. Hereafter, the valuation methods used for this research are described in more detail. But first is attention paid to the definition and criteria of the Dutch SMEs, according to the first sub question.

### 2.1 Small and Medium-sized Enterprises

Small firms are the engines of global economic growth (Acs, Morck, Shaver, & Yeung, 1997). As stated by the European Commission, nine out of ten companies are SMEs and create two out of three jobs (European Commission, 2015). The European Commission even states that SMEs represent 99% of all businesses in the EU.<sup>3</sup>

Now that the importance of the SMEs in the European market is discussed, the criteria of these SMEs is presented below. For the definition of SMEs the criteria of the European Commission is used.

Enterprise category	Head count	Turnover*	Balance sheet total*
Medium-sized	< 250	≤ € 50 million	≤ € 43 million
Small	< 50	≤ € 10 million	≤ € 10 million
Micro	< 10	≤ € 2 million	≤ € 2 million

\* At least one of these criteria

Figure 2: Criteria of SME (European Commission)

SMEs consist of micro, small and medium-sized enterprises. The amount of staff must be lower than 250, and thereby is the turnover not exceeding € 50 million or the balance sheet total not exceeding € 43 million.

Dutch entrepreneurs in the SME market are too optimistic about the (selling) value of their company. On average, they consider a value of 9.4 times the net profit, which is in practice more than twice what will be paid.<sup>4</sup> In general, SMEs are valued lower than multinationals and listed companies. The risks are lower for the multinationals and listed companies, such as less independence of individuals (owners) and access to capital markets.

### 2.2 Valuation methods in the literature

Company valuation, or also called business valuation, is a much debated topic in the literature. In the existing literature are several methods for valuation of companies appointed. These methods can be divided into the income approach, market approach and asset approach. In order to present a more extensive distinction, this study uses the distribution of Damodaran (2005) and Fernández (2013). All of the valuation approaches are elaborated in the following paragraphs.

<sup>3</sup> Numbers are obtained from the European Commission: [http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition\\_nl](http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_nl)

<sup>4</sup> <https://fd.nl/ondernemen/1170223/ondernemers-te-optimistisch-over-verkoopprijs-van-hun-bedrijf>

According to Damodaran (2005) and Fernández (2013) there are five approaches for valuation, all of them with many valuation methods:

1. Discounted cash flow (DCF) valuation
2. Liquidation and accounting valuation
3. Relative valuation
4. Contingent claim valuation (real options)
5. Goodwill valuation<sup>5</sup>

All of these approaches have their own characteristics. Moreover, the advantages and disadvantages of the several approaches will be described in the next paragraphs.

### 2.2.1 Discounted cash flow valuation

The DCF method relies on the future cash flows, where other valuation approaches will use the past. As Luehrman (1997b) presented, DCF methods are based on a simple relationship between the present value and the future value. Many researchers labeled the discounted cash flow valuation as the most accurate valuation method (i.e. Fernández P. , 2013; Koller, Goedhart & Wessels, 2005).

“Discounted cash flow analysis is the most accurate and flexible method for valuing project, divisions and companies. (Koller, Goedhart, & Wessels, 2005).

The following definition will give a clear sight of the relationship between present and future value:

“In discounted cashflows valuation, the value of an asset is the present value of the expected cashflows on the asset, discounted back at a rate that reflects the riskiness of these cashflows” (Damodaran, 2005). The three core elements of the DCF method are money, time and risk.

The following formula will present the DCF method (a more detailed formula is presented in appendix A):

$$\sum_{t=1}^n \frac{\text{Expected future cash flow}_t}{(1+\text{discount rate})^t} + \frac{\text{Residual value}_n}{(1+\text{discount rate})^n}$$

The generated future cash flows are represented by period 1, 2 till n, as long as the time horizon is (mostly 5 years). Year n is the last year and the residual value is added to represent the future cash flows after this moment. A constant growth is assumed in order to simplify the indefinite duration of the future cash flows (Fernández P. , 2013). The residual value is calculated as follow:

$$\text{Residual value} = \frac{\text{Future cash flow}_n * (1 + \text{growth rate})}{(\text{discount rate} - \text{growth rate})}$$

Since the DCF method focus on the future profitability and underlying assumptions of the business (i.e. growth rate, reinvestment rate and cost of capital), it will be further analyzed in this research. The disadvantages such as the questionable reliability of forecasts will be discussed based on the calculations.

The DCF approach has several methods, with differences in the cash flows and discount rate. For example, Fernández (2007) discussed ten methods of the DCF approach in his study (i.e. free cash flow, equity cash flow, adjusted present value and economic value added). In general, there are four

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<sup>5</sup> Goodwill valuation is only disclosed in the article of Fernández (2013).

basic methods in the DCF approach (Fernández P., 2007), these methods will be further explained below:

1. Free Cash Flow (FCF) with the Weighted Average Cost of Capital (WACC), also known as the Free Cash Flow to Firm (FCFF).
2. Equity Cash Flow (ECF) with required return to equity, also known as the Free Cash Flow to Equity (FCFE).
3. Capital Cash Flow (CCF) with the Weighted Average Cost of Capital before tax (WACCbt)
4. Adjusted Present Value (APV)

#### *Free cash flow to firm*

The FCFF method can be used to value the entire firm or business. The value of the company is the result of the free cash flow discounted by the cost of capital, in this case the WACC. The origins of firm valuation lies in the work of Modigliani & Miller (1958).<sup>6</sup> This method relies on the expected free cash flows. For companies with a stable growth rate in their free cash flows, the formula of the FCFF method is as follows:

$$\sum_{t=1}^n \frac{\text{Free Cash Flow to the Firm}_{t+1}}{WACC - \text{growth rate}}$$

According to Damodaran (2005) two conditions have to be met using this model. First, the growth rate must be less than or equal to the growth rate in the economy. Second, the characteristics of the company must meet the assumptions of stable growth: the reinvestment rates should be consistent with the growth rate.

But in practice, there are a few of such stable growth companies. The model can be divided into a two-stage and three-stage model. A more general model to tackle the differences in growth rate, yields the following formula:

$$\sum_{t=1}^n \frac{\text{Free cash flow to the Firm}_t}{(1+WACC)^t} + \frac{\text{Free Cash Flow to the Firm}_{n+1} / (WACC - \text{growth rate})}{(1+WACC)^n}$$

The used cash flow in this method is defined by Damodaran (2005): “the cash flows before debt payments and after reinvestment needs are termed free cash flows to the firm”.

$$FCFF = EBIT * (1 - \text{tax rate}) + \text{Depreciation} - \text{Capital expenditures} - \text{Change in Working Capital}$$

As the name already says, the WACC is the cost of capital in which each category of capital is weighted at the ratio of the total capital. The formula of the WACC and its elements are further explained in appendix B.

#### *Free Cash Flow to Equity*

The FCFE is different in the cash flows and the discount rate. “The value of the equity is the present value of the expected equity cash flows discounted at the required return to equity” (Fernández P., 2007). The model of the FCFE is an alternative to the dividend discount model (DDM), when a

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<sup>6</sup> Modigliani & Miller (1958) stated that the value of a firm is the present value of the after-tax operating cash flows.

company does not pay dividend.<sup>7</sup> Assuming that the company has a stable growth rate the model of FCFE is as follows:

$$\sum_{t=1}^n \frac{\text{Free Cash Flow to Equity}_{t+1}}{\text{Cost of Equity} - \text{growth rate}}$$

Just like the previous method the FCFE has a more general model to tackle differences in growth rate.

$$\sum_{t=1}^n \frac{\text{Free cash flow to Equity}_t}{(1 + \text{Cost of Equity})^t}$$

As said before, the FCFE method differs from the FCFF method in the used cash flows. It could be calculated from the formula of FCFF, by subtracting “the money that goes from the cash of the company to the pockets of the shareholders” (Fernández P. , 2013). In other words, the after tax interest and principal payments plus the provided new debt. According to Damodaran (1994) the formula for the FCFE is:

$$\text{FCFE} = \text{Net Income} + \text{Depreciation} - \text{Capital Expenditures} - \text{Change in non-cash Working Capital} - (\text{New debt issued} - \text{Debt repayments})$$

When the company has no debt and therefore no interest, the FCFE is equal to the FCFF.

#### Capital Cash Flow

This method is the sum of the Equity Cash Flow (FCFE) and the Debt Cash Flow. While the FCFE already is mentioned, the Debt Cash Flow will be further explained. It only consist of the interest paid on the debt plus the principal repayments. Therefore:

$$\text{CCF} = \text{FCFE} + \text{Interest} + \text{Principal Repayments}$$

The Capital Cash Flows are discounted by the WACCbt.

#### Adjusted Present Value

The APV method assumes that the company is financed entirely by equity. Luehrman (1997a) named that the APV method will replace the standard DCF method (WACC) in the DCF methodology. This method differs in the way of value creation: “APV’s approach is to analyze financial maneuvers separately and then add their value to that of the business” (Luehrman T. A., 1997a).

This specific DCF method separates the value of the operations and the effects of debt financing (Damodaran A. , 2005). The cash flows are discounted by the unlevered cost of equity, since the company has no leverage. The second step is adding the value of all financing side effects. Where in the traditional DCF method these financing side effects are bundled in the discount rate, the APV method analyzes them separately (Luehrman T. A., 1997a):

$$\text{Company Value} = \text{NPV of unlevered company} + \text{value of financing side effects}$$

Whereby the most common value of financing side effects consist of tax shields, because interest expenses are tax deductible.

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<sup>7</sup> Value of stock: Expected dividend next period / (cost of equity – growth rate). This formula is based on a stable growth rate.

### 2.2.2 Liquidation and accounting valuation

The liquidation and accounting approach estimates the value of the company's assets. Methods in this approach consider that a company's value lies in the balance sheet, it determines the value from a static viewpoint. Other affects are not taken into account (Fernández P. , 2013). This approach, also named as asset-based valuation, estimates the value of the present assets. These estimated values together yields the value of the company (Damodaran, 2005). This research will not further focus on this method, despite is quite easy to calculate. This choice is made due to the accounting values of this approach and its historic view.

Some specific methods in the asset-based valuation are:

- Book value
- Adjusted book value
- Liquidation value

#### *Book value*

The book value of the company is the difference between the value of the total assets and liabilities. In other words, the book value is the shareholder's equity (capital and reserves) (Fernández P. , 2013). The value which is presented in the balance sheet is used in this method.

$$\text{Book value (shareholder's equity)} = \text{total assets} - \text{total liabilities}$$

Hence, the following question frequently arises when this method is used: "Is the book value the same as the market value"?

#### *Adjusted book value*

The adjusted book value will be used to overcome the differences in book and market value. All balance sheets items are, where necessary, adjusted to a (more) suitable market value.

#### *Liquidation value*

Another method of the asset-based valuation is the use of liquidation value: "value assets based upon the presumption that they have to be sold now" (Damodaran, 2005). Liquidation expenses (i.e. payments to employees) are deducted from the net worth.

$$\text{Liquidation value} = \text{book value} / \text{adjusted book value} - \text{liquidation expenses}$$

### 2.2.3 Relative (multiple) valuation

The relative approach values the assets by pricing of 'comparable' assets relative to a common variable (earning, cashflows, book value or sales) (Damodaran, 2005). According to Lie & Lie (2002) multiple valuation is described as: "valuation by multiples entails calculating particular multiples for a set of benchmark companies and then finding the implied value of the company of interest based on the benchmark multiples." The following three steps are essential in the relative valuation (Damodaran, 2005):

1. Finding comparable assets that are priced by the market
2. Scaling the market price to a common variable
3. Adjusting for differences across assets

According to Goedhart, Koller, & Wessels (2005) multiples can be useful for making accurate forecasts in DCF methods. Four basic principles must be keep in mind for a proper multiple

valuation:

1. Use the right peer group (not only based on industry, also on ROIC and growth)
2. Use forward-looking multiples
3. Use enterprise-value multiples
4. Adjust the enterprise-value-to-EBITDA-multiple for non-operating items.

Some examples of frequently used multiples are the EBIT, EBITDA, sales, book value and price earnings multiple.

$$EBIT \text{ Multiple} = \frac{\text{Company value}}{EBIT}$$

$$Book \text{ value Multiple} = \frac{\text{Company value}}{\text{Book value assets}}$$

$$EBITDA \text{ Multiple} = \frac{\text{Company value}}{EBITDA}$$

$$Price \text{ earnings ratio} = \frac{\text{Common equity value}}{\text{Earnings}}$$

$$Sales \text{ Multiple} = \frac{\text{Company value}}{\text{Total revenues}}$$

Relative valuation uses peer groups, so this method reflects the (current) market. Thereby, it's quite simple to calculate. This research further analyze the relative valuation.

#### 2.2.4 Contingent claim valuation (real options)

Contingent claim valuation is described by Damodaran (2005) as: "uses option pricing models to measure the value of assets that share option characteristics. This is what generally falls under the rubric of real options". Real options are known as the possibilities to choose for or against making an investment decision, the right to buy or sell a financial value (Carlsson & Fullér, 2003). "Contingent claims analysis (CCA) is the application of option-pricing theory to the valuation of assets, the future value of which depends, in turn, on the future value of other assets" (Gray, Robert, & Bodie, 2007).

This approach is contingent on the occurrence of certain events. The most simplified formula for the company valuation by real options is:

$$\text{Company value} = \text{Value of existing operations} + \text{Value of real options}$$

The value derives from the underlying assets, whereby these assets often are valued by their discounted future cash flows. This applies for both the existing operations and the real options. With this knowledge the contingent claim valuation approach is based on other valuation methods, mostly on the DCF-method. So this research will not further focus on contingent claim valuation.

#### 2.2.5 Goodwill valuation

Simply said, goodwill is the value a company has above its book value, it represents the value of the intangible assets (Fernández P. , 2013). While goodwill is not always presented on the balance sheet, it is the benefit and advantage of the company. How to determine the value of the goodwill, "as there is no consensus regarding the methodology used to calculate it" (Fernández P. , 2013).

Most of the methods in goodwill valuation will use, on the one hand, a static valuation and, on the other hand, valuation based on the future. This mixed approach can be summarized as follows:

“valuing the company’s assets and then add a quantity related with future earnings” (Fernández P. , 2013).

While there are several goodwill valuation methods, some examples are presented below:

$$\text{Company value} = \text{Net asset value} + (\text{Coefficient} * \text{Net income})$$

*In this formula the goodwill is valued with a certain coefficient to the net income. Instead of the net income, another method will use a percentage of the total revenue as representation of the goodwill.*

$$\text{Company value} = \text{Net asset value} + (\text{Percentage} * \text{Total revenue})$$

These formulas are quite simple to calculate, where other formulas uses capitalizations and interest rates which make them complex. That’s why the other methods are not presented in this review. In the further analysis goodwill valuation will not be researched further.

### 2.2.6 Summary

In the theoretical framework in the previous paragraphs a wide variety of literature and business valuation methods were discussed. In the figure below a clear overview of these literature is presented. Several articles are not directly stated in the paragraphs above, but were taken into account for this research. These literature are also summarized in the figure below.

Author(s)	Valuation approaches				
	DCF	Liquidation & accounting	Relative	Contingent claim	Goodwill
Fernández (2013)	x	x	x	x	x
Damodaran (2005)	x	x	x	x	
Koller, Goedhart & Wessels (2005)	x				
Luehrman (1997a)	x				
Luehrman (1997b)	x			x	
Lie & Lie (2002)			x		
Goedhart, Koller & Wessels (2005)			x		
Imam, Barker & Clubb (2008)	x		x		
Fernández (2007)	x				
Bancel & Mittoo (2014)	x	x	x	x	
Dittmann & Maug (2008)	x		x		
Carlsson & Fullér (2003)				x	
Demirakos, Strong & Walker (2004)	x		x	x	

Figure 3: Overview of literature on valuation methods



### 2.3 Used valuation methods

The choice for certain valuation methods used in this research is based on the literature. This study focuses on the two DCF methods, the traditional and APV method, and relative valuation for the following two reasons. As summarized in the overview in the previous paragraph, most of the studied literature paid attention to these valuation methods. Secondly, the study of Bancel & Mittoo (2014) found that European experts prefer relative (multiple) valuation and the DCF-method, specific the FCF, as shown in the figure below.

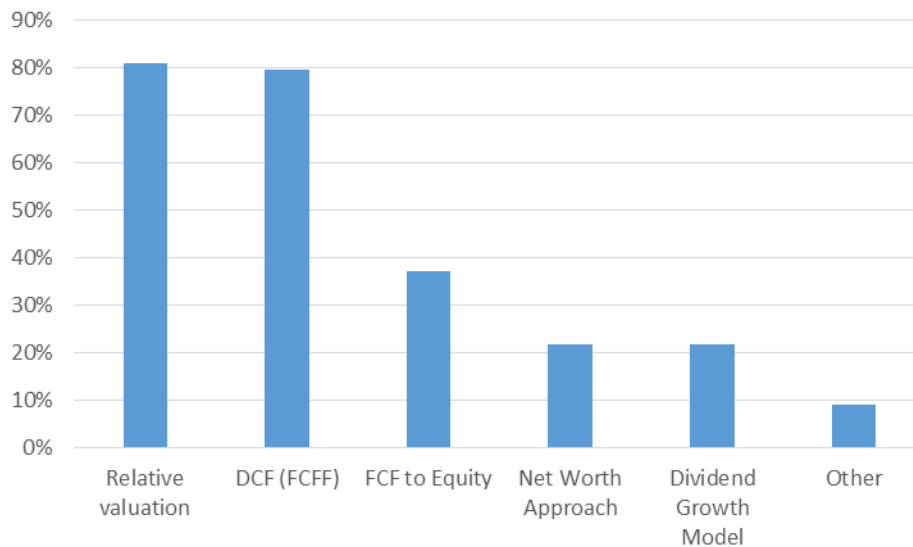


Figure 4: Popularity of different valuation methods (Bancel & Mittoo, 2014)

For the specific DCF methods is chosen for the traditional and APV approach, whereby the cash flows are discounted by different discount rates. Next to the theoretical relevance as explained above, the advantages of these methods and disadvantages of the other methods are considered for this choice.

- The DCF method focus on the future (profitability) of businesses, where other methods are based on the history.
- Underlying assumptions of a business are captured in the DCF method.
- Stakeholders are forced to think proper about the future for reliable forecasts.
- The core elements money, time and risks are reflected in the cash flows and discount rates.
- Relative valuation is quite simple to calculate and isn't very time consuming.
- Market value is reflected in relative valuation.
- In practice, the traditional DCF method and APV method are most used for several valuation purposes. This in combination with a relative valuation, to provide a range of the company value.

## 3. Methodology

This section describes the methodology which is used in order to prepare the research. As Kallet (2004) stated “providing a clear and precise description of how an experiment was done”.

### 3.1 Research Design

Two companies were examined, as described in the third paragraph of this chapter, in order to answer the research question. The analysis of these cases is called a case study. “The intensive study of a single case for the purpose of understanding a larger class of similar unites (a population)” (Gerring, 2012). The purpose of a case study may be descriptive: to determine the most accurate valuation method (Babbie, 2010).

### 3.2 Case selection and data collection

The cases were selected on the criteria of the scope of this research. So, the companies are located in The Netherlands and must meet the criteria of the SMEs. This selection of cases with desirable features is called purposive case selection (Babbie, 2010). Another important criterion of the case selection is the availability of financial information, because several values are calculated based on the different valuation methods. This is called convenience sampling, the selection of accessible and available cases (Marshall, 1996).

In order to check the availability of all financial information for the companies, which is needed to calculate the different values, ORBIS has been used. ORBIS is a huge database with company information across the world, provided by Bureau van Dijk. Next to this step, two companies are selected in order to calculate the several values. The two selected companies have a different core business, this to show the possible differences in sectors.

The key financials, which are needed for the calculations, can be obtained from Orbis. For a more detailed insight, the annual reports of the companies were examined and used. So, the final data is collected from the deposited annual reports.

### 3.3 Data analysis

For the selected companies, different values are calculated based on the used valuation methods. The calculations and elements of these different valuation methods are presented. Differences between the values will be explained by the underlying assumptions and elements of the used valuation methods. In this way the research examines where the value is derived from and therefore the accuracy of the used valuation methods.

#### 3.3.1 Sensitivity analysis

For the two DCF-methods and the relative method a sensitivity analysis is conducted. This sensitivity analysis shows the importance of an accurate choice of the independent variable and their impact on the dependent variable, in this case the company value.

Independent variables of the DCF-valuation are the cash flows and the discount rate. The cash flow is determined by several elements, so a sensitivity analysis can be conducted on these elements (a.o. turnover, EBIT, depreciations etc.). On the other hand, the discount rate in which the risks are

reflected is subjectively determined. This means that other opinions about the risks, have an impact on the company valuation. The independent variable of the relative method is the used multiple.

### 3.4 Overview analysis

In the overview below the reason for the case analysis is presented. As already presented and mentioned in the theoretical framework several elements of the used valuation methods are judged. In order to examine the accuracy and sensitivity of the three valuation methods the two cases are analyzed.

Methods	Elements					
	Input	Simplicity	Popularity	Preference	Accuracy	Sensitivity
APV-method	+/-	-	++	+		
Traditional DCF-method	+/-	-	++	+		
Relative	+	+	+	+		

Figure 5: Overview of the elements of the research

The analysis of the cases, the calculations of the values by different valuation methods, examines the accuracy of these methods. Another element which will be examined is the sensitivity. Next to the judgement on the accuracy and sensitivity of the methods, an advice can be provided based on the judged elements.

## 4. Results

This chapter presents the results of the research on the different valuation methods. Per case, the different values are presented on the used valuation methods. The calculation show where the value came from, and so the insights on the accuracy of the valuation methods. The sensitivity analysis will present the impact of the variables of the specific methods. In the summary, the differences of the valuations are explained.

### 4.1 Company A

In the sections below the calculated values of the different valuation methods are shown. For the (traditional) DCF-method, the APV-method and the relative method the company values are respectively € 14.651.000,-, € 14.634.000,- and € 17.881.000,-. A detailed overview of the calculations of the cash flows, the discount rate and the multiple are presented in the confidential version.

#### 4.1.1 DCF-method

DCF-method	2016	2017	2018	2019	2020	RP
Free cash flow	2.130	2.175	2.222	2.269	2.318	15.735
WACC	16,1%	16,1%	16,1%	16,1%	16,1%	
Discount rate	0,86	0,74	0,64	0,55	0,47	
Discounted value cash flows	1.833	1.612	1.418	1.247	1.096	7.444
Total discounted value cash flows (2016-2020)	7.207					
Total discounted value cash flowsn (after 2020)	7.444					
Company value	14.651					

Figure 6: Company A - calculation of the DCF-method

#### 4.1.2 APV-method

APV-method	2016	2017	2018	2019	2020	RP
Free cash flow	2.130	2.175	2.222	2.269	2.318	15.368
Cost of equity	16,5%	16,5%	16,5%	16,5%	16,5%	
Discount rate	0,86	0,74	0,63	0,54	0,47	
Discounted value cash flows	1.827	1.602	1.404	1.230	1.078	7.150
Interest expenses	-226	-226	-226	-226	-226	
Tax benefit of interest expenses (taxshield)	57	57	57	57	57	342
Discount rate	0,86	0,74	0,63	0,54	0,47	
Discounted value taxshield	49	42	36	31	26	159
Total discounted value cash flows	14.292					
Total discounted value taxshield	342					
Company value	14.634					

Figure 7: Company A – calculation of the APV-method

### 4.1.3 Relative method

Relative method	
EBITDA 2015	3.193
Multiple	<u>5,6</u>
Company value	17.881

Figure 8: Company A – calculation of the relative method

## 4.2 Company B

In the sections below the calculated values of the different valuation methods are shown. For the (traditional) DCF-method, the APV-method and the relative method the company values are respectively € 4.860.000,-, € 4.860.000,- and € 4.110.000,-. A detailed overview of the calculations of the cash flows, the discount rate and the multiple are presented in the confidential version.

### 4.2.1 DCF-method

DCF-method	2016	2017	2018	2019	2020	RP
Free cash flow	694	712	730	749	768	4.937
WACC	15,2%	15,2%	15,2%	15,2%	15,2%	
Discount rate	<u>0,87</u>	<u>0,75</u>	<u>0,65</u>	<u>0,57</u>	<u>0,49</u>	
Discounted value cash flows	603	537	478	426	379	2.437
Total discounted value cash flows (2016-2020)						2.423
Total discounted value cash flows n (after 2020)						<u>2.437</u>
Company value						4.860

Figure 9: Company B – calculation of the DCF-method

### 4.2.2 APV-method

APV-method	2016	2017	2018	2019	2020	RP
Free cash flow	694	712	730	749	768	4.894
Cost of equity	15,3%	15,3%	15,3%	15,3%	15,3%	
Discount rate	<u>0,87</u>	<u>0,75</u>	<u>0,65</u>	<u>0,57</u>	<u>0,49</u>	
Discounted value cash flows	602	536	477	424	377	2.402
Interest expenses	-26	-26	-26	-26	-26	
Tax benefit of interest expenses (taxshield)	7	7	7	7	7	43
Discount rate	<u>0,87</u>	<u>0,75</u>	<u>0,65</u>	<u>0,57</u>	<u>0,49</u>	
Discounted value taxshield	6	5	4	4	3	21
Total discounted value cash flows						4.817
Total discounted value taxshield						<u>43</u>
Company value						4.860

Figure 10: Company B – calculation of the APV-method

### 4.2.3 Relative method

Relative method	
EBITDA 2015	1.126
Multiple	<u>3,65</u>
Company value	4.110

Figure 11: Company B – calculation of the relative method

## 4.3 Sensitivity

The forecast of the cash flows and the subjective discount rate are based on several assumptions. When a variable will change, the ultimate company value will also vary. This also applies for the relative method, with the use of a different multiple. The sensitivity analyses of the three methods are presented in the confidential version.

The revenue growth is used as input for the cash flows. As the revenue increases, the differences between the company values will also be larger. Next to the revenue, the impact of the discount is noticeable. For example, the company value of Company A ranges between € 12.982.000,- and € 16.749 .000 (APV-method).

By the use of another (wrong) multiple, the company value will also vary. Though, the only misunderstanding can be derived by wrong multiples. Because of the influences of the cash flows and the discount rate, the DCF-methods are more sensitive for possible misunderstandings.

The differences in company values, based on the several variables, are large. This means that the need for carefully chosen variables is high. A quite simple misunderstanding can strongly influence the value.

## 4.4 Summary

As shown in the calculations, the (traditional) DCF-method and APV-method give proper insights of the cash incomes and outcomes and how the value is established. In contrast to the relative method, where only a historical number is multiplied with an industry multiple.

Because of the simplicity and easy use of the relative method, it's a popular method. It reflects the market, what they are willing to pay per industry on average. So, the company value is not specific based on the company itself, but on the market. That's why the DCF-methods are more accurate.

In the discount rate is a small firm premium added. This addition is specifically made for the Dutch SMEs (Appendix B). This is another reason why the DCF-methods are more accurate for the Dutch SMEs.

Differences in the both DCF-methods are in the used discount rate and separation of the tax shield. The WACC assumes a constant ratio of equity and debt, which is not expected in practice. The APV-method assumes that the company is financed by 100% equity and the financing side effects (tax shield) are then added as cash flows and discounted. Through the separation of the tax shield, the APV-method gives insight in the interest deduction for tax.

## 5. Discussion

This chapter appoints two major issues for discussion. First, the nature of value is discussed and secondly the limitations of this type of research, the case study.

### 5.1 Subjectivity of value

Company valuation requires necessary knowledge and skill. As the sensitivity analyses already have shown, differences in the input can lead to large differences in the outcome, the ultimate company value. This is the reason why valuations should be guided and executed by professionals.

Despite the aforementioned recommendation, value is subjective and some problems can occur when interpreting the value. Fernández P (2004) expressed this as follows, “the value resulting from any valuation is always contingent on a set of expectations (about the future of the company, the industry, the country, and the world economy and on an assessment of the risk of the company”

Each subject has its own judgement on the principles, in this case the value of the company. Price and value are not the same, differences between price and value can be explained by this subjective nature. “Valuation is always an opinion”, so there are different values for seller and the different buyers (Fernández P. , 2004).

In business transaction prices are determined by several factors (a.o. alternatives, synergies, timing and negotiations). Every individual party have different ideas about the value and through possible negotiations the ultimate price can be determined.

### 5.2 Case study

A common issue for discussion on a case study is the generalizability. The sample of the research is small and therefore not representative for the larger group (e.g. Hodkinson & Hodkinson, 2001).

In this research two companies, that meet the criteria of a Dutch SME, have been selected. For both companies the value is calculated. Differences are explained using the elements of the different valuation methods. There will also be differences in values if other companies were used. The cases were only used to explain the several elements and the accuracy of the valuation methods.

In conclusion can be said that the case study is representative for this research.

## 6. Conclusion

In order to determine accurate business valuations methods for Dutch SMEs, the goal of this research, the formulated research question was:

*“What are accurate business valuation methods for Dutch small and medium-sized enterprises”?*

First the definition of a Dutch SME is given, in accordance with the European Commission. A company is a SME if the amount of staff is lower than 250 and the turnover or balance sheet total is not exceeding respectively € 50 million or € 43 million.

With regard to the second sub question, there are in general five approaches for business valuation, namely DCF valuation, liquidation and accounting valuation, relative valuation, contingent claim valuation (real options) and goodwill valuation. Hereby has each approach several specific methods.

By calculating the several values of the selected companies, the underlying elements of the valuation methods are appointed. This give insight on how the value is established and the underlying assumptions of business are captured. The sensitivity analyses is conducted to show the need for proper inputs, this with regard to the third sub question.

From the calculated values can be concluded that there are differences between the different valuation methods. Where the relative method use a static historical point, the DCF-method focus on the future of the company. To capture the underlying assumptions the DCF-methods are more accurate than the relative method.

On the other hand, the discount rate in the DCF-methods captures the specific risks in the small firm premium. This small firm premium is specifically added for Dutch SMEs. This implies the accuracy for valuation of Dutch SMEs.

Differences in the traditional DCF method and the APV method are shown in the tax shield and discount rate. Through the separation of the tax shield, the APV-method gives insight in the interest deduction for tax. So, the APV-method is a more extensive method than de traditional DCF method en therefore more accurate. The figure below presents the earlier mentioned elements of the valuation methods, including the accuracy and sensitivity.

Methods	Elements					
	Input	Simplicity	Popularity	Preference	Accuracy	Sensitivity
APV-method	-	-	++	+	++	-
Traditional DCF-method	-	-	++	+	+	-
Relative	+	+	+	+	+/-	+/-

Figure 12: Complete overview of the elements of the research

Important note on business valuation is the subjectivity, as already appointed in the previous chapter. Thereby are accurate inputs (financial numbers and forecasts) essential for a proper and accurate valuation. In the absence of these inputs, another simple method can be more suitable. Valuation by the DCF-methods is so reliable as the forecasts are.



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## Appendix A – Discounted cash flow method

The DCF method is based on the economic value, the value of the company is determined by the present value of operating turnover and expenses (free cash flow). This free cash flow is the available money for the financiers of the company. In other words, it's the amount of money that is not needed to reinvest in the company to maintain the expected cash flows.

Financiers are the providers of debt and equity for the company. For providers of debt, this means that the cash flows are available for the payments of interest and principles. For providers of equity, this means the availability of cash flows for payments of dividend or reinvestments.

The DCF method starts with the operational profit (EBIT). Then, the corporate tax is deducted, this results in the net operating profit (NOPLAT). All depreciations and net additions to the provisions are added to the NOPLAT. Then, investments are deducted including investments in net working capital. Finally, any amounts obtained from divestments, are summed to arrive the free cash flows.

The residual period begins when the company has entered a stable phase, a forecast period of 5 years is often used. The future cash flows are discounted to the valuation point at a discount rate, the formula is as follows:

$$\frac{\text{Future cash flow}_1}{(1+\text{discount rate})^1} + \frac{\text{Future cash flow}_2}{(1+\text{discount rate})^2} + \frac{\text{Future cash flow}_{\dots}}{(1+\text{discount rate})^{\dots}} + \frac{\text{Future cash flow}_n + \text{residual value}_n}{(1+\text{discount rate})^n}$$

Used discount rates differ dependent on the specific DCF method. The traditional DCF method uses the WACC as discount and the APV method uses the cost of equity as discount rate. The differences between these discount rate is described in appendix B.

## Appendix B – Discount rate

In order to calculate the net present value (NPV), the free cash flows are discounted with a discount rate. The different DCF-methods uses different assumptions and discount rates. Where the traditional DCF-method uses the WACC as discount rate and the APV-method the unlevered cost of equity.

### WACC

“The weighted average cost of capital represents the opportunity cost that investors face for investing their funds in one particular business instead of other with similar risk (Koller, Goedhart, & Wessels, 2005)”.

The WACC consists of three elements, namely the cost of equity, the after-tax cost of debt and the company’s target capital structure.

$$WACC = \text{Ratio of Equity} * \text{Cost of Equity} + \text{Ratio of Debt} * \text{Cost of Debt} * (1 - \text{tax rate})$$

### Cost of Equity

Cost of equity is calculated by the Capital Asset Pricing Model (CAPM).

$$\text{Cost of Equity} = \text{Risk free rate} + \text{Beta} * (\text{Market return} - \text{Risk free rate})$$

Because of the higher risk profile for SMEs, the Small Firm Premium Model added.<sup>8</sup> This model consist of a illiquidity premium and company specific risk factors: dependency on customers, dependency on suppliers, dependency on management, spread of activities, barrier of access in the market, track record and flexibility.

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<sup>8</sup> BDO CF