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Practical Challenges in the Application of the Discounted Cash Flow (DCF) Model

in Terms of Business Valuation

Department of Accounting and Finance

Bachelor's thesis

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This thesis investigates the practical challenges associated with the application of the Discounted Cash Flow (DCF) model in business valuation. While the DCF model is widely regarded as a theoretically robust tool for estimating intrinsic value, its real-world use is often complicated by subjectivity, uncertainty, and model sensitivity. The study aims to identify the most significant obstacles practitioners encounter when applying the DCF model and to evaluate how these challenges are addressed in professional settings. A qualitative research design was adopted, combining a review of academic literature with semi-structured interviews of two experienced finance professionals.

The empirical findings confirm that the key difficulties lie in forecasting future cash flows, determining an appropriate discount rate, and estimating terminal value, each of which involves assumptions that can significantly influence the final valuation. Interviewees also emphasized the DCF model's reliance on heuristics and the limited availability of reliable data, particularly for non-public or early-stage companies. Despite these limitations, the DCF model remains a valuable tool when used alongside complementary valuation methods.

Sensitivity and scenario analyses were highlighted as essential techniques for managing uncertainty and stress-testing assumptions. The study concludes that the greatest challenges in DCF valuation are not mathematical, but stem from the quality of inputs and the judgment required in their estimation. Consequently, effective application of the DCF model demands both technical competence and deep contextual understanding. These findings suggest that valuation professionals should adopt a critical, context-sensitive approach to modeling, supported by a triangulation of valuation methods.

Key words: discounted cash flow, business valuation, financial modeling, practical challenges, corporate finance

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Tämä tutkielma tarkastelee diskontattuihin kassavirtoihin perustuvan mallin käytännön haasteita yrityksen arvonmäärityksessä. Vaikka DCF-malli nähdään yleisesti vankkana työkaluna todellisen arvon arviointiin, sen soveltaminen käytännössä on usein haastavaa mallin subjektiivisuuden, epävarmuuden ja oletuksien herkkyyden vuoksi. Tutkimuksen tavoitteena oli tunnistaa keskeisimmät käytännön haasteet, joita mallin käytössä esiintyy, sekä arvioida miten näitä haasteita käsitellään käytännön tasolla. Tutkimus toteutettiin laadullisena tutkimuksena, jossa yhdistettiin kirjallisuuskatsaus ja kaksi asiantuntijahaastattelua kokeneiden rahoitusalan ammattilaisten kanssa.

Empiiriset havainnot vahvistivat, että suurimmat haasteet liittyvät kassavirtojen ennustamiseen, sopivan diskonttokoron määrittämiseen ja terminaaliarvon arviointiin. Nämä osa-alueet perustuvat oletuksiin, joilla on merkittävä vaikutus lopullisessa arvonmäärityksessä. Haastateltavat korostivat DCF-mallin riippuvuutta heuristiikoista sekä luotettavan datan rajallista saatavuutta, erityisesti listaamattomien tai varhaisessa kasvun vaiheessa olevien yrityksien kohdalla. Rajoitteistaan huolimatta DCF-malli säilyttää arvonsa työkaluna, kun sitä käytetään yhdessä täydentävien arvonmääritysmenetelmien kanssa.

Herkkyys- ja skenaarioanalyysit nousivat keskeisiksi tekniikoiksi epävarmuuden hallinnassa ja oletusten kestävyyden testaamisessa. Tutkimuksen päätelmänä on, että DCF-mallin suurimmat haasteet eivät liity sen matemaattiseen rakenteeseen, vaan syötteiden ja oletuksien laatuun sekä niiden arviointiin liittyvään harkintaan. Mallin tehokas käyttö edellyttää sekä teknistä osaamista että syvällistä ymmärrystä liiketoiminnasta ja sen ajureista. Tulokset korostavat tarvetta kriittiselle ja tilannesidonnaiselle lähestymistavalle, jossa hyödynnetään useita arvonmääritysmenetelmiä rinnakkain lopputuloksen luotettavuuden parantamiseksi.

Avainsanat: diskontattu kassavirta, arvonmääritys, taloudellinen mallintaminen, käytännön haasteet, yritysrahoitus

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1 Introduction

1.1 The Significance of the DCF Model in Business Valuation

Discounted Cash Flow (DCF) analysis is a core valuation method widely employed by investment bankers, corporate executives, academics, investors, and other finance professionals. It is based on the concept that the value of a company, business unit, or asset portfolio can be determined by calculating the present value of its projected free cash flows. These projections are developed using a range of assumptions and estimates regarding the company's future financial performance, including revenue growth, profit margins, capital expenditures, and net working capital requirements. DCF analysis is commonly used in various financial contexts, such as mergers and acquisitions (M&A), initial public offerings (IPOs), corporate restructurings, and investment evaluations. DCF analysis is also useful when there are few or no direct peer companies or comparable acquisitions available for valuation. In such cases, it provides a standalone approach to determining value based on a company's intrinsic cash flow potential rather than relying on market-based comparisons (Rosenbaum & Pearl, 2021).

The assumptions underlying a DCF analysis serve as both its greatest strength and its primary limitation compared to market-based valuation methods. On the positive side, using well-supported assumptions for financial projections, the weighted average cost of capital (WACC), and terminal value can insulate the target's valuation from temporary market fluctuations. Additionally, a DCF offers the flexibility to model various scenarios by adjusting key inputs and assessing their impact on valuation. However, the reliability of a DCF depends entirely on the quality of its assumptions. If these assumptions fail to accurately reflect the target's true opportunities and risks, the resulting valuation may lack credibility and practical relevance (Rosenbaum & Pearl, 2021).

In real-world scenarios, professionals often struggle with uncertainties in forecasting future cash flows, determining an appropriate discount rate, and estimating the terminal value, all of which can lead to highly variable results. Moreover, external factors such as macroeconomic changes, industry-specific risks, and company-specific variables further complicate the process (Green et al., 2016). Given these complexities, understanding the practical difficulties and limitations of the DCF model is crucial for improving its application in business and investment decisions.

1.2 Research Objectives and Question

This research aims to bridge the gap between theoretical knowledge and practical implementation by exploring the key challenges financial professionals face when using the DCF model. By incorporating expert interviews and an extensive literature review, this research seeks to provide valuable insights into real-world valuation practices, offering guidance on how analysts and decision-makers can enhance the reliability and accuracy of their DCF-based valuations.

Based on prior literature (Brotherson et al., 2014), we can determine that the application of the DCF model is far from routine, it demands strong expertise and sound judgement capabilities. The same research also highlights that all leading practitioners utilize DCF methods in their valuation of companies, thus creating a compelling topic to research.

This thesis aims to answer the following research question with the help of expert interviews and the author's own conclusions drawn from a literature review. The research question is:

What are the biggest practical challenges in the application of the DCF model?

The primary goal of the interviews is to generate practical insights that complement the theoretical perspectives drawn from existing literature. While many scientific articles identify challenges (see e.g., Damodaran, 2011; Green et al., 2016; Ruback, 2011), there is limited research on the practical aspects of addressing and managing them. The interviewees consist of professionals with years of experience in financial modelling and simulation. After identifying the main challenges, I will propose recommendations for the application of the DCF model and suggest directions for future research. This thesis benefits readers less familiar with the Discounted Cash Flow (DCF) model by outlining key considerations and common challenges in its practical application.

1.3 Research Approach and Methodology

This study employs a qualitative research approach to explore the practical challenges associated with the application of the Discounted Cash Flow (DCF) model. Given that the DCF model is widely used in business valuation but prone to subjective inputs and forecasting difficulties, a qualitative approach is suitable for capturing the nuanced perspectives of industry professionals. This study focuses on gathering in-depth insights

from experienced professionals in the field of finance through expert interviews. This method allows for a rich exploration of real-world challenges that may not be fully captured through literature review.

To gain a comprehensive understanding of the practical challenges associated with the DCF model, semi-structured interviews were conducted with financial professionals experienced in company valuation. The interviewed experts had backgrounds in investment banking, financial analysis, equity research, corporate finance, and private equity, providing diverse insights into the real-world application of the model. The interviews followed a predefined set of questions (see Appendix 1), but flexibility was maintained to allow participants to elaborate on relevant topics and share personal experiences. In addition to expert interviews, the study incorporates insights from existing literature on the DCF model. Academic research papers, textbooks, and industry reports were analyzed to contextualize the findings from the interviews and to compare them with theoretical frameworks.

1.4 Research Structure

This thesis is organized into seven chapters, each serving a distinct purpose in exploring the practical challenges associated with the Discounted Cash Flow (DCF) model. Chapter 1 introduces the topic by outlining the relevance of the DCF model in modern valuation practice and formulates the research objective and guiding question. Chapter 2 presents the theoretical foundation of the DCF model, covering its core components and valuation logic. Chapter 3 reviews the most common challenges of the model as identified in academic literature, including its sensitivity to assumptions, forecasting difficulties, and limitations in real-world application. Chapter 4 describes the research methodology, including the qualitative approach, data collection via expert interviews, and the thematic analysis process. Chapter 5 presents the empirical findings from the interviews, highlighting real-world perspectives on the DCF model's strengths, limitations, and implementation challenges. Chapter 6 provides a critical discussion by comparing the empirical insights to the literature, identifying both convergence and divergence between theory and practice. Finally, Chapter 7 concludes the thesis by summarizing the key findings, reflecting on their implications for valuation professionals, and suggesting areas for further research.

2 Theoretical Framework

2.1 Fundamental Principles

The DCF model requires three key inputs to value any asset: the expected cash flow, the timing of the cash flow, and an appropriate discount rate that reflects the riskiness of these cash flows (Damodaran, 2011). The model plays a crucial role in decision-making processes, providing a systematic approach to evaluating financial opportunities. This chapter outlines the fundamental principles of the DCF model, drawing upon academic research and established financial theories.

2.1.1 Laying the Foundation: Understanding the Target and Its Industry

The initial phase of conducting a DCF valuation, like any valuation process, involves thoroughly researching the target company and its industry. Neglecting this crucial due diligence step can result in flawed assumptions and inaccurate valuations. This process includes identifying the primary financial performance drivers such as revenue growth, profitability, and free cash flow generation, which help in developing well-supported financial projections. Valuing a publicly traded company tends to be more straightforward than a private company, as publicly available information from sources such as company filings, equity research reports, earnings call transcripts, and investor presentations facilitates the analysis (Brealey et al., 2014).

2.1.2 Forecasting Free Cash Flow: The Core of DCF Valuation

The foundation of a DCF valuation is built upon forecasting the target company's unlevered free cash flow (FCF). Unlevered FCF, referred to simply as FCF in this context, represents the cash a company generates after covering its operating expenses, taxes, capital expenditures, and working capital needs, but before accounting for interest payments. The projection of FCF relies on key assumptions about the company’s future financial performance, including revenue growth, profit margins, capital expenditures, and working capital requirements. These assumptions are typically informed by historical performance, management insights, and external market analysis (Rosenbaum & Pearl, 2021).

Accurate FCF projections are crucial, as they significantly influence the valuation outcome in a DCF. Generally, FCF is forecasted over a five-year period, though this timeframe may vary depending on industry dynamics, the company’s growth stage, and

the predictability of its cash flows. A five-year projection period is often adequate to capture at least one full business or economic cycle and to allow for the execution of ongoing or planned strategic initiatives. The objective is to extend FCF projections until the company reaches a stable financial state, which serves as the basis for calculating terminal value (Rosenbaum & Pearl, 2021).

2.1.3 Weighted Average Cost of Capital (WACC): The Key Discount Rate

In a DCF analysis, the Weighted Average Cost of Capital (WACC) typically serves as the discount rate applied to the target company's projected free cash flows and terminal value, bringing them to their present value (Fernandez, 2010). This rate is intended to accurately capture both the business and financial risks associated with the company. As its name suggests, WACC represents a “weighted average” of the expected returns required by investors who have provided capital, typically in the form of debt and equity (Farber et al., 2006). It is often referred to as the company's “discount rate” or “cost of capital.” Since debt and equity carry different levels of risk and tax implications, WACC is inherently influenced by the firm’s capital structure (Graham & Harvey, 2001).

2.1.4 Terminal Value: Capturing Long-Term Business Value

The DCF valuation method is centered on estimating the present value of a company's future free cash flows. Since it is impractical to project these cash flows indefinitely, a terminal value is used to capture the remaining value of the company beyond the forecast period. This terminal value often constitutes a significant portion of the overall valuation in a DCF. Therefore, it is essential that the company’s financial figures in the final projection year (the "terminal year") reflect a stable and normalized level of performance rather than the low or high point of a cycle (Vorst & Yohn, 2018).

There are two commonly used approaches to calculating terminal value: the Exit Multiple Method (EMM) and the Perpetuity Growth Method (PGM). The EMM estimates the company's remaining value by applying a valuation multiple, typically based on terminal year EBITDA or EBIT. Meanwhile, the PGM assumes that the company’s terminal year free cash flow will grow indefinitely at a constant rate, treating it as a perpetuity to determine the final valuation (Nissim, 2019).

2.1.5 Estimating Enterprise Value: The Final Output of DCF Valuation

The enterprise value of a company is determined by discounting its projected free cash flows (FCF) and terminal value to the present and then summing these values. From this calculated enterprise value, the implied equity value and, if applicable, the share price can be derived. The present value calculation involves applying a discount factor to each year's projected FCF as well as the terminal value (Rosenbaum & Pearl, 2021). This discount factor reflects the present value of one dollar received in the future, based on a specific discount rate (Graham & Harvey, 2001).

Since a DCF model relies on multiple assumptions, including key performance drivers, WACC, and terminal value, it typically produces a valuation range rather than a single fixed value. The process of adjusting key inputs to analyze how they impact the valuation outcome is known as sensitivity analysis. Among the most commonly adjusted factors in this analysis are WACC, exit multiple, perpetuity growth rate, revenue growth, and profit margins (Rosenbaum & Pearl, 2021). Once a valuation range is established, it should be compared against valuations derived from other methodologies (Kaplan & Ruback, 1995), such as comparable company analysis, precedent transactions, and leveraged buyout (LBO) models, to ensure consistency and reliability.

3 Common Challenges of the DCF Model Based on Literature

The Discounted Cash Flow (DCF) model is one of the most widely used valuation methods in finance, yet it comes with several challenges that can affect the reliability and accuracy of its results. These challenges stem from various factors, including the sensitivity of inputs, forecasting difficulties, and market dynamics. This chapter explores the key challenges of the DCF model based on academic literature and research.

3.1 Sensitivity to Input Assumptions

A major drawback of the DCF model is its reliance on several input assumptions, including projected cash flows, discount rates, and terminal value assumptions. Small changes in these inputs can lead to significant variations in valuation outcomes (Damodaran, 2011; Lundholm & O'keefe, 2001). The most sensitive variables in the DCF model include discount rate, growth rate and terminal value.

The choice of discount rate, often derived from the Weighted Average Cost of Capital or the Cost of Equity via the Capital Asset Pricing Model (see Lintner, 1975; Sharpe, 1964) can significantly influence valuation results. A higher discount rate increases the rate at which future cash flows are discounted, thereby reducing their present value and leading to a lower valuation of the asset. Conversely, a lower discount rate reduces the discounting effect, increasing the present value of future cash flows and resulting in a higher valuation.

Assuming overly optimistic or pessimistic projections about revenue growth or profit margins can result in either inflated or understated valuations (Psychoyios, 2024). Most notably, assuming a higher growth rate than the overall economy and inflation in perpetuity is unrealistic, as no company can sustain a growth rate that exceeds the broader economy indefinitely. Over the long run, firms are constrained by macroeconomic factors, market saturation, and competitive pressures, making it implausible for a single entity to outgrow the economy indefinitely. While individual companies can experience periods of rapid growth, their long-term expansion is ultimately limited by the economy's aggregate growth factors (Solow, 1956; Swan, 1956).

Both the discount factor and the growth rate assumptions have a direct impact on the terminal value. Rojo-Ramírez et al., (2018) highlights how Terminal Value often represents a significant proportion of a firm's total valuation, making the DCF model highly sensitive to assumptions about long-term growth rates and discount rates.

3.2 Forecasting Difficulties

The Discounted Cash Flow model relies on projected cash flows, typically spanning from five to ten years, depending on the company's stage of development, with longer projection periods for high-growth early-stage firms and shorter periods for mature companies in a steady state (Rosenbaum & Pearl, 2021). While historical performance offers valuable insights for forming defensible assumptions, it is important to recognize that past growth rates, profit margins, and financial ratios do not guarantee future performance. Market dynamics, competitive pressures, economic conditions, and industry-specific trends can all influence a company's future cash flow generation, making it essential to incorporate both quantitative analysis and qualitative judgment when developing forecasts.

3.3 Estimation of the Discount rate

One of the primary challenges in estimating WACC is the selection of the correct tax rate. The tax rate should reflect the effective tax paid by the company rather than the statutory corporate tax rate, as the latter does not always align with actual tax savings. Additionally, the choice between market and book values is critical. WACC should be calculated using market values of debt and equity rather than book values, as market values better reflect the true economic capital structure (Fernandez, 2010). Using book values can lead to substantial miscalculations, especially in cases where market conditions have significantly altered the firm's financial position.

Another major issue is the handling of changes in capital structure (Fernandez, 2010). Many WACC calculations assume a constant capital structure, but in reality, companies adjust their debt levels over time. If a firm's leverage is expected to change, WACC should be adjusted dynamically for each period, rather than applying a single WACC across all forecasted years (Fernandez, 2010). Similarly, determining the correct risk-free rate and cost of equity presents difficulties. The risk-free rate should correspond to the duration of the forecast horizon, while the Cost of Equity, often estimated using CAPM (Fama &

French, 2004), is highly sensitive to beta and market risk premium assumptions. Estimating the cost of debt presents additional difficulties. The cost of debt should reflect the market rate on newly issued debt rather than the historical coupon rates of existing debt. Using outdated debt costs can lead to underestimation of the firm's true financing costs.

3.4 Dependence on Terminal Value

A significant issue in the practical application of the DCF model is its heavy reliance on the terminal value. In many valuations, the terminal value accounts for a substantial portion, often exceeding 50 % of the total estimated enterprise value (Rojo-Ramírez et al., 2018). This dependency raises concerns about the robustness and accuracy of the valuation, as small changes in terminal value assumptions can lead to disproportionately large variations in the final output.

There are two primary methods for estimating the terminal value: the Exit Multiple Method (EMM) and the Perpetuity Growth Method (PGM) (Nissim, 2019). The EMM applies a valuation multiple to determine the business's value at the end of the projection period. However, the key challenge is selecting an appropriate multiple, as it is usually derived from comparable companies or transactions that may not accurately reflect the target company's unique characteristics. The PGM assumes that the company’s free cash flow will grow indefinitely at a constant rate, typically linked to long-term GDP growth or inflation. The difficulty here lies in determining a realistic and defensible long-term growth rate, as overestimating it can lead to an excessively optimistic valuation, while underestimating it may undervalue the company.

Additionally, estimating terminal value is complicated by the fact that business conditions, competitive landscapes, and macroeconomic environments evolve over time. Forecasting a stable state for a company in perpetuity is inherently speculative (Behr et al., 2018). This issue is particularly pronounced for industries experiencing high volatility or rapid technological changes, such as the technology and energy sectors. Because of these challenges, financial analysts often conduct sensitivity analyses to assess the impact of different terminal value assumptions, but this does not eliminate the fundamental problem of excessive reliance on terminal value in DCF models.

3.5 Market and Behavioral Factors

Market conditions also play a crucial role in DCF valuations. While the model is designed to estimate intrinsic value independent of short-term market fluctuations, in practice, macroeconomic factors such as interest rates, inflation, and geopolitical risks can significantly influence valuation outcomes. For instance, a sudden increase in interest rates can lead to a higher discount rate, reducing the present value of projected cash flows and leading to lower valuations.

Behavioral biases in valuation arise from the subjective choices analysts make when selecting companies to evaluate and gathering relevant information. Initial perceptions are shaped by prior exposure to media reports, expert opinions, and market sentiments, which can introduce bias even before an analysis begins. Additional biases stem from institutional factors, such as equity research analysts' tendencies to favor buy recommendations over sell recommendations, often due to pressures from portfolio managers and investment banking relationships (Damodaran, 2011).

3.6 Practical Limitations in Application

One of the most significant challenges is data availability. For publicly traded companies, financial statements, analyst reports, and market data provide a foundation for making reasonable assumptions about future performance. However, for private companies or early-stage firms, obtaining reliable financial data is significantly more difficult.

A further issue arises from the difficulty of modelling industry-specific risks. While the DCF framework assumes a level of predictability in cash flow generation, certain industries such as natural resources, pharmaceuticals, and technology are subject to highly uncertain revenue streams due to regulatory changes, commodity price fluctuations, or technological disruption.

Uncertainty is an inherent aspect of the valuation process, influencing both the initial assessment of a business and how its value changes over time as new information emerges. This information may pertain specifically to the company being valued, the industry in which it operates, or broader market factors such as interest rates and economic conditions (Damodaran, 2011). Huang et al., (2023) investigates how analysts respond to valuation uncertainty proxied by poor earnings quality and elevated firm-specific risks

through their use of DCF models in equity research. Their findings demonstrate that analysts are more inclined to apply DCF models when firms exhibit greater uncertainty, reflecting heightened investor demand for explicit information on cash flows and discount rates. The study underscores the importance of considering firm-specific uncertainty in both the selection and implementation of valuation models. While DCF models offer a theoretically robust approach under uncertainty, their practical value depends heavily on the quality of input assumptions and the depth of supporting analysis.

3.7 Comparisons with Alternative Valuation Methods

Given the practical challenges associated with the DCF model, financial professionals often complement it with alternative valuation approaches to improve the robustness of their assessments. Among the most widely used alternatives are Comparable Company Analysis (CCA), Precedent Transaction Analysis (PTA), and the Leveraged Buyout (LBO) model. While each of these valuation methods has its strengths and weaknesses, many practitioners use a triangulation approach, employing multiple methodologies to cross-validate their results. By incorporating insights from alternative models, analysts can mitigate some of the inherent limitations of the DCF model and arrive at a more balanced and defensible valuation.

3.7.1 Comparable Company Analysis

Comparable Company Analysis (CCA) involves valuing a company based on market multiples derived from similar publicly traded firms. Common valuation multiples include Price-to-Earnings (P/E), Enterprise Value-to-EBITDA (EV/EBITDA), and Price-to-Book (P/B) (Liu et al., 2002). The key advantage of this method is its reliance on actual market data rather than subjective projections. However, CCA is limited by the availability of truly comparable companies, as differences in size, growth prospects, and business models can make direct comparisons difficult (Bhojraj & Lee, 2002).

3.7.2 Precedent Transaction Analysis

Precedent Transaction Analysis (PTA) evaluates a company based on the valuation multiples observed in past mergers and acquisitions within the same industry. This approach is particularly useful in M&A scenarios, as it reflects actual market prices paid for similar companies. However, PTA is sensitive to deal-specific factors such as synergies, market

conditions at the time of the transaction, and strategic motivations behind the deal, making it difficult to generalize findings (Rosenbaum & Pearl, 2021).

3.7.3 Leveraged Buyout Model

A Leveraged Buyout (LBO) model is a financial tool used to assess the valuation and feasibility of acquiring a company primarily through borrowed funds. In essence, it evaluates the capacity of a target company to support high levels of debt, which are used to finance its own acquisition (Kaplan & Strömberg, 2009). As a valuation tool, the LBO model is distinct from traditional techniques such as Discounted Cash Flow (DCF) or Comparable Companies Analysis (CCA) in that it is return-driven. Instead of focusing solely on intrinsic or market-based value, it aims to determine the maximum purchase price a financial sponsor can pay while still achieving acceptable internal rates of return.

The model incorporates detailed assumptions about the financing structure, including various tranches of debt (e.g., bank loans, high-yield bonds, mezzanine capital) and an equity contribution from a private equity sponsor. By projecting future financial performance and debt repayments, it calculates the residual equity value at exit often through a sale or IPO, thereby informing the sponsor's potential return (Rosenbaum & Pearl, 2021). Due to its focus on cash flow generation, capital structure, and debt servicing capacity, the LBO model serves as both a valuation floor and a key reference point in mergers and acquisitions, particularly in the private equity space.

4 Research Methodology

This chapter outlines the research methodology adopted in this study to examine the practical challenges associated with the application of the Discounted Cash Flow (DCF) model. The research design was chosen to ensure a comprehensive understanding of the subject matter, combining qualitative methods with an emphasis on expert insights.

Given the subjective nature of financial valuation and the complexity of the DCF model, this study employs a qualitative research approach. Qualitative research is particularly well suited for exploring real-world applications, as it allows for the collection of in-depth insights from experienced practitioners. Instead of focusing on numerical data and statistical analysis, this method prioritizes the detailed perspectives of professionals who engage with valuation methodologies in practice.

4.1 Data Collection

A central component of this research is the integration of primary and secondary data. Primary data was obtained through interviews with finance professionals who have extensive experience in financial modeling and valuation, while secondary data was sourced from academic literature, industry reports, and valuation textbooks. This mixed approach ensures a balanced examination of theoretical and practical aspects, allowing for a critical assessment of the challenges faced in implementing the DCF model.

To collect relevant primary data, semi-structured interviews were conducted with professionals working in finance. The selection of interviewees was based on their expertise in valuation and financial modeling, ensuring a high level of insight into the application of the DCF model.

Table 1 Research Interviewees

Interviewee	A	B
Current Position	Head of IR & Strategy at a Publicly Listed Company	Director at a Global Private Equity Firm
Background & Experience	Mergers & Acquisitions, Investment Banking, Equity Research	Private Equity, Management Consulting, Investment Banking
Duration	60 minutes	60 minutes
Date	5.3.2025	13.3.2025

Semi-structured interviews were chosen as the primary data collection method because they offer a balance between structure and flexibility. While the interviews were guided by a predefined set of questions (see Appendix 1), participants were encouraged to elaborate on their experiences, providing nuanced perspectives on the practical difficulties associated with the DCF model. This approach allowed the research to uncover detailed insights that may not have emerged through a rigid questionnaire format.

Each interview lasted approximately 60 minutes and was conducted remotely via video conferencing. The participants were assured of confidentiality to ensure candid and unbiased responses. The discussions focused on various aspects of the DCF model, including its assumptions, sensitivity to input variables, forecasting challenges, and its role in practical valuation scenarios.

4.2 Data Analysis

The data collected from the interviews was analyzed using a thematic approach. This involved identifying recurring patterns and key themes in the responses to understand the common challenges and variations in perspectives among professionals. The findings from the interviews were then compared against existing literature to identify areas of consistency and divergence. This comparative analysis helped in assessing whether the challenges highlighted by professionals align with those discussed in academic research.

4.3 Limitations

As with any qualitative study, certain limitations must be acknowledged. The findings are based on a limited number of expert interviews, which, while providing deep insights, may not capture the full spectrum of industry perspectives. Additionally, the study relies on self-reported experiences, which can be influenced by individual biases and specific professional backgrounds. Despite these limitations, the methodological design provides a solid foundation for uncovering practitioner-level insights that are often absent from quantitative research or purely theoretical literature.

5 Empirical Findings from Interviews

This chapter presents the key empirical findings derived from the conducted interviews, providing practical perspectives on the application and challenges of the Discounted Cash Flow model. Thematic analysis of the interviews revealed recurring viewpoints on the practical use of the DCF model, its strengths and weaknesses, and key challenges in its application. Their reflections underscore the model's dual nature: while theoretically robust, its implementation is often fraught with complexities that can limit its reliability and practical usefulness.

Both experts highlight several practical limitations. Central among these is the high sensitivity of the DCF model to input assumptions, particularly regarding cash flow forecasts, discount rates, and terminal value estimates. Both interviewees stress that even small changes in assumptions (e.g., WACC shifts of 0.5–1%) can lead to substantial valuation swings.

5.1 Perceived Strengths of the DCF Model

A key strength emphasized by both interviewees is the DCF model's capacity to compel a deep understanding of a company's fundamental value drivers. Unlike relative valuation methods (e.g., EV/EBITDA multiples), DCF provides an intrinsic valuation framework that forces analysts to examine revenue growth, profitability, scalability, capital expenditures, working capital needs, and associated risks. The DCF model is often used to validate or cross-check results derived from other approaches as a “sanity check”, especially in strategic investment contexts or when assessing intrinsic value in the absence of comparable market data.

5.2 Core Practical Challenges

5.2.1 Forecasting Cash Flows

The main challenge in using the DCF model was the difficulty of forecasting cash flows, particularly in companies lacking stable historical performance or operating in volatile markets. Even detailed and data-driven forecasts were often seen to fall short of accuracy due to unexpected market shifts or company-specific developments. Interviewee B emphasizes the difficulty in forecasting cash flows, especially in businesses that do not exhibit stable, steady-state profiles. Similarly, Interviewee A notes that in high-growth or

cyclical industries, estimating normalized cash flow potential becomes highly speculative. Interviewee A highlights the importance of understanding the company's market and competitive position before quantifying any assumptions.

5.2.2 Estimating the Discount Rate

Both experts acknowledged that determining an appropriate discount rate is critical to the credibility of a DCF valuation. When it comes to estimating the discount rate, both A and B mention the common use of WACC derived via CAPM, although interviewee A points out that in practice, assumptions are often based on industry heuristics or peer benchmarking rather than purely academic precision. Notably, the discount rate is viewed as a component where, paradoxically, less analytical effort is sometimes devoted despite its outsized impact on valuation results, to focus more on understanding the business and its key value drivers.

5.2.3 Terminal Value Estimation

A further challenge relates to the estimation of terminal value, which typically accounts for a substantial share of total firm value in a DCF model. The assumptions behind this component, especially those concerning long-term growth are highly influential and prone to uncertainty. The interviewees emphasized that terminal growth assumptions must be well justified and reflect a realistic trajectory in line with the broader economy. Overly optimistic or simplistic assumptions were viewed as a common source of overvaluation. The interviewees noted that the weight of the terminal value in the overall valuation outcome is case-dependent and varies by company characteristics; in early-stage firms, the terminal value typically represents a smaller proportion of the total value, whereas in more mature companies, it tends to account for a larger share.

5.3 Role of the DCF Model in Practice

In terms of practical application, DCF is rarely used in isolation. Interviewee B states that in private equity (PE) settings, valuation is predominantly driven by comparable transactions and LBO models, with DCF serving as a complementary tool. Interviewee A confirms that while DCF is frequently constructed, its weight in final decision-making varies significantly depending on the context, be it public markets, M&A, or venture capital. Importantly, DCF's relevance increases in stable industries or when strategic synergies

need to be explicitly valued. Interviewee B stated that it is rare for practitioners to assert that the DCF outcome represents the definitive best estimate of a company's value, partly due to the model's susceptibility to bias and manipulation through subjective input assumptions.

5.4 Use of Sensitivity and Scenario Analysis

Both experts emphasize the importance of scenario and sensitivity analyses. Interviewee B refers to the use of multiple operating scenarios and stress testing of discount rates and growth assumptions. Interviewee A highlights the role of sensitivity testing on revenue growth, profit margins, and terminal growth rates to validate model robustness. These practices are essential to mitigate the model’s sensitivity to uncertain inputs and to support more informed decision-making.

6 Discussion of the Results

This chapter critically evaluates the empirical findings from the interviews in relation to the theoretical framework established in the literature review. The purpose is to identify points of convergence and divergence between theory and practice, and to reflect on the implications of these findings for the use of the DCF model in business valuation.

6.1 Theoretical Validity Versus Practical Complexity

The literature extensively promotes the DCF model as a robust and theoretically grounded approach to valuation, capable of capturing the intrinsic value of a business through the present value of its expected cash flows (Damodaran, 2011; Rosenbaum & Pearl, 2021). This view is largely echoed in practice, where interviewees acknowledged the model's strength in forcing a disciplined analysis of value drivers. However, while the theoretical structure assumes a certain level of predictability and rationality, real-world applications reveal a more nuanced reality: valuation is often affected by subjective inputs, data limitations, and contextual judgment.

This gap between theory and practice highlights a recurring theme in financial literature: the tension between model sophistication and real-world usability (Green et al., 2016). Although DCF remains a preferred method in academia, practitioners frequently rely on simplifications or complementary methods to accommodate uncertainties and resource constraints.

6.2 Forecasting Challenges and Business Understanding

The interviews confirmed one of the most frequently cited issues in the literature, difficulty in forecasting free cash flows (see e.g., Damodaran, 2011; Huang et al., 2023; Kaplan & Ruback, 1995). While some academic texts recommend using historical data, industry trends, and management guidance to generate cash flow projections, practitioners reported that even well-informed models often fall short of accuracy. This supports the findings of Brotherson et al. (2014), who observed that expert judgment and qualitative understanding of the business are just as important as technical forecasting skills.

In practice, forecasting is not merely a mechanical process but a strategic exercise in understanding the firm’s competitive positioning, market dynamics, key value drivers, and capital intensity. This suggests that while DCF is a quantitative model, its effectiveness

depends heavily on qualitative insight, a dimension sometimes understated in theoretical treatments.

6.3 Discount Rate Estimation and Sensitivity

Literature emphasizes the need for precision in estimating the discount rate through WACC and CAPM (Fernandez, 2010; Fama & French, 2004), and warns of its impact on valuation outcomes. The interviews confirmed this sensitivity but also revealed a surprising pattern: despite its importance, the discount rate is often set using standardized heuristics rather than in-depth calculation. This reflects a disconnect between academic ideals and industry practices.

Moreover, both interviewees stressed that DCF models are highly sensitive to changes in discount rate assumptions, aligning with empirical findings by Huang et al. (2023), who observed a strong reliance on DCF in high-uncertainty environments precisely because it allows for explicit modelling of risk premiums. This finding further underscores the importance of sensitivity testing, which was universally applied in practice.

6.4 Terminal Value and Model Fragility

Both theoretical and empirical perspectives agree that terminal value is a dominant component of the DCF model (Nissim, 2019; Rojo-Ramírez et al., 2018). However, while literature treats terminal value estimation as a manageable assumption, practitioners viewed it as a major source of model fragility. Small changes in terminal growth assumptions, particularly when exceeding GDP growth, can distort valuation results significantly, an issue often glossed over in academic discussions.

The empirical insights suggest that terminal value is not just a technical input but a strategic modelling decision with profound implications. This highlights the need for more critical treatment of terminal value estimation in valuation education and research.

6.5 Contextual Use and Complementary Methods

While the DCF model is frequently presented in academic literature as a foundational method for firm valuation, empirical findings from this study highlight its context-dependent role in professional practice. Both interviewees emphasized that DCF is rarely used as a standalone tool; instead, it is typically employed in parallel with other valuation

approaches, such as Comparable Company Analysis (CCA), Precedent Transaction Analysis (PTA), and Leveraged Buyout (LBO) models.

The relative weight given to DCF in the overall valuation process varies based on the type of transaction, industry characteristics, and stakeholder perspective. For instance, in private equity settings, valuation decisions are more commonly driven by return-oriented frameworks such as LBO models, where capital structure and internal rate of return targets are central. In such cases, the DCF model may serve more as a reference point or sanity check rather than a decisive input in investment decisions.

Conversely, in corporate strategic transactions, particularly where the acquirer intends to integrate the target company into its long-term operations, DCF analysis plays a more prominent role. This is because it provides an avenue to explicitly incorporate strategic synergies, cost efficiencies, and capital allocation plans into the valuation model. The ability to assess long-term intrinsic value based on company-specific assumptions makes DCF especially useful in such contexts.

In sum, while DCF retains strong conceptual value, its practical utility is highly situational. The findings support the view that experienced practitioners prefer a triangulation approach, where multiple valuation methods are used in combination to enhance reliability, reduce bias, and adapt to the specific circumstances of each case. This practical flexibility contrasts with the more prescriptive stance often found in academic treatments of valuation methodology.

7 Summary

This thesis has examined the practical challenges associated with the application of the Discounted Cash Flow (DCF) model in business valuation. The research question was: *What are the biggest practical challenges in the application of the DCF model?* To address this, the study employed a qualitative research approach, combining a review of academic literature with semi-structured interviews of experienced finance professionals.

The findings reveal that while the DCF model is theoretically robust and widely recognized for its ability to estimate intrinsic value, its application in practice is often fraught with complexity and subjectivity. The most significant practical challenges identified include the difficulty of forecasting future free cash flows, determining an appropriate discount rate, and estimating terminal value. These inputs are not only inherently uncertain but also highly sensitive, small changes in assumptions can lead to substantial variations in valuation results. Moreover, practitioners highlighted that despite the academic emphasis on analytical accuracy, real-world implementations often rely on heuristics, peer benchmarking, and simplified assumptions due to time constraints and data limitations.

One notable observation from the interviews was that DCF models are rarely used in isolation. Instead, they serve as complementary tools alongside other valuation methods. The choice and weight of valuation methods depend heavily on context, industry characteristics, and the nature of the transaction. In addition, scenario and sensitivity analyses are considered essential in managing uncertainty and validating model robustness.

The study concludes that while the DCF model retains substantial conceptual value, its practical utility is context-dependent and heavily reliant on the analyst's business understanding and judgment. It is not the model's theoretical structure that limits its effectiveness, but the uncertainties and discretion required in applying it under real-world conditions. Therefore, practitioners should not only develop technical competence in financial modelling but also cultivate a deep understanding of the business environment and remain critical of their assumptions.

Limitations of this research include the small number of interviews, which, while insightful, may limit the generalizability of the findings. Additionally, the reliance on subjective expert perspectives may introduce bias. Future research could expand the empirical base

through a broader survey of industry professionals. Another promising area lies in investigating how technological advances, such as artificial intelligence and data analytics, may enhance the forecasting accuracy and objectivity of DCF models.

In answering the research question, this study shows that the greatest challenges in applying the DCF model lie not in its mathematical structure, but in the assumptions and judgments required for its effective implementation. The findings underscore the need for a balanced, critical, and context-sensitive approach to valuation, combining technical expertise with qualitative insight.

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Disclosing the use of AI:

While the content and analysis are entirely my own, I have used AI-based tools, including ChatGPT, to assist with language refinement and proofreading.

Appendices

Appendix 1 Interview Questions

- Voitko kertoa lyhyesti itsestäsi ja taustastasi rahoitusalalla? / Can you briefly introduce yourself and your background in the financial industry?
- Mitkä ovat mielestäsi DCF-mallin suurimmat vahvuudet ja heikkoudet käytännön arvonmäärityksessä? / In your opinion, what are the greatest strengths and weaknesses of the DCF model in practical valuation?
- Millaisia haasteita olet kohdannut DCF-mallia käyttäessäsi? Onko jokin tietty osa-alue erityisen haastava (esim. kassavirtojen ennustaminen, diskonttokorko, terminaaliarvo)? / What challenges have you encountered when using the DCF model? Is there a specific area that is particularly challenging (e.g., forecasting cash flows, discount rate, terminal value)?
- Kuinka merkittävässä roolissa DCF-malli on ollut verrattuna muihin arvonmääritys tapoihin urallasi? / How significant has the DCF model been compared to other valuation methods in your career?
- Miten arvioitte ja määritätte tulevat kassavirrat? Mitkä tekijät vaikuttivat eniten niiden ennustamiseen? / How do you assess and determine future cash flows? What factors influence their forecasting the most?
- Kuinka herkkä DCF-malli on oletuksille, ja miten varmistutaan, että ennusteet ovat realistisia? / How sensitive is the DCF model to assumptions, and how do you ensure that the forecasts are realistic?
- Oletko huomannut, että tietyillä toimialoilla tai yritystyypeillä DCF-mallin soveltaminen on erityisen vaikeaa? / Have you noticed that applying the DCF model is particularly difficult in certain industries or types of companies?
- Miten pääasiallisesti määritätte kassavirtoihin käytettävän diskonttokoron? Millaisia haasteita muistat kohdanneesi? / How do you primarily determine the discount rate used for cash flows? What challenges do you recall facing?

- Kuinka paljon painoarvoa DCF-mallin tuloksille annettiin arvonmääritystä tehdessä? Vaihteleeko painoarvo, esim. kassavirrat vs. jäännösarvo? / How much weight is given to the results of the DCF model when conducting a valuation? Does the emphasis vary, e.g., between cash flows and terminal value?

- Millaisia tarkistuksia tai herkkyysanalyysiä olette tehneet varmistaaksenne DCF-mallin tulosten luotettavuuden? / What kinds of checks or sensitivity analyses have you conducted to ensure the reliability of the DCF model results?

- Onko sinulla vielä jotain ajatuksia tai näkemyksiä DCF-mallin käytännön haasteista, joita emme käsitelleet mutta jotka koet tärkeiksi? / Do you have any additional thoughts or insights on the practical challenges of using the DCF model that we have not covered but that you consider important?