Commercial Due Diligence in Business Valuation:

How the Assessment of an M&A Target's Commercial Prospects Impacts its Enterprise Value

An der Rechts- und Staatswissenschaftlichen Fakultät der Universität Greifswald eingereichte

Diplomarbeit

zur Erlangung des akademischen Grades

Diplom-Kaufmann

(Dipl.-Kfm.)

Vorgelegt von

Felix Florian Günther

Greifswald, den 10. Mai 2021

Acknowledgements

During the work on this thesis, I received valuable support.

In particular, I would like to thank Mr. Markus Knarr from the management consultancy firm Commercial Advisory, who took the time to provide me with helpful input and insights during my research.

I would also like to thank my father for his everlasting support.

Table of Contents

List of Abbreviations

CAPEX	Capital Expenditure
CDD	Commercial Due Diligence
CIM	Confidential Information Memorandum
COGS	Cost of Goods Sold
DCF	Discounted Cash Flow
D&A	Depreciation and Amortization
EBIAT	Earnings Before Interest After Taxes
EBIT	Earnings Before Interest and Taxes
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
EV	Enterprise Value
FCF	Free Cash Flow
FDD	Financial Due Diligence
LBO	Leveraged Buyout
M&A	Mergers & Acquisitions
NWC	Net Working Capital
PGR	Perpetuity Growth Rate
SG&A	Selling, General, and Administrative Expenses
TV	Terminal Value
WACC	Weighted Average Cost of Capital

List of Figures

1 Introduction

"CDD [commercial due diligence] is about magic. It is about unearthing the few magic ingredients that allow you to say with confidence whether or not a business is worth investing in."

(Howson, 2006, p. XV)

Mergers and Acquisitions (M&A) are among the most important investment decisions made by businesses and they are a key component of corporate strategy. The global M&A volume in 2019 alone was $3.33 trillion with an average transaction size of $389 million (Mergermarket Limited, 2019). By comparison, Germany's gross domestic product in the same year was approximately $3.86 trillion (The World Bank, 2021). The vast amount of capital involved in M&A demonstrates the potential for economic losses that can result from ill-informed investments. Given these numbers, it is remarkable that the failure rate of M&A lies between 70% and 90% (Christensen et al., 2011).

A common problem in corporate transactions is overpayment and a resulting destruction of shareholder value (Lewis & McKone, 2016). In fact, "more than 60% of them destroy shareholder value" (Lewis & McKone, 2016, n.p.). The overpayment problem suggests that potential buyers have difficulty in accurately anticipating the value generated by an M&A deal, from which the purchase price is derived. Key to the value that an M&A target brings to a potential buyer is its commercial success in the future, i.e., the target's ability to compete in the marketplace and generate attractive financial returns. This is because the target's future performance in its market and in interaction with its customers and competitors will ultimately be reflected in future financial returns, which are used in various valuation models to determine a business value. This is where commercial due diligence (CDD) comes into play: as a sub-discipline of a detailed examination of the target company in the run-up to a corporate transaction, it examines the target from a market, customer and competitive perspective and thus comprehensively reviews its commercial prospects (Niederdrenk & Müller, 2012, p. 17). It follows that CDD must make a significant contribution to reducing the problem of inaccurate business valuations and help reduce the likelihood of transaction failures.

This leads to the question of how exactly CDD examines the inherently uncertain future developments of the target, its market, customers, and competitors, and how the results of this examination ultimately inform the investment decision and, more concretely, the valuation of the target. The aim of this thesis is to answer that question. The underlying hypothesis is that an examination of the future commercial success of an M&A target must have a significant impact on the enterprise value that a potential buyer attributes to that target, given that commercial success is a key driver of financial returns and thus deal value. This thesis examines the way in which CDD investigates the future of the target company and how the results of this investigation are reflected in the business valuation that a potential buyer undertakes prior to the transaction. In essence, the aim is to demystify the magic of CDD referred to by Howson (2006) at the beginning of this section.

The motivation for investigating this question arose while the author was undertaking an internship in management consulting. During this internship, the author was involved in a CDD project and developed scenarios for the future developments of the German automotive and mobility market and their consequences for the future commercial success of a player in this market. The analysis acted as input for the financial modeling of an M&A transaction concerning this player. Since the financial modeling of the transaction was performed by an investment bank, the author was not involved in the further use of the analysis findings. Thus, the question arose as to how the results of CDD would ultimately be factored into the investment decision. Despite extensive research, the author was unable to find any literature that explains the role of CDD in M&A in a way that conceptually and procedurally clarifies the impact on business valuation that CDD inevitably has because of its analyses of the target's future financial returns. The problem that became apparent is that the existing literature focuses either specifically on the content of CDD or more generally on M&A and business valuation. The relationship between CDD and business valuation is mostly mentioned peripherally, whereby the significance of CDD for business valuation is always stressed, but not described in detail. This thesis therefore aims at describing specifically this conceptual and procedural link between CDD and business valuation and thus fills a gap in existing literature.

To answer the research question, the findings from a broad theoretical analysis of academic textbooks and scientific articles on the topics of M&A, business valuation, due diligence, and commercial due diligence are synthesized. To support the understanding of this theoretical analysis, a brief fictional case study is discussed. In this case study, the valuation of a fictitious M&A target is performed with and without CDD inputs, replicating part of a typical buy-side M&A process. The CDD inputs used are fictional, but based on a real CDD report, which were provided to the author by the management consultancy firm Commercial Advisory (2020), as well as on the author's own experiences. The comparison of the results allows a fictitious, but quantitatively measurable and conceptually tractable answer to the research question of how CDD impacts business valuation. It must be stressed however, that this thesis is primarily a theoretical analysis and that the case study only serves to illustrate the findings of this analysis.

The thesis consists of four chapters. Following this introduction, the second chapter explains the fundamental connections between due diligence and business valuation in the context of M&A. For this purpose, the nature of due diligence and how it is related both conceptually and procedurally to the valuation and pricing of businesses is first discussed. Then, the concept of enterprise value is distinguished from the concept of the purchase price and two business valuation methods that are widely used in M&A practice are explained theoretically and by introducing the illustrative case study. Hereby, a partial step in a typical buy-side M&A process is described. In this context, leveraged buyouts are briefly discussed as a special form of corporate transactions in which CDD is of particular relevance. Subsequently, the concept of due diligence is further specified by introducing sub-disciplines, namely commercial due diligence, and financial due diligence (FDD). To prepare the analysis of the influence of CDD on business valuation, it is explained how CDD and FDD collaborate in the analysis of the target company's business plan.

In the third chapter, the key question of this thesis is answered by first describing the concept and objectives of CDD in detail. This is followed by a description of the perspective taken by

CDD in analyzing the target company's business plan and how this perspective distinguishes CDD from other due diligence disciplines such as FDD. Subsequently, the areas of analysis covered by CDD and the output of a CDD investigation are presented. In this context, the technique of scenario analysis is described. To illustrate the impact of CDD on business valuation, illustrative findings from a CDD analysis are then applied to the case study and fed into the business valuation models described in Chapter 2. This builds upon the partial step of the buy-side M&A process discussed in Chapter 2. In this way, the impact of CDD on the most frequently used business valuation approaches is demonstrated both conceptually and procedurally.

The fourth chapter critically summarizes the results of the analysis and provides an outlook on possible avenues for future research.

The approach chosen here implies that the core concept of this thesis, the concept of CDD, is not defined in detail until the third chapter. The reason for this approach is that an understanding of the term and the content of CDD can best be conveyed once the fundamentals of M&A, due diligence, and business valuation have been discussed.

2 Fundamentals of due diligence and business valuation in corporate transactions

2.1 Due diligence as the basis for business valuation and purchase price determination in mergers & acquisitions

A due diligence investigation is a thorough investigation into a company, and it is primarily used in the context of mergers & acquisitions (Beck, 2002). M&A are corporate transactions characterized by a change in the ownership structure of a company's equity (Lucks & Meckl, 2002, p. 23). In the process of preparing such a transaction, a target's potential buyer is naturally less well informed about the business in question than the seller. During the transaction process and prior to reaching a final investment decision, including the submission of a binding purchase price offer, it is therefore essential for a buyer to reduce the information deficit by carrying out a thorough examination of the target company, i.e., a due diligence review. Due diligence therefore functions as an instrument for reducing the asymmetrical distribution of information inherent to the transaction process (Berens, Brauner et al., 2019, p. V; Pomp, 2015, p. 9).

Due diligence is the stage in the transaction process in which a potential buyer learns "as much as possible about all aspects of the target (e.g., business, sector, financial, accounting, tax, legal, regulatory, and environmental)" (Rosenbaum & Pearl, 2009, p. 164). This investigation ultimately serves the purpose of answering two central questions (Niehues, 1993 cited in Berens, Schmitting & Strauch, 2019, p. 18): is the deal in line with the buyer's strategic goals? And, if so, what value does the buyer associate with the target? Both questions are interlinked and critical to prevent transaction failure: if a strategic disadvantageousness of a transaction is not recognized in advance, destruction of shareholder value follows, as is illustrated, for example, by Bank of America's acquisition of Countrywide Financial in 2008. Bank of America had bought Countrywide Financial at the time for $2.5 billion to become the market leader in home loans in the United States, but lost more than $50 billion as a result, having to pay the price for Countrywide's problematic lending practices in the wake of the following financial crisis (Rothacker, 2014). In a deal that in retrospect has been labeled "the worst deal in the history of American finance" (Plath, 2012 cited in Fitzpatrick, 2012, n.p.), the due diligence apparently failed, or its findings were neglected. While then Bank of America chief executive Ken Lewis emphasized that "extensive due diligence supports our overall valuation and pricing of the transaction" (Lewis, n.d. cited in Rothacker, 2014, n.p.), there were people in the diligence team who were concerned about a lack of strategic fit and risks associated with the acquisition (Rothacker, 2014). Apparently, those voices were disregarded, and the risks of the acquisition were underestimated by the decision makers as much as the potentials for value creation were overestimated. The example of Countrywide shows that a poorly informed investment decision based on an overestimation of future financial returns and an underestimation of risks can lead to severe value destruction.

In the run-up to a transaction, risks and value assumptions are mapped in a profile of expected financial returns, which are then converted into a present value of the target using business

valuation models. A potential buyer uses the estimated present value of a target's future financial returns as the basis for determining the purchase price, i.e., the appropriate and strategically prudent monetary compensation for the business. If, as in the case of Countrywide Financial, future returns are overestimated, the valuation is inflated and the price paid may be higher than the value generated by the target in the future. An overly optimistic assessment of the value generated by a deal therefore often causes buyers to overpay for the target (Lewis & McKone, 2016). Such an overpayment usually leads to a substantial destruction of shareholder value (John, Liu & Taffler, 2011). For the purpose of this thesis, overpayment can be understood as a positive difference between the price a buyer pays for a business and the value that this business delivers to that buyer after the transaction is completed. Since buyers base their purchase price decision on the anticipated values generated by a target, overpayment is generally a consequence of overvaluation. Reducing a buyer's risk of overpaying for the target, which is also referred to as reducing transactional risk, is one of the key tasks of due diligence (Howson, 2006, pp. 16-17). Due diligence is therefore a central instrument for supporting purchase price decisions in corporate transactions (Pomp, 2015, p. 9; see also Haarbeck, 2019, p. 102). The gap between a detailed analysis of the target company and the determination of the appropriate purchase price is bridged through business valuation: business valuation serves to determine potential prices for the business in question (Berens, Schmitting & Strauch, 2019, p. 24) and due diligence reveals the necessary information for conducting such valuation (Schacht, 2009, p. 33). Consequently, identifying a target's key value drivers is a central purpose of due diligence (Pomp, 2015, p. 9). Findings regarding value potentials and risks can be transferred into business valuation models so that the resulting business value can be used as a basis for subsequent purchase price negotiations (Blöcher, 2002, p. 30).

In addition to overpayment risk, due diligence is concerned with another valuation and pricing related issue: underpayment (Banks et al., 2018). For the purpose of this thesis, underpayment can be understood as a negative difference between the price a buyer pays or intends to pay for a target and the value that target delivers to the buyer after the transaction is completed. Underpayment can be either strategically intended or negligent. Strategic underpayment is a deliberate attempt by the buyer to acquire the target at a price lower than the value determined after identifying all valuation-related matters during due diligence and is a key to profitable transactions. Negligent underpayment, on the other hand, means that a buyer fails to identify value potentials during due diligence and therefore does not include them in their valuation and willingness to pay. Hence, negligent underpayment is a consequence of undervaluation. In the case of negligent underpayment, the buyer either misses out on a potentially lucrative transaction, that is when the offer is rejected, or makes a lucky buy. Neither is in accordance with strategically sound decision making. To allow strategic underpayment and prevent negligent underpayment and overpayment, due diligence must facilitate an accurate valuation of the business in question.

In substantiating business valuation and thus purchase price determination, due diligence is not only useful to a potential buyer. The seller of a company also regularly conducts due diligence in the preparation of a transaction because an independently conducted sell-side due diligence functions as an objective analysis of the company's strengths and weaknesses that can reveal factors that increase or decrease its value, which can be used in negotiations to argue for a

higher price, or whose discovery by the buyer can be anticipated and prepared against (Blöcher, 2002, p. 32). As the final price is ultimately the result of negotiations and as the negotiating positions of buyer and seller alike highly depend on how well-informed each party is, the seller too can significantly benefit from the information obtained during sell-side due diligence (Blöcher, 2002, pp. 30-35). The usefulness of sell-side due diligence is also reflected in the circumstance that the traditional transaction process without sell-side due diligence does not guarantee the realization of the ideal price for the seller (Niederdrenk & Müller, 2012, p. 35). The seller thus also carries out due diligence to establish a value assessment and incorporate this in the negotiations on the purchase price. In doing so, sell-side valuation should include the perspective of potential buyers to obtain a benchmark for expected purchase price offers (Rosenbaum & Pearl, 2009, p. 258). Sell-side due diligence-based valuation thus reduces the seller's risk of being underpaid. In the following, this thesis focuses on buy-side due diligence, as potential buyers are usually confronted with a larger information deficit and therefore usually conduct more detailed investigations (Berens, Knauer & Strauch, 2019, pp. 7-9).

Despite any differences in the level of detail of the analyses, due diligence is a key sell-side and buy-side component of M&A that provides both the buyer and the seller with critical inputs for conducting business valuation. Buyer and seller use the established value assessments to inform the negotiations on the purchase price. This thesis focuses on the first step of this connection from the buyer's perspective and investigates how the part of due diligence that focuses on the assessment of a target's commercial prospects impacts buy-side valuation.

2.2 Due diligence and business valuation in a structured M&A process

The interplay of due diligence, business valuation and purchase price determination on buyer and seller side described above is reflected in the typical design of M&A processes. While both sell-side and buy-side due diligence and valuation are standard components in the transaction process, procedural differences exist: sell-side due diligence is usually a single step in the transaction process, whereas buy-side due diligence is usually divided into a preliminary due diligence and a detailed due diligence. As is described in detail later in this section, these different phases of buy-side due diligence correspond with different phases of buy-side business valuation, which is a natural consequence of the typical transaction structure. Such a typical transaction structure, an auction, is depicted in Figure 1. The different stages of such an auction are briefly discussed in the following.

In Stage I of an auction, the seller prepares the sale by conducting due diligence and business valuation, thereby determining a benchmark for assessing the attractiveness of the buyers' offers, which are presented to the seller in later stages of the transaction process (Niederdrenk & Müller, 2012, pp. 32-33; see also Rosenbaum & Pearl, 2009, p. 256).

In Stage II of the transaction (under the assumption that contact is initiated by the seller) the seller addresses potential buyers and distributes a confidential information memorandum (CIM) (Rosenbaum & Pearl, 2009, p. 256). The CIM is a document that contains qualitative and quantitative information about the target, such as an explanation of its business model and the

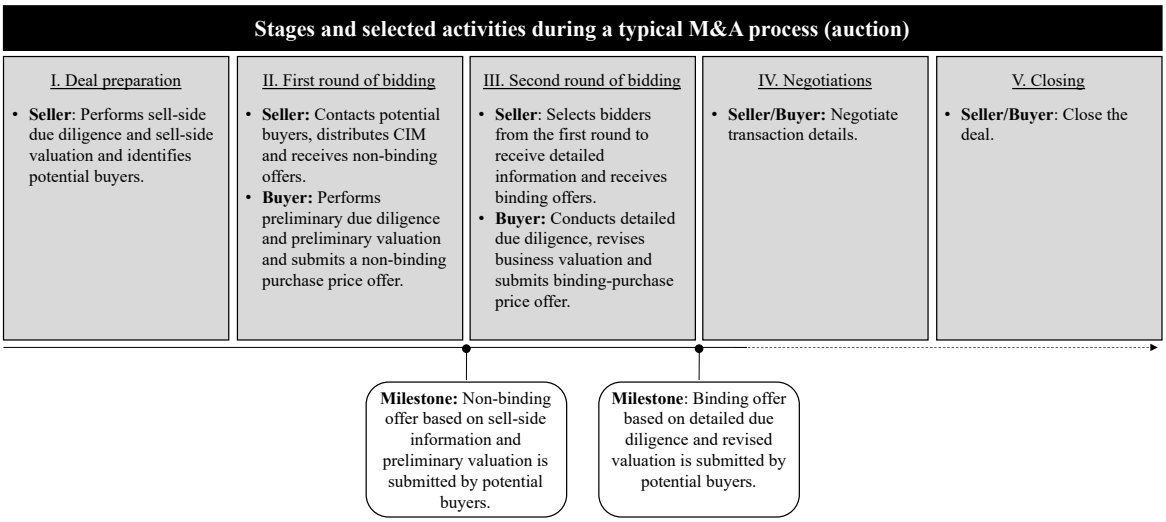

Figure 1: Stages and selected activities during a typical M&A process (auction)
(Source: own illustration based on Niederdrenk & Müller, 2012, p. 32; Pomp, 2015, pp. 12-15; Rosenbaum & Pearl, 2009, p. 256; Stiller, 2020, n.p.)

industry in which the target operates, as well as historical and projected financial data (Banks et al., 2018; Rosenbaum & Pearl, 2009, p. 260). After potential buyers have received the CIM, they have approximately three to five weeks to submit a non-binding purchase price offer (Banks et al., 2018). This leaves only a short period of time for the buyer to investigate the target prior to making a purchase price indication. Moreover, the seller is oftentimes providing only limited information through the CIM, as sellers are often reluctant to provide detailed information before a potential buyer has shown a significant interest in completing the transaction (Banks et al., 2018). This means that at this stage, the buyer's informational basis for investigating the business and proposing a purchase price is not ideal (Berens, Schmitting & Strauch, 1998 cited in Blöcher, 2002, p. 49). Consequently, only a limited and therefore preliminary due diligence can be carried out at this stage (Banks et al., 2018). This preliminary due diligence focuses on issues that can materially impact the transaction and may even lead to its termination and is therefore also referred to as red flag due diligence. Red flag issues that can lead to the termination of the transaction are referred to as deal breakers. The result of preliminary due diligence is usually a red flag report that addresses such deal breakers and other significant risks, and upon which the potential buyer decides whether to proceed with the transaction (Pomp, 2015, p .24). Once preliminary due diligence is completed, the buyer needs to reach an initial assessment of the target's value to place a preliminary offer (Banks et al., 2018). For this, the buyer conducts business valuation. It is important to note that, at this stage, this is a preliminary business valuation as it is strongly based on sell-side CIM information as well as on preliminary due diligence findings (Banks et al., 2018; see also Rosenbaum & Pearl, 2009, p. 260). Consequently, the buyer's initial offer, which is submitted at the end of Stage II, is subject to satisfactory completion of detailed due diligence (Pomp, 2015, p. 14). Detailed buy-side due diligence and the revision of preliminary business valuation are carried out in the following stage of the transaction process.

Stage III commences after the seller has received the non-binding offers. Based on these offers those bidders are selected who will enter the second bidding round, at the end of which a binding

purchase price offer must be submitted, and during which detailed due diligence can be conducted (Niederdrenk & Müller, 2012, pp. 32-33). The selected buyers can carry out a more detailed due diligence at this stage because more detailed information is made available to them (Banks et al., 2018). Detailed due diligence represents the second phase of the buy-side due diligence process and is based on the results of preliminary due diligence (Pomp, 2015, p. 24). A central question answered during detailed due diligence is whether the information about the target provided by the seller in the CIM is true, plausible, and consistent (Banks et al., 2018). If it is not, it cannot be accepted as the basis for valuation (Mellen & Evans, 2018, p. 125). Hence, detailed due diligence provides the basis for the revision of preliminary business valuation (Andrews et al., 2017) and the findings of detailed due diligence frequently lead to a downward adjustment of preliminary valuation (Banks et al., 2018). Consequently, the questions of whether the transaction should be completed, and if so, at what price, can ultimately be answered after detailed due diligence has been carried out (Banks et al., 2018). At the end of this third stage, based on detailed due diligence and subsequently refined business valuation, the binding purchase price offer is submitted (Pomp, 2015, p. 15). The seller then selects the favored buyer so that final negotiations and the closing of the transaction can take place in Stages IV and V (Rosenbaum & Pearl, 2009, p. 256).

The point from this section that is most relevant for this thesis is that preliminary buy-side business valuation and the derived preliminary purchase price offer are largely based on information provided by the seller through the CIM, and preliminary due diligence does not thoroughly examine the plausibility of this information due to restrictions in time and access to relevant data. As potential buyers cannot blindly trust sell-side information, the initial offer is subject to a detailed assessment as to the accuracy of this information. This assessment is carried out during detailed due diligence, during which valuation is refined so that a final and binding purchase price offer can be established.

2.3 The concept of business value and its distinction from the purchase price

As discussed above, both potential buyers and sellers of a company perform business valuation when preparing for a transaction to inform purchase price negotiations. The concepts of price and value are thus closely related. However, a central difference is that values are subjective, whereas prices are objectively observable. If value were objective, it would not have to be determined by each party individually, nor would negotiations on the price be necessary. Thus, the terms price and value need to be distinguished carefully.

An intuitive distinction between price and value is expressed in the phrase "[p]rice is what you pay; value is what you get" (Graham, n.d. cited in Buffett, 2009, p. 5). In this sense, "[b]uy a company and you are buying its future earnings" (Howson, 2006, p. 147) is similarly concise. Following these quotes, for a transaction to be lucrative for the investor, they must pay a price which is at most as high as the present value of the future earnings that the target will generate after the transaction. Paying more would mean overpayment. The seller, on the other hand, must receive at least the amount of money that compensates them for the loss of these future earnings, as in their view it can be stated: sell a company and you are selling its future earnings.

It is at this point that subjectivity of valuation becomes apparent, as, for example, the buyer may be able to include strategic options such as synergies in the anticipation of future earnings, which the seller may lack (Haarbeck, 2019, pp. 102-103; see also Berens, Schmitting & Strauch, 2019, pp. 23-24; Kuhner & Maltry, 2017, p. 30). Thus, valuation of the target from the buyer's perspective can differ significantly from that of the seller, and the purchase price may be significantly lower than the subjective business value determined by the buyer (Haarbeck, 2019, pp. 102-104, p. 133). In this case, strategic underpayment is achieved.

In contrast to value, price is ultimately the result of negotiations between the buyer and the seller, and it is not only influenced by their respective value assessments, but also, for example, by process dynamics such as the competition between potential buyers or the transaction design (Rosenbaum & Pearl, 2009, p. 253). Therefore, a subjective value assessment is important, but it is not the only factor that influences deal pricing. However, as a transaction only takes place when buyer and seller agree on a purchase price that is generally in line with their subjective value assessments, value can be considered the most important factor for price determination.

The target's value to the buyer equals the benefit that the target is expected to offer them in the future. This translates into a present value of future earnings, which are a consequence of the target's innovative strengths, its products, its positioning in the market and the capabilities of its internal organization and management (Blöcher, 2002, p. 40). This future oriented concept of business value implies a going-concern, i.e., the continuation of the business after the transaction. How this abstract concept of aggregating future financial returns into a value assessment is applied in M&A practice is discussed in detail in the following section.

Before different approaches to valuation can be discussed, another important terminological distinction must be made. In this thesis, the terms business value, enterprise value and entity value are used to describe the total value of a company. This total value figure refers to the value of the company's equity plus the value of its debt less cash and cash equivalents (Misamore, 2017). As a buyer only acquires the ownership of a business, i.e., its equity, the purchase price is ultimately based on equity value and not on enterprise value (Pomp, 2015, p. 197). During valuation, the value of a company's equity must therefore be determined. Business valuation practice distinguishes between methods that directly determine equity value (equity approaches) and methods that first determine enterprise value and then derive equity value in a second step (entity approaches). In transaction practice it is common that, assuming that the target company is cash and debt free, entity approaches are employed. Using entity approaches, enterprise value is first determined and used for purchase price proposals, of which net debt is later deducted to establish equity value (Pomp, 2015, pp. 279-281; see also Haarbeck, 2019, p. 106). Following this practice, this thesis only discusses entity approaches. Specifically, this thesis discusses only the first step of entity approaches, i.e., the determination of enterprise value. The subsequent determination of equity value is not discussed. The reason for this is that commercial due diligence is not involved in deriving equity value from entity value.

2.4 Methodology in selected approaches to business valuation

This chapter discusses how the abstract concept of business value discussed above, which is based on future financial returns, is applied in transaction practice. Thereby the methodological

foundations for investigating commercial due diligence's contribution to business valuation are laid. To do so, selected valuation approaches that are frequently used in transaction practice are discussed. To illustrate the procedures, a sample company is evaluated according to each valuation approach. In line with the typical transaction structure outlined in Section 2.2, these sample valuations represent a preliminary buy-side valuation after preliminary buy-side due diligence has been carried out. This is reflected in three key assumptions:

1. The sample valuations below are based on target management's financial forecasts, which were presented to the potential buyer, whose perspective is taken here, in the confidential information memorandum.
2. Target management's financial forecasts have remained entirely unchanged during preliminary due diligence and no buyer-specific strategic options (such as synergies, restructuring or performance programs) are being considered in preliminary valuation.
3. Detailed due diligence has not yet been carried out and the target management's forecasts therefore were not yet checked for plausibility by the buyer.

Under these assumptions, buy-side preliminary valuation is entirely based on target management's projections for the target's future financial performance and is thus referred to as the management case for valuation. Since the buyer cannot simply rely on this management case, all enterprise values calculated below are subject to a detailed due diligence review and thorough buy-side plausibility checks to assess whether management's forecasts realistically reflect the target's future financial performance and whether the enterprise values calculated here may be inflated. The values computed below are revised in Chapter 3 of this thesis, where the impact of commercial due diligence on the revision of preliminary business valuation is isolated and quantified.

In literature, three main approaches to business valuation are categorized, within which a multitude of subordinate approaches exist (see for example Blöcher, 2002, p. 36; Hood & Lee, 2011, p. 42; Mellen & Evans, 2018, pp. 101-103). The main categories include the income approach, the market approach, and the asset approach. In M&A practice, valuation is usually only carried out according to the income approach and the market approach (Pomp, 2015, p. 2). For this reason, only these two approaches are discussed in the following.

2.4.1 Basic principles of the income approach

The income approach to valuation is "a general way of determining a value indication of a business … using … methods that convert anticipated economic benefits into a present single amount" (National Association of Certified Valuators and Analysts, 2001, n.p.). In other words, the income approach describes the process in which a buyer's abstract anticipation of benefits associated with a transaction is first translated into expected cash flows or earnings, which are then aggregated into a single number expressing the buyer's maximum willingness to pay for the target (Kuhner & Maltry, 2017, p. 30). The income approach thus reflects the future oriented concept of business value described in Section 2.3. Within the income approach, it is possible to convert a single period of anticipated benefits into a present business value, or to anticipate financial returns of multiple periods and convert them into a present business value (Mellen &

Evans, 2018, pp. 121-128). The latter of the two is referred to as the discounted cash flow (DCF) approach. As DCF is the most frequently used valuation approach (see for example Kuhner & Maltry, 2017, pp. 78-79; Pomp, 2015, p. 258), it is the only form of the income approach discussed here.

According to the DCF approach, the value of a business equals the present value of future cash flows that the business makes available to its capital providers. The link between cash flow and value is based on the idea that value is only created where cash flow is increased, and wherever cash flow cannot be increased, value is only conserved or even destroyed (Goedhart, Koller & Wessels, 2010, p. 4). Accordingly, the value that a company creates can be measured by the cash flows it makes available to its capital providers in the future (Mellen & Evans, 2018, pp. 104-105). The cash-flow-based interpretation of business value requires future cash flows to be predictable. To predict cash flows, a twofold structure is usually applied in DCF models: the first part of anticipating cash flows comprises a discrete forecasting period, while the second part determines a terminal value (TV) which represents the value of all future cash flows following the discrete forecasting period (Mellen & Evans, 2018, pp. 124-128). For preliminary valuation, discrete cash flow forecasts are usually drawn from the target management's financial forecasts, included in the target management's business plan, and presented to potential buyers in the CIM (Rosenbaum & Pearl, 2009, p. 260).

Due to its multi-periodic approach, DCF is a complex valuation method. A major advantage of this complexity, however, is that this valuation method requires a structured assessment of the premises of future success, which creates the opportunity to critically challenge the plausibility of the assumptions behind valuation. According to Howson (2006, pp. 255-256), it is this systematic analysis of value drivers that makes DCF the best valuation method. There is general agreement in literature that DCF is the most accurate and flexible method of business valuation (see for example Brotherson et al., 2014; Goedhart, Koller & Wessels, 2005; Goedhart, Koller & Wessels, 2010, p. 313).

Within DCF there are again various ways of establishing value (see for example Goedhart, Koller & Wessels, 2010, p. 104). Due to the predominance in international valuation practice (see for example Haarbeck, 2019, p. 106), only the entity approach of DCF is discussed here. Under this approach, an enterprise value is first calculated as the present value of future cash flows accruing to all providers of capital. In a second step, net debt is deducted from enterprise value to determine equity value (see for example Pomp, 2015, pp. 266-268). As previously mentioned, only the first step, i.e., the calculation of enterprise value is discussed in this thesis.

Within DCF entity approaches, the predominant approach is to discount a target's free cash flow (FCF) projections at a weighted average cost of capital (WACC) rate to obtain a present enterprise value (see for example Goedhart, Koller & Wessels, 2010, pp. 103-104; Pomp, 2015, pp. 263-268). This approach is referred to as the WACC approach in the following. The WACC rate represents the average risk-adjusted return demanded by providers of equity and debt capital, taking into account equity and debt proportions in the company's financing structure. The free cash flow represents the after-tax cash surplus that can be paid to both debt and equity providers of the company. As future FCFs are the key determinant of business value under the WACC approach, their forecast can be considered the most important step in business valuation

(Kuhner & Maltry, 2017, p. 121). Consequently, the plausibility of FCF projections is the most important factor for ensuring that valuation is not distorted. As is discussed in detail in Chapter 3, commercial due diligence plays a key role in assuring plausibility of FCF projections.

In M&A practice, FCF forecasts are usually obtained indirectly, which means that they are derived from the company's projected income statements, changes in balance sheet items and investment activity (see for example Goedhart, Koller & Wessels, 2010, p. 190; Pomp, 2015, p. 230). Consequently, these financial forecasts must be developed, and business valuation according to DCF relies heavily on the target's projected income statements. As is discussed in detail in Section 2.6, these forecasts are an integral part of a target's business plan, whose plausibility is a central area of investigation for commercial due diligence.

Converted into a formula, the calculation of present enterprise value (V_0) under the WACC approach, year-end discounting, where T is the number of years in the discrete forecasting period and TV_T is the terminal value of all FCFs after the end of the discrete forecasting period, can be expressed as follows:

$$V_0 = \sum_{t=1}^{T} \frac{FCF_t}{(1+WACC)^t} + \frac{TV_T}{(1+WACC)^T} \quad . \tag{1}$$

The terminal value is calculated as follows, where PGR represents the perpetuity growth rate, i.e., the rate assumed to be the perpetual annual growth of FCFs after the end of the discrete forecasting period:

$$TV_T = \frac{FCF_T * (1+PGR)}{(WACC-PGR)} \quad . \tag{2}$$

2.4.2 Illustrative business valuation under the income approach

To illustrate business valuation under the WACC approach, the enterprise value of the fictitious M&A target *ValueCo* is determined below from the perspective of a potential acquirer. The sample used here is adapted from Rosenbaum & Pearl (2009, pp. 140-157). To shorten it and integrate it into the context of this thesis, several assumptions and calculations were modified. It was also significantly condensed. In the sample valuation, the three assumptions listed at the beginning of Section 2.4 are applied. Therefore, in a structured M&A process as described in Section 2.2, this sample valuation represents buy-side preliminary business valuation, which is based on sell-side information provided in the CIM.

As can be seen in Equation (1), the determination of ValueCo's enterprise value V_0 using the WACC approach requires FCF projections for the discrete forecasting period T. Moreover, WACC and TV_T must be calculated. The first step of valuation is thus the projection of ValueCo's FCFs for the discrete forecasting period T. In the above remarks it has been stated that in valuation practice, initial FCF projections, i.e., those used for preliminary valuation, are usually obtained from the target management's business plan, which therefore forms the basis for preliminary valuation. The potential acquirer gets access to these financial projections through the CIM. It was also mentioned that FCF projections are usually obtained indirectly by deriving them from the target's projected income statements. For this sample valuation it is

		($ in millions)	Actual	Forecast					Notes / *(Assumptions)*
		(Assumption: All business events occur on Dec, 31)	2019	2020	2021	2022	2023	2024	
Step I	ValueCo's projected income statement according to management planning	**Sales**	**$1,000.0**	**$1,080.0**	**$1,144.8**	**$1,190.6**	**$1,226.3**	**$1,263.1**	*(Management assumptions for future sales)*
		% growth	*8.1%*	*8.0%*	*6.0%*	*4.0%*	*3.0%*	*3.0%*	
		Cost of Goods Sold (COGS)	600.0	648.0	686.9	714.4	735.8	757.9	*(Management assumtions for future COGS)*
		% sales	*60.0%*	*60.0%*	*60.0%*	*60.0%*	*60.0%*	*60.0%*	
		Gross Profit	**$400.0**	**$432.0**	**$457.9**	**$476.2**	**$490.5**	**$505.2**	Gross Profit = Sales - COGS
		% margin	*40.0%*	*40.0%*	*40.0%*	*40.0%*	*40.0%*	*40.0%*	*(Assumed constant at 40% of sales)*
		Selling, General & Administrative (SG&A)	250.0	270.0	286.2	297.6	306.6	315.8	*(Assumed constant at 25% of sales)*
		% sales	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	
		EBITDA	**$150.0**	**$162.0**	**$171.7**	**$178.6**	**$183.9**	**$189.5**	EBITDA = Gross Profit - SG&A
		% margin	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*(Assumed constant at 15% of sales)*
		Depreciation & Amortization (D&A)	20.0	21.6	22.9	23.8	24.5	25.3	*(Assumed constant at 2% of Sales)*
		% sales	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	
		EBIT	**$130.0**	**$140.4**	**$148.8**	**$154.8**	**$159.4**	**$164.2**	EBIT = EBITDA - D&A
		% margin	*13.0%*	*13.0%*	*13.0%*	*13.0%*	*13.0%*	*13.0%*	*(Assumed constant at 13% of sales)*
	Projection of FCFs	Taxes		$53.4	$56.6	$58.8	$60.6	$62.4	*(Assumed constant at 38% of EBIT)*
		EBIAT		**$87.0**	**$92.3**	**$96.0**	**$98.8**	**$101.8**	EBIAT = EBIT - Taxes
		Less: Capital Expenditure (CAPEX)		*(21.6)*	*(22.9)*	*(23.8)*	*(24.5)*	*(25.3)*	*(Assumed constant at 2% of sales)*
		Less: Increase in Net Working Capial (NWC)		*(8.0)*	*(6.5)*	*(4.6)*	*(3.6)*	*(3.7)*	*(NWC assumed constant at 10% of sales)*
		Plus: Depreciation and Amortizaion (D&A)		*21.6*	*22.9*	*23.8*	*24.5*	*25.3*	see above
		Free Cash Flow (FCF)		**$79.0**	**$85.8**	**$91.4**	**$95.3**	**$98.1**	FCF = EBIAT - CAPEX - inc. NWC + D&A
Step II	Calculation of terminal value	*Free Cash Flow (2024)*						*$98.1*	see above
		WACC						*11.0%*	*(Assumed at 11%)*
		Perpetuity Growth Rate (PGR)						*3.0%*	*(Assumed at 3%)*
		Terminal Value (TV)						***$1,263.4***	TV = FCF*(1+ PGR)/(WACC - PGR)
Step III	Determination of present values	*Discount periods t*		*1*	*2*	*3*	*4*	*5*	*(Year-end discouting)*
		Present Value of FCF		***$71.2***	***$69.6***	***$66.8***	***$62.8***	***$58.2***	Present Value = FCF/(1+WACC)^t
		Present Value of Terminal Value						***$749.8***	Present Value = TV/(1+WACC)^t
Step IV	Determination of enterprise value	***Present Value of all discretely planned FCFs***	**$328.7**						Sum of all present values of discrete FCFs
		Present Value of TV	**$749.8**						See above
		Present Enterprise Value	**$1,078.4**						Present value of all future free cash flows

Figure 2: Preliminary valuation of the fictitious M&A target ValueCo under the WACC approach
(Source: own illustration based on Rosenbaum & Pearl, 2009, p. 155)

assumed that ValueCo management has provided an income statement forecast for the discrete forecasting period 2020 to 2024.

Step I in Figure 2 illustrates the projection of FCFs through their derivation from management's projected income statement. Management's key assumptions for the financial forecasts are listed on the right-hand side. Particularly important for the purpose of this thesis and therefore highlighted in black on the right-hand side of Figure 2 are management assumptions for future sales and cost of goods sold (COGS), i.e., the assumptions driving gross profit projections. ValueCo management expects sales growth to decrease gradually from an actual rate of 8.1% in 2019 to a rate of 3.0% in 2024. With regard to COGS, ValueCo management assumes a constant rate of 60% of sales. These assumptions are of particular relevance for this thesis because, as is discussed in detail in Chapter 3, the main purpose of commercial due diligence is to scrutinize management's sales and gross profit projections with regard to their plausibility to ensure that they are realistic, and valuation is not distorted.

Applying management's assumptions, gross profit is calculated by subtracting COGS from sales. Subsequently deducting selling, general, and administrative expenses (SG&A), which management projects at a constant rate of 25% of sales, from gross profit yields earnings before interest, taxes, depreciation, and amortization (EBITDA). Earnings before interest and taxes (EBIT) projections are calculated by deducting depreciation and amortization (D&A), which management projects at a constant rate of 2% of sales, from EBITDA. After deducting tax projections, which remain constant at 38% of EBIT, earnings before interest after taxes (EBIAT) projections are arrived at. Subtracting capital expenditures (CAPEX), which are assumed to be constant at 2% of sales, increase in net working capital (NWC), and adding D&A projections yields FCF projections. The increase in NWC is calculated under the assumption of a constant NWC at 10% of sales. The so calculated cash flow is the unlevered free cash flow. This is the amount of cash that the company has available from its business operations that can

flow to both debt and equity holders. The term unlevered implies that the effects of leverage (tax relief from interest payments on debt capital) are not incorporated in this figure. This tax shield is included in the WACC rate in this valuation approach to account for its value-enhancing effect.

After having derived FCF projections for the discrete forecasting period, weighted average cost of capital and the terminal value of all cash flows after 2024 remain to be determined, which is illustrated in Step II in Figure 2. With regard to WACC, it is assumed here for simplicity that ValueCo's capital structure, the estimated cost of debt and equity, and the tax shield yield a WACC rate of 11% per annum. The terminal value is calculated according to Equation (2), assuming ValueCo's projected 2024 FCF grows annually at a PGR of 3%. This yields a TV_T of $1,263.4 million. This value still needs to be discounted to determine its present value in 2019.

Since all discrete FCFs as well as TV_T and the WACC rate are now available for discounting, ValueCo's present enterprise value can be calculated according to Equation (1), whereby in this case T = 5. The calculation of ValueCo's enterprise value is depicted in Steps III and IV in Figure 2. Step III illustrates the calculation of the present value of each discretely planned FCF and the present value of TV_T. For example, the 2019-year-end value of ValueCo's 2024 projected FCF is obtained by discounting the projected FCF of $98.1 million for five years at the WACC rate of 11%, which yields $58.2 million. The 2019-year-end value of TV_T is established accordingly. As can be seen in Step IV, the sum of present values of ValueCo's discretely planned FCFs equals $328.7 million, while the present value of the terminal value equals $749.8 million. Based on ValueCo management's business plan, the business's enterprise value is thus $1,078.4 million as of December 31, 2019, which is the sum of the present value of all discretely planned FCFs and the present value of the terminal value. In the context of a typical transaction structure discussed in Section 2.2, ValueCo's preliminary enterprise value obtained here could now be used to derive a preliminary purchase price offer. In M&A practice, a valuation range rather than one single number is usually established, for example by varying WACC and perpetuity growth rates using scenario analysis. For reasons of simplicity, this is not done here.

As can be seen from the theoretical explanations and the sample valuation above, business value under the WACC approach depends largely on the target's projected sales and thus on the top line of its projected income statement. It is essential for the buyer to thoroughly investigate the plausibility of management's assumptions with regard to sales projections to ensure that these value driving assumptions are not distorted and reflect a development that can realistically be expected. This is where the core competence of commercial due diligence lies and its contribution to valuation becomes apparent, which is illustrated in Chapter 3 by challenging management's sales and gross profit projections and therefore the preliminary business value determined here.

2.4.3 Basic principles of the market approach

The market approach is another valuation approach that is widely used in M&A practice. The market approach is "a general way of determining a value indication of a business … by using one or more methods that compare the subject to similar businesses, business ownership

interests, securities, or intangible assets that have been sold" (National Association of Certified Valuators and Analysts, 2001, n.p.). Thus, valuation under the market approach is based on market prices for similar investments (Mellen & Evans, 2018, p. 103). These prices are incorporated into different types of multiples which are then used to establish a value for the business in question.

Within the market approach, a distinction is made between two main approaches: the transaction multiple method and the guideline public company method (Mellen & Evans, 2018, p. 102). The guideline public company method is also known as the trading multiple method. Under the guideline public company or trading multiple method, the target's value is established based on trading multiples that are derived from market prices for publicly traded shares of companies similar to the target and therefore known as part of the target's peer group (Pomp, 2015, pp. 275-276). Under the transaction multiple method, on the other hand, the target's value is established based on transaction multiples, which are derived from purchase prices for comparable companies in recent M&A transactions (Pomp, 2015, pp. 275-276).

Regardless of the approach chosen, valuation according to the market approach employs multiples and it is the source of data used for constructing those multiples that distinguishes both approaches. A multiple is a factor by which a performance measure (e.g., EBITDA) of the target is multiplied to obtain a measure of its value. Equation (3) illustrates this, whereby V_0 represents a measure of the target's value (e.g., enterprise value), PM_{Target} represents a measure for the target's financial performance (e.g., EBITDA), and $M_{PeerGroup}$ represents either a transaction or a trading multiple established from data on the target's peer group:

$$V_0 = PM_{Target} * M_{PeerGroup} \quad . \tag{3}$$

The multiple $M_{PeerGroup}$ can be calculated, for example, as the mean value of all individual multiples of the companies within the target's peer group (Kuhner & Maltry, 2017, p. 312). These individual multiples are determined by relating a market-based measure of an individual peer group member's value to a performance measure of this individual peer group member. Equation (4) exemplifies this for the company i, which, for the purpose of this discussion, is assumed to be a part of the target's peer group. The individual multiple for company i (M_i) is calculated by dividing a measure for the company i's value (V_i) by a measure for company i's financial performance (PM_i):

$$M_i = \frac{V_i}{PM_i} \quad . \tag{4}$$

The numerator V_i can be a measure of the peer group member's enterprise value or equity value (Rosenbaum & Pearl, 2009, p. 44). If the numerator contains a measure of enterprise value, the denominator must contain a performance measure that flows to both equity and debt providers (e.g., EBITDA), while the performance measure for equity value multiples can only flow to equity providers (Rosenbaum & Pearl, 2009, p. 44). The selection of value metric and performance measure leads either to the calculation of the target's enterprise value (entity approach) or to the calculation of the target's equity value (equity approach). This thesis discusses entity multiples only, since these are the most widely used in M&A practice (Pomp, 2015, p. 276). Within entity multiples, EV/EBITDA is the most frequently used (Rosenbaum & Pearl, 2009,

p. 44), with EV representing enterprise value in the numerator and EBITDA representing the performance measure in the denominator.

Both transaction multiples and trading multiples can be utilized as equity or entity multiples (Rosenbaum & Pearl, 2009, p. 89). However, a difference between trading multiples and transaction multiples relevant to this thesis is that transaction multiples are inherently backward-looking (Pomp, 2015, p. 276). That is because the value measure in the numerator represents a peer group member's historical transaction value and the performance measure in the denominator usually employs historical financial statistics available at the time of the transaction (Rosenbaum & Pearl, 2009, p. 89). Such backward-looking transaction multiples are then usually multiplied by historical performance measures of the target to determine its value (Rosenbaum & Pearl, 2009, p. 93). Due to their backward-looking nature, transaction multiples are subject to criticism (Kuhner & Maltry, 2017, p. 316).

With trading multiples, the situation is different as they employ current and projected financial data: for the target's public peer group members, analysts' estimates on future financials (e.g., EBITDA) usually exist. Thus, forward-looking multiples can be established for the target's public peer group members (see for example Pomp, 2015, pp. 275-276; Rosenbaum & Pearl, 2009, p. 23). Forward-looking multiples are multiples that, in contrast to transaction multiples, do not employ a historical performance measure in the denominator, but a forecast instead (Goedhart, Koller & Wessels, 2010, p. 321). They are usually established for the first and second year of the projection period (Rosenbaum & Pearl, 2009, p. 49).

In literature, the use of forward-looking multiples is recommended when valuing companies using the market approach as they lead to a more accurate valuation by employing future-oriented and thus more relevant information about the target's value (see for example Goedhart, Koller & Wessels, 2005; Pomp, 2015, p. 277). This is in accordance with the forward-looking concept of value discussed in Section 2.3, which is also at the heart of DCF. Thus, forward-looking multiples are based on the same fundamental value principle as DCF since they imply that business value reflects the present value of the business's future earnings (Goedhart, Koller & Wessels, 2010, p. 321). As this value principle is not reflected in transaction multiples, this thesis only discusses a sample valuation that employs forward trading multiples. Moreover, commercial due diligence is concerned with verifying the plausibility of target management's financial forecasts. Thus, CDD has no impact on valuation approaches that exclusively employ historical financial data as the basis for valuation.

In comparison to DCF, multiples are considered heuristic and thus subordinate because they simplify valuation significantly (Kuhner & Maltry, 2017, pp. 78-79, p. 315). However, they are also considered useful in verifying plausibility of DCF results, and they are therefore widely used in M&A practice (Goedhart, Koller & Wessels, 2010, p. 313; see also Pomp, 2015, p. 274). The sample valuation below illustrates how valuation according to the guideline public company method, i.e., with forward trading multiples, is established.

2.4.4 Illustrative business valuation under the market approach

The following market approach sample valuation employs a forward-looking EV/EBITDA trading multiple and therefore yields an enterprise value of the fictitious M&A target valued

here, which again is the sample company ValueCo. This sample valuation is again adapted from Rosenbaum & Pearl (2009, pp. 53-69), was shortened significantly and several assumptions were modified. As with the sample valuation under the WACC approach, the three assumptions listed at the beginning of Section 2.4 apply. Therefore, this sample valuation again represents buy-side preliminary business valuation prior to the submission of a non-binding purchase price offer, which is based on sell-side information provided in the CIM (see Step II in Figure 1).

The first step of valuation according to the market approach is to identify comparable companies, i.e., ValueCo's peer group. Once a peer group has been identified, the necessary financial information on the companies included in that peer group must be collected in order to calculate their individual trading multiples and ultimately the peer group multiple, which can then be used to establish ValueCo's enterprise value. This financial data on ValueCo's peer group members includes share price information, publicly available balance sheet information and analysts' estimates on future performance measures (e.g., EBITDA projections). Once this data has been collected, trading multiples can be calculated for each peer group member.

Figure 3 illustrates how trading multiples for the fictitious peer group member PeerA are calculated based on the aforementioned financial information. The source of the relevant data is noted on the right-hand side. According to analysts' estimates, PeerA's 2020 EBITDA will be at $225.0 million and its 2021 EBITDA will be at $240.0 million. From PeerA's market capitalization it follows that its current equity value is $1,000 million. From published balance sheet information it follows that the current value of total debt less cash and cash equivalents is $500 million. The sum of equity value and net debt yields PeerA's current enterprise value of $1,500 million. Dividing this by analysts' EBITDA projections for 2020 and 2021, respectively, yields forward-looking EV/EBITDA trading multiples for 2020 and 2021. PeerA's 2020 trading multiple, for example, is established by dividing PeerA's enterprise value of $1,500 million by its 2020 projected EBITDA of $225 million, which yields a multiple of 6.67. This means that PeerA's current enterprise value equals 6.67 times its 2020 projected EBITDA. The heuristic rationale of the market approach now suggests that, because PeerA is similar to ValueCo, ValueCo's current enterprise value should also be approximately 6.67 times its 2020 expected EBITDA.

After having carried out the steps outlined above for all of ValueCo's peers, and thus having determined their individual trading multiples, a peer group multiple can be established. In practice this step is usually preceded by a benchmarking analysis, which identifies the target's most similar peers and thereby selects only a few peer multiples for the target's valuation. Due to space constraints, this step is not carried out here. Instead, it is assumed that PeerA's trading multiples determined in Figure 3 represent the mean of all individual trading multiples of ValueCo's closest peers and that this mean value can be used to establish valuation. Thus,

($ in millions)		Actual	Forecast					Notes
		2019	2020	2021	2022	2023	2024	
Computation of trading multiples for PeerA	EBITDA	$215.0	$225.0	$240.0				Forecasts drawn from analysts' estimates
	Equity Value	$1,000.0						Drawn from current market capitalization
	Total Debt less Cash and Cash Equivalents	$500.0						Drawn from published balance sheet data
	Enterprise Value (EV)	**$1,500.0**						EV = Equity Value + Net Debt
	EV/EBITDA Trading Multiples (M)	**6.98**	**6.67**	**6.25**				M = EV / EBITDA

Figure 3: Illustrative determination of trading multiples for a member of the target's peer group
(Source: own illustration based on Rosenbaum & Pearl, 2009, p. 64)

($ in millions)		Actual	Forecast					Notes / *(Assumptions)*
(Assumption: All business events occur on Dec, 31)		2019	2020	2021	2022	2023	2024	
ValueCo's projected income statement according to management planning	**Sales**	**$1,000.0**	**$1,080.0**	**$1,144.8**	$1,190.6	$1,226.3	$1,263.1	*(Management Assumptions for future sales)*
	% growth	*8.1%*	*8.0%*	*6.0%*	*4.0%*	*3.0%*	*3.0%*	
	Cost of Goods Sold (COGS)	600.0	648.0	686.9	714.4	735.8	757.9	*(Management assumtions for future COGS)*
	% sales	*60.0%*	*60.0%*	*60.0%*	*60.0%*	*60.0%*	*60.0%*	
	Gross Profit	**$400.0**	**$432.0**	**$457.9**	$476.2	$490.5	$505.2	Gross Profit = Sales - COGS
	% margin	*40.0%*	*40.0%*	*40.0%*	*40.0%*	*40.0%*	*40.0%*	*(Assumed constant at 40% of Sales)*
	Selling, General & Administrative (SG&A)	250.0	270.0	286.2	297.6	306.6	315.8	*(Assumed constant at 25% of Sales)*
	% sales	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	
	EBITDA	**$150.0**	**$162.0**	**$171.7**	$178.6	$183.9	$189.5	EBITDA = Gross Profit - SG&A
	% margin	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*(Assumed constant at 15% of Sales)*
Determination of Enterprise Value	*ValueCo's projected EBITDA*		$162.0	$171.7				See above
	Relevant Trading Multiple (M)		6.67	6.25				As computed for PeerA
	Implied Enterprise Value (EV)		**$1,080.0**	**$1,073.3**				EV = EBITDA * M

Figure 4: Preliminary valuation of the fictitious M&A target ValueCo under the market approach (guideline public company, trading multiples)
(Source: own illustration based on Rosenbaum & Pearl, 2009, p. 7, p. 69)

valuation in this example is based on the EV/EBITDA multiples calculated in Figure 3 by multiplying them with ValueCo's respective EBITDA forecast for 2020 and 2021. The latter requires the availability of ValueCo's EBITDA forecasts. As with DCF, these financial forecasts are obtained from ValueCo management's projected income statement, which is included in ValueCo management's business plan and provided to the potential acquirer through the CIM. Thus, valuations according to the WACC approach and the market approach in this thesis are based on the identical management case for ValueCo's future financial performance.

Figure 4 demonstrates how ValueCo's enterprise value is established using management projections of its income statement and the trading multiples determined in Figure 3. ValueCo's projected income statement in Figure 4 is identical to that depicted in Figure 2 and used in the WACC approach. Note, however, that the line items following EBITDA are excluded, as they are not relevant to the trading multiple approach used here. Moreover, projections beyond 2021 are grayed out, as forecasts further than two years into the future are typically not used in forward trading multiples. Due to the particular relevance of sales and gross profit projections for this thesis, their underlying assumptions are again highlighted in black on the right-hand side of Figure 4.

Multiplying ValueCo's respective EBITDA projections for 2020 and 2021 by the respective trading multiples determined in Figure 3 yields an enterprise value of $1,080.0 million and $1,073.3 million, respectively. ValueCo's calculated enterprise value of $1,080.0 million, for example, can then be interpreted as follows: because PeerA's current enterprise value of $1,500.0 million is 6.67 times its 2020 EBITDA forecast of $225.0 million, ValueCo's current enterprise value is also 6.67 times its 2020 EBITDA forecast of $162.0 million, or $1,080.0 million. As with DCF, a valuation range instead of a single value is usually determined under the market approach. For instance, ValueCo's anticipated 2020 EBITDA would be multiplied by a range of multiples from the peer group instead of simply using a single mean value or a single peer's multiple. For reasons of simplicity, this is not done here. However, in this example a valuation range between $1,080.0 million and $1,073.3 million already follows from the fact that two different multiples and EBITDA projections were used.

The results for ValueCo's enterprise value under the market approach are in line with the enterprise value obtained using the WACC approach in Figure 2, which was at $1,078.4 million.

As with the DCF sample valuation, ValueCo's enterprise value obtained here represents preliminary valuation which could now be used to derive a preliminary purchase price offer.

At this point, the value assessments are based exclusively on sell-side information. It is now the task of detailed due diligence to verify the plausibility of management forecasts. Commercial due diligence plays a central role in this respect as it aims to validate the plausibility of management's gross profit projections. In Chapter 3, the preliminary business values obtained in this section are revised after commercial due diligence's plausibility checks on ValueCo management's financial forecasts have been carried out.

2.5 Selected aspects of valuation in leveraged buyouts

In addition to the traditional valuation methods discussed above, this section briefly introduces a more complex and specialized method primarily used in the context of private equity transactions. For reasons discussed in Section 3.3, commercial due diligence is of particular relevance to private equity investors. Consequently, the valuation approach mainly used by this group of buyers needs to be introduced when discussing the impact of commercial due diligence on business valuation.

Private equity firms are financial sponsors – a term that describes a group of investors who typically acquire companies in the form of leveraged buyouts (LBO) (Rosenbaum & Pearl, 2009, pp. 161-164). In this form of corporate transactions, valuation is carried out by means of leveraged buyout analysis (LBO analysis). LBO analysis is a more sophisticated valuation technique than the ones discussed above. Due to space constraints, it is only briefly outlined here, and no sample valuation is carried out. Since the purpose of this thesis is to measure the influence of CDD on business valuation, and since CDD has its highest relevance in private equity transactions, it is counterintuitive and may give rise to criticism not to discuss this valuation technique in detail. However, as shown below, LBO analysis shares important value-driving inputs with business valuation under the income and market approach. In an attempt to find a compromise between allowing a detailed examination of the impact of CDD on business valuation and not exceeding the capacity of this thesis by discussing LBO analysis in detail, it seems appropriate to briefly discuss parallels to the valuation techniques described above. This allows a quantification and a profound conceptual understanding of CDD's impact on business valuation according to traditional valuation methods and at the same time a conceptual understanding of its impact on valuation in the transaction structure where it is most frequently used in practice.

LBOs are acquisitions of a target by a financial sponsor in which a major portion (approximately 60-70%) of the purchase price is levered through debt and only the remainder is financed through the sponsor's equity (Rosenbaum & Pearl, 2009, p. 161). The sponsor's objective is to generate a high return on equity (approximately 20% per annum) within approximately five years upon exit, e.g., through sale or initial public offering of the target (Rosenbaum & Pearl, 2009, p. 161). This objective requires a thorough due diligence by the sponsor, their advising investment banks, and financing institutions in order to assess the target's ability to meet these high return requirements and at the same time cope with high leverage. In addition, it is part of the concept of LBOs that cash flows generated by the target until exit are used to cover interest

payments and to repay debt (Rosenbaum & Pearl, 2009, p. 162). Therefore, the ability of the target to reliably generate high cash flows through future commercial success is a key attribute of attractive LBO targets (Rosenbaum & Pearl, 2009, p. 169).

To determine the value of a target to a financial sponsor within LBOs, LBO analysis is carried out. The centerpiece of LBO analysis is a financial model (LBO model), which is an integrated financial model comprising a projected income statement, balance sheet and cash flow statement and which is used to model a target's value to the sponsor under different financing structures and operating scenarios (Rosenbaum & Pearl, 2009, pp. 195-237). Thus, a key input to valuation in LBO analysis is a projected income statement, as is the case with the valuation methods discussed in Section 2.4. Initially during LBO analysis, as with the above methods, target management's financial forecasts are used to build a management case for valuation (Rosenbaum & Pearl, 2009, p. 199). It is only after a detailed due diligence and the resulting adjustment of management assumptions that additional cases (operating scenarios) are developed, in which the ability of the target to repay debt under different financing structures is analyzed and valuation is finalized (Rosenbaum & Pearl, 2009, pp. 199-201). Consequently, as with the previously discussed valuation approaches, the central value driver within LBO analysis is the target's future financial performance. Hence, it is of great importance in the context of LBO analysis to verify plausibility of management's projected income statement during detailed due diligence to ensure that valuation is based on forecasts that can realistically be expected. As previously mentioned and discussed in detail in Chapter 3, the latter is the central purpose of commercial due diligence.

2.6 The business plan and its role in valuation

Throughout the previous remarks it was discussed that LBO analysis, forward multiples, and DCF have a central commonality: valuation centers around the target's expected financials, such as cash flow or EBITDA projections. As discussed, the seller provides these financial projections to the buyer through the CIM. The financial forecasts contained in the CIM are taken from the target management's business plan, which thus forms the basis for preliminary valuation and is a key document in the valuation process. This section briefly outlines what a business plan generally is and explains that plausibility checks of the target management's business plan are a key aspect of due diligence. Commercial due diligence influences business valuation through its plausibility checks on the business plan.

A business plan is an inherently future-oriented "document that describes all the important aspects of a business" (Abor, 2017, p. 52). In addition to qualitative information relevant for planning, such as the business's goals and vision or an analysis of the market and competitors, a business plan also contains a financial component (Abor, 2017, pp. 56-62). The financial component of a business plan contains projected financial statements for a discrete planning period (approximately three to five years), consisting of a projected income statement, a projected cash flow statement and a projected balance sheet (Abor, 2017, p. 62; see also Pomp, 2015, p. 125).

Two main quality requirements can be formulated for a business plan and especially its financial component: the business plan must be consistent, and the business plan must be plausible

(Kuhner & Maltry, 2017, p. 128). The financial component of a business plan is consistent if all its components (income statement, cash flow statement and balance sheet) are coherently interlinked (Kuhner & Maltry, 2017, p. 128). For example, the income statement must be coherently linked to cash flow projections. The importance of the latter can be understood in the DCF sample valuation in Section 2.4.2, where cash flows were derived from the target's projected income statement. If income statement and cash flow statement were not coherently interlinked, valuation would be distorted as DCF would not take into account all relevant valuation inputs. The same holds true for the link between balance sheet and cash flow statement, as changes in balance sheet items influence cash flows and vice versa. The same applies to the connection between balance sheet and income statement.

Plausibility of a business plan is achieved when the assumptions underlying financial forecasts can be considered realistic because they reflect the most likely future development (Kuhner & Maltry, 2017, p. 128). For example, a business plan is plausible if sales projections in the projected income statement are based on realistic assumptions about market growth and market shares, or if assumed above-industry-average returns can be justified by the existence of competitive advantages (Kuhner & Maltry, 2017, pp. 128-129). The latter are typical questions raised in CDD investigations.

A business plan provides the basis for systematic analyses of assumptions driving financial forecasts. Consequently, a business plan is a key prerequisite for discovering errors in financial projections caused by unrealistic assumptions (Kuhner & Maltry, 2017, p. 125). In M&A practice, if the business strategy of the target is not fundamentally changed, it is reasonable for the potential buyer to use target management's business plan and conduct an independent analysis on it, rather than developing an entirely new business plan to support valuation (Berens, Hoffjan & Strauch, 2019, p. 80). Thus, as is the case in the sample valuations above, the basis for preliminary buy-side business valuation is usually the financial component of the target management's business plan (see for example Mellen & Evans, 2018, p. 125; Pomp, 2015, p. 258; Rosenbaum & Pearl, 2009, p. 258). Consequently, the identification of unrealistic management assumptions during detailed due diligence and prior to final valuation is crucial to ascertain that the financial projections are realistic, and that the resulting enterprise value is not distorted. Human nature makes such a safeguarding needed: in the sales process, target management is intrinsically motivated to cast a positive light on the business to achieve the highest possible price (Berens, Knauer & Strauch, 2019, p. 7; see also Howson, 2003, p. 46). Particularly, target management's business plans often include sales forecasts that imply higher future growth rates than have been achieved in the past. Such projections are referred to as hockey stick projections (Niederdrenk & Müller, 2012, pp. 156-157). If unplausible, such forecasts can inflate valuation significantly and lead to overpayment. Investigations into the plausibility of target management's business plan are therefore at the heart of due diligence (Russ, 2006, pp. 180-184). As is explained in the following sections, the interplay of two sub-areas of due diligence, namely financial due diligence and commercial due diligence, plays a central role in assessing the plausibility of the target management's business plan.

2.7 Introduction to different sub-areas of due diligence

The thorough investigation into an M&A target that constitutes due diligence covers a multitude of sub-areas. These are, for example, commercial, financial, operational, human resources, organizational, environmental, tax, legal, and cultural due diligence (see for example Beck, 2002; Blöcher, 2002, p. 35). In essence, since M&A are about generating value, there can and arguably should be a due diligence investigation for every area of the target that affects its value to the potential buyer. Consequently, almost all areas of due diligence impact valuation (Schacht, 2009, p. 35). However, as depicted in Figure 5, financial due diligence and commercial due diligence are of particular relevance for determining the value of an M&A target (Schacht, 2009, p. 35). Thus, only these two sub-areas of due diligence are introduced here. The remarks on financial and commercial due diligence provided in this section are brief and will be elaborated in more detail in the following sections.

Financial due diligence involves a critical analysis of the target's financial situation as projected by management. This means that FDD critically analyzes the financial component of the target's business plan, thereby providing the basis for an undistorted final business valuation. Commercial due diligence examines and verifies the target's commercial prospects as presented in the business plan, which are primarily reflected in sales and gross profit projections and thus form part of the target's planned financial situation. Hence, CDD and FDD are both concerned with the investigation into the target's future financial performance and thus the drivers of the target's value. FDD and CDD thereby collaborate in substantiating business valuation by analyzing, validating and – if necessary – adjusting the financial component of target management's business plan provided in the CIM and used to establish preliminary valuation. FDD and CDD challenge that preliminary valuation by challenging management's financial

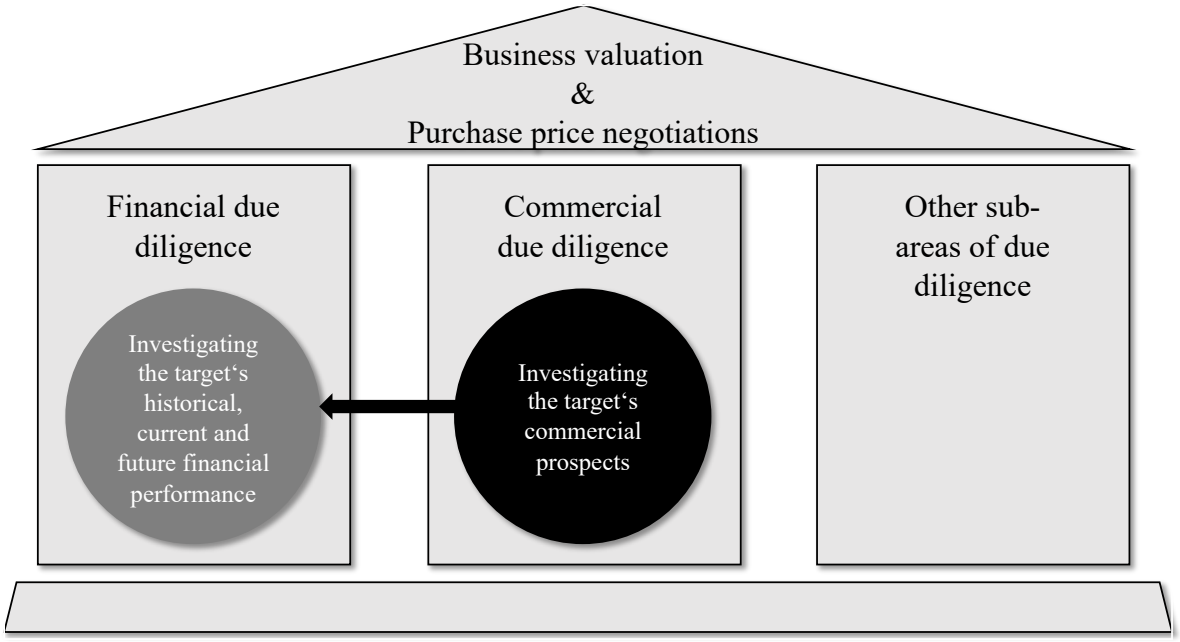

Figure 5: Illustration of the relevance of financial and commercial due diligence for business valuation and purchase price determination
(Source: own illustration based on Brokemper & Herrmann, 2010, p. 22)

projections and thus form the basis for the buyer's more independent final valuation, based on which the final purchase price offer is submitted, as discussed in Section 2.2.

2.8 The connection between financial due diligence, commercial due diligence, and the business plan

As briefly described above, a key task of FDD is to conduct a detailed analysis of a target's planned financial situation, i.e., the financial section of the target's business plan. In more detail, FDD comprises three key activities: it is concerned with analyzing the target's historical and planned income situation (income statement), its historical and planned asset and liability situation (balance sheet) and its historical and planned liquidity situation (cash flow statement) (Pomp, 2015, p. 1). FDD's central objective is to provide a detailed representation of the target's financial performance in the past, present and future, and thus to present information on the target's true historical, current, and future financial state (Savovic & Pokrajcic, 2013, p. 427), including the quantification of opportunities and risks (Bayerke, 2004). An analysis of the target's future financial performance is thus not the sole objective of FDD. However, due to its relevance for business valuation and its interconnection with commercial due diligence, only this part of FDD is discussed here.

When analyzing the target's future financial performance, i.e., the financial component of the target's business plan, FDD aims at verifying that management's financial forecasts, such as EBITDA and FCF projections, can realistically be achieved (Pomp, 2015, pp. 25-28). This is important because any distortions in the preliminary business valuation and price determination need to be uncovered and corrected during detailed due diligence, so that, for example, overpayment as a result of the reliance on overly optimistic management assumptions can be avoided. Consequently, FDD findings usually have a direct impact on business valuation and subsequent purchase price determination (Haarbeck, 2019, p. 102), since FDD analyses on the achievability of cash flows as projected by target management are a central input to business valuation under the DCF approach (Pomp, 2015, p. 2, pp. 267-268). With the associated analyses of EBITDA projections, FDD also provides key inputs for business valuation using forward multiples (Pomp, 2015, p. 2, p. 123, p. 277). Since valuation in LBO analysis is also based on financial forecasts, FDD also provides key inputs for this valuation approach.

When reviewing the financial component of the target's business plan, FDD maps the inherent uncertainty of projections in the form of scenarios: based on the target management's business plan, FDD findings are used by potential buyers to develop their own business cases (operating scenarios), such as an optimistic upside case, a pessimistic downside case and a most likely base case (Pomp, 2015, p. 124). In these scenarios, key assumptions regarding the drivers of future financial performance are modified according to the findings of the plausibility checks on target management's business plan. These scenarios are then used to determine a final valuation range for the target that represents the revision of preliminary valuation and serves as guidance for the final purchase price determination.

The review of target management's business plan during FDD essentially serves the purpose of ensuring that it meets the quality requirements of business plans discussed in Section 2.6, i.e.,

consistency and plausibility. For example, FDD examines whether the projected cash flow statements are correctly linked to the projected balance sheets and income statements (Pomp, 2015, p. 252). More relevant to this thesis than the mechanics of the target's business plan, however, is its plausibility. In particular, the plausibility of the underlying assumptions about the target's future financial performance as reflected in the projected income statement. FDD examines the plausibility of key assumptions about the drivers of the target's future earnings and thus valuation, taking into account both historical and expected developments of these drivers (Pomp, 2015, pp. 124-125). As an example, ValueCo's projected income statement according to management planning as shown in Figure 2 and Figure 4 can be considered, where management assumptions for the various line items are noted on the righthand side: a possible plausibility check of FDD would be whether management's assumption of constant SG&A at 25% of sales for the projection period is plausible in view of historical and expected developments. With respect to verifying the plausibility of such cost projections, FDD receives inputs from operational due diligence, which analyzes the target's operational performance (Pomp, 2015, p. 35).

Additional inputs regarding certain cost positions also come from commercial due diligence (Howson, 2006, p. 22). Verifying the plausibility of cost projections, however, is not the main contribution of CDD to business plan validation. Most relevant to this thesis are plausibility checks on sales forecasts, i.e., the top line of the projected income statement, because these are CDD's primary contributions to FDD's analyses of the target's business plan (Howson, 2006, p. 22; see also Pomp, 2015, p. 26). Since in the projection of EBITDA and FCF "[a]lmost every line item will rely directly or indirectly on revenues" (Goedhart, Koller & Wessels, 2010, p. 190), the plausibility of sales projections as part of the projected income statement is a key

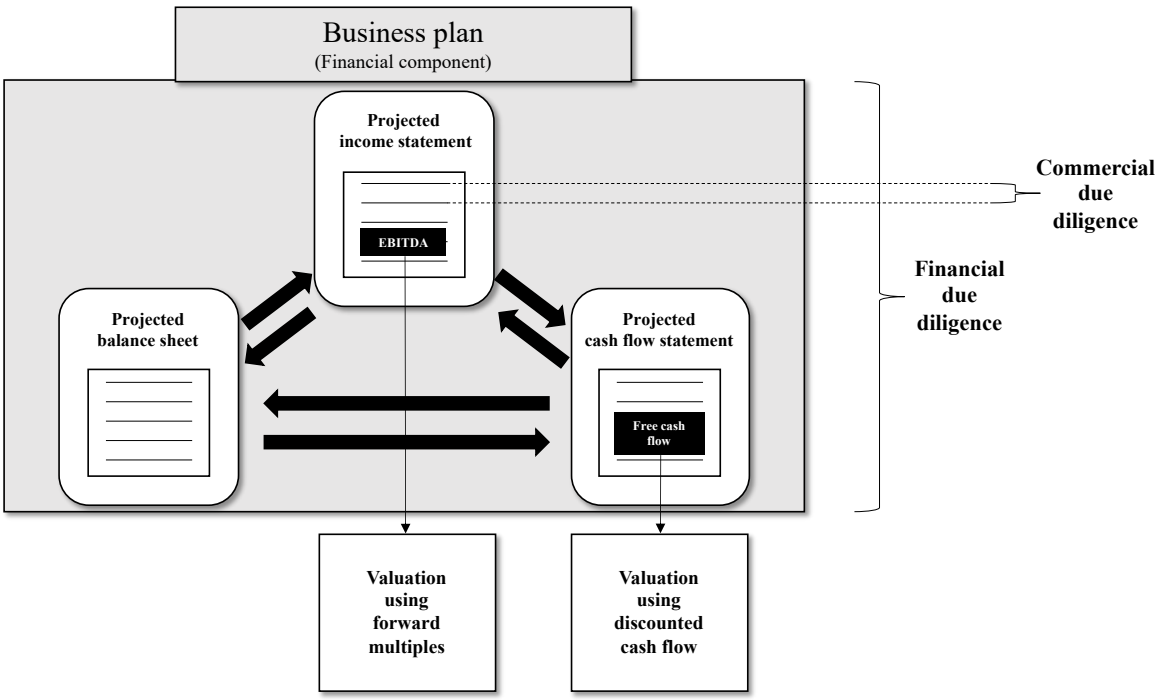

Figure 6: Illustration of the relationship between financial due diligence, commercial due diligence and the business plan in the context of business valuation using forward multiples and discounted cash flow
(Source: own illustration)

element in ensuring that the business plan is plausible, and valuation is not distorted. Consequently, plausibility checks regarding target management's sales projections are CDD's central contribution to substantiating business valuation. Figure 6 illustrates this relationship between FDD and CDD in validating the target's business plan. While FDD analyzes the financial component of the business plan holistically and usually focuses on the mechanics (Niederdrenk & Müller, 2012, p. 17), CDD delivers specialized inputs for FDD with regard to the plausibility of the income statement's top line, thereby impacting FCF and EBITDA forecasts and consequently the valuation according to the approaches discussed above.

With its plausibility checks, CDD can significantly improve the soundness of FDD's business plan validation and thus the value figure that ideally represents the present value of the target's future financial returns. That is because CDD is the only area of due diligence that comprehensively examines the future development of the target and its environment (Niederdrenk & Müller, 2012, p. 14). Accordingly, only the connection of FDD and CDD provides a sound assessment of the plausibility of the target's business plan (Niederdrenk & Müller, 2012, p. 20).

3 Commercial due diligence in business valuation

In the previous chapter, the fundamental links between business valuation and due diligence in M&A processes were described. It was also discussed how the combination of FDD and CDD helps to base business valuation on sound financial forecasts. Building on this discussion, this chapter now focuses on CDD and its implications for valuation. To this end, the so far brief definition of CDD must first be expanded.

3.1 Definition and purpose of commercial due diligence

In literature, there is consensus about the definition of the term commercial due diligence. However, some sources use the term market due diligence interchangeably to it (see, for example, Schacht, 2009, pp. 41-42). The term strategic due diligence was also found during research for this thesis (see for example Adolph, Gillies & Krings, 2006). Despite sharing many conceptual aspects with CDD, these terms do not refer to its entire scope (Niederdrenk & Müller, 2012, p. 15, pp. 18-19). Hence, an interchangeable use of these terms is incorrect when considering the details (Waschbusch & Schuster, 2018).

A comprehensive definition of CDD is provided by Niederdrenk & Müller (2012, p. 17, p. 154): CDD is the thorough examination of a target company from a market, customer and competitor perspective prior to a corporate transaction, in close connection with financial due diligence and with the objective of validating the target's business plan, thereby focusing on target management's sales projections and seeking an answer to the question as to whether these sales projections are plausible in light of the target's strategic market positioning. In addition, a fully comprehensive CDD analyzes and quantifies growth potentials that are not included in the target management's business plan, as such upside potentials increase the upper boundary of the target company's valuation range for the buyer and thus offer the opportunity to increase the proposed purchase price, for example in competitive auctions (Niederdrenk & Müller, 2012, p.

161). When validating the target's business plan, CDD also analyzes the target management's capabilities with respect to developing such a plan (Niederdrenk & Müller, 2012, p. 154).

With its focus on verifying the target's sales projections, CDD provides top-line inputs to FDD's plausibility checks on the business plan, as discussed in Section 2.8. However, "as a company is being bought for future profits not future sales, the border between CDD and FDD should not be fixed at sales. Gross margin should be as much the concern of CDD as it is of FDD because raw material suppliers are outside the company and can sometimes have a very big influence on sales, growth and profitability" (Howson, 2006, p. 22).

Howson (2006) provides a definition of CDD that is in line with that of Niederdrenk & Müller (2012): "CDD provides the most important insights on the future of the target and the merged entity. Broadly defined, it is a set of activities involved in evaluating a target company's market, customer relationships, competitive position and strategic direction. The knowledge gained from this evaluation becomes the critical input into determining the target's value to the acquirer" (Howson, 2006, p. 31). In this regard, "CDD is concerned with what is going on outside the target company and it is concerned with the future. It is therefore complementary to FDD, which tends to draw on historical information from inside the target" (Howson, 2006, p. 32). CDD "is about telling the difference between superior businesses and poor businesses … . CDD is about really understanding how businesses and markets work; it is about understanding what is really important for profits and growth" (Howson, 2006, p. XV). As with Niederdrenk & Müller's (2012) definition of CDD, this also includes an assessment of target management's capabilities (Howson, 2006, pp. 18-21).

The purpose of developing such a thorough understanding of the target's commercial prospects is to allow a quantitative assessment and adjustment of the target management's business plan and thus to derive outputs that can be implemented into the acquirer's financial models (Niederdrenk & Müller, 2012, p. 15). This means that CDD findings about the plausibility of

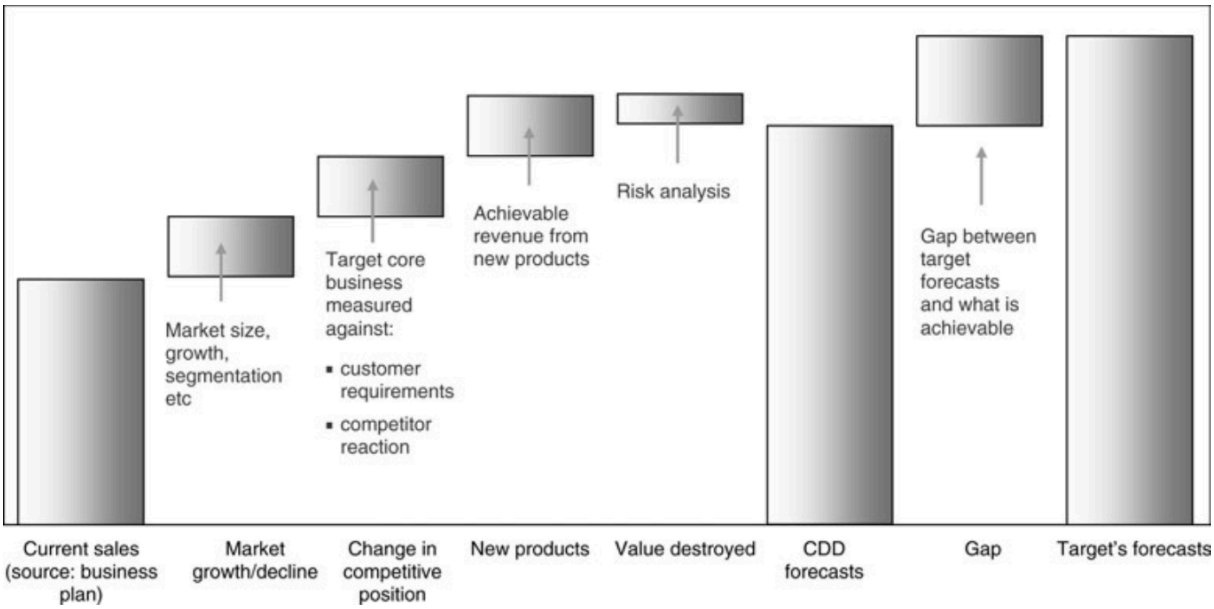

Figure 7: Illustration of commercial due diligence assessments regarding the achievability of target management's business plan
(Source: Howson, 2006, p. 259)

target management's sales and gross profit projections can be fed into the valuation models, thereby providing inputs for the revision of preliminary business valuation. In this regard, CDD findings can be illustrated as gaps between target management's forecasts and what seems realistically achievable. The latter is depicted in Figure 7: based on the target's business plan and investigations into the target's market, its customers, and competitors, CDD builds sales forecasts that can be compared to management forecasts. Since EBITDA and FCF projections used for business valuation are derived from sales, a potential gap between target management's sales projections and CDD forecasts shown on the right-hand side of Figure 7 translates into a gap between target management's FCF or EBITDA projections and what seems achievable according to CDD findings. This gap ultimately translates into a gap between preliminary valuation and revised valuation. Thus, the gap between target management's forecasts and CDD findings illustrates where CDD's impact on business valuation becomes apparent. The latter is discussed and exemplified in detail in Section 3.5.

In short, CDD is about analyzing whether the commercial prospects of the target are as management describes them in the business plan. At its heart lies the question: "Is the deal commercially attractive?" (Adolph, Gillies & Krings, 2006, p. 2). It answers this question by thoroughly analyzing the target company, including its business model, its customers, and competitors, thereby complementing FDD's analyses of the business plan by validating target management's sales and gross profit projections. The quantitative findings, i.e., the adjustments of target management's sales and gross profit projections feed into business valuation.

3.2 A forward-looking and outside-the-company approach to business plan validation

Commercial due diligence is the only sub-area of due diligence that thoroughly analyzes the future development of a target company's environment and the impact of this development on the target's business model (Niederdrenk & Müller, 2012, p. 14). Thus, CDD is the only part of due diligence that takes into account future outside-the-company developments when assessing whether the target's future financial performance is in line with management's projections.

The relevance of an outside-the-company perspective in reviewing the target's business plan is emphasized by Howson (2006, p. 33), who states that the major risks in corporate transactions are market-related. This means that the greatest risks of value misperception and, consequently, overpayment and value destruction can only be mitigated if target-external factors are taken into account during due diligence. While FDD does conduct market-related plausibility checks on the business plan, the information used is generally obtained from target management and thus internal (Howson, 2006, p. 25). In contrast to CDD, which uses primary information obtained in the market to validate target management's projections (Beck, 2002), FDD does not conduct research in the market to model the risk of misjudging value. Consequently, potential gaps between management's projections and what is achievable, which require information from outside the company to be revealed, may go unnoticed if FDD is not supplemented by CDD. If such gaps remain undiscovered, preliminary valuation cannot be correctly adjusted, and overvaluation and overpayment risk cannot be adequately addressed.

FDD analyses not only draw from target-internal rather than target-external information, but they also tend to be backward-looking (Howson, 2006, p. 28). FDD tends to validate the business plan with a focus on the consistency of projections with historical developments, projecting historical growth rates into the future rather than assessing the actual achievability of these projections, thus missing the very idea of a plausibility check (Niederdrenk & Müller, 2012, p. 20). In other words, FDD's accounting perspective "does not tell half the story" (Howson, 2006, p. 29) because, when assuming that the target's future financial performance including the external drivers of that performance will be similar to the past, one assumes a constant business environment. However, "the future success of the company being acquired is largely dependent on a future environment that is different than that in the past" (Harvey & Lusch, 1995, p. 11) and only a thorough understanding of the future development of commercial forces that is provided by CDD allows for an accurate assessment of the target's future development (Howson, 2006, p. 28). Considering that companies are often put up for transaction at the height of their profitability when their main products reach the end of their life cycle, i.e., when they are cash cows, an acquisition seems attractive considering historical or current financial data and their projection into the future. However, in that case the acquirer inevitably buys the deterioration of earnings (Wirtschaftswoche, 1986). If target management's business plan projects historical financial performances into the future and if, during business plan validation, value inflating gaps between historical and future performances are not discovered because no extensive analysis of future developments is carried out, then overvaluation and overpayment risks are not mitigated during the revision of the business plan. The future-oriented perspective provided by CDD is thus as important a supplement to FDD's plausibility checks of the business plan and to the substantiation of business valuation as CDD's outside-the-company perspective.

In essence, CDD is the only part of due diligence that considers soundly investigated future and outside-the-company developments when assessing whether the target's future financial performance, and ultimately its value, are in line with management's projections. Given the fact that it is at the heart of business valuation to discount the target's future earnings, which depend on future outside-the-company events, such as customers buying the products, competitors offering substitutes, and suppliers delivering required materials, only the application of such a perspective can uncover any unrealistic and value distorting assumptions underlying target management's business plan.

3.3 Commercial due diligence in private equity transactions

According to the above, including CDD in the due diligence review seems generally indispensable in every M&A transaction. However, due diligence design is case specific. This means that not all possible sub-areas of due diligence are included in each transaction. For example, a study conducted by Knauer, Herrmann & Wagener (2017 cited in Berens, Knauer & Strauch, 2019, p. 9) shows that FDD as well as legal and tax due diligence are conducted more frequently than CDD. In view of CDD's theoretical relevance to business valuation outlined in the previous section, it is surprising that CDD is not always attributed this relevance in transaction practice. Beck (2002) shares this puzzlement and argues that the market-based examinations of the target's future success, which are at the heart of CDD, should be placed at the center of due

diligence. One reason why this is not always the case in practice is the different demand for information on the part of potential buyers.

For the purpose of this thesis, a suitable differentiation of potential buyers is provided by Niederdrenk & Müller (2012, p. 28), who distinguish between financial investors and strategic investors. According to the authors, strategic investors are companies which, for example, aim to acquire competitors to consolidate the market and thus often possess very specific knowledge about the target's market and business model. Strategic investors therefore often have in-depth knowledge of the areas that CDD is concerned with and are therefore only likely to have a need for CDD as part of their due diligence when, for example, planning to enter new markets through M&A (Pomp, 2015, p. 32). In this case they have less knowledge of the target's business model and market, and a detailed investigation into these fields may offer important inputs to business plan validation and valuation. The situation is then comparable to that of financial investors.

A prominent example for financial investors are private equity firms, which pursue an investment strategy of "buying established businesses and selling them at a higher price three to five years later" (Howson, 2006, p. 6). As "highly flexible investors that seek attractive investment opportunities across a broad range of sectors, geographies and situations" (Rosenbaum & Pearl, 2009, p. 168), it is normal for private equity firms to invest in unfamiliar markets. This and their requirement for high returns within a short period of time make it necessary for private equity firms to devote particular attention to the market, the competitive situation, and the business model of the target during due diligence to establish in detail the sustainability of the target's commercial success. Moreover, due to the fact that acquisitions carried out by private equity firms are usually structured as leveraged buyouts (see Section 2.5), which involve financing a large portion of the purchase price through debt and using the target's cash flows to repay that debt, private equity investors particularly require extensive information about the target's ability to generate high and reliable cash flows (Rosenbaum & Pearl, 2009, p. 169). Such strong and reliable cash flows require leading and defensible market positions (Rosenbaum & Pearl, 2009, p. 169). Understanding the market positioning of a target company in an unfamiliar market thus makes CDD particularly relevant for financial investors as they need to understand the commercial risk, i.e., the variability of cash flows of this target company to carry out valuation and propose the intended financing structure to the lending banks (Howson, 2006, pp. 7-8). Hence, private equity investors are more likely to carry out CDD than strategic investors (Pomp, 2015, p. 11, see also Knarr, 2020). Consequently, the impact of CDD on business valuation is particularly relevant for private equity investors and the valuation approach primarily used by this group of investors, i.e. LBO analysis. As mentioned in Section 2.5, this valuation technique is not discussed in this thesis due to its complexity. Instead, the focus is limited to a discussion on the influence of CDD on the traditional valuation approaches, i.e., income and market approach.

3.4 Areas of investigation and output of commercial due diligence

The main objective of CDD is to validate the target's business plan, and sales and gross profit projections in particular, to provide quantitative market-based information that can feed into

valuation and substantiate the investment decision. In this section, CDD's various areas of analysis are briefly introduced to illustrate how the information needed to revise preliminary business valuation is obtained. In this regard, an acquirer is confronted with the problem that, from a vast amount of data, the information relevant to business valuation must be identified and selected. Complex matters must therefore be simplified in such a way that the main drivers of business value become transparent, so that their influence on valuation and the sensitivity of valuation with respect to these drivers can be modelled (Schacht, 2009. pp. 34-35). In other words: "[i]nvestigating companies, markets and competitive positions will throw up a wall of data, much of it contradictory and a great deal of it incomplete or only partially relevant. Being able to bring order to the mess and uncertainty inherent in the process is a special skill" (Howson, 2006, p. XV).

Conducting CDD consequently requires a structured approach. Niederdrenk & Müller (2012) offer such an approach, which is illustrated in Figure 8. According to the authors, CDD's approach to business plan validation consists of four interrelated modules, with a thorough analysis of the target company being the first step, which is followed by an assessment of the general market attractiveness, an analysis of the target's customer situation and an analysis of the target's competitive situation. All these analyses are carried out for the purpose of validating target management's business plan (Niederdrenk & Müller, 2012, p. 15). In addition, CDD aims at identifying further growth potentials.

Niederdrenk's & Müller's (2012) definition of the scope of CDD is generally in line with other sources, such as Howson (2006, pp. 18-21) or Pomp (2015, p. 31). With respect to the structure and focal points, however, differences can be observed. Howson (2006, pp. 18-21), for example, classifies CDD investigation areas into market, competitive position and management, and places a strong emphasis on the assessment of target management's general capabilities. Niederdrenk & Müller (2012, pp. 23-28), by contrast, put an emphasis on a holistic investigation into the target company from a commercial perspective and consider only the analysis of management's planning competence in the course of business plan validation as part of CDD. Moreover, Howson (2006, pp. 18-20) lists customer and competitor analyses as seperate analyses within the market analysis, whereas Niederdrenk & Müller (2012, pp. 24-26) distinguish

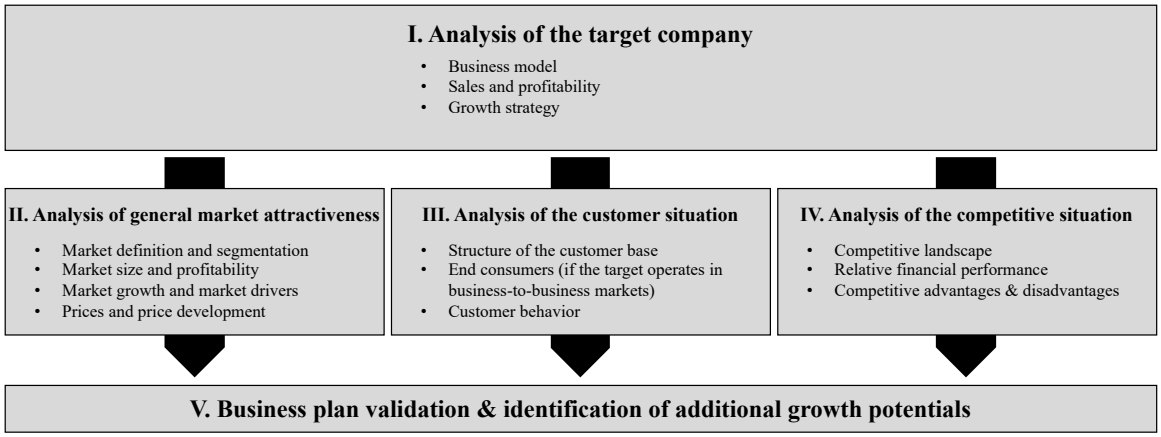

Figure 8: Areas of investigation during commercial due diligence
(Source: own illustration based on Niederdrenk & Müller, 2012, p. 23)

between a rather general assessment of the attractiveness of the market relevant to the target and a detailed assessment of its customers and competitors.

This thesis follows the structure presented by Niederdrenk & Müller (2012), because it provides a clear and easy to follow overview of CDD's approach to business plan validation and thus makes CDD's impact on business valuation understandable in a way that best meets the overall purpose of this thesis. Where applicable, other sources are integrated into this structure. The following sections briefly summarize the different activities carried out during CDD.

3.4.1 Analyzing the target company

A thorough analysis of the target company is the first step of CDD (Niederdrenk & Müller, 2012, pp. 23-24). According to the authors, this analysis seeks to answer three central questions (Niederdrenk & Müller, 2012, p. 41):

1. What is the target's business model?
2. What are the target's historical and projected sales and margins and what are their drivers?
3. What is the target's growth strategy?

Such a detailed portrayal of the target provides the basis for assessing whether the target's business model is sustainable and whether it can operate profitably in the long term. This establishes the foundation for verifying whether the target can really create the value that management is forecasting.

The first step, namely the analysis of the target's business model, can be translated into the following question: how does the target generate profit? This question can be subdivided into four questions (Niederdrenk & Müller, 2012, p. 41):

i. What products or services does the target offer to its customers?
ii. To which customers does the target offer these products or services and how?
iii. How are the target's operations organized to profitably offer the products or services?
iv. How are revenues and costs structured?

In answering these questions as the basis for further investigations, CDD first allows the buyer to gain a general understanding of the business they are buying into. Due to space constraints, this thesis does not discuss the investigation of these sub-questions. Instead, the purpose here is to illustrate the structure by which CDD approaches business plan validation.

The second step in analyzing the target company is to analyze the target's historical and projected sales and profitability figures and their drivers (Niederdrenk & Müller, 2012, p. 41). When analyzing historical and projected sales, the link between FDD and CDD becomes apparent, as FDD usually provides the data on historical sales and CDD examines projected sales in the light of historical developments and market trends. Pomp (2015, pp. 129-139) provides numerous examples to illustrate this. Critical questions are derived from analyzing the target's sales and profitability projections and their drivers, which must be answered in the subsequent investigations into the target's market, customers, and competitors, because only by linking

management's sales and profitability projections with market-based information is it possible to assess the plausibility of the business plan (Niederdrenk & Müller, 2012, p. 59). Although the focus of this analysis lies on sales, it is also important for CDD to analyze the target's most important profitability figures, such as EBITDA, and identify their drivers (Niederdrenk & Müller, 2012, pp. 64-69). Focusing not only on sales is important because in certain industries cost positions can be impacted strongly by outside-the-company factors. For example, a battery producer's future commercial success is heavily dependent on future lithium supply and cost. CDD therefore needs to assess the future development of the lithium market to substantiate the projected COGS and gross profit development. Thus, during the analysis of sales and margins as part of the analysis of the target company, those cost positions that are dependent on market developments must be identified so that their development can be analyzed in the market analyses. In essence, the analyses of historical and projected sales and margin developments act as a preparation for the following market-based analyses, raising questions about projected developments that can only be answered after thorough analyses into the target's market, its customers, and competitors.

As the last step in analyzing the target company, target management's growth strategy is analyzed, whereby the target's historical growth strategy, its current market positioning and the intended future market positioning must be understood (Niederdrenk & Müller, 2012, p. 24). Again, this analysis serves to first develop an understanding of the strategy in order to be able to examine its plausibility from a market perspective in the following steps.

3.4.2 Analyzing the attractiveness of the target's market

After having analyzed the target company, the second step of CDD is an assessment of the general attractiveness of the market in which the target operates (Niederdrenk & Müller, 2012, p. 24). This involves estimating the future development of the individual market segments, as target management often assumes growth potential in new and existing markets. Hence, CDD must assess how realistic a successful entry into new markets is and how big the target's sales potential in these markets is (Pomp, 2015, p. 33). This requires answering four main questions (Niederdrenk & Müller, 2012, p. 74):

1. How is the market defined and how is it segmented?
2. What is the market size and its profitability?
3. How is the market developing and what are the drivers of this development?
4. What is the market's price level and how is it developing?

The first step, the precise definition of the market and its segments, is one of the core concerns of CDD, as this definition is fundamental for later assessments of potential market growth and the target's competitive positioning (Niederdrenk & Müller, 2012, p. 74). According to Niederdrenk & Müller (2012, p. 75), a market consists of a group of companies offering similar products to similar customers, whereby the market boundaries are defined by the types of products offered, the location of trade, and the time of trade. In this context, Howson (2006, p. 58) offers a distinction between markets and industries by stating that "[i]ndustries are groups of companies linked by technology or product similarities. Markets are groups of customers linked

together by needs and wants". In his remarks on CDD analyses on the target's market, Howson (2006, p. 53) distinguishes between strategic segmentation and operational segmentation, whereby strategic segmentation stands for the definition of markets, while operational segmentation stands for the identification of distinctive buyer groups within the previously defined markets. Thus, while using different terminology, Howson (2006) and Niederdrenk & Müller (2012) emphasize the importance of defining markets and identifying distinctive groups of customers to whom distinctive products and services are offered.

After CDD has identified the target's market and segments, the next step is to determine the size and profitability of that market, including its segments, to assess whether the target operates in a strategically attractive market (Niederdrenk & Müller, 2012, p. 77). When estimating market size, a key task of CDD is to develop a market model that quantifies both the overall market and its segments, taking into account their key drivers (Niederdrenk & Müller, 2012, p. 78). A good CDD uses a thorough analysis of these market drivers to derive overall market growth (Niederdrenk & Müller, 2012, p. 81). The term market driver thereby refers to all factors that directly or indirectly influence the growth of the market and its segments (Niederdrenk & Müller, 2012, p. 81). After the market drivers have been identified, their expected development can be modelled and used to project the development of the market (Niederdrenk & Müller, 2012, p. 85). The market model is a central contribution of CDD to business valuation because it allows to model sales forecasts based on the expected development of market drivers, which feed into valuation (Howson, 2006, p. 19). After having estimated market and segment sizes, CDD analyzes their profitability to assess their attractiveness (Niederdrenk & Müller, 2012, pp. 79-81).

As a last step in assessing the attractiveness of the target's market, the determination of price levels in that market and in the identified segments as well as the historical and expected future development of these market prices need to be analyzed (Niederdrenk & Müller, 2012, pp. 88-92). This step is essential for the validation of sales forecasts in the business plan and thus the EBITDA and cash flow projections, as the prices that can be achieved are key revenue drivers.

3.4.3 Analyzing the target's customer situation

After the target company has been thoroughly analyzed and the attractiveness of its market has been assessed, the next step of CDD is to conduct a detailed investigation into the target's customer situation. In this context, CDD particularly draws on primary information obtained from the market in the form of interviews with customers, competitors, and experts. Thereby, in contrast to all other areas of due diligence, CDD offers the possibility to assess the target from an outside-the-company perspective (Niederdrenk & Müller, 2012, p. 25). During customer analysis, the interplay of FDD and CDD again becomes apparent, since primarily backward-looking customer analyses conducted during FDD are often used as a basis for further investigations during CDD (Pomp, 2015, p. 34).

Although Howson (2006, pp. 19-20) includes the customer analysis in the analysis of the market, its contents are generally in line with those according to Niederdrenk & Müller (2012). Following Niederdrenk & Müller (2012, pp. 92-93), the analysis of the target's customer situation can be divided into three sub-analyses:

1. How is the target's customer base structured?
2. How attractive are the markets in which the target's customers operate?
3. How is the purchasing behavior of the target's customers structured?

When analyzing the structure of the customer base, the focus lies on questions concerning the segmentation of the target's customers, the growth and profitability of these segments, the target's dependence on individual customers, the customer-specific market shares, the customer's loyalty, the target's ability to pass on price increases, and the target's strategic positioning in the market hierarchy (Niederdrenk & Müller, 2012, p. 92). In this context, determining the target's dependence on individual customers is of great importance, as this is a potential deal breaker and such concentration risk should be identified during CDD (Andrews et al., 2017; see also Pomp, 2015, p. 83).

If the target's customers are active in different markets, i.e., when the target operates in business-to-business markets, CDD analyses must also include the situation and development of the markets in which the target's customers operate (Niederdrenk & Müller, 2012, p. 25). The purpose of this is to gain a profound understanding of the development of these markets to determine the strategic positioning of the target's customers in those markets (Niederdrenk & Müller, 2012, p. 25). Since the positioning of the target's customers in their respective markets is ultimately a key revenue driver for the target, such an understanding is critical to assessing the target's future cash flow and EBITDA development.

The last step in the analysis of the target's customer situation is the analysis of the purchasing behavior of the target's customers. This includes interviewing current and former customers as well as potential customers and involves identifying key decision makers, analyzing the purchasing process, purchasing strategies, and purchasing criteria (Howson, 2006, pp. 19-20; Niederdrenk & Müller, 2012, p. 93).

3.4.4 Analyzing the target's competitive situation

As the last step prior to validating the target's business plan, CDD involves a detailed assessment of the target's competitive situation. In this part of CDD, the target's ability to compete is investigated, which involves interviews with industry experts and competitors as well as an assessment of the target's relative strengths and weaknesses (Howson, 2006, pp. 20-21). According to Niederdrenk & Müller (2012, p. 115), the analysis of the target's competitive situation involves three sub-analyses:

1. How is the target's competitive landscape structured?
2. How do the target's key financial indicators compare to those of its competitors?
3. What are the target's competitive advantages and disadvantages?

In the first step, the target's key competitors need to be identified (Niederdrenk & Müller, 2012, p. 116). This identification of key competitors is closely linked to the correct definition of the market, which has been carried out during the assessment of general market attractiveness. After key competitors have been identified, the target's strategic positioning in the market in relation to them is analyzed (Niederdrenk & Müller, 2012, pp. 116-123). Following the

determination of the target's strategic positioning in the market in comparison to its key competitors, the intensity of competition in that market should be investigated, because the intensity of competition is a central driver of profitability in a market and is thus important to understanding the commercial attractiveness of the target's strategic positioning (Niederdrenk & Müller, 2012, p. 123). The determination of competitive intensity is of importance, as high competitive intensity not only reduces overall profitability in the market, but also reduces the average durability of competitive advantages (Niederdrenk & Müller, 2012, p. 123). Competitive advantages are a key value driver, and their sustainability has a significant impact on the value of a company through the financial returns they generate.

After the structure of the target's competitive landscape has been analyzed, the second step in evaluating the target's competitive situation is to compare its key financial indicators to those of its competitors (Niederdrenk & Müller, 2012, p. 129). Thereby, CDD focuses on comparing the target's historical and projected sales growth to that of its competitors. Moreover, the target's margins and overall profitability are compared with those of its competitors. This relative analysis allows for a detailed quantitative understanding of the target's strategic positioning in the market. Based on the results, the existence of competitive advantages and disadvantages can be inferred, which can then be investigated in depth in the next step.

The third step, the analysis of the existence and the structure of the target's competitive advantages and disadvantages, is a key task of commercial due diligence (Howson, 2006, pp. 20-21; Pomp, 2015, p. 34). This often delivers explanations for differences regarding key financial indicators between the target and its competitors discovered in the preceding step (Niederdrenk & Müller, 2012, p. 131). A competitive advantage exists when a company achieves a higher difference between customer willingness to pay and unit costs than its competitors, which means that the company achieves a higher return on investment than its competitors (Niederdrenk & Müller, 2012, pp. 131-133). Of central importance in this context is the sustainability of such competitive advantages, as the existence of sustainable competitive advantages is a prerequisite for the future commercial success of a company.

According to Niederdrenk & Müller (2012, pp. 131-152), the analysis of competitive advantages can be broken down into three sub-analyses. The first step is to identify the target's competitive advantages and disadvantages and to determine their drivers. The second step is to analyze the sustainability of the target's competitive advantages and disadvantages. Of special relevance in this regard is the competitive-advantage period, because only during that period can a company achieve a higher return on investment than its competitors, which is why this period is also referred to as a "period of supernormal returns" (Goedhart, Koller & Wessels, 2010, p. 221). This makes the creation and maintenance of competitive advantages the core concept of corporate strategy and value creation (Goedhart, Koller & Wessels, 2010, p. 4). The investigation of how long current competitive advantages can be maintained is thus a key input for valuation.

At this point, the relevance of the supplementation of FDD's plausibility checks on target management's business plan by CDD again becomes apparent: FDD analyses focus on historical data and often project this data into the future without conducting a market-based verification of the plausibility of such an extrapolation. If the target has had a competitive advantage in the

past and this advantage is still present when due diligence is conducted, it is possible that FDD, during its plausibility checks on the target's business plan, extrapolates the resulting historic above-average returns into the future without a market-based assessment as to whether the competitive advantage can be maintained in the future. This could significantly inflate value because the historical existence of competitive advantages does not tell anything about how long these advantages and the corresponding supernormal returns can be maintained in the future. Such an inflation of business value is often hidden in perpetuity growth rates that are applied to the last FCF projection of the discrete forecasting period in a DCF model. If, for example, the perpetuity growth rate applied in a DCF valuation is assumed at 10%, which would mean that the target's sales will perpetually grow at a rate of 10% per year, while market experts estimate that the industry's annual growth rate will be 3%, a valuation based on that long-term growth rate of 10% would imply the assumption that the target will perpetually grow at a rate more than three times the industry's growth rate, thus increasing its market share eternally (Mellen & Evans, 2018, p. 132). Such an assumption implies that the target will forever be able to maintain its competitive advantages. In a competitive economy, however, competitive advantages usually have a limited life span, since competitors have an incentive to imitate the skills that lead to above-average returns (Kuhner & Maltry, 2017, p. 129). Therefore, the competitive intensity is a key driver of profitability in the market. As sellers oftentimes inflate the value of a business by including unrealistically high growth assumptions in their business plans, the underlying assumptions regarding the existence and durability of competitive advantages should be reviewed with care (Mellen & Evans, 2018, p. 132). Simply put: "[t]he key to investing is determining the competitive advantage of any given company and, above all, the durability of that advantage" (Buffet, 2000 cited in Howson, 2006, p. 111). The investigation into the structure and durability of competitive advantages and disadvantages is thus a crucial exercise in preparing a transaction and determining the value of the company to a potential buyer. CDD, with its forward-looking outside-the-company analyses, can provide key insights for FDD in this regard.

After the target's competitive advantages and disadvantages have been identified and their durability has been thoroughly investigated, the third and last step of competitive advantage analysis involves an assessment of how well the target uses the competitive advantages in its pricing strategy (Niederdrenk & Müller, 2012, pp. 150-152). This step allows value potentials from unexploited pricing power to be identified.

3.4.5 Revising the target's business plan using scenario analysis

All the above analyses of the target company, the attractiveness of its market, its customer situation and its competitive situation are carried out with the objective of determining whether the financial projections provided by target management are a reliable source for determining the value of the target to the potential buyer. After having examined the target company from a forward-looking outside-the-company perspective, CDD's task is to review the target management's business plan – especially the target's sales and gross profit projections. In this respect, CDD assesses whether the forecasts presented appear plausible in light of the knowledge obtained from the above analyses. If necessary, the forecasts are revised. This revision usually takes the form of scenarios, and it is this revision of the business plan that, when fed into the

valuation models, makes the impact of CDD on business valuation quantitatively measurable. In addition to verifying and revising the target's business plan, CDD seeks to identify additional growth potentials and risks that were not considered by target management. The revised and potentially extended business plan is the central output of commercial due diligence relevant for business valuation. According to Niederdrenk & Müller (2012, p. 152), the validation of the target's business plan comprises five separate steps, each having a distinct objective. These steps and objectives are illustrated in Figure 9.

Step I of validating the target's business plan focuses on a detailed description and analysis of the target's sales projections according to the management case including their drivers (Niederdrenk & Müller, 2012, pp. 152-154). This has already been carried out while analyzing the target company (see Question 2 in Section 3.4.1) and is now used as the basis for the validation process. Furthermore, the first step of business plan validation includes analyzing the planning process and the business plan's underlying assumptions (Niederdrenk & Müller, 2012, pp. 152-154). This last step, the detailed analysis and description of the assumptions on which the business plan is based, is of particular relevance since it is the plausibility of these assumptions that is later thoroughly investigated in light of the insights obtained from the analyses on the market, customers and competitors (Niederdrenk & Müller, 2012, p. 154; Pomp, 2015, pp. 34-35). According to McDonald, Smith & Ward (2010, p. 53), all assumptions a business plan can be based on can be subsumed under three claims made by the planners:

1. The market has this size.
2. The company is going to be taking this share of the market.
3. The company is going to make this much profit as a result.

When reviewing such assumptions later in Step III, the guideline during CDD should be to develop an approach where the investigator keeps asking the question *why* to be able to "say with confidence whether or not a business is worth investing in" (Howson, 2006, p. XV). CDD

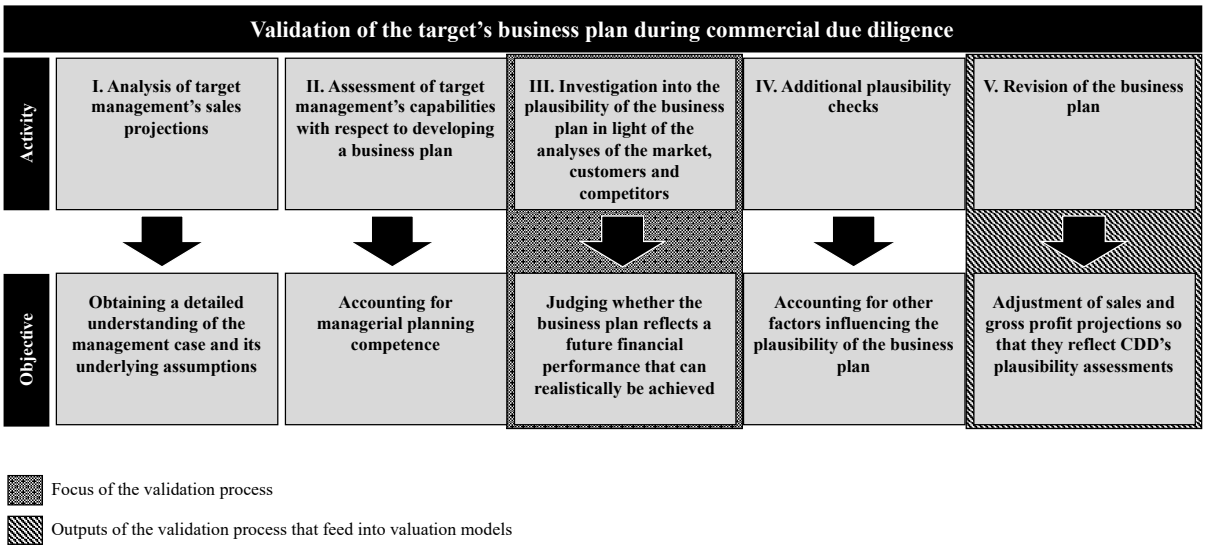

Figure 9: Activities and objectives in the validation of the target company's business plan during commercial due diligence
(Source: own illustration based on Niederdrenk & Müller, 2012, p. 152)

thereby systematically gets to the bottom of any assumptions driving future commercial success, starting, for example, by asking the question: why does management think the target will take this share of the market? Is this realistic? If not, what are the consequences for future financial returns?

Step II of business plan validation, according to Niederdrenk & Müller (2012, p.154), is an assessment of target management's planning capabilities. Due to space constraints, this step is not discussed in this thesis. It is worth noting at this point, however, that Howson (2006, p. 21) places a different emphasis on CDD analyses of managerial competences: according to the author, CDD analyzes not only management's planning competence, but also management's capacity to deliver strategy and growth.

Step III of validating the target's business plan, the investigation into its consistency with knowledge obtained about market attractiveness, customer situation and competitive situation, is the centerpiece of business plan validation and thus of CDD (Niederdrenk & Müller, 2012, p. 152). Russ (2006, p. 180) even describes it as the centerpiece of the whole due diligence process due to its relevance to business valuation. In essence, the question answered here is whether target management's sales and gross profit projections and their underlying assumptions are realistic in light of the target's strategic positioning in the market (Niederdrenk & Müller, 2012, p. 154). It is at this stage where CDD's contributions to FDD's plausibility checks of the business plan are most significant: in contrast to FDD, CDD provides a forward-looking outside-the-company assessment of the plausibility of the target's business plan and its underlying assumptions. Thereby, CDD offers a much more comprehensive perspective on the target's future financial performance as could be accomplished by FDD alone (Niederdrenk & Müller, 2012, pp. 154-155). To do so, CDD first compares the target management's sales projections from step one to the expected growth rate of the market, which is derived from the market model developed in the analysis of general market attractiveness (see Section 3.4.2) (Niederdrenk & Müller, 2012, p. 155). In the course of this comparison, it can be reasonable to assume that a projected organic sales growth which is equal to the expected market growth is realistic (Niederdrenk & Müller, 2012, p. 155). However, as this implies a maintaining of market share, a growth rate which is equal to that of the market implies the assumption that the target's current strategic positioning in the market will remain unchanged, meaning that there is no danger of falling victim to a competitive disadvantage emerging in the future. CDD should challenge this assumption in light of the results from the analysis of the target's competitive situation. If the target's projected organic sales growth is below expected market growth, this implies a future loss of market share, which may, for example, indicate a future competitive disadvantage (Niederdrenk & Müller, 2012, p. 155). Here again, CDD should use the findings from the above analyses to determine why this could be the case and whether this assumption is realistic. If CDD finds, for example, that an assumed future loss in market share is due to a suboptimal cost structure resulting in too high prices, this could be the basis for investigating further growth potentials, because the cost structure could possibly be optimized after the deal. On the other hand, management's sales projections that exceed expected market growth and thus assume a future gain in market share must also be plausibilized in light of the above analyses as they imply the existence and durability of future competitive advantages (Niederdrenk & Müller, 2012, pp. 155-156). If the above analyses suggest that management's projections of

above-market growth rates are too optimistic, this will lead to a revision of the business plan in Step V. Niederdrenk & Müller (2012, p. 156) suggest dividing such above-market growth rate assumptions into different categories according to their respective levels of risk. In this context, a categorization of risks proposed by McDonald, Smith & Ward (2010, pp. 47-58) is useful because it subsumes all the possible ways in which a business plan can fall short of its promises. Following their three-fold structure of all possible assumptions underlying a business plan discussed above, they refer to the risk of a business plan failing to deliver its promises as business risk. This business risk, according to the authors, can be subdivided into market risk (the risk that the market is not as big as assumed in the business plan), share risk (the risk that the target will not be able to take the market share that it is assumed to take according to the business plan) and profit risk (the risk that the target will not be able to make the profits it is assumed to make according to the business plan). "Significant levels of market, share or profit risk, or some combination of the three, suggest that the returns delivered by the plan are likely to be less than promised" (McDonald, Smith & Ward, 2010, p. 48). The result of Step III of business plan validation is thus an assessment about the level of business risk inherent to the target management's business plan, which essentially reflects the judgement of how plausible this business plan and overall preliminary valuation is. A common method of quantifying this judgement and translating it into a revision of the business plan is scenario analysis, which is described in Step V below.

Before the business plan is revised according to the results of comparing the management case to CDD findings, further plausibility checks are carried out in Step IV of business plan validation (Niederdrenk & Müller, 2012, pp. 156-157). For example, if the target's sales projections are significantly higher than historical sales (hockey stick projections), the underlying assumptions for such an acceleration in sales should be analyzed carefully (Niederdrenk & Müller, 2012, pp. 156-157).

After all plausibility checks have been conducted and the potential buyer has reached a judgement about the level of business risk inherent to the business plan, this judgement can be translated into a revision of the business plan in Step V. A possible approach for such a revision is to quantify the identified levels of risk and apply risk discounts to the target's sales projections (Niederdrenk & Müller, 2012, p. 158). Instead of applying risk discounts, another approach to revising the business plan is to adjust management's projected sales growth rates according to the assessment of their plausibility formed during CDD. These adjusted growth rates can then be used to project base year sales into the future, resulting in an adjusted sales forecast (Niederdrenk & Müller, 2012, p. 158). In this case the business plan is recalculated based on CDD findings.

The latter approach usually takes the form of a scenario analysis. Scenario analysis is "a process for thinking and communicating about the future" (Howson, 2006, p. 96) in which plausible and representative images of the future development of a variable of interest are drawn by extrapolating the development of parameters that drive this variable (Kuhner & Maltry, 2017, pp. 139-148). In the case of CDD, the variable of interest is the development of the top line of the target company's income statement. The in-depth knowledge about the target's market, its customers and its competitors obtained during CDD offers a well-informed basis to model plausible developments of the target's top line. As the number of possible scenarios increases

exponentially with an increasing projection period, scenario analysis can be depicted as a funnel, as illustrated in Figure 10.

Figure 10 illustrates how business plan validation and revision can be carried out using scenario analysis: after the drivers of the target's future sales and gross profit have been identified, the information obtained during CDD can be used to develop several plausible scenarios for the future development of these drivers, and consequently sales and gross profit. The idea of scenario analysis is to reduce the complexity and the subjective variability of possible future states by establishing a few representative scenarios rather than analyzing every possible scenario (Kuhner & Maltry, 2017, p. 140). By developing an upper extreme scenario (an optimistic upside case) and a lower extreme scenario (a pessimistic downside case) for the target's future sales and gross profit development, all plausible developments can be captured between these two scenarios. Scenario analysis thus establishes a probability space which can be used to put the plausibility of the management case into perspective.

In the illustrative scenario analysis depicted in Figure 10, the management case for future sales and gross profit development is found to be a plausible future scenario but, according to CDD findings, it is not the most likely scenario as it is based on rather optimistic assumptions. The most likely scenario according to CDD findings is the base case. The base case acts as an anchor for the revision of the business plan and projects a more conservative development of the target's sales and gross profit than the management case.

The representative scenarios of the target's future sales and gross profit development established during CDD feed into the corresponding upside, downside or base case for the target's future financial performance developed during financial due diligence (see Section 2.8). These different projections about the target's future financial performance translate into different value assessments when fed into business valuation models. Scenario analysis thereby provides the buyer with valuable information, because the extreme scenarios allow them to determine a range of different business values and their translation into possible purchase price offers

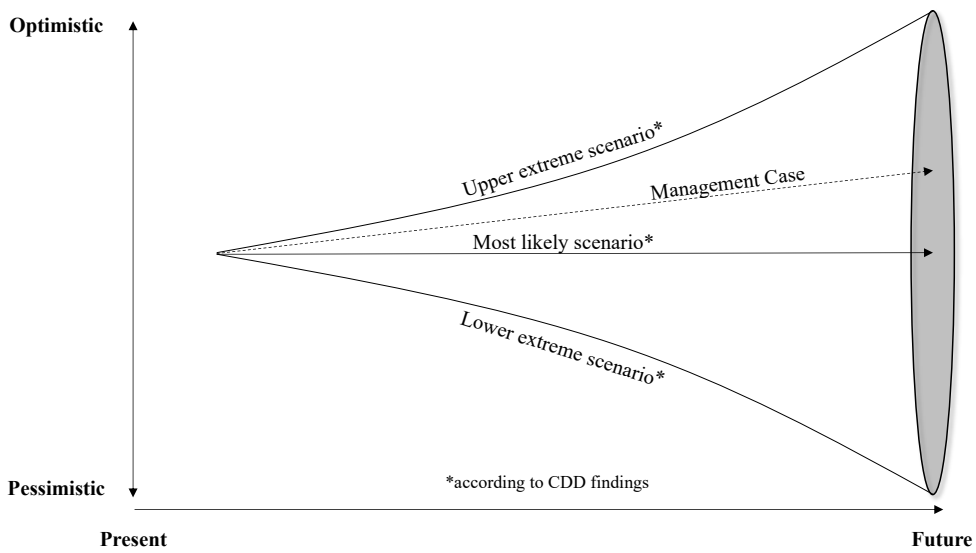

Figure 10: Illustration of a scenario analysis to revise the target company's business plan during commercial due diligence
(Source: own illustration based on Kuhner & Maltry, 2017, p. 140)

(Pomp, 2015, pp. 251-260). This offers the buyer guidance in the transaction process: the buyer can conclude that a purchase price derived from the upside case valuation includes high risk of overpayment, because the target will only in the best case deliver the financial returns that compensate them for the price paid. A purchase price derived from downside case valuation, however, includes a high chance of underpayment, because even in the worst plausible case will the target deliver financial returns that compensate the buyer for the price paid. As a rule, the more the purchase price offer exceeds the enterprise value resulting from the base case valuation, the greater the risk of overpayment, because the necessary financial returns only occur in scenarios that are increasingly optimistic and therefore less likely.

If, as illustrated in Figure 10, target management has provided a rather optimistic business plan to the potential buyer through the information memorandum, preliminary business valuation based on this business plan includes an increased risk of overpayment. It is only after detailed plausibility checks during CDD have been carried out that such an overpayment risk can be identified. Hence, scenario analysis as a structured approach to model uncertainty plays a key role in substantiating the investment decision (Goedhart, Koller & Wessels, 2010, p. 194). This will neither control nor eliminate uncertainty inherent to the future and thus to valuation, but it allows for this uncertainty to be calculated (Berens, Schmitting & Strauch, 2019, p. 25). In this way, scenario analysis establishes reference points for the validation and revision of target management's business plan and the revision of preliminary valuation.

During LBO transactions, CDD's scenario analysis on the business plan serves another important purpose for deal success: the downside case or even more conservative stress cases are used to assess the target's ability to service and repay debt in unfavorable economic circumstances (Niederdrenk & Müller, 2012, p. 158; Rosenbaum & Pearl, 2009, p. 201). The scenario ultimately used by financial sponsors to structure the LBO transaction is referred to as the sponsor case (Rosenbaum & Pearl, 2009, p. 201).

Scenario analysis during CDD usually takes additional growth potentials into account. The above-mentioned upside case, for example, usually includes growth potentials exceeding the target's business plan (Niederdrenk & Müller, 2012, p. 158). Identifying such additional growth potentials can be of use for the potential buyer because, through their transfer into valuation models, they increase the buyer's leeway to increase the purchase price in competitive bidding processes (Niederdrenk & Müller, 2012, p. 161).

3.5 The impact of commercial due diligence on business valuation

In the following, the valuation impact of a CDD-based business plan revision is quantified. To this end, the hypothetical M&A target ValueCo's business plan, which was used as the basis for preliminary business valuation in Section 2.4, is revised based on illustrative CDD findings. Using scenario analysis, a base case for the development of ValueCo's income statement is derived from the management case. This base case is then fed into the valuation models described in Section 2.4, which allows a comparison of enterprise values before and after business plan revision. To isolate the impact of CDD on valuation, all other potential due diligence inputs to the revision of the business plan, such as inputs from financial and operational due diligence, are ignored. As in Section 2.4, the valuations of ValueCo discussed here are based on

Rosenbaum & Pearl (2009). However, in this section the inputs to the valuation models are modified so that they reflect illustrative CDD findings.

In Sections 2.4.2 and 2.4.4, ValueCo management's business plan served as an input to the valuation models. This means that the enterprise values established in Sections 2.4.2 and 2.4.4 represent ValueCo's preliminary valuation based on unrevised management forecasts, which represents Stage II in a structured M&A process described in Section 2.2. The activities described in the following represent the subsequent third stage of a typical M&A process. Thus, it is assumed that ValueCo's potential buyer, whose perspective is taken here, has already submitted a non-binding purchase price offer and has been given access to the data necessary for conducting a detailed commercial due diligence investigation. While conducting detailed CDD, the buyer has followed the steps outlined in Section 3.4. They were thus able to reach a judgment on the plausibility of ValueCo management's business plan in light of ValueCo's business model, its market, customer and competitive situation. The potential buyer must now apply the findings and revise management's business plan to refine preliminary valuation and submit a binding purchase price offer, thus completing Stage III of the structured M&A process depicted in Figure 1. The application of CDD results and refinement of valuation is described below.

3.5.1 Illustrative revision of an M&A target's business plan

The objective of CDD is to investigate the plausibility of management's sales and gross profit projections. Hence, only the revision of these two line items of the target management's business plan is discussed in the following. All other assumptions remain unchanged compared to the management case. The result of this discussion is a revised business plan, which is depicted in Figure 11 and which represents ValueCo's most likely future financial performance according to CDD findings, i.e., the base case. This base case differs from the management case shown in Figure 2 and Figure 4, as the assumptions about ValueCo's sales and COGS development have been adjusted in line with CDD results. These adjustments are explained in the following. It must be noted that the adjustments to ValueCo's business plan discussed below are fictional. However, conceptually they are based on the analysis of a real CDD report provided by the management consultancy firm Commercial Advisory (2020) as well as on the author's experiences gained during an internship at a management consultancy firm. The fictional adjustments discussed below are therefore realistic.

It is assumed that the CDD team has thoroughly analyzed ValueCo's projected annual sales growth, which management has forecasted at 8.0% for 2020, 6.0% for 2021, 4.0% for 2022 and 3.0% for 2023 and 2024 (see Figure 2 and Figure 4). The CDD team has developed a market model and found that ValueCo's industry will most likely grow at a constant annual rate of 3.0%, which is in line with management's growth rate assumptions for ValueCo's sales in 2023 and 2024. Management's above-industry growth rate assumptions for the years prior to 2023 are based on a competitive advantage obtained by ValueCo, which allowed ValueCo to achieve above-industry growth in recent years. ValueCo management assumes that these superior growth rates will gradually converge to average industry growth as competitors catch up by 2023. The CDD team concluded, however, based on analyses of ValueCo's market, customer preferences, and competitive intensity, that in the most likely scenario, competitors will close

($ in millions)		Actual	Forecast					Notes / *(Assumptions)*
(Assumption: All business events occur on Dec, 31)		2019	2020	2021	2022	2023	2024	
ValueCo's projected income statement according to CDD findings (base case)	**Sales**	**$1,000.0**	**$1,065.0**	**$1,118.3**	**$1,157.4**	**$1,192.1**	**$1,227.9**	*(Revision of ValueCo's sales projections according to CDD base case findings)*
	% growth	*8.1%*	*6.5%*	*5.0%*	*3.5%*	*3.0%*	*3.0%*	
	*Absolute change compared to management case**		*-1.5%*	*-1.0%*	*-0.5%*	*+0.0%*	*+0.0%*	
	Cost of Goods Sold (COGS)	600.0	640.1	673.2	697.9	720.0	741.6	*(Revision of ValueCo's COGS projections according to CDD base case findings)*
	% sales	*60.0%*	*60.1%*	*60.2%*	*60.3%*	*60.4%*	*60.4%*	
	*Absolute change compared to management case**		*+0.1%*	*+0.2%*	*+0.3%*	*+0.4%*	*+0.4%*	
	Gross Profit	**$400.0**	**$424.9**	**$445.1**	**$459.5**	**$472.1**	**$486.2**	Gross Profit = Sales - COGS
	*Absolute change compared to management case**		*-$7.1*	*-$12.9*	*-$16.8*	*-$18.4*	*-$19.0*	Base case impact on gross profit projections
	% margin	*40.0%*	*39.9%*	*39.8%*	*39.7%*	*39.6%*	*39.6%*	Base case gross profit margins
	Selling, General & Administrative (SG&A)	250.0	266.3	279.6	289.3	298.0	307.0	*(Assumed constant at 25% of sales)*
	% sales	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	
	EBITDA	**$150.0**	**$158.7**	**$165.5**	**$170.1**	**$174.0**	**$179.3**	EBITDA = Gross Profit - SG&A
	*Absolute change compared to management case**		*-$3.3*	*-$6.2*	*-$8.5*	*-$9.9*	*-$10.2*	Base case impact on EBITDA projections
	% margin	*15.0%*	*14.9%*	*14.8%*	*14.7%*	*14.6%*	*14.6%*	Base case EBITDA margins
	Depreciation & Amortization (D&A)	20.0	21.3	22.4	23.1	23.8	24.6	*(Assumed constant at 2% of sales)*
	% sales	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	
	EBIT	**$130.0**	**$137.4**	**$143.1**	**$147.0**	**$150.2**	**$154.7**	EBIT = EBITDA - D&A
	*Absolute change compared to management case**		*-$3.0*	*-$5.7*	*-$7.8*	*-$9.2*	*-$9.5*	Base case impact on EBIT projections
	% margin	*13.0%*	*12.9%*	*12.8%*	*12.7%*	*12.6%*	*12.6%*	Base case EBIT margins

**See Figure 2 in Section 2.4.2 and Figure 4 in Section 2.4.4*

Figure 11: ValueCo's revised business plan according to the base case developed during commercial due diligence
(Source: own illustration based on Rosenbaum & Pearl, 2009, p. 155).

the gap more quickly than anticipated by ValueCo management. As a result, CDD concluded that sales in the base case will more quickly return to the average industry growth rate of 3.0%. This downward revision of sales growth is illustrated in the top three lines of ValueCo's base case income statement depicted in Figure 11: according to CDD findings, the most likely scenario is that in 2020 sales will grow at a rate of 6.5%, which is an absolute change of -1.5% compared to management's growth rate assumption of 8.0%, meaning that sales in 2020 are most likely to be at $1,065.0 million instead of $1,080.0 million. In 2021, sales will most likely grow at a rate of 5.0%, which is an absolute change of -1.0% compared to the 6.0% growth rate assumed in the management case. In 2022, sales will most likely grow at a rate of 3.5%, which is an absolute change of -0.5% compared to the 4.0% growth rate assumed in the management case. From 2023 onwards, no adjustments were made. Hence, the base case growth rate of sales remains at 3.0%, which is in line with management assumptions.

Moreover, the CDD team has investigated management's assumption of constant COGS at 60.0% of sales. Here, after having carried out a detailed analysis of ValueCo's procurement market, the CDD team found that in the most likely scenario ValueCo's COGS will gradually increase due to a global increase in demand for one of ValueCo's key raw materials. In the base case, COGS are assumed to increase annually by 0.1% of sales from 2020 to 2023. Hence, COGS in 2020 are most likely to be 60.1% of sales instead of 60.0%. The same rationale applies to the following years until 2023. Thus, COGS in 2023 are at 60.4% of sales in the base case instead of the 60.0% assumed in the management case. From this time onwards, no further growth in COGS is assumed in the base case.

These base case adjustments to ValueCo's sales and COGS impact the key financial performance indicators. Assuming all other assumptions remain unchanged, gross profit, EBITDA and EBIT are reduced compared to the management case. For example, ValueCo's gross profit in 2023 in the base case is $472.1 million, which is $18.4 million less than the $490.5 million assumed in the management case. This leads to a $9.9 million lower EBITDA and a $9.2 million lower EBIT in 2023. Such gaps between management forecasts and CDD findings were illustrated in Figure 7. At this point it can be seen that according to the judgment formed during CDD, the management case is a rather optimistic forecast for the target's financial performance,

meaning that it is tilted toward the upper extreme scenario in the context of a scenario analysis, as shown in Figure 10. Thus, valuations based on the management case, namely the enterprise values computed in Section 2.4, contain overpayment risk.

If this adjusted financial planning developed during CDD is now fed into business valuation models, valuation according to the base case will deviate negatively from that according to the management case. This is illustrated below for both approaches discussed in Section 2.4. In reality, in addition to the base case discussed here, the upper and lower extreme scenarios would be modeled and later fed into the valuation models to obtain a valuation range. Due to space constraints, this is not done here and the valuation impact of CDD is only illustrated using the fictitious base case for ValueCo's future financial performance.

3.5.2 Illustrative revision of an M&A target's enterprise value under the income approach

After target management's sales and gross profit projections have been revised during CDD, the target's most likely future financial performance can be translated into a most likely enterprise value by feeding the base case business plan into the respective valuation model. Figure 12 illustrates this revision of ValueCo's preliminary valuation according to the WACC approach.

The determination of ValueCo's revised enterprise value depicted in Figure 12 follows the identical structure as the DCF model discussed in Section 2.4.2. The only difference compared to preliminary DCF valuation according to the management case depicted in Figure 2 is ValueCo's projected income statement, which now reflects the base case developed during CDD. In Step I, this revised income statement is used to derive the base case projections for ValueCo's future free cash flows. Again, this is done by deducting taxes, which remain at 38% of EBIT, from the revised EBIT projections, which yields revised EBIAT projections. Deducting CAPEX, which are assumed to remain at a constant rate of 2% of sales, and increase in net working capital, whereby NWC is assumed to remain at 10% of sales, and adding D&A, which are assumed to remain at a constant rate of 2% of sales, yields the revised FCF projections. For example, ValueCo's 2023 projected FCF in the base case is now at $89.7 million, which is $5.6 million less than the $95.3 million in the management case.

After FCF projections have been derived for the discrete forecasting horizon, the terminal value of all FCFs after 2024 can be calculated in Step II. Again, this is done by applying the WACC rate of 11% and the perpetuity growth rate of 3% to the last discretely planned FCF of $92.3 million. Under these assumptions, the 2024-year-end value of all future FCFs after 2024 equals $1,188.9 million, which is $74.4 million less than the $1,263.4 million in the management case.

In Step III, the present value of all discretely planned FCFs as well as the TV can be determined by discounting them using year-end discounting at a WACC rate of 11%. For example, the 2019-year-end value of ValueCo's 2023 FCF of $89.7 million equals $59.1 million. The 2019-year-end value of the terminal value is calculated by discounting the TV of $1,188.9 million for five years at a WACC rate of 11%. This yields a 2019-year-end value of $705.6 million. Having discounted all future FCFs and the TV, ValueCo's enterprise value according to the

		($ in millions)	Actual	Forecast					Notes / *(Assumptions)*
		(Assumption: All business events occur on Dec, 31)	2019	2020	2021	2022	2023	2024	
Step I	ValueCo's projected income statement according to CDD findings (base case)	**Sales**	**$1,000.0**	**$1,065.0**	**$1,118.3**	**$1,157.4**	**$1,192.1**	**$1,227.9**	*(Revision of ValueCo's sales projections according to CDD base case findings)*
		% growth	*8.1%*	*6.5%*	*5.0%*	*3.5%*	*3.0%*	*3.0%*	
		*Absolute change compared to management case**		*-1.5%*	*-1.0%*	*-0.5%*	*+0.0%*	*+0.0%*	
		Cost of Goods Sold (COGS)	600.0	640.1	673.2	697.9	720.0	741.6	*(Revision of ValueCo's COGS projections according to CDD base case findings)*
		% sales	*60.0%*	*60.1%*	*60.2%*	*60.3%*	*60.4%*	*60.4%*	
		*Absolute change compared to management case**		*+0.1%*	*+0.2%*	*+0.3%*	*+0.4%*	*+0.4%*	
		Gross Profit	**$400.0**	**$424.9**	**$445.1**	**$459.5**	**$472.1**	**$486.2**	Gross Profit = Sales - COGS
		*Absolute change compared to management case**		*-$7.1*	*-$12.9*	*-$16.8*	*-$18.4*	*-$19.0*	Base case impact on gross profit projections
		% margin	*40.0%*	*39.9%*	*39.8%*	*39.7%*	*39.6%*	*39.6%*	Base case gross profit margins
		Selling, General & Administrative (SG&A)	250.0	266.3	279.6	289.3	298.0	307.0	*(Assumed constant at 25% of sales)*
		% sales	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	
		EBITDA	**$150.0**	**$158.7**	**$165.5**	**$170.1**	**$174.0**	**$179.3**	EBITDA = Gross Profit - SG&A
		*Absolute change compared to management case**		*-$3.3*	*-$6.2*	*-$8.5*	*-$9.9*	*-$10.2*	Base case impact on EBITDA projections
		% margin	*15.0%*	*14.9%*	*14.8%*	*14.7%*	*14.6%*	*14.6%*	Base case EBITDA margins
		Depreciation & Amortization (D&A)	20.0	21.3	22.4	23.1	23.8	24.6	*(Assumed constant at 2% of sales)*
		% sales	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	
		EBIT	**$130.0**	**$137.4**	**$143.1**	**$147.0**	**$150.2**	**$154.7**	EBIT = EBITDA - D&A
		*Absolute change compared to management case**		*-$3.0*	*-$5.7*	*-$7.8*	*-$9.2*	*-$9.5*	Base case impact on EBIT projections
		% margin	*13.0%*	*12.9%*	*12.8%*	*12.7%*	*12.6%*	*12.6%*	Base case EBIT margins
	Projection of FCFs	Taxes		$52.2	$54.4	$55.9	$57.1	$58.8	*(Assumed constant at 38% of EBIT)*
		EBIAT		**$85.2**	**$88.7**	**$91.1**	**$93.1**	**$95.9**	EBIAT = EBIT - Taxes
		Less: Capital Expenditure (CAPEX)		*(21.3)*	*(22.4)*	*(23.1)*	*(23.8)*	*(24.6)*	*(Assumed constant at 2% of sales)*
		Less: Increase in Net Working Capial (NWC)		*(6.5)*	*(5.3)*	*(3.9)*	*(3.5)*	*(3.6)*	*(NWC assumed constant at 10% of sales)*
		Plus: Depreciation and Amortizaion (D&A)		*21.3*	*22.4*	*23.1*	*23.8*	*24.6*	see above
		Free Cash Flow (FCF)		**$78.7**	**$83.4**	**$87.2**	**$89.7**	**$92.3**	FCF = EBIAT - CAPEX - inc. NWC + D&A
		*Absolute change compared to management case**		*-$0.4*	*-$2.4*	*-$4.2*	*-$5.6*	*-$5.8*	Base case impact on FCF projections
Step II	Calculation of terminal value	*Free Cash Flow (2024)*						*$92.3*	see above
		WACC						*11.0%*	*(Assumed at 11%)*
		Perpetuity Growth Rate (PGR)						*3.0%*	*(Assumed at 3%)*
		Terminal Value (TV)						***$1,188.9***	TV = FCF*(1+ PGR)/(WACC - PGR)
		*Absolute change compared to management case**						*-$74.4*	Base case impact on TV
Step III	Determination of present values	*Discount periods t*		*1*	*2*	*3*	*4*	*5*	*(Year-end discouting)*
		Present Value of FCF		***$70.9***	***$67.7***	***$63.8***	***$59.1***	***$54.8***	Present Value = FCF/(1+WACC)^t
		Present Value of Terminal Value						***$705.6***	Present Value = TV/(1+WACC)^t
Step IV	Determination of enterprise value	***Present Value of all discretely planned FCFs***	**$316.2**						Sum of all present values of discrete FCFs
		*Absolute change compared to management case**	*-$12.4*						Base case impact on present value of FCFs
		Present Value of TV	**$705.6**						See above
		*Absolute change compared to management case**	*-$44.2*						Base case impact on present value of TV
		Present Enterprise Value	**$1,021.8**						Present value of all future free cash flows
		*Absolute change compared to management case**	*-$56.6*						Base case impact on enterprise value

**See Figure 2 in Section 2.4.2*

Figure 12: Base case revision of ValueCo's enterprise value according to the WACC approach
(Source: own illustration based on Rosenbaum & Pearl, 2009, p. 155)

base case can be determined in Step IV. The latter is done by calculating the sum of the present values of all future FCFs and the present value of the TV. The 2019-year-end value of all discretely planned FCFs equals $316.2 million, which represents a downward correction of $12.4 million compared to the management case. The present value of the TV is corrected downwards by $44.2 million compared to the management case. Summing up the present value of all future FCFs and TV yields ValueCo's revised enterprise value of $1,021.8 million.

This means that under the WACC approach, ValueCo's enterprise value according to the base case developed during CDD is $56.6 million lower than according to the management case used for preliminary valuation in Section 2.4.2. This represents a 5.2% downward revision of enterprise value. Therefore, ceteris paribus even a moderate CDD-induced modification of two value levers, i.e., sales and COGS projections, can significantly impact valuation. In the example discussed here, this allows the potential buyer to understand that ValueCo's most likely enterprise value according to CDD findings is substantially lower than assumed in the management case. It is important to note at this point that while CDD findings may change the output of valuation models, they do not change the true value of the target to the buyer, i.e., the actual returns that it will make available to them in the future. In other words, CDD is about identifying the most likely returns delivered by a target in the future and ensuring that these returns rather than unrealistic projections are used as the basis for valuation. Thus, a change in valuation output as the consequence of business plan revision ideally means that the valuation model now reflects a realistic enterprise value, whereas it reflected distorted value before due diligence findings were incorporated. However, as valuation contains forecasts that are inherently

uncertain, the potential buyer can never be positive that the valuation model is based on the target's true future financial performance. The latter holds true for both pre- and post-due-diligence outputs of valuation models.

Nonetheless, CDD's future-oriented outside-the-company analyses allow for an assessment of whether a valuation is likely to be too high or too low by establishing scenarios such as the base case discussed in this example. In the fictitious example discussed here, CDD found that actual enterprise value is most likely $56.6 million lower than according to management forecasts. In other words, the most likely net present value of ValueCo's future financial returns was considerably overstated by management. Such findings improve the buyer's negotiating position and reduce the risk of overpayment, as in transaction practice the revised valuation is used as the basis for the submission of the binding purchase price offer. CDD thus contributes to transaction success by informing the final purchase price decision through improved quality of inputs to valuation models, thereby ensuring that the potential buyer is aware of the target's most likely enterprise value when entering price negotiations. In addition, the supplementation of the base case valuation with extreme scenarios, which was omitted here due to space constraints, offers the buyer a corridor for the possible values of the target as well as reference points for the assessment of overpayment risk inherent to price proposals. Thus, the quantitative effect of CDD on business value can ultimately be translated into a quantitative change of the purchase price proposal. Here, however, one will most certainly reach the limits of measurability, since, as discussed in Section 2.3, the purchase price determination also depends on situation-specific factors. Therefore, the actual relevance of CDD in the context of M&A can probably be most accurately captured by its measurable impact on enterprise value.

3.5.3 Illustrative revision of an M&A target's enterprise value under the market approach

To illustrate the quantitative impact of CDD on valuation under the market approach, ValueCo's revised business plan from Section 3.5.1 is fed into the valuation model discussed in Section 2.4.4 and illustrated in Figure 4, where ValueCo's preliminary enterprise value was calculated using forward-looking EV/EBITDA trading multiples. As in the previous section, the methodological approach to business valuation remains entirely unchanged. Only the input to the valuation model is modified in such a way that the basis for determining business value is no longer ValueCo management's unchallenged business plan, but instead the base case financial projections established during CDD.

As discussed in Section 2.4.4, the first step of determining enterprise value according to the market approach is the identification of ValueCo's peer group to derive representative multiples with which ValueCo's EBITDA projections can be multiplied to calculate enterprise value. It is assumed that the peer group multiples derived and used for preliminary valuation remain unchanged. Hence, the multiples determined in Figure 3 for the peer group member PeerA can be kept in use to determine ValueCo's revised enterprise value. The 2020 trading multiple for PeerA was determined at 6.67, which means that PeerA's current enterprise value of $1,500.0 million is 6.67 times its 2020 projected EBITDA of $225.0 million. Since PeerA and ValueCo are similar companies, the market approach suggests that ValueCo's enterprise value should

($ in millions)		Actual	Forecast					Notes / *(Assumptions)*
(Assumption: All business events occur on Dec, 31)		2019	2020	2021	2022	2023	2024	
ValueCo's projected income statement according to CDD findings (base case)	**Sales**	**$1,000.0**	**$1,065.0**	**$1,118.3**	**$1,157.4**	**$1,192.1**	**$1,227.5**	*(Revision of ValueCo's sales projections according to CDD base case findings)*
	% growth	*8.1%*	*6.5%*	*5.0%*	*3.5%*	*3.0%*	*3.0%*	
	*Absolute change compared to management case**		*-1.5%*	*-1.0%*	*-0.5%*	*+0.0%*	*+0.0%*	
	Cost of Goods Sold (COGS)	600.0	640.1	673.2	697.9	720.0	741.6	*(Revision of ValueCo's COGS projections according to CDD base case findings)*
	% sales	*60.0%*	*60.1%*	*60.2%*	*60.3%*	*60.4%*	*60.4%*	
	*Absolute change compared to management case**		*+0.1%*	*+0.2%*	*+0.3%*	*+0.4%*	*+0.4%*	
	Gross Profit	**$400.0**	**$424.9**	**$445.1**	**$459.5**	**$472.1**	**$486.2**	Gross Profit = Sales - COGS
	*Absolute change compared to management case**		*-$7.1*	*-$12.9*	*-$16.8*	*-$18.4*	*-$19.0*	Base case impact on gross profit projections
	% margin	*40.0%*	*39.9%*	*39.8%*	*39.7%*	*39.6%*	*39.6%*	Base case gross profit margins
	Selling, General & Administrative (SG&A)	250.0	266.3	279.6	289.3	298.0	307.0	*(Assumed constant at 25% of Sales)*
	% sales	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	
	EBITDA	**$150.0**	**$158.7**	**$165.5**	**$170.1**	**$174.0**	**$179.3**	EBITDA = Gross Profit - SG&A
	*Absolute change compared to management case**		*-$3.3*	*-$6.2*	*-$8.5*	*-$9.9*	*-$10.2*	Base case impact on EBITDA projections
	% margin	*15.0%*	*14.9%*	*14.8%*	*14.7%*	*14.6%*	*14.6%*	Base case EBITDA margins
Determination of Enterprise Value	*ValueCo's projected EBITDA*		$158.7	$165.5				See above
	*Relevant Trading Multiple (M)***		6.67	6.25				As computed for PeerA
	Implied Enterprise Value (EV)		**$1,057.9**	**$1,034.4**				EV = EBITDA * M
	*Absolute change compared to management case**		*-$22.1*	*-$38.9*				Base case impact on enterprise value

**See Figure 4 in Section 2.4.4*
***See Figure 3 in Section 2.4.4*

Figure 13: Base case revision of ValueCo's enterprise value according to the market approach (guideline public company, trading multiples)
(Source: own illustration based on Rosenbaum & Pearl, 2009, p. 7, p. 69)

also be 6.67 times its 2020 projected EBITDA. The same reasoning holds for PeerA's 2021 trading multiple of 6.25. Thus, multiplying ValueCo's base case EBITDA projections with the corresponding peer group multiple yields a revised valuation that can be compared to the preliminary valuation determined in Section 2.4.4. In this way, the impact of CDD on ValueCo's enterprise value under the market approach can be determined. The latter is illustrated in Figure 13.

As previously discussed, ValueCo's adjusted sales and gross profit projections impact its EBITDA projections. For example, the revision of ValueCo management's business plan during CDD results in a downward revision of the 2020 EBITDA forecast by $3.3 million from $162.0 million in the management case (see Figure 4) to $158.7 million in the base case. For 2021, the projected EBITDA is reduced by $6.2 million from $171.7 million to $165.5 million. To determine ValueCo's refined enterprise value under the market approach, the revised EBITDA projections are multiplied with the respective peer group multiple. Multiplying ValueCo's revised 2020 EBITDA projection of $158.7 million with the relevant multiple of 6.67 yields an enterprise value of $1,057.9 million, which is $22.1 million lower than the $1,080.0 million resulting from the management case. This equals a 2.0% downward correction of enterprise value as a result of CDD investigations. For 2021, multiplying ValueCo's base case EBITDA projection of $165.5 million with the respective multiple of 6.25 yields a revised enterprise value of $1,034.4 million, which is $38.9 million less than the $1,073.3 million resulting from the management case, representing a 3.6% downward correction of enterprise value. The two outcomes form a base case valuation range. In practice, the valuation range is extended, for example, by considering the extreme scenarios developed during CDD.

The downward correction of ValueCo's enterprise value resulting from the incorporation of CDD base case findings into management's business plan is significantly lower under the market approach than under the WACC approach. This reflects a weakness of the market approach: even when using forward-looking multiples to determine the value of a company, the market approach does not take as extensive a view into the future as the DCF approach. As a result, some of the information uncovered during CDD is not reflected in valuation under the market approach. On the other hand, under the WACC approach a large portion of the calculated

enterprise value is determined by the terminal value, which means that variables that lie far in the future and are therefore highly uncertain determine a major part of the valuation output. Since every approach has its weaknesses, in transaction practice various business valuation methods are considered in combination (see for example Rosenbaum & Pearl, 2009, p. 157). A potential buyer will examine all valuation ranges offered by the different valuation models, thus obtaining a multidimensional information base for optimizing the final purchase price decision. In this big picture, CDD findings affect each valuation model to varying degrees, but they significantly inform each forward-looking valuation approach. Thereby, CDD contributes to an improvement of the basis for decision-making in M&A.

4 Conclusion and outlook

This thesis has analyzed the connections between due diligence and business valuation in the context of M&A. The focus of the investigation was placed on the impact of commercial due diligence on determining the enterprise value of an M&A target, i.e., the impact of the sub-discipline of due diligence that deals with the commercial prospects of the target. The findings obtained in the course of this thesis can be briefly summarized as follows.

Due diligence in the run-up to M&A serves to reduce asymmetrically distributed information between buyer and seller and to uncover information that is relevant for both buyer and seller in the transaction process. On the basis of due diligence findings, both buyer and seller determine a business value for the target and form an assessment of the appropriate purchase price. Thus, both buy-side and sell-side due diligence and business valuation are standard components in structured M&A processes. The most used valuation methods are the income approach, especially the WACC approach, and the market approach, especially the guideline public company method with forward trading multiples. Under these valuation methods, the concept of enterprise value is forward-looking and based on the anticipation of future financial returns generated by the target. In structured M&A processes, potential buyers face the problem of having to propose a purchase price before they have been able to conduct a detailed investigation into the target's future financial performance. The purchase price indication is therefore preliminary, based on a preliminary business valuation and subject to detailed buy-side due diligence. The preliminary buy-side business valuation is usually based on forecasts of the target company's financial returns provided by management in the business plan. This means that a potential buyer must use sell-side information to determine a preliminary enterprise value and derive a purchase price indication. Since target management has an interest in painting a positive picture of the company, for example by issuing optimistic sales forecasts, the potential buyer must critically analyze management's business plan and the preliminary business valuation derived from it before submitting the final purchase price offer. In this way, a buyer addresses overpayment risk, because a business valuation based on optimistic forecasts, as well as a purchase price derived from it, is likely to be inflated. Accordingly, both preliminary business valuation and preliminary purchase price indication are to be scrutinized by the buyer during detailed buy-side due diligence. Commercial due diligence plays a central role in this process because it is the only sub-discipline of the due diligence investigation that uses primary market research to assess whether the target's commercial prospects described in management's

business plan and expressed in sales and gross profit projections are realistic. To do so, CDD analyzes the target company, including its business model, its market, its customers, and its competitors. Based on these analyses, scenarios are established about the future development of sales and gross profit, which allow an assessment of the plausibility of management's business plan and thus the appropriateness of preliminary business valuation. Thus, CDD provides revised inputs to business valuation in the form of refined sales and gross profit projections that supplement FDD analyses of the target's business plan. With all other influencing factors held constant, it was shown that these inputs have a measurable impact on refining preliminary business valuation.

The measurable impact of CDD on business valuation was illustrated by using a fictitious sample company to analyze the transaction process from preliminary buy-side business valuation through detailed buy-side CDD to a revision of the preliminary business valuation. The comparison of preliminary enterprise value and refined enterprise value based on CDD inputs showed that using the WACC approach, the refined most likely enterprise value of the target was 5.2% lower than the one resulting from a valuation that was based on target management's business plan. Using forward trading multiples, the revision of enterprise value was less significant than in the WACC approach with a downward revision of 2% to 3.6% compared to valuation based on target management's business plan. These findings show, on the one hand, that CDD can uncover significant overvaluation and overpayment risks regardless of the type of forward-looking valuation approach. On the other hand, the results also highlight the weaknesses of each valuation approach: while the market approach using forward trading multiples determines the enterprise value rather heuristically and the consideration of the target's future financial performance is very scarce compared to the WACC approach, the WACC approach strongly emphasizes forecasts that lie far in the future and are thus increasingly uncertain. The latter is reflected in particular by the fact that, according to DCF, a large part of enterprise value depends on the terminal value. CDD, as the only sub-discipline of due diligence that deals in detail with the prospects of the target to succeed in the market and generate attractive financial returns, should therefore be used in particular in DCF approaches to substantiate the influencing variables of enterprise value and to reduce the risk of using an inflated valuation as the basis for the final purchase price proposal. It is surprising at this point that CDD, as mentioned in Section 3.3, is used relatively rarely compared to other sub-disciplines of due diligence. Thus, in M&A practice, there seems to be a frequent reliance on FDD analyses on the plausibility of target management's business plan, which, however, are significantly less extensive, future-oriented, and market-driven. It seems possible that the high failure rates in M&A can in part be explained by the fact that too little priority is given to the detailed analysis of a target's commercial prospects. An interesting question for future research in this context would be to investigate the extent to which the absence of CDD correlates with shareholder value destruction.

Additional possibilities for future research on this topic would be to build on the weaknesses of this work: this thesis is a theoretical analysis and models the impact of CDD on business value using fictitious CDD findings. Although based on case study research, this thesis thus only demonstrates how the influence of CDD on business valuation can be traced theoretically. At this point, it would be interesting to analyze a genuine transaction process involving a CDD. This would probably also correct one of the unrealistic assumptions made here, that the

management's business plan alone is used as the basis for the preliminary business valuation. The latter would result in all potential buyers using the same financial projections to derive the preliminary purchase price offer. In reality, however, buyer-specific strategic options, such as synergies, are taken into account in preliminary business valuation. Another avenue for future research would be to investigate the influence of CDD in the context of leveraged buyouts in detail.

This thesis might also have given the impression that CDD is only about substantiating and revising business valuation. This is not the case, because as Niederdrenk & Müller (2012, p. 40) point out, a good CDD also has the function of a strategic roadmap, which can be used as a basis for developing a post-deal strategy for the target. However, the aim of this work, to explain the influence of CDD on business valuation both procedurally and quantitatively, has been achieved. In this context, an implicit finding of this thesis should be noted, namely that CDD has no impact on business valuation methods that do not include a future-oriented value concept.

With regard to CDD's function of substantiating future-oriented business valuation, it must be concluded that even a detailed analysis of commercial prospects offers no guarantee that the sales and gross profit forecasts used for valuation are accurate. Future-oriented business valuation, even if systematically informed, remains a calculation based on forecasts, and "[t]he only thing you know for certain about any forecasts you construct is that they will be wrong" (Howson, 2006, p. 258). CDD however, is the only sub-discipline of due diligence that offers a systematic approach to address this problem. The decisive question in transaction practice, however, is to what extent the rational results of CDD stand up to irrational human decision-making processes. If investors want to win a bidding process by any means, even the best analysis of the future profitability of a company can fall victim to deal fever. In this case, an overpayment risk may have been identified, but the investor is tempted to downplay it. CDD cannot close this knowledge to execution gap.

Bibliography

Abor, J. Y. (2017). *Entrepreneurial finance for MSMEs: a managerial approach for developing markets*. Cham: Springer.

Adolph, G., Gillies, S., & Krings, J. (2006). 'Strategic due diligence: a foundation for M&A success'. *strategy+business*, 28 September. Available at: https://www.strategy-business.com/media/file/enews-09-28-06.pdf (Accessed: 17 December 2020).

Andrews, J., Gribens, B., Johnson, B., Strahle, R., & Wilson, T. (2017). 'M&A due diligence workshop'. *2017 engineering and construction conference*. Deloite Development LLC. Available at: https://www2.deloitte.com/content/dam/Deloitte/us/Documents/Real%20Estate/us-engineering-construction-ma-due-diligence.pdf (Accessed: 17 December 2020).

Banks, J., Ficklin, G., Jones, C., Petty, A., Plotner, R., Rosser, W., & Wright, P. (2018). 'The buy side M&A process: an overview to acquiring companies'. *RKJ Partners Buy Side M&A Newsletter*, 2 (1), pp. 1-11. Available at: https://static1.squarespace.com/static/5984a0f3e3df2867773800ec/t/5ae5b6ef562fa7d975aa2d5c/1525004015651/RKJ+Partners+-+Buy+Side+Newsletter+-+Vol+2+Article+1.pdf (Accessed: 17 December 2020)

Bayerke, R. (2004). 'Financial Due Diligence als Bestandteil einer Unternehmensanalyse'. *Betriebswirtschaftliche Mandantenbetreuung*, 2004 (1), p. 18.

Beck, R. (2002). 'Die Commercial Due Diligence'. *M&A Review*, 2002 (11), pp. 554-559.

Berens, W., Brauner, H.U., Knauer, T., & Strauch, J. (2019). 'Vorwort der Herausgeber zur achten Auflage'. In: Berens, W., Brauner, H.U., Knauer, T., & Strauch, J. (eds.), *Due Diligence bei Unternehmensakquisitionen* (8th edn.). Stuttgart: Schäffer-Poeschel, pp. V-XIV.

Berens, W., Hoffjan, A., & Strauch, J. (2019). 'Planung und Durchführung der Due Diligence'. In: Berens, W., Brauner, H.U., Knauer, T., & Strauch, J. (eds.), *Due Diligence bei Unternehmensakquisitionen* (8th edn.). Stuttgart: Schäffer-Poeschel, pp. 53-99.

Berens, W., Knauer, T., & Strauch, J. (2019). 'State of the Art der Due Diligence'. In: Berens, W., Brauner, H.U., Knauer, T., & Strauch, J. (eds.), *Due Diligence bei Unternehmensakquisitionen* (8th edn.). Stuttgart: Schäffer-Poeschel, pp. 3-13.

Berens, W., Schmitting, W., & Strauch, J. (2019). 'Funktionen, Terminierung und rechtliche Einordnung der Due Diligence'. In: Berens, W., Brauner, H.U., Knauer, T., & Strauch, J. (eds.), *Due Diligence bei Unternehmensakquisitionen* (8th edn.). Stuttgart: Schäffer-Poeschel, pp. 15-51.

Blöcher, A. (2002). 'Due Diligence und Unternehmensbewertung im Akquisitionsprozess'. In: Scott, C. (ed.), *Due Diligence in der Praxis: Risiken minimieren bei Unternehmenstransaktionen*. Wiesbaden: Gabler, pp. 29-53.

Brokemper, A., & Herrmann, T. (2010). 'Maximizing the impact of M&A controlling: due diligence's link to corporate values. Practical experience from the consumer goods industry'. In: Gleich, R., Kierans, G., & Hasselbach, T. (eds.), *Value in due diligence: contemporary strategies for merger and acquisition success* (Gower e-book). Farnham: Gower, pp. 17-27.

Brotherson, W. T., Eades, K. M., Harris, R. S., & Higgins, R. C. (2014). 'Company valuation in mergers and acquisitions: how is discounted cash flow applied by leading practitioners?'. *Journal of Applied Finance (Formerly Financial Practice and Education)*, 24 (2), pp. 43-51.

Buffett, W. (2009). *Letter to the shareholders of Berkshire Hathaway Inc*., 27 February. Available at: https://www.berkshirehathaway.com/letters/2008ltr.pdf (Accessed: 17 December 2020).

Christensen, C.M., Alton, R., Rising, C., & Waldeck, A. (2011). 'The New M&A Playbook'. *Harvard Business Review*, 2011 (3), pp. 48-60. Available at: https://hbr.org/2011/03/the-big-idea-the-new-ma-playbook (Acessed: 17 December 2020).

Commercial Advisory (2020). *Business Plan Validierung*. Internal Commercial Advisory report. Unpublished.

Fitzpatrick, D. (2012). 'BofA's Blunder: $40 Billion-Plus'. *The Wall Street Journal Online*, 1 July. Available at: https://www.wsj.com/articles/SB10001424052702303561504577495332947870736 (Accessed: 17 December 2020).

Goedhart, M., Koller, T., & Wessels, D. (2005). 'The right role for multiples in valuation'. *McKinsey on Finance*, 15, pp. 7-11. Available at: https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-right-role-for-multiples-in-valuation# (Accessed: 17 December 2020).

Goedhart, M., Koller, T., & Wessels, D. (2010). *Valuation: measuring and managing the value of companies* (5th edn.). Hoboken, New Jersey: Wiley.

Haarbeck, C. (2019). 'Interdependenz von Due Diligence-Untersuchungen, Unternehmensbewertung und Unternehmenskaufvertrag'. In: Berens, W., Brauner, H.U., Knauer, T., & Strauch, J. (eds.), *Due Diligence bei Unternehmensakquisitionen* (8th edn.). Stuttgart: Schäffer-Poeschel, pp. 101-134.

Harvey, M. G., & Lusch, R. F. (1995). 'Expanding the nature and scope of due diligence'. *Journal of Business Venturing*, 10 (1), pp. 5-21. Available at: https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.468.2046&rep=rep1&type=pdf (Accessed: 17 December 2020)

Hood, L. P., & Lee, T. R. (2011). *A reviewer's handbook to business valuation: practical guidance to the use and abuse of a business appraisal*. Hoboken, New Jersey: Wiley.

Howson, P. (2003). *Due diligence: the critical stage in mergers and acquisitions*. Aldershot: Gower.

Howson, P. (2006). *Commercial due diligence: the key to understanding value in an acquisition*. Aldershot: Gower.

John, K., Liu, Y., & Taffler, R. (2011). 'It takes two to tango: overpayment and value destruction in M&A deals'. *The 20th European Financial Management Association (EFMA)*. Braga, Portugal, 22 June. Available at: https://efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2011-Braga/papers/0210.pdf (Accessed: 17 December 2020).

Knarr, M. (2020). *Commercial due diligence: private equity*. Available at: https://commercial-due-diligence.de/private-equity (Accessed: 17 December 2020).

Kuhner, C., & Maltry, H. (2017). *Unternehmensbewertung* (2nd edn.). Berlin: Springer Gabler.

Lewis, A., & McKone, D. (2016). 'So many M&A deals fail because companies overlook this simple strategy'. *Harvard Business Review Digital Articles*, 10 May. Available at: https://hbr.org/2016/05/so-many-ma-deals-fail-because-companies-overlook-this-simple-strategy (Accessed:17 December 2020).

Lucks, K., & Meckl, R. (2002). *Internationale Mergers & Acquisitions: der prozessorientierte Ansatz*. Berlin; Heidelberg: Springer.

McDonald, M., Smith, B., & Ward, K. (2010). 'Marketing due diligence'. In: Gleich, R., Kierans, G., & Hasselbach, T. (eds.), *Value in due diligence: contemporary strategies for merger and acquisition success* (Gower e-book). Farnham: Gower, pp. 47-61.

Mellen, C.M., & Evans, F.C. (2018). *Valuation for M&A: building and measuring private company value* (3rd edn.). Hoboken, New Jersey: Wiley.

Mergermarket Limited (2019). *2019 Global M&A Report with financial league tables*. Available at: https://www.mergermarket.com/info/2019-global-ma-report-financial-league-tables (Accessed: 26 April 2021).

Misamore, B. (2017). 'How to value a company: 6 methods and examples'. *Harvard Business School Online*, 21 April. Available at: https://online.hbs.edu/blog/post/how-to-value-a-company (Accessed:17 December 2020).

National Association of Certified Valuators and Analysts (2001). *International glossary of business valuation terms*. Available at: https://www.nacva.com/content.asp?contentid=166 (Accessed: 17 December 2020).

Niederdrenk, R., & Müller, M. (2012). *Commercial Due Diligence: die strategische Logik erfolgreicher Transaktionen*. Weinheim: Wiley-VCH.

Pomp, T. (2015). *Praxishandbuch Financial Due Diligence: Finanzielle Kernanalysen bei Unternehmenskäufen*. Wiesbaden: Springer.

Rosenbaum, J., & Pearl, J. (2009). *Investment banking: valuation, leveraged buyouts, and mergers & acquisitions*. Hoboken, New Jersey: Wiley.

Rothacker, R. (2014). 'The deal that cost Bank of America $50 billion – and counting'. *The Charlotte Observer*, 16 August. Available at: https://www.charlotteobserver.com/news/business/banking/article9151889.html (Accessed 17 December 2020).

Russ, W. (2006). 'Due Diligence - Bereiche der erforderlichen Prüfung'. In: Deutsche Börse AG (ed.), *Praxishandbuch Börsengang: Von der Vorbereitung bis zur Umsetzung*. Wiesbaden: Gabler, pp. 175-189.

Savovic, S., & Pokrajcic, D. (2013). 'Due diligence as a key success factor of mergers and acquisitions'. *Actual Problems of Economics*, 6 (144), pp. 424-434. Available at: https://www.researchgate.net/publication/281647947_Due_diligence_as_a_key_success_factor_of_mergers_and_acquisitions (Accessed: 17 December 2020)

Schacht, M. (2009). 'Due Diligence bei Unternehmensbewertungen'. In: Schacht, U., & Fackler, M. (eds.), *Praxishandbuch Unternehmensbewertung: Grundlagen, Methoden, Fallbeispiele* (2nd edn.). Wiesbaden: Gabler, pp. 31-50.

Stiller, P. (2020). *Mit dem Unternehmenskauf Ziele erreichen - zuverlässig und zeitnah*. Available at: https://stilleradvisors.com/de/unternehmenskauf-prozess.html (Accessed: 17 December 2020).

The World Bank (2021). *GDP (current US$) - Germany*. Available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=DE (Accessed: 26 April 2021).

Waschbusch, G., & Schuster, H. (2018). 'Global Mergers & Transactions'. *Tax & Legal Excellence*, 2018 (17). Available at: https://www.tax-legal-excellence.com/die-commercial-due-diligence-im-rahmen-von-unternehmenstransaktionen/ (Accessed: 17 December 2020).

Wirtschaftswoche (1986). 'Strategische Unternehmensbewertung: Lust auf Cash-Kühe'. *Wirtschaftswoche*, 1986 (11), p. 64. Available at: https://archiv.wiwo.de/document/WW__038607022 (Accessed: 17 December 2020).