

**Corporate Reporting in Equity Analysis**  
A Case Study on the Relevance of  
Financial and Sustainability Reporting Information

**Dissertation**

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## **Abstract**

Literature on financial analysis illustrates that financial analysts' information processing is still not fully understood and investigated. Meanwhile, corporate disclosures grow as companies increasingly disclose sustainability matters. However, divergences in environmental, social, and governance (ESG) ratings exhibit that ESG information is not processed consistently. Whether financial analysts derive added value from sustainability matters if even specialized rating agencies obtain inconsistent ESG scores is questionable.

Therefore, the dissertation's main objective is to examine the role of sustainability within equity analysis by investigating analysts' use and assigned relevance of financial and sustainability information. A case study design allows for obtaining in-depth insights into financial analysts' workflows and their information processing.

Financial analysis is first placed in the theory of financial intermediation by explicating that analysts serve as information intermediaries for investors, which is why they process information and pass it on to investors in a condensed format. Corporate reporting serves as an information source for financial analysts. The theoretical background, development, and regulatory requirements of financial and sustainability reporting are delineated.

Afterward, the research design of an embedded single-case study is depicted. Different information sources, including expert interviews, research reports, and a workshop, allow an investigation of the dissertation's objective. Therefore, the study contributes with a methodological approach that occurs less frequently in financial analysis literature. The study focuses on the German capital market. Insights are obtained from 20 individuals working for the sell side; additionally, four supplementary interviews with ESG and buy-side analysts were conducted. The data collection took place in 2020 and 2021. In the meantime, the proposal for a *Corporate Sustainability Reporting Directive* (CSRD) was published. The methodology and the sample are described in detail before the results are pointed out.

The findings shed light on the procedures in financial analysis, the relevance of financial and sustainability information, as well as on the collaboration between sell-side analysts and other information intermediaries, such as buy-side and ESG analysts. The results reveal that financial analysts process information with time constraints that justify integrating financial figures in their estimates and valuation models but with little consideration of written texts, such as notes or management reports. Financial statement figures are indispensable for

valuation and estimation, although not every individual position is generally studied. The equity analysts, however, focus on deviations that arise.

Additionally, procedures can deviate depending on the bank house, and the analysts' recommendations also rely on their expertise and gut feeling. While sell-side analysts rarely read sustainability reports or integrate ESG information in their models hitherto, ESG analysts exist to prepare condensed ESG ratings that are disclosed in the financial analysts' research reports.

Following the financial intermediation theory, ESG analysts also act in the interest of investors and serve as information intermediaries. Based on the theoretical foundation, if an increasing investors' interest in sustainability is perceived, the analysts must process the information. However, ESG analysts collaborate with financial analysts to derive financial implications from sustainability information. Indeed, financial and ESG analysts' perceptions of their collaboration deviate.

In view of the currently changing sustainability reporting requirements, financial analysts perceive an increasing relevance of sustainability matters and assume that the integration into financial analysis and the collaboration with ESG analysts will intensify in the future. Thus, the study contributes to a current topic which is why it is of interest in practice. The uncertainty of financial analysts in dealing with sustainability is underlined, while the dissertation offers insights into different possibilities for handling sustainability information. It also provides in-depth insights into equity analysts' financial information processing.

Moreover, the dissertation contributes to the literature by performing a case study research that enhances the qualitative literature on financial analysts' information processing.



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## List of Abbreviations

A	<i>Agents</i>
A4S	<i>Accounting for Sustainability</i>
AktG	<i>German Stock Corporation Act (Aktiengesetz)</i>
APV	<i>Adjusted Present Value</i>
BaFin	<i>German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht)</i>
BörsO	<i>Exchange Rules (Börsenordnung)</i>
CapEx	<i>Capital Expenditures</i>
CAPM	<i>Capital Asset Pricing Model</i>
CDP	<i>Carbon Disclosure Project</i>
CDSB	<i>Climate Disclosure Standards Board</i>
CFOs	<i>Chief Financial Officers</i>
CFROI	<i>Cash Flow Return on Investment</i>
CO <sub>2</sub>	<i>Carbon Dioxide</i>
COP	<i>Conference of the Parties</i>
CR	<i>Corporate Responsibilities</i>
CSR	<i>Corporate Social Responsibility</i>
CSRD	<i>Corporate Sustainability Reporting Directive</i>
CSR-RUG	<i>German Implementation Act of the NFRD (CSR-Richtlinien- Umsetzungsgesetz)</i>
CV	<i>Corporate Value</i>
DCF	<i>Discounted Cash Flow</i>
DMM	<i>Debt &amp; Mezzanine Markets</i>
DRS	<i>German Accounting Standard (Deutscher Rechnungslegungs Standard)</i>
E	<i>ESG File</i>
E(R)	<i>Expected Rate of Return</i>
E(Z)	<i>Expected Free Cash Flows</i>
EBIT	<i>Earnings Before Interest and Taxes</i>
EBITDA	<i>Earnings Before Interest, Taxes, Depreciation, and Amortization</i>
EEA	<i>European Economic Area</i>
EFFAS	<i>European Federation of Financial Analysts Societies</i>
EFRAG	<i>European Financial Reporting Advisory Group</i>

EK	<i>Equity Capital</i>
ESG	<i>Environmental, Social, and Governance</i>
ESMA	<i>European Securities Markets Authority</i>
ESRS	<i>European Sustainability Reporting Standards</i>
EU	<i>European Union</i>
EUR	<i>Euros</i>
EVA	<i>Economic Value Added</i>
f	<i>Risk-free</i>
FASB	<i>Financial Accounting Standards Board</i>
FCF	<i>Free Cash Flow</i>
FK	<i>Debt Capital</i>
FN	<i>Field Notes</i>
FSB	<i>Financial Stability Board</i>
FSE	<i>Frankfurt Stock Exchange</i>
FTE	<i>Flow-to-Equity</i>
GAAP	<i>Generally Accepted Accounting Principles</i>
GK	<i>Total Capital</i>
GRI	<i>Global Reporting Initiative</i>
GSSB	<i>Global Sustainability Standards Board</i>
HGB	<i>German Commercial Code (Handelsgesetzbuch)</i>
i	<i>Security</i>
I	<i>Interviewee</i>
IAS	<i>International Accounting Standard</i>
IASB	<i>International Accounting Standards Board</i>
IFRS	<i>International Financial Reporting Standards</i>
IIRC	<i>International Integrated Reporting Council</i>
IM	<i>Intermediaries</i>
IR	<i>Integrated Reporting</i>
ISSB	<i>International Sustainability Standards Board</i>
KPIs	<i>Key Performance Indicators</i>
m	<i>Million</i>
M	<i>Market</i>
M&A	<i>Mergers and Acquisition</i>
MACD	<i>Moving Average Convergence/Divergence</i>



MAR	<i>Market Abuse Regulation</i>
MiFID	<i>Markets in Financial Instruments Directive</i>
min	<i>Minutes</i>
NFRD	<i>Non-Financial Reporting Directive</i>
NGOs	<i>Non-Governmental Organizations</i>
NIE	<i>New Institutional Economics</i>
O	<i>Other Document</i>
OCI	<i>Other Comprehensive Income</i>
OECD	<i>Organisation for Economic Co-Operation and Development</i>
OpEx	<i>Operating Expenditures</i>
P	<i>Principals</i>
P&L	<i>Profit and Loss Statements</i>
PEG	<i>Price-Earnings-to-Growth</i>
PER	<i>Price-Earnings Ratio</i>
PIEs	<i>Public Interest Entities</i>
PRI	<i>Principles for Responsible Investment</i>
PTF-ESRS	<i>Project Task Force on European Sustainability Reporting Standards</i>
r	<i>Discount Rate</i>
R	<i>Rate of Return</i>
RNE	<i>German Council for Sustainable Development (Rat für Nachhaltige Entwicklung)</i>
ROC	<i>Rate of Change</i>
RR	<i>Research Report</i>
RSI	<i>Relative Strength Index</i>
RT	<i>Recorded and Transcribed</i>
RTF	<i>Rich Text Format</i>
s	<i>Corporate Tax Rate</i>
SASB	<i>Sustainability Accounting Standards Board</i>
SDGs	<i>Sustainable Development Goals</i>
SEC	<i>Securities and Exchange Commission</i>
SICS	<i>Sustainable Industry Classification System</i>
SMEs	<i>Small and Medium-Sized Enterprises</i>
t	<i>Number of Years during the Detailed Planning Period</i>
T	<i>Period Switch from Detailed Planning Period to Constant Perpetuity</i>

T+1	<i>Starting Point of Constant Perpetuity</i>
TCF	<i>Total Cash Flow</i>
TCFD	<i>Task Force on Climate-related Financial Disclosures</i>
TEG	<i>Technical Expert Group</i>
TRWG	<i>Technical Readiness Working Group</i>
TS	<i>Tax Shield</i>
u	<i>Self-financed Company</i>
UK	<i>United Kingdom</i>
UN	<i>United Nations</i>
UNCED	<i>United Nations Conference on Environment and Development</i>
UNEP FI	<i>UN Environment Programme Finance Initiative</i>
UNFCCC	<i>United Nations Framework Convention on Climate Change</i>
US	<i>United States</i>
v	<i>Company in Debt</i>
VRF	<i>Value Reporting Foundation</i>
WACC	<i>Weighted Average Capital Costs</i>
WCED	<i>World Commission on Environment and Development</i>
WEF	<i>World Economic Forum</i>
WpHG	<i>German Security Trading Act (Wertpapierhandelsgesetz)</i>

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# 1 Introduction

## 1.1 Problem and Objective

Sustainability is a ubiquitous topic, regardless of the country, the industry, or the institution. Companies increasingly disclosed sustainability information in recent years (e.g., KPMG, 2020, p. 10). Simultaneously, investors' demand for environmental, social, and governance (ESG) information grew (COM(2021) 189 final, recital 9).<sup>1</sup> This ESG acronym has been used more often lately. Before, corporate social responsibility (CSR) has been a matter of interest to capital market participants. Irrespective of the terminology used to describe a sustainability matter, a multitude of institutions has emerged. Organizations, such as the Global Reporting Initiative (GRI) or the Task Force on Climate-related Financial Disclosures (TCFD), addressed sustainability issues and developed frameworks, standards, and other guidelines for companies.

Meanwhile, regulatory efforts have arisen, and some regulations have already entered into force. In 2022, the Corporate Sustainability Reporting Directive (CSRD) was published. In addition, based on the proposed version of the CSRD, the European Commission asked the European Financial Reporting Advisory Group (EFRAG) to introduce a sustainable reporting pillar. In contrast to the financial reporting pillar, the EFRAG was asked to consider a broader range of stakeholders for developing sustainability standards (COM(2021) 189 final, p. 9). Concurrently, the International Financial Reporting Standards (IFRS) Foundation established the International Sustainability Standards Board (ISSB) to standardize sustainability reporting due to sustainability's complexity. The ISSB is now responsible for *IFRS Sustainability Disclosure Standards* (IFRS Foundation, 2021a, p. 6).

Although sustainability reporting considers a broader set of users than financial reporting, investors belong to the primary user group of sustainability information (recital 9 Directive (EU) 2022/2464). Schipper (1991, p. 105) points out that investors usually rely on financial analysts. The analysts<sup>2</sup> obtain the information that is supposed to be for investors and process it for them. According to Schipper (1991, p. 105), financial analysts are likewise considered primary users of financial accounting information. Even though financial analysts are experts in processing information, research findings identify two “*black boxes*” (Bradshaw, 2009,

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<sup>1</sup> In 2021, the European Commission published the communication COM(2021) 189 final. It presents a proposal for a directive of the European Parliament and the Council to amend corporate sustainability reporting. It is known as the proposal for a *Corporate Sustainability Reporting Directive* (CSRD) that resulted in the publication of the final act, the Directive (EU) 2022/2464, commonly referred to as the CSRD, in 2022.

<sup>2</sup> This dissertation uses the term financial analyst, stock analyst, equity analyst and analyst interchangeably.

p. 1076). In the first instance, little is known about the input to analysts' earnings forecasts. In the second instance, the input to valuation procedures leading to stock recommendations is mainly unknown. Even if proceeding studies shed light on the two "*black boxes*" of analysts' proceedings, they are still not fully understood and investigated (Bradshaw, 2009, p. 1076).

While research further examined the consideration of financial information in financial analysis, companies disclosed an increasing amount of sustainability matters (e.g., KPMG, 2020, p. 10). Therefore, it is questionable which role sustainability takes in financial analysis as financial analysts process information for investors who also increasingly demand ESG information (COM(2021) 189 final, recitals 7–9).

Following financial intermediation theory, financial analysts are intermediaries processing information between capital borrowers and capital providers, the investors (e.g., Boyd and Prescott, 1986, pp. 211–212; Vergoossen, 1993). Accordingly, if analysts act in the interest of investors, i.e., the institution they process information for, they should consider sustainability information if it is in the investors' interest.

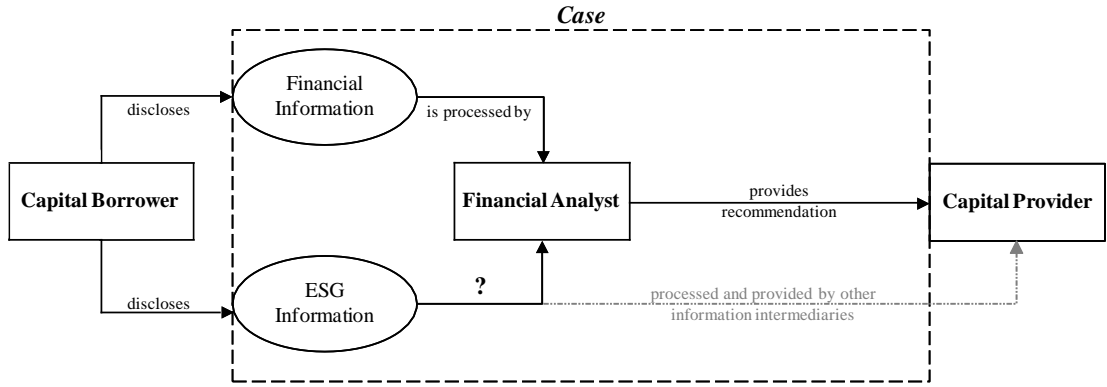
To answer investors' demand for sustainability information, specified agencies developed that process ESG matters for investors, for instance. Recent research studies, however, emphasize that ESG ratings, representing condensed sustainability information by specified ESG rating agencies, vary greatly (e.g., Chatterji *et al.*, 2016; Berg *et al.*, 2020; Christensen *et al.*, 2022). Since specialized institutions differ in processing ESG information, it is questionable whether financial analysts can appropriately incorporate sustainability matters in their financial analysis. By improving the understanding of financial analysis procedures, the dissertation's objective is to clarify the role that ESG information may have taken in equity analysis (see *FIGURE 1*) or could take in the future. The focus is on equity analysis, in particular, to generate in-depth insights on analysts' information processing instead of broad insights from different fields.

Four research questions are derived from prior literature to examine the study's objective. First, financial analysts' daily routines and processes need to be understood as well as potential restrictions limiting their actions. Second, the inclusion of financial reporting information in their estimates and valuation must be investigated as it is the main task of equity analysts. Afterward, it can be compared to the use of sustainability reporting information, whose incorporation into financial analysis is of interest. Lastly, as experts exist who only process ESG



information, it is questionable how equity analysts collaborate with other information intermediaries and whether or how the equity analysts' work benefits from the supplemental expertise.

**FIGURE 1:**  
*The Role of ESG Information in Financial Analysis*



**Notes:** Market participants are illustrated in rectangles, whereas the information they disclose or process is oval-shaped. The case that this dissertation investigates is marked in a dashed rectangle. The information flows between the market participants are shown with labeled arrows. Only the information flow of ESG information to financial analysts is highlighted with a question mark, which underlines the objective of this dissertation. The role of ESG information, hence, its information processing by financial analysts, is under consideration. The information flow of ESG information to capital providers is marked with a light-dotted arrow, as this is not part of the investigation.

FIGURE 1 delineates how this dissertation responds to the research questions and the study's objective. A qualitative empirical analysis enables an in-depth look at *financial analysts' information processing* which reflects the case under investigation. A quantitative empirical analysis would not be able to provide comprehensive answers, which is why a qualitative empirical analysis is conducted. The focus is on equity analysts from the sell side. Complementary insights are obtained from ESG analysts and the buy side to complete the sell-side perspective and its collaboration with other intermediaries. This dissertation addresses the German capital market as few requirements for sustainability reporting have existed since 2017<sup>3</sup>, but further

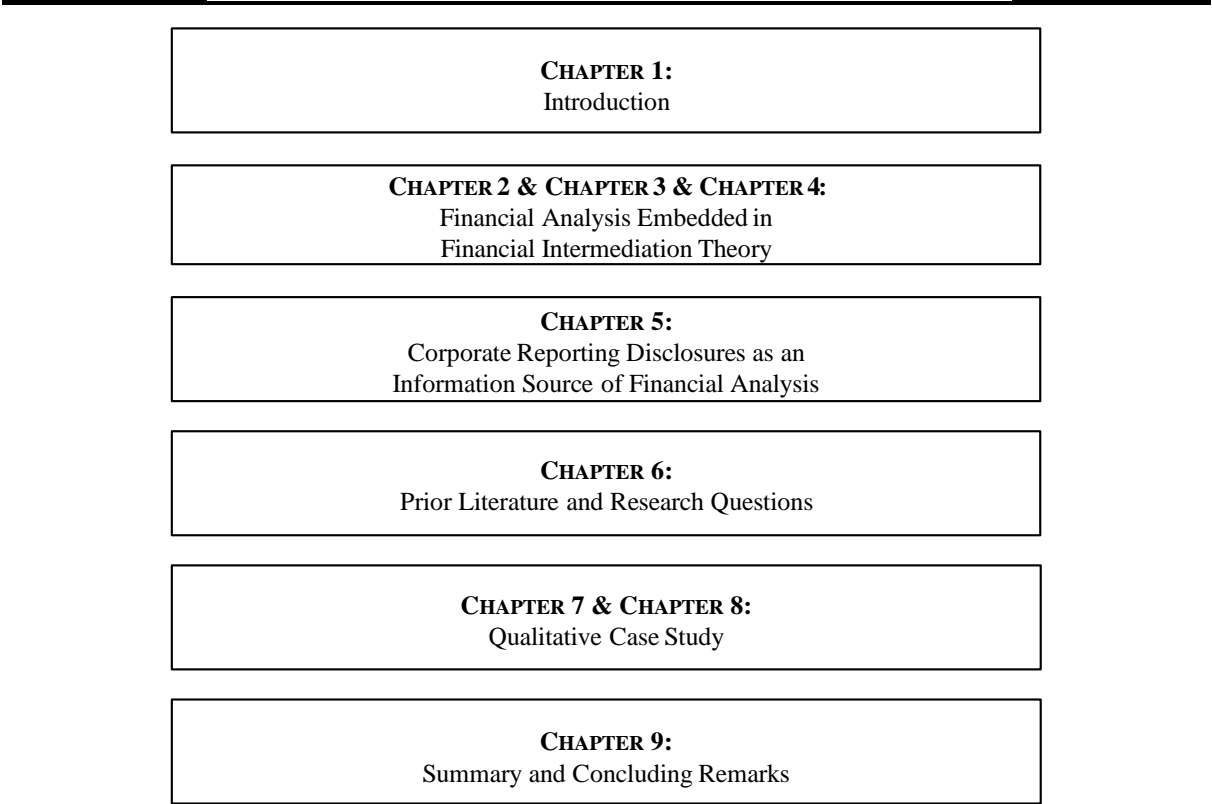
<sup>3</sup> The fiscal year beginning on January 1, 2017, was the first year for which the requirements of the Directive 2014/95/EU had to be applied. It is referred to as the *Non-Financial Reporting Directive* (NFRD). In Germany, the national implementation act (CSR-RUG) entered into force with delay on April 19, 2017. Still, Article 11, para. 5 NFRD states that the new regulations had to be applied for fiscal years starting after December 31, 2016.

requirements are in their implementation<sup>4</sup>. The data is based on different information sources. Field notes from a workshop about financial analysis, transcripts of expert interviews, and other documents, such as research reports from different bank houses, are examined.

1.2 Outline

This dissertation divides into nine chapters. Subsequent to the introduction, seven main chapters follow before the conclusion is drawn. *FIGURE 2* depicts the outline of the study.

**FIGURE 2:**  
*Outline of the Dissertation*



**Notes:** This figure illustrates the outline of the dissertation. While *CHAPTER 1* introduces the study, *CHAPTER 2*, *CHAPTER 3*, and *CHAPTER 4* embed financial analysis in financial intermediation theory, which is why the three chapters are displayed on the same level. The first two chapters explicate the theory of financial intermediation from an economic and a more specific financial theory perspective before the last chapter defines financial analysis and embeds it in the theory of financial intermediation. *CHAPTER 5* then describes corporate reporting requirements, including financial and sustainability reporting, as an information source for financial analysts. *CHAPTER 6* extends the foundations explained in the previous chapters by insights of prior literature on whose basis research questions are derived. *CHAPTER 7* and *CHAPTER 8* present the dissertation’s case study, including its research design and its findings. *CHAPTER 9* concludes.

<sup>4</sup> See *CHAPTER 5.4.2.3* for details on the implementation of the EU Taxonomy and the CSRD.

Financial analysts are understood as financial intermediaries when they process information for capital providers about companies borrowing capital. That is why *CHAPTER 2* and *CHAPTER 3* explain the financial intermediation theory from different perspectives. First, the economic necessity of intermediaries acting between capital borrowers and providers is explained. Second, from a more specific financing theory perspective, different activities and roles of financial intermediaries as well as the divergent reasons for intermediation, are presented. The explanations are based on pioneering works of financial intermediation theory. The primary purpose of these two chapters is to provide a theoretical fundament of the necessary assumptions for financial intermediation.

Based on the former explanations, *CHAPTER 4* classifies financial analysts as financial intermediaries; and pictures financial analysis. The chapter presents different analyzing perspectives as well as differing analyst types and sets the focus for this study on equity analysis. Thereupon, the procedures of equity analysis are explained. The three steps, information collection, processing, and distribution, are introduced. While information distribution stresses the actual intermediation, processing information is indispensable to forward complex information in a compressed format. The recommendations forwarded to potential investors are based on valuation models that are explained in this chapter.

Corporate reporting information serves as an information source for financial analysts, which is why *CHAPTER 5* points out the theoretical implications as well as the regulatory requirements of corporate reporting. While financial information is mainly regulated, sustainability information is subject to dynamic changes. The chapter illustrates milestones and institutions leading to the development of sustainability reporting and ongoing regulatory efforts. The explications emphasize the transition that is currently taking place and which impacts the business world.

After the theoretical foundation of financial intermediation, the classification of financial analysts, and the processes of financial analysis, as well as corporate reporting as an information source that analysts draw on, are clarified, prior literature is exposed to define the remaining research gaps and derive research questions to answer the study's objective. Consequently, *CHAPTER 6* presents previous research findings on financial analysis' procedures, its usage of financial information, the impact and use of sustainability information in the capital market, and, thereupon, the deduction of research questions.

*CHAPTER 7* justifies the research design of an embedded single-case study that consists of three different information sources. The chapter discusses the data collection as well as the data evaluation. *CHAPTER 8* follows and presents the findings of the qualitative empirical case study and discusses the results with respect to the study's objective, its contribution to the theory, and possible limitations of the dissertation.<sup>5</sup> Additionally, implications for future research are derived. Subsequently, *CHAPTER 9* concludes.

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<sup>5</sup> Preliminary results based on a first data set, which present only a portion of the final data of this study, were published by Fülbier *et al.* (2021). Additionally, this study contains elements of the working paper named “*Relevance and Use of Financial Accounting and Sustainability Information in Financial Analysis*”, presented (and written by the author of this study) at the EAA Conference 2022 in Bergen, Norway (see Lösse (2022)).

## 2 Financial Intermediation from an Economic Perspective

This dissertation focuses on financial analysts' work, which fulfills the task of financial intermediation. To understand why financial analysts exist, it is first necessary to comprehend financial intermediation, which is why economic considerations must be consulted. This chapter explicates whether and how the different theories justify financial intermediation and whether the existence of financial analysts serving as intermediaries is required based on the theories' economic assumptions.

### 2.1 Neoclassical Financing Theory

Neoclassical economics<sup>6</sup> investigates the optimal allocation of resources in the presence of scarcity and alternative uses (Robbins, 1935, p. 16). By exchanging goods or services on the market, individuals can allocate resources.<sup>7</sup> Consumers' demand and producers' supply are essential conditions resulting in a competitive equilibrium.<sup>8</sup> Within neoclassical financing theory, the focus of the economic considerations lies on financial markets (Ross, 1987, p. 29).

In financial markets, the exchange of financial products takes place.<sup>9</sup> Optimal allocation is verified through Pareto efficiency. Thus, an optimum state of affairs is reached if any reallocation of resources cannot improve an individual's position without impairing another (Arrow and Debreu, 1954, p. 265).<sup>10</sup> Neoclassical financing theory is grounded in competitive equilibriums<sup>11</sup>, hence, on the assumptions of risk-neutral pricing, the absence of arbitrage, and efficiency through perfect and complete markets (Ross, 2002).<sup>12</sup> In efficient markets, investors obtain all available information, and prices incorporate all the available information (Ross, 1987, p. 32). In complete capital markets, individuals can hedge against all contingencies

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<sup>6</sup> Veblen (1900) assumingly coined the term neoclassic in economics and the change taking place.

<sup>7</sup> For instance, Stigler (1967, p. 290) describes the exchange of goods as a market function.

<sup>8</sup> Walras (1900, pp. 54–71) explicates a competitive exchange equilibrium. Arrow and Debreu (1954) elaborate on two theorems to solve Walras' equations under which the competitive equilibrium exists.

<sup>9</sup> As in the latter course, this study focuses on capital markets. The distinction should be made that a capital market is a form of a financial market where capital is raised and allocated (Stiglitz, 1989, p. 56). Capital markets are distinct from financial markets in that they trade variable price instruments, such as stocks and shares but not the full range of financial services (Spencer, 2002, p. 23). Further information on capital markets can be found in Fama (1970), Stiglitz (1989), Loistl (1993, pp. 5–16), or Spencer (2002).

<sup>10</sup> For studies addressing Pareto optima, see, for instance, Rothenberg (1960), Arrow (1964), or Morgenstern (1972).

<sup>11</sup> Research results addressing equilibrium conditions in markets can be found in Wald (1936), Debreu (1956), Mossin (1966), Arrow (1968), Cox *et al.* (1985), or Duffie and Sonnenschein (1989).

<sup>12</sup> Perfect and complete capital markets are stated in, e.g., Spencer (2002, p. 2) or Laux *et al.* (2018, pp. 450–455). Copeland *et al.* (2005, pp. 353–354) expound the assumptions of perfect capital markets in further detail.

(Spencer, 2002, p. 2).<sup>13</sup> Arrow and Debreu (1954) build upon the assumptions of utility maximization by individuals, the non-existence of externalities and transaction costs, and prices being independent of and observable by all market participants.<sup>14</sup> On this basis, prices reflect a Pareto optimal competitive equilibrium that already incorporates all available information.

Consequently, neither financial regulation nor financial intermediation is needed within neoclassical financing theory. They could not assure improvements, as the Pareto optimum is already achieved. Following neoclassical financing theory, financial analysts serving to intermediate between capital borrowers and lenders are not needed.

## 2.2 New Institutional Financing Theory

### 2.2.1 Fundamentals and Property Rights Theory

In contrast to neoclassical financing theory, new institutional financing theory has continued developing the underlying neoclassical assumptions by modifying the economic models. Whereas neoclassical economists assume capital markets that are informationally efficient as well as perfect and complete, studies that can be assigned to new institutional economics<sup>15</sup> (NIE) disprove the assumptions of neoclassical market structures.

Pioneering works of *new institutionalism*<sup>16</sup> can be assigned, among others, to Coase (1937, 1960), Arrow (1969), Fama (1970), Davis and North (1971), Alchian and Demsetz (1972), Williamson (1975), Jensen and Meckling (1976), and De Alessi (1983).<sup>17</sup> In the article, *The Nature of the Firm*, Coase (1937) considers transaction costs in the market and costs resulting from management within the firm, which led to the implementation of new institutionalism within economics.<sup>18</sup> Arrow (1969) discusses the existence of transaction costs<sup>19</sup> besides externalities, (Pareto) inefficiencies in market equilibriums, and imperfectly competitive environments. Stigler (1961, p. 213) considers information a valuable and powerful resource while

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<sup>13</sup> Fama (1970, p. 387) describes the assumptions of informationally efficient markets containing market structures that are perfect and complete.

<sup>14</sup> See De Alessi (1983) or Spulber (1999, pp. 83–94) for further assumptions of neoclassical analysis, such as the non-existence of market frictions, price discrimination, or dispersion.

<sup>15</sup> The term new institutional economics is coined by Williamson (1975). He refers to the term as he elucidates the growing interest in economics deviating from neoclassical assumptions adopted in previous years (Williamson, 1975, p. 1).

<sup>16</sup> Different terms, such as neo-institutional theory or neo-institutionalism, may be alternatively used for NIE.

<sup>17</sup> For further information on pioneering works and the development from neoclassic to new institutional economics, see, e.g., De Alessi (1983), Coase (1984), Williamson (1985a), or North (1986).

<sup>18</sup> In later years, Williamson (1975) and Coase (1998) describe Coase's (1937) article *The Nature of the Firm* as pioneering work on new institutional economics.

<sup>19</sup> He determines transaction costs as “costs of running the economic system” (Arrow, 1969, p. 48).

analyzing the determination of market prices. However, he addresses various imperfections in capital markets and assesses the achievement of having complete information as useless (Stigler, 1967).<sup>20</sup> Foley (1970, p. 276) further criticizes the absence of considering costs related to collecting and processing information.<sup>21</sup> Whereas neoclassical economics assumes that investors obtain all available information (Ross, 1987, p. 32), NIE emphasizes the existence of asymmetrical information. Akerlof (1970) discusses the relevance of information asymmetries between buyers and sellers in (automobile) markets regarding the quality of commodities<sup>22</sup>, which contrasts with neoclassical assumptions.

These economic assumptions contrast with neoclassical financing theory, in which they reason for the absence of financial regulation and financial intermediation. Conversely, NIE can justify the existence of financial intermediaries in the markets to counteract the limitations, by lowering transaction costs, for instance. NIE has contradictory economic assumptions compared to neoclassical financing theory.

In addition to the previously mentioned deviating market structure assumptions from new institutional to neoclassical financing theory, Coase (1998, p. 73) acknowledges that the institutions give meaning to the new institutional economics. Institutions determine the economy and its performance. Throughout the development of this new economic theory, three different strands of literature developed and can be identified. Property rights theory, agency theory, and transaction cost theory are fundamental components giving NIE its relevance based on the deviating assumptions of market structures.

The property rights theory can be traced back, among others, to Coase (1960), Alchian (1961), and Demsetz (1967).<sup>23</sup> Demsetz (1967) defines property rights as an exchange occurring during a transaction on the market, giving value to what is exchanged. Through the right to use, acquire, modify, or transfer the commodity, it is only indirectly addressed. Therefore, the traded items are subject to a variety of rights. These rights determine who has to be paid for specific actions and how an individual may or may not benefit from these actions undertaken (Demsetz, 1967, p. 347). Property rights are an incentive mechanism to internalize externalities (Demsetz, 1967). According to Demsetz (1967), externalities, in general, include external costs,

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<sup>20</sup> For other causes of incomplete markets, see Laffont (1989) and Ross (1989).

<sup>21</sup> Thus, Foley (1970) modifies the model with costs related to marketing activities.

<sup>22</sup> Akerlof (1970) considers the quality of cars and distinguishes between good and bad (“lemons”) cars. Accordingly, a seller can better judge a car’s quality than a buyer. Hence, it is about adverse selection processes arising from information asymmetries. He also addresses the costs arising from dishonesty.

<sup>23</sup> See De Alessi (1983), Jensen and Meckling (1976), and Williamson (1990) for additional information on pioneering works concerning property rights theory.

benefits, and (non-)pecuniary externalities.<sup>24</sup> Property rights may impact them. Coase (1960) demonstrates the importance of transaction costs for the optimal rights arrangement. When considering transaction costs, rights are only rearranged if the value's increase in production exceeds the costs (Coase, 1960).

In financial markets, transactions are tied to property rights. These rights allow the introduction of intermediaries in a principal-agent relationship to strive for an optimal allocation of resources. The costs associated with the intermediaries' implementation must exceed the benefits of introducing them into the principal-agent relationship.

## 2.2.2 Principal-Agent Problems as a Basis to Intermediation

Besides property rights theory, NIE is coined by agency theory. Sappington (1991, p. 45) describes the principal-agent relationships' problems and simultaneously justifies their existence. He accentuates that many tasks require additional support due to restrictions, such as financial resources or knowledge. These restrictions lead to the need for agency relationships, hence, between principals and agents.

Agency theory considers agents as individuals acting on behalf of principals in decision-making procedures (Ross, 1973, p. 134). Contractual arrangements exist between two parties (Jensen and Meckling, 1976, p. 308).<sup>25</sup> Consequently, they agree upon the payment of the principals for the fulfillment of the agents' services. Agency problems arise between the parties because the agents and the principals want to maximize their utility, but they can have divergent interests and may possess different information (Ross, 1973; Jensen and Meckling, 1976; Rothschild and Stiglitz, 1976).<sup>26</sup> Asymmetric information is the basis for agency theory and justifies the existence of a contractual agreement based on the principal-agent relationship (Ross, 1973).

As the interests of principals and agents differ, Pareto optimal efficiency is challenging to be reached (Jensen and Meckling, 1976). Difficulties arising from principal-agent relationships

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<sup>24</sup> Externalities arise from companies' actions without impacting themselves but external parties. For instance, externalities arose from corporate activities related to sustainability since financial impacts on the companies were missing out. As sustainability is of increasing interest to various stakeholders and the regulatory requirements for sustainability reporting increase, the externalities related to ESG matters are gradually internalized (Unerman *et al.*, 2018, p. 497). See *CHAPTER 5* for further information on the theoretical background of sustainability reporting and its impact on the business environment.

<sup>25</sup> The relationship may include more than two parties. An example, introducing intermediaries as another transacting party, is addressed later in this chapter.

<sup>26</sup> Jensen and Meckling (1976) point out the relevance of agency problems to different organizations, even though they focus on the relationship between corporate owners and the management. Rothschild and Stiglitz (1976) take insurance markets, in particular, into account but emphasize the generalization of the model.



are designated adverse selection and moral hazard.<sup>27</sup> Adverse selection is based on asymmetric information between principals and agents before contracts' conclusions, i.e., ex-ante, and may lead to market failure (Rothschild and Stiglitz, 1976; Arrow, 1985; Rasmusen, 2005, p. 160). Rothschild and Stiglitz (1976) explain that Pareto efficiency cannot be achieved due to hidden characteristics.<sup>28</sup> The principals do not have complete knowledge as they distinguish between high-risk and low-risk agents (on insurance markets). Depending on the risk assessment, the two groups should be charged differently, but the personal knowledge of one party prevents a proper allocation. The sellers do not know whether individuals purchasing (insurance) contracts belong to one or the other group. On that account, all individuals are charged equally, and a negative externality exists because of high-risk individuals. Low-risk individuals would have costs that exceed their level of risk and, hence, do not enter into a contract. They would be better off without high-risk individuals (Rothschild and Stiglitz, 1976).<sup>29</sup>

In adverse selection, agents' actions can be observed but not verified because one party already possesses personal knowledge before contracting (Holmstrom, 1982, p. 324). Adverse selection contrasts moral hazard concerning the point in time of concluding a contract. Moral hazard is an agency problem that arises after a contract is concluded, i.e., ex-post, and may lead to market failure.<sup>30</sup> Accordingly, agents can impact the outcome through privately performed actions or private information. Principals can only see the result; they cannot observe the agents' actions and are not entirely aware of the agents' knowledge.

Additionally, incentives that encourage agents' behavior in alignment with the principals' interests are not properly induced (Holmstrom, 1979, p. 74). In the case of moral hazard, one distinguishes between hidden information<sup>31</sup> and hidden action (Arrow, 1985, pp. 37–38). Hidden action addresses the agents' behavior that the principals cannot observe, but the information is complete. In case of moral hazard with hidden information, principals can watch agents'

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<sup>27</sup> Moreover, a third problem, known as a hold-up problem, exists in literature but is not further addressed in this context. For further information on the hold-up problem, see, e.g., Klein *et al.* (1978) and Rogerson (1992). In addition, Rasmusen (1994, p. 212) provides a short description and an example of hold-up potential.

<sup>28</sup> Rothschild and Stiglitz (1976) present a setting on insurance markets. The participants addressed are insurance companies and insureds. They trade insurance contracts. Rothschild and Stiglitz (1976) emphasize that this example of adverse selection is generalizable.

<sup>29</sup> For additional examples of adverse selection, see Akerlof (1970), Spence (1974b), or Arrow (1985).

<sup>30</sup> Simon (1951) describes the issue of moral hazard in employment contracts, having employers using their authority and workers using their choices. Ross (1973) depicts the "*canonical agency problem*" based on any contractual arrangement in which the principals lack knowledge. For further examples on moral hazard, see Holmstrom (1979, 1982).

<sup>31</sup> Moral hazard with hidden information is also considered as such with hidden knowledge (Rasmusen, 2005, p. 178).

actions but cannot verify the agents' actions. The point of time matters, as the agents obtain private information after contracting. It resembles adverse selection because both agency problems rely on asymmetric information (Rasmusen, 1994, pp. 166–169).<sup>32</sup> These agency problems demand assurance that agents act in the principals' interests. Therefore, specific mechanisms are applied before or after the contractual arrangement through which agency costs arise (Jensen and Meckling, 1976, p. 308).<sup>33</sup> Agency costs may occur in case of adverse selection due to screening or signaling and in the case of moral hazard due to monitoring or bonding.

Given adverse selection, information asymmetries exist between the two parties. Signaling<sup>34</sup> allows the agents to reduce asymmetric information. As such information gaps exist between agents and principals before contracting (Spence, 1974b), the agents' hidden characteristics may be considered signals.<sup>35</sup> Hence, the agents signal to the principals (Spence, 1974b, pp. 5–13; Rasmusen, 1994, p. 249). The agents' signaling allows the principals to learn about the hidden characteristics.

Spence (1973, 1974b) first investigated these information transfers in the context of job markets. He considers hiring job applicants as an investment decision under uncertainty (Spence, 1973, p. 356). Uncertainty exists because the applicants' productive capabilities are unknown before hiring them. Moreover, their skills are still not immediately identified after hiring, but time is needed to learn about them. Within Spence's *educational signaling model*, education is a signal tracing back to the applicants' capabilities and causing signaling costs to the agents (Spence, 1973). Considering markets, buyers know less about the commodities' quality than sellers before the transactions occur (Akerlof, 1970). Prior to the transactions, sellers submit signals containing information to which the buyers have to respond (Spence, 1974a).<sup>36</sup> In particular, in stock markets, signals shall be provided to potential investors to support investment decisions (Stiglitz, 1982, p. 118). Among others, the shares owned by managers may serve as a signal because the possession indicates the companies' acceptable performance. Managers of well-performing companies want to obtain more shares than managers of poorly-performing companies (Stiglitz, 1982, p. 121).

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<sup>32</sup> See Rasmusen (1994, Part II) for further information on the distinction between moral hazard and adverse selection.

<sup>33</sup> A more detailed description of agency costs is provided by Jensen and Meckling (1976).

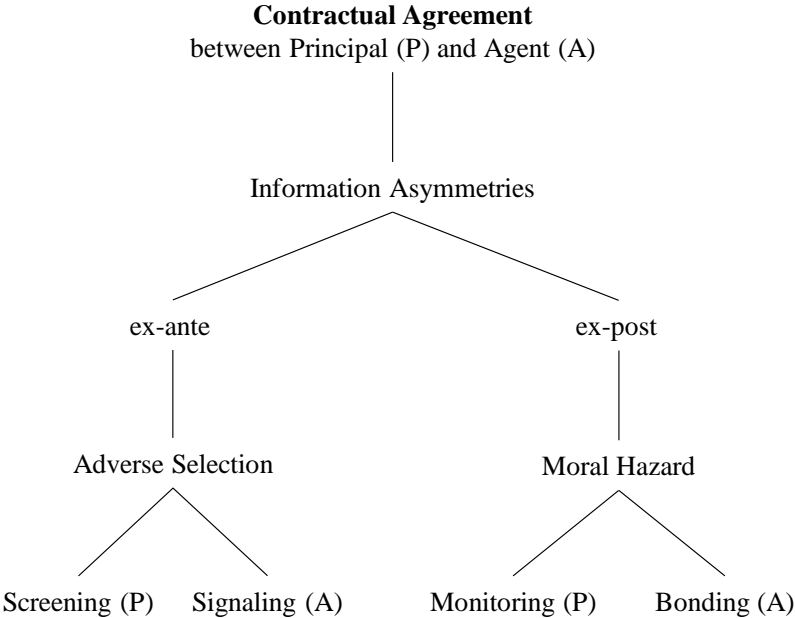
<sup>34</sup> Literature either refers to signalling or signaling. Here it is addressed as signaling.

<sup>35</sup> Spence (1974b) differentiates between observable alterable and non-alterable characteristics; accordingly only the alterable characteristics are regarded as signals, whereas the non-alterable are considered indices.

<sup>36</sup> For further information on signaling, see, e.g., Rasmusen (1994, Chapter 10).

Screening<sup>37</sup> is also performed to combat adverse selection and incomplete information before contracting. Screening likewise allows for identifying the quality of unknown characteristics (Stiglitz, 1975, p. 283). The principals conduct screening beforehand to learn about the agents' characteristics, i.e., their productivity (Stiglitz, 1975, pp. 284–285).<sup>38</sup> The actions generate insights into the agents' personal knowledge to reduce asymmetric information between the principals and the agents (Stiglitz, 1975; Rothschild and Stiglitz, 1976). Additional costs arise through these screening processes (Stiglitz, 1975, p. 285).

**FIGURE 3:**  
*Combating Principal-Agent Problems*



**Notes:** Adverse selection problems arise ex-ante to a contractual agreement, and moral hazard problems arise ex-post. The mechanisms to combat adverse selection and moral hazard problems differ in their executors. Signaling and bonding emphasize activities applied by agents (A). Screening and monitoring activities are applied by principals (P).

<sup>37</sup> Screening is addressed, among others, by Spence (1973), Stiglitz (1975), Rothschild and Stiglitz (1976), and Salop and Salop (1976). Rothschild and Stiglitz (1976) address the theory of screening in insurance markets and Salop and Salop (1976) in labor markets, for instance.

<sup>38</sup> Stiglitz (1975) describes the theory of screening based on the example of workers being assigned to an assembly line. Those that are “*more able*” shall be distinguished from the ones that are “*less able*”. All workers obtain equal wages, except if an individual is beforehand identified to be more productive based on the screening process. To properly differentiate between the two groups, a screening process is implemented for which additional costs arise. Due to the costs, the net incomes are lower with screening than without.

*FIGURE 3* delineates that even though signaling and screening result from imperfect information before a contract is agreed upon, i.e., ex-ante. In contrast to combating adverse selection, monitoring and bonding are mechanisms that shall alleviate moral hazard, a post-contractual issue (see *FIGURE 3*). Monitoring<sup>39</sup> is arranged by the principals, who acquire information about the agents to control their behavior and prevent them from conducting activities that are not in the principals' interests (Jensen and Meckling, 1976, p. 308). The agents' actions are usually not observable by the principals. Costs arise for monitoring (Jensen and Meckling, 1976; Jost, 1991). Monitoring includes a bundle of activities. Monitors have to observe the agents' behavior, measure the output, and give instructions to the agents (Alchian and Demsetz, 1972, p. 782). Within companies, monitoring costs may arise from auditing, internal control systems, or incentive compensation systems, for instance, to control managers' behavior and prevent managers from using their position to take advantage (Jensen and Meckling, 1976, p. 323).<sup>40</sup> Monitoring may take place ex-ante to a contractual agreement as well as ex-post (Hellwig, 1991, p. 46).

Besides monitoring, bonding is another possibility to incentivize agents to behave in the principals' interest. The expected behavior of the agents can be assured through bonding. The agents bear the costs and not the principals (Jensen and Meckling, 1976, p. 308). The agents agree to a contractual agreement through which they guarantee to behave in a manner that maximizes the principals' interests. In non-compliance, the agents may commit themselves to paying the principals a fine (Jensen and Meckling, 1976, p. 308). Consequently, bonding may reduce monitoring expenditures, as the agents' behavior does not necessarily have to be additionally monitored, although the principals also indirectly bear the bonding costs. The bonding activities are only of interest as long as the marginal benefits exceed the marginal costs (Jensen and Meckling, 1976, pp. 325–326).

In summary, markets aim at preventing agency problems. Market imperfections ask for intermediation to encounter these problems (Scholtens, 1993, pp. 119–120). Intermediaries shall reduce asymmetric information, otherwise leading to adverse selection and moral hazard (Scholtens, 1992, p. 472).

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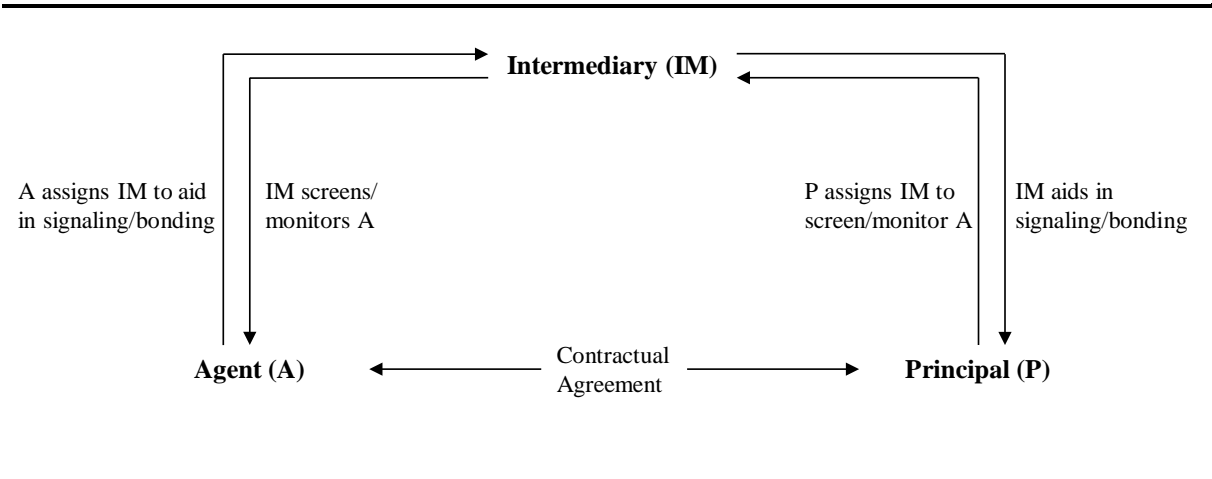
<sup>39</sup> See Alchian and Demsetz (1972), Jensen and Meckling (1976), or Holmstrom (1979, 1982) for further details on monitoring.

<sup>40</sup> Leland and Pyle (1977) and Diamond (1984) provide examples of monitoring in financial markets and in financial intermediation, in particular. These pioneering studies are not only relevant to the monitoring literature but also the financial intermediation literature. Therefore, the studies are addressed in more detail in *CHAPTER 3.2*.

Information may be understood as an “*economic commodity*” (Allen, 1986, p. 1).<sup>41</sup> Intermediaries can be engaged by the principals to aid in screening or monitoring. Thereby another agency relationship arises between the principals and the intermediaries. In this specific agency relationship, bonding and signaling can also play a role. When choosing intermediaries, for instance, their reputations may be considered and serve as signals to the principals (Paarz, 2011, pp. 16–17).

As the principals are responsible for carrying out screening and monitoring activities, the two mechanisms to combat information asymmetries, the principals can enter an additional agency relationship with intermediaries as second agents. Monitoring and screening are essential activities for the intermediaries for which agency costs arise (Scholtens, 1993, p. 125). Furthermore, agents may also assign intermediaries to aid in bonding or signaling to the principal. This setting also points out another agency relationship between the actual agents, here the principals, and the intermediaries, here the agents (Scholtens, 1993, pp. 126–130). Reliability of quality characteristics can be assured by specific institutions acting as intermediaries, who signal the information of interest to the actual principals (Scholtens, 1993, pp. 126–127). Rating agencies, for instance, may serve as intermediaries to signal the qualities of assets (Millon and Thakor, 1985, p. 1416).

**FIGURE 4:**  
*Intermediaries in (Two-Tier) Agency Relationships*



**Notes:** The two-tier agency relationships with an intermediary (IM) as a third party may either arise between the actual agent and the intermediary or the actual principal and the intermediary, depending on the mechanisms to combat the principal-agent problem.

<sup>41</sup> Similar thoughts are presented in Marshak (1974, p. 93).

FIGURE 4 illustrates the two-tier agency relationships between the three parties. The intermediaries take on tasks for the principals or agents as a third party.

Similarly, financial intermediation, in particular, is required due to market imperfections in financial markets. The effects of asymmetric information and the reduction in agency costs encourage the implementation of financial intermediaries. Albeit the environment and market imperfections constantly change, the continuous need for financial intermediation can be justified precisely for this reason (Scholtens, 1993, p. 125).

### 2.2.3 Reduction in Transaction Costs through Intermediation

The agency theory justifies the necessity of intermediaries based on principal-agent relationships and forms the basis of intermediation in financial markets. This chapter describes how transaction cost theory similarly justifies the existence of financial intermediaries. The following addresses the theory's considerations. Property rights theory and agency theory are essential to NIE; transaction cost theory is closely connected and results from agency relationships. Transaction cost theory is based on the same issues as agency theory; similarly, asymmetric information and transaction costs<sup>42</sup> shall be reduced (Oviatt, 1988, p. 215).

Although there are different definitions of transaction costs, in a broader sense, transaction costs can be understood as "*costs of running the economic system*" (Arrow, 1969, p. 48). In some earlier studies, the assumption of carrying out costless market transactions can be found. Within *The Nature of the Firm*, Coase (1937) reveals the existence of costs for negotiating, contracting, and other cost advantages due to price mechanisms. Varying costs, e.g., resulting from notifying potential contracting parties, dealing with such parties, setting up contracts, and even ensuring that contract terms are complied with, arise when carrying out market transactions (Coase, 1960, p. 15). Arrow (1969) distinguishes between two types of costs resulting in transaction costs: costs of communication and information, and costs of exclusion.<sup>43</sup> Williamson (1985b) differentiates between ex-ante and ex-post transaction costs. Ex-ante transaction costs include costs for negotiation or drafts of agreements. Before conducting such actions, Stigler (1961, p. 216) additionally considers search costs as an essential indicator and

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<sup>42</sup> Transaction costs in transaction cost theory are comparable to agency costs in agency theory (Oviatt, 1988, p. 215).

<sup>43</sup> Costs arising from the supply are understood as costs of communication and information (Arrow, 1969). Arrow (1969, p. 60) states another type of transaction costs, the costs of disequilibrium. In the following, they are not further addressed.

mechanism to identify potential buyers and sellers. Hereafter, setup and running costs of governance structures, haggling costs to straighten misalignments, or bonding expenditures to secure obligations can be subsumed under ex-post transaction costs (Williamson, 1985b, pp. 22–25).<sup>44</sup>

In transaction cost theory, the central unit to investigate is the transaction itself and not any commodity; that is why it is viewed as an issue of contracting (Williamson, 1985b, p. 20). It is questionable to the profit-maximizing firm whether an activity that can be understood as a transaction is carried out internally (inter-firm) or is acquired from an external party in the market (intra-firm) (Klein *et al.*, 1978, p. 297). For this reason, economizing transaction costs is essential to examining organizations because a firm aims to achieve efficiency (Williamson, 1979, p. 234, 1981, pp. 548–549). A particular case in this context is market failure, as transaction costs are too high, so the market will no longer exist (Arrow, 1969, p. 60).

The transaction cost approach has developed from economics, contract law, and organization theory literature (Williamson, 1981, p. 550).<sup>45</sup> In the 1970s, Williamson (1971) and Alchian and Demsetz (1972) shaped two strands of literature.<sup>46</sup> Whereas Williamson generally addresses transacting parties, Alchian and Demsetz concentrate on cooperative intra-firm production, considered team production.<sup>47</sup> They face the problem of metering the productivity of individuals' inputs. However, individual performance may not be separated from the team performance and its output; thus, it is the origin of individuals shirking. If individuals' performance is monitorable, their incentive to shirk will be reduced. Consequently, monitors who supervise the individuals' behavior within team production processes are introduced. This raises agency costs. Ultimately, there is a tradeoff between the agency costs induced by monitoring and the teams' outputs (Alchian and Demsetz, 1972).

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<sup>44</sup> Further details on the distinction between ex-post and ex-ante transaction costs can be found in Williamson (1985b, pp. 22–25). The broad definition of “*costs of running the economic system*” from Arrow (1969, p. 48) is relevant for further explanations, even though many definitions of transaction costs exist.

<sup>45</sup> Williamson (1981) depicts the works of Commons (1934), Coase (1937), and Hayek (1945) as central studies of transaction cost theory. Further pioneering works are presented in Williamson (1991b, p. 76). Among others, Kenneth Arrow is pointed out by Williamson (1981) as he understood the importance of considering transaction costs in a broader sense, instead of market failures in a narrow sense. According to Williamson (1985a, p. 188), central works for the development of NIE, in general, can be traced back to Ronald Coase, Friedrich Hayek, Herbert Simon, Armen Alchian, Alfred Chandler Jr., and Kenneth Arrow. For further details on pioneering papers, see Williamson (1985a).

<sup>46</sup> For a more detailed description of the development, see Williamson (1998).

<sup>47</sup> In the following, the focus lies on the transaction costs approach developed by Williamson. However, see Alchian (1984), who addresses the different approaches and bridges the gap between the two pioneering works of Williamson (1971) and Alchian and Demsetz (1972).

Transaction cost theory is based on the assumption that, on the one hand, human behavior is coined by bounded rationality (Williamson, 1975, pp. 20–56), which leads to incomplete contracts (Williamson, 1991b, p. 79). On the other hand, opportunism is assumed (Williamson, 1975, pp. 20–56). In addition to incomplete contracts, the opportunistic behavior of transacting parties requires safeguarding the transaction through the executing organization, the firm. Varying arguments exist for the firm to organize transactions differently (Williamson, 1985b, p. 52). Since a transaction is the central unit of interest within transaction cost theory and since its costs shall be reduced, differences in transactions' attributes and the organizational form executing a transaction need to be known.

Transactions may be distinguished based on asset specificity, uncertainty, and frequency (Williamson, 1985b, pp. 52–61). The organization effects vary (Williamson, 1985b, pp. 52–61), depending on the asset specificity type<sup>48</sup> and degree of involvement (Shelanski and Klein, 1995, p. 337). Additionally, the dimensions to which transactions differ depend upon the frequency of the transactions' recurrence and the prevailing uncertainty concerning future events or actions (Shelanski and Klein, 1995, p. 337).

The attributes of transactions can influence the form of transaction governance. The governance structures describe firms' or transactions' organizational constructions. Three forms of governing transactions are identified by Williamson (1991a): *market*, *hybrid*, and *hierarchy*. The divergent governance structures are based on different considerations of contract law. The relationships between the transacting parties vary. The governance structures can be placed in a continuum between ownership and control (*hierarchy*)<sup>49</sup> and classical contract law (*market*). *Hierarchy* represents a dependency relationship between transacting parties. *Market* misses a dependency relationship because a third party is engaged. *Hybrid* governance is located in between *market* and *hierarchy* governance. In the *hybrid* case, transacting parties are more independent than those involved in *hierarchy* (Williamson, 1991a, 1991b; David and Han, 2004).<sup>50</sup> Therefrom, the interplay of the transactions' attributes and the governance structures impact a

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<sup>48</sup> The affected parties of a transaction can choose between either special oder general purpose investments, whereas special purpose investments usually lead to cost savings but come with higher risks. The risk results from the level of specificity as it may only be used for a particular purpose, and a modification would lead to additional costs. A distinction can be made between different types of asset specificity, among others, namely: site specificity, dedicated assets, as well as physical and human asset specificity (Williamson, 1985b, pp. 52–56).

<sup>49</sup> See Williamson (1967) for further information on the relation between hierarchical levels and control.

<sup>50</sup> For further explanations on the distinction between the three governance forms and their contract laws, consult Williamson (1991a).



rise or decline in transaction costs (David and Han, 2004).<sup>51</sup> The favored choice in transaction cost theory is the governance structure that minimizes transaction costs (Williamson, 1991a, p. 277).<sup>52</sup>

Considering financial markets, the existence of transaction costs and, thereby, the aim to economize transaction costs can be transferred to the borrowers and the lenders, which exchange financial goods and services. This aim leads to the reasoning behind financial intermediation's existence (Benston and Smith, 1976, p. 215). If financial intermediaries are integrated into an existing relationship, they introduce a two-tier agency relationship, and new transaction costs arise (Paarz, 2011, p. 17). However, financial intermediaries are only assigned by the principals if the expenses for intermediation are lower than the costs that will arise if the borrowers (agents) and the lenders (principals) conduct the transaction without intermediaries (Niehans, 1978, p. 167). Therefore, financial intermediaries ensure a net cost advantage compared to direct borrowing and lending (Diamond, 1984, p. 393).

Varying costs may arise depending on the role of financial intermediaries. In the literature, different functions are associated with intermediaries.<sup>53</sup> They may be seen as information producers through which investment decision-making procedures (in case of moral hazard) can be improved. Information production costs to estimate firms' values arise. A cost advantage may be achieved because intermediaries screen (or monitor) the corporates (borrowers) only once; otherwise, each investor would have to screen (or monitor) individually without intermediaries (Ramakrishnan and Thakor, 1984). Different approaches to transaction cost theory concerning financial intermediation exist and are addressed in *CHAPTER 3*.<sup>54</sup>

## 2.3 Information Economics and Theory of Efficient Capital Markets

### 2.3.1 Information Intermediation's Benefit in Efficient Capital Markets

Neoclassical financing theory assumes the exchange of financial products resulting in a Pareto-optimal allocation because all information is fully reflected in prices. In contrast, the theory of

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<sup>51</sup> For further details on the interaction of the transactions' attributes and the governance forms, as well as their impact on transaction costs, see David and Han (2004).

<sup>52</sup> It is called the "*discriminating alignment hypothesis*".

<sup>53</sup> Detailed explanations of the roles and approaches defining financial intermediaries can be found in *CHAPTER 3*.

<sup>54</sup> *CHAPTER 3* only addresses a specific selection of studies.

efficient capital markets considers deviating assumptions. Again, this chapter outlines how the theory of efficient capital markets reconciles with the existence of financial intermediation.

Fama (1970, p. 387) emphasizes that certain market conditions are sufficient to achieve capital market efficiency. The theory aims for a market in which trading securities are not involved with any transaction costs, in which market participants can acquire any information free of charge, and in which all market participants share the same expectations. These markets possess prices reflecting any available information.<sup>55</sup>

Accordingly, Fama (1970) assumes that information is processed at any time; but the degree to which information is processed can be differentiated between weak, semi-strong, and strong market efficiency. Prices in a market with weak efficiency only incorporate information about historical prices. Semi-strong market efficiency represents prices that consider all publicly available information. Whereas prices on strong information-efficient markets embed any information, meaning all publicly available and even all private information (Fama, 1970).

Although Fama (1970) addresses market efficiency in stock markets, in particular, Fama's findings generalize to financial markets and markets in general (Ball, 1995, p. 9). Literature addresses the improvement of decision-making, particularly through an additional information gathering and processing source, such as information intermediation.<sup>56</sup>

If decisions can be improved through information intermediation, it is questionable whether improvements arise in each form of capital market efficiency. Given a capital market sufficient to strong information efficiency, additional information processing, e.g., through financial analysis, would not generate excess returns since all information is already reflected in market prices (Fama, 1970, p. 409). Price changes can only result from new information that is random and unpredictable by nature, as the prices already incorporate all other information (Malkiel, 2003, p. 59). Accordingly, investors would not benefit from information intermediation, such as financial analysis, because the security's price already reflects all available information. Thus, financial analysis cannot forecast a random, unpredictable price change, i.e., a financial analyst cannot make a reliable forecast incorporating the new information because the news and its price change are unpredictable. In this case, the *random walk hypothesis* is assumed,

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<sup>55</sup> Although research on the theory of efficient capital markets was conducted before the study of Fama (1970), the three information subsets analyzing the efficiency can be traced back to Fama (1970).

<sup>56</sup> *CHAPTER 3* provides further information on financial intermediaries, in general, and on information intermediaries, in particular.

which is why financial analysis<sup>57</sup> would not ensure investors greater profits than they would achieve without financial analysis (Malkiel, 2003, p. 59).

If semi-strong information efficiency is assumed, the capital market reflects all publicly available information within prices (Fama, 1970, p. 404). Thus, a positive marginal benefit of additional information gathering and processing by an intermediary can only arise and lead to the prospect of excess returns if the intermediary processes the information faster than the market or if he has private information.

In a weak information-efficient capital market, information intermediation generates excess returns if intermediaries consider publicly available or even private information that exceeds historical information (Fama, 1970, p. 388). Consequently, information intermediation can lead to the prospect of excess returns. Similarly, intermediation could be beneficial in an inefficient capital market, leading to potential excess returns (Malkiel, 2003, p. 77).

### 2.3.2 Debates on the Three Forms of Capital Market Efficiency

The literature discusses the role and the existence of the three forms of market efficiency.<sup>58</sup> Studies analyzing market efficiency usually conduct empirical investigations that may give rise to anomalies. Empirical results that present inconsistencies within a given theory are considered anomalies (Schwert, 2003, p. 942). However, anomalies may point out market inefficiency or the inadequacy of applied asset-pricing models (Schwert, 2003, p. 942).<sup>59</sup> Research results indicate that the theory of market efficiency should not be discarded, even though the existence of weak and semi-strong, rather than strong, information-efficient capital markets is implied (Fama, 1998, p. 304; Malkiel, 2003, p. 80; Copeland *et al.*, 2005, pp. 372–377). Notwithstanding, studies exist that justify the consideration of all available information within equilibrium prices if certain conditions apply.<sup>60</sup>

Testing the forms of capital market efficiency, addresses the question whether the development of stock prices are subject to chance (Perridon *et al.*, 2016, pp. 232–233). Three models

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<sup>57</sup> This applies to technical and fundamental analysis. See *CHAPTER 4.6* for further information on different analyzing methods.

<sup>58</sup> Fama (1991), Fama (1998), Sapusek (1998, pp. 199–217), or Malkiel (2003), for instance, provide an overview of studies addressing and testing the capital market efficiency hypothesis.

<sup>59</sup> Typical anomalies are the *weekend effect* or the *turn-of-the-year effect*. See Fama (1991) or Schwert (2003) for an overview.

<sup>60</sup> Analytical studies by Grossman (1978), Lucas (1978), Radner (1979), Allen (1981), or Jordan (1983) consider conditions under which equilibrium asset prices are consistent with the capital market efficiency hypothesis.

exist to test the random process that is usually referred to in connection with market efficiency: the *fair-game model*, the *martingale* in conjunction with the *submartingale model*, and the *random walk model*. The martingale and submartingale model are also fair game models (Copeland and Weston, 1992, p. 346).

Tests on the weak form of market efficiency refer to whether past returns are suitable for forecasting future returns. Fama (1970) already considers early works in his pioneering paper and refers to the *fair-game model* as a basis for empirical literature testing market efficiency (Fama, 1970, pp. 384–385). For testing the – as later defined – weak market efficiency, earlier literature also addresses a *random walk model*<sup>61</sup> (Fama, 1970, pp. 386–404).<sup>62</sup> Fama (1991) provides another overview of relevant studies and indicates controversial implications for weak information-efficient markets (Fama, 1991, pp. 1576–1577), not allowing to discard the theory of the weak form.

Studies on semi-strong information-efficient markets stress the matter of abnormal returns as the difference between expected and actual returns.<sup>63</sup> According to the theory of semi-strong market efficiency, changes in abnormal returns should only occur after an announcement has been made, or an event has occurred.<sup>64</sup> Hence, Fama (1998) provides an overview of various event studies examining the semi-strong market efficiency and revealing deviating results.<sup>65</sup> Research on semi-strong information efficiency considers different announcements or events, such as the disclosure of income reports<sup>66</sup>, press releases<sup>67</sup>, initial public offerings<sup>68</sup>, dividend

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<sup>61</sup> The *random walk model* is a specialized consideration of the “*fair game*” *model* (Fama, 1970, pp. 385–389). The *random walk approach* considers price series, in which a price change is independent of prior prices. As price changes only depend on new information that has not been predictable, the price change is similarly based on randomness (Malkiel, 2003, p. 59).

<sup>62</sup> For information on the tests that can be conducted, see, e.g., Copeland *et al.* (2005, pp. 488–506) or Sapusek (1998, pp. 199–202).

<sup>63</sup> The studies can be distinguished between the investigation of long and short-term returns (Copeland *et al.*, 2005, pp. 391–404).

<sup>64</sup> Ball and Brown (1968) and Fama *et al.* (1969) represent key event studies investigating capital market effects.

<sup>65</sup> Copeland *et al.* (2005) point out various studies that empirically test the market efficiency hypothesis and its semi-strong form.

<sup>66</sup> Ball and Brown (1968) consider the disclosure of preliminary and annual reports, but they regard the release of preliminary reports as the event through which income numbers are announced. They investigate the information usefulness through market adjustments to security prices.

<sup>67</sup> Berry and Howe (1994) consider news releases as a measure of public information flow.

<sup>68</sup> For instance, see the studies of Shaw (1971) or McDonald and Fisher (1972).

yields<sup>69</sup>, or stock splits<sup>70</sup>. As the results differ, the theory of semi-strong market efficiency is not discarded.

Strong market efficiency is researched and generally addressed through studies measuring abnormal returns obtained by insiders. According to the theory of strong market efficiency, insiders should not be able to gain excess returns as private information should already be considered before the information is publicly available. In contrast, prior studies find contrary evidence since the insiders earn higher abnormal returns through their transactions (e.g., Jaffe, 1974b; Finnerty, 1976).<sup>71</sup> Besides the empirical evidence on the non-existence of strong information-efficient capital markets, a theoretical approach to explain the non-existence is carried out by Grossman and Stiglitz (1980).

Grossman and Stiglitz (1980) argue that information needs to be costless to corroborate the theory of strong information-efficient markets. They state that the opposite is true in reality. According to Hayek (1945), no single individual can obtain all available information, leading to price systems serving as communication mechanisms. Consequentially, individuals do not have to possess all available knowledge to act appropriately in the sense of efficiency. Knowledge is dispersed among many market participants ensuring that intermediaries only pass on essential information to individuals requiring such information to take further actions. Therefore, the intermediaries' costs arising to communicate information – in any manner – determine the price (Hayek, 1945, pp. 526–530).

Moreover, Grossman and Stiglitz (1980) point out that informed traders, serving as information intermediaries, can only obtain returns on their information processing if uninformed traders benefit from the processed information. However, uninformed traders would not benefit from the intermediaries' knowledge if the market aggregates all the available information and reflects it in its prices. They would not earn any returns, resulting in market failure (Grossman and Stiglitz, 1980, p. 404).<sup>72</sup> Thus, an informationally efficient capital market destroys any incentive to acquire information. Consequently, competition in markets and the functioning of

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<sup>69</sup> See Fama and French (1988) as an exemplary study investigating dividend yields and the variances in returns. They find no significant evidence. It means in effect that information about dividends should already be considered by the market.

<sup>70</sup> Fama *et al.* (1969) investigate stock splits and find evidence that the market responds informationally efficient to stock splits; as prices only adjust to stock splits to the extent to which stock splits impact future dividends.

<sup>71</sup> Among others, Jaffe (1974b) and Finnerty (1976) find evidence of insiders earning higher profits than non-insiders, questioning the existence of strong market efficiency.

<sup>72</sup> Grossman (1976) and Grossman (1977) further address the issue of having a price system that aggregates knowledge perfectly leading to the absence of incentives to gather and process information.

price systems depend on costly information. This contradicts the assumptions of strong market efficiency (Grossman and Stiglitz, 1980, pp. 404–405).

Based on the formerly presented study, Hellwig (1982) considers an approach in which market efficiency is approximated despite the costs of information acquisition. He considers a model that is based on past equilibrium prices. Hence, he supposes that market participants can only adjust their expectations after a transaction is completed. Accordingly, prices reflect information with delay. The market participants willing to acquire information before it is reflected in market prices have an advantage compared to the other group, which observes market prices and obtains the information after the prices reflect the information following a specific period. Overall, the smaller the period needed to reflect information within prices, the higher the capital market efficiency.

Considering the studies mentioned above and their results, regardless of the form of capital market efficiency, intermediaries in capital markets may be able to improve information efficiency.

### 3 Financial Intermediation from a Finance Theory Perspective

The previous explanations emphasize the need for financial intermediation from an economic perspective, whereas this chapter focuses on financial intermediaries in finance theory. Despite the causes being sometimes interrelated, the various theoretical approaches trace back to asymmetric information<sup>73</sup>, costs<sup>74</sup>, or regulation<sup>75</sup> as market imperfections, explaining the emergence of financial intermediaries.<sup>76</sup> Besides the economic reasoning for the existence of financial intermediaries, their roles and the definition of financial intermediation are similarly inconsistent. Whereas hereafter, *CHAPTER 4* focuses, in specific, on financial analysts as financial intermediaries, this chapter illustrates financial intermediaries in a broader sense and highlights the divergent roles and activities of financial intermediaries. They are partially presented in some of the pioneering works of financial intermediation theory. This chapter also distinguishes more precisely between financial and information intermediaries.

#### 3.1 Systematization of Financial Intermediaries' Roles and Activities

The theory of financial intermediation, in general, considers financial intermediaries as individuals, the reasons for their existence as well as the economic consequences of their operations. Different approaches focus on deviating reasons for the existence of financial intermediation (Scholtens, 1993, pp. 119–121), allowing various functions or roles<sup>77</sup> that can be assigned to financial intermediaries.

Financial intermediation considers the exchange of financing titles between two parties, adding a third party, the intermediaries (Breuer, 1993, pp. 20–21). Financial intermediaries acquire and process information to compile economic entities' financial claims (Draper and Hoag, 1978, p. 595). Benston and Smith (1976, p. 215) view the role of financial intermediaries in creating "*specialized financial commodities*". Accordingly, they are agents undertaking

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<sup>73</sup> See, for instance, Benston and Smith (1976), Leland and Pyle (1977), Draper and Hoag (1978), Campbell and Kracaw (1980), Ramakrishnan and Thakor (1984), Millon and Thakor (1985), Boyd and Prescott (1986), or Allen (1990).

<sup>74</sup> See, for instance, Benston and Smith (1976), Townsend (1978), Townsend (1979), Bryant (1980), Grossman and Stiglitz (1980), Fischer (1983), Stiglitz and Weiss (1983), Diamond (1984), or Ramakrishnan and Thakor (1984).

<sup>75</sup> Regulation as a cause for the existence of financial intermediation is not discussed in the following. Studies focusing on regulation matters reasoning financial intermediaries' existence are, e.g., Kahane (1977), Kane (1981), Kane (1983), and Hörngren (1985).

<sup>76</sup> See Scholtens (1993) for an extensive overview of studies assigned to the three types of market imperfections.

<sup>77</sup> Goldsmith (1958, Chapter VII) discusses the roles of financial intermediaries and explicates the development of financial intermediaries in the United States in the early 20<sup>th</sup> century.

financial activities, such as producing financial goods or services (Scholtens, 1993, pp. 112–116). Conducting financial intermediation relates to information production, price assessment, transformation, or exchange of goods (Breuer, 1993, pp. 20–21).

Financial intermediaries obtain different functions. Due to the formerly mentioned market imperfections, financial intermediation is used to allocate capital resources. *CHAPTER 2* explicates that inefficiencies in markets exist, which justify intermediation through which costs arise but whose advantages outweigh the costs. Financial intermediaries simultaneously involve borrowers and lenders (Boyd and Prescott, 1986, pp. 211–212). The intermediaries' information deviates from the borrowers', which justifies information production. The costs, hence, define loan terms and allocation.<sup>78</sup> In general, transaction costs shall be minimized for all market participants. Risks existing for market participants shall be reduced through intermediation. Beyond that, intermediation shall reduce the risk that markets fail (Bernet, 2003, pp. 14–17). In summary, financial intermediaries contribute to the market's efficiency through capital resource allocation and the reduction in transaction costs and risks (Bernet, 2003, p. 14).

Scholtens (1993, p. 117) categorizes four financial intermediaries' activities. Financial intermediaries manage financial assets' and liabilities' demand and supply; the same applies to non-tangible and contingent assets and liabilities. They conduct typical brokerage activities or administer accounting systems. Similarly, Breuer (1993, p. 17) distinguishes four financial intermediary types<sup>79</sup>: financial appraisers, financial auctioneers, finance market makers, and financial producers.<sup>80</sup> Rating agencies, as well as consultants or auditors, serve as financial appraisers. Brokers are generally financial auctioneers, brokering contracting opportunities and aiding in price determination. Finance market makers can be security traders, for instance. Lastly, investment companies or private equity companies are considered financial producers (Breuer, 1993, pp. 17–19).

### 3.2 Approaches to the Emergence of Financial Intermediaries

Existing studies provide various sets of roles and activities of financial intermediaries and diverging definitions. Consequently, there is a lack of a conclusive definition of financial

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<sup>78</sup> Boyd and Prescott (1986) highlight five facts describing financial intermediaries' characteristics.

<sup>79</sup> Draper and Hoag (1978, p. 596) present a table containing different intermediary types and their activities.

<sup>80</sup> See Breuer (1993, p. 22) for an overview of studies as well as the understanding and assignment of the different roles of financial intermediaries.



intermediation. For reasons of simplification, the following only depicts a few pioneering studies.<sup>81</sup> First, studies justifying the existence of financial intermediation are presented, considering different types of intermediaries. Second, information intermediaries are categorized in the context of financial intermediation. Third, financial analysts are classified as a particular type of financial intermediaries.

### 3.2.1 Leland and Pyle (1977) as a Pioneering Study

Investors are interested in knowing the borrower's firm or project value for which capital needs to be raised. However, the two parties have asymmetric information about the value (Leland and Pyle, 1977, p. 371). Incentive issues arise and prevent the exchange of all information. Exchange costs arise between the borrowers and the investors. Therefore, Leland and Pyle (1977, pp. 383–384) consider transaction costs that may be reduced through an intermediary.<sup>82</sup> They regard the existence of financial intermediation as a response to informational asymmetries in a pre-contractual setting. Thus, they view this setting as the primary reason for intermediation (Leland and Pyle, 1977, p. 372).<sup>83</sup>

Leland and Pyle (1977) emphasize financial equilibriums accompanied by informational asymmetries; that is why they introduce signaling to combat adverse selection problems.<sup>84</sup> Companies or entrepreneurs possess asymmetric information compared to investors because the borrowers only know the actual investment project's quality. Accordingly, Leland and Pyle (1977, pp. 372–373) consider the entrepreneurs' investments in their own projects as signals of quality. The signaling model considers information asymmetries between borrowers and lenders, which contrasts with the work of Modigliani and Miller (1958) based on symmetric information (Leland and Pyle, 1977, pp. 381–382).<sup>85</sup>

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<sup>81</sup> The studies presented are only a selection of pioneering works chosen by the author of this study.

<sup>82</sup> The intermediary's compensation depends on the quality and suitability of information production. This justifies the need for a reliable measurement of the investment project's value (e.g., Leland and Pyle, 1977; Campbell and Kracaw, 1980; Chan, 1983; Ramakrishnan and Thakor, 1984). Beforehand, Benston and Smith (1976) justified the theory of financial intermediation and the existence of intermediaries due to the reduction in transaction costs. They present a theory of financial intermediation emphasizing the consideration of transaction costs. Even though their explanations do not take center stage in this work, they have substantially contributed to financial intermediation theory literature.

<sup>83</sup> Chan (1983) as well as Ramakrishnan and Thakor (1984) similarly build upon information asymmetries. Ramakrishnan and Thakor (1984) additionally consider the matter of reliability.

<sup>84</sup> See *CHAPTER 2.2* for information on adverse selection and signaling.

<sup>85</sup> Whereas Modigliani and Miller (1958) find no relationship between a company's value and a financing decision, Leland and Pyle (1977, pp. 381–383) reveal asymmetric information on capital markets and a relationship between a corporate value and a financing decision in a particular setting.

Considering transaction costs, Leland and Pyle (1977, pp. 381–382) justify the existence of financial intermediation.<sup>86</sup> They conclude that individuals or organizations may be induced to spend resources to obtain information collected and forwarded by intermediaries. The intermediaries thereby solve two problems. They prevent incentive problems due to reliability issues because buyers believe intermediaries only sell good information. Intermediaries ensure this through signaling, where an owner's investment in his project or company serves as a signal. Moreover, the general public considers information a public good, limiting the attractiveness of buying information if it is publicly available. Engaging intermediaries lead to creating a portfolio with specialized information that investors cannot directly observe, hampering the character of a public good (Leland and Pyle, 1977, pp. 382–384; Campbell and Kracaw, 1980, pp. 879–881).

Based on Leland and Pyle (1977), Campbell and Kracaw (1980) expanded the theory of financial intermediation. They expose the importance of the information production function of financial intermediaries in particular. In contrast to Leland and Pyle (1977), Campbell and Kracaw (1980) argue that the existence of financial intermediaries must be based on multiple functions rather than only producing information about an investment's value. Accordingly, financial intermediaries must conduct complementary transactions and other services (Campbell and Kracaw, 1980, pp. 879–881).

### 3.2.2 Diamond's (1984) Delegated Monitoring Approach

Like Leland and Pyle (1977), Diamond (1984) developed an approach of financial intermediation theory based on the information production task and minimizing costs. Whereas Leland and Pyle (1977) consider *ex-ante* information asymmetries and answer with a signaling approach without conducting an analysis, Diamond (1984, pp. 407–409) focuses on *ex-post* information asymmetries and answers with a monitoring model. His theory introduces delegated monitoring and related costs to prevent incentive problems between lenders and borrowers. In Diamond's (1984, p. 394) approach, he introduces banks as a third party. The banks, as financial intermediaries, monitor borrowers on behalf of lenders.

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<sup>86</sup> Leland and Pyle (1977, pp. 382–383) stress that prior models in the existing literature on financial markets failed to explain the existence of financial intermediation.

Diamond (1984, pp. 395–396) addresses investment projects for which entrepreneurs<sup>87</sup>, the borrowers, require capital. The investors<sup>88</sup> lend capital to the entrepreneurs. The projects' outputs, however, are only observable to the borrowers and not the lenders. Subsequently, information asymmetries about the investment projects' outcomes arise. Hence, the borrowers must be incentivized to communicate the actual values. On that account, monitors shall supervise the borrowers to eliminate information asymmetries and prevent incentive problems arising from information asymmetries between the borrowers and lenders (Diamond, 1984, pp. 395–398). Costs arise for monitoring, which is why the investors delegate the monitoring task to financial intermediaries to profit from cost savings. Thus, financial intermediation assures that only the intermediaries have to produce information rather than each lender individually. Further, incentive problems between investors and borrowers, such as freeriding, are solved by the monitors, i.e., the intermediaries (Diamond, 1984, pp. 398–403).

Diamond's approach views the financial intermediaries as financial producers (Breuer, 1993, p. 140). Thereby, another agency relationship between the intermediaries and the lenders emerges beside the borrowers' and lenders' relationship. Through the lenders' delegation of an intermediary, further incentive problems may arise within this agency relationship (Diamond, 1984, p. 399). Following Diamond (1984, pp. 398–400), additional costs arise due to financial intermediation. He distinguishes between information and delegation costs.<sup>89</sup> The latter costs result from the intermediaries' total monitoring costs. They can be divided into actual monitoring costs and costs resulting from incentives provided to the intermediaries. These costs result from ensuring that the intermediaries are not using their position and shall prevent further incentive issues based on the second agency relationship. Overall, the intermediation must result in a cost advantage to justify its existence (Diamond, 1984, pp. 398–399).

### 3.2.3 Coalition Forming Approach of Ramakrishnan/Thakor (1984)

In contrast to Diamond's (1984) approach to a theory of financial intermediation, Ramakrishnan and Thakor (1984) consider a model without transaction costs. Their model is built upon informational asymmetries as well as the issue of information reliability. Accordingly, the intermediaries are regarded as diversified information brokers, considered financial appraisers to assess

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<sup>87</sup> According to Diamond's (1984, p. 395) assumptions, the entrepreneur is illiquid and risk neutral.

<sup>88</sup> According to Diamond's (1984, p. 395) assumptions, the investors are also risk neutral.

<sup>89</sup> Diamond (1984, pp. 400–402) also addresses the diversification of the intermediary's portfolio to reduce the delegation costs.

the values of firms that want to raise capital as borrowers (Ramakrishnan and Thakor, 1984, p. 416).<sup>90</sup> Investors are subject to moral hazard issues based on their relationship with the borrowers. They cannot observe the borrowers' actions and, hence, cannot judge the reliability of the entrepreneurs' information about the firms' actual values. Ramakrishnan and Thakor (1984, p. 417) consider the possibility of signaling to combat incentive issues. However, they assume that losses related to signaling are greater than the costs of screening the entrepreneurs. As a result, screening contracts lead to the consideration of financial intermediaries as information producers. Due to this new agency relationship between investors and information producers, further incentive issues arise. The information's reliability may be questioned. Therefore, the financial intermediaries' compensation depends on information production to prevent any incentive problems. It depends on the information they gather, buy, and process. Accordingly, their compensation is conditioned upon the performance of their assessments (Ramakrishnan and Thakor, 1984, pp. 415–417).

Following Ramakrishnan and Thakor (1984, p. 416), a coalition of information producers may reduce the costs resulting from information production. Their model emphasizes the formation of coalitions to benefit from cost reductions (Ramakrishnan and Thakor, 1984, p. 417). Indeed, forming a coalition may lead to free-rider problems for information producers. Ramakrishnan and Thakor (1984, pp. 421–425) conclude that information producers monitor each other to prevent this problem. Within a coalition, it is aimed for a greater intermediary size to monitor each other and to reduce information production costs (Ramakrishnan and Thakor, 1984, p. 416).<sup>91</sup>

Based on the considerations of Ramakrishnan and Thakor (1984), Millon and Thakor (1985) provide an extension of the former study. Like Ramakrishnan and Thakor (1984), they focus on financial intermediaries as financial appraisers or information producers to assess companies' values (Millon and Thakor, 1985, p. 1405). However, they address them as screening agents, and the coalitions mentioned by Ramakrishnan and Thakor (1984) are named information-gathering agencies. Contrasting the former study, Millon and Thakor (1985, p. 1416) do not assume that the optimal size of an information-gathering agency or a coalition is unlimited. Millon's and Thakor's (1985, pp. 1414–1415) approach allows information sharing because it reduces efforts and spreads the risk among various agents (Millon and Thakor, 1985,

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<sup>90</sup> For a detailed classification of financial intermediaries as financial appraisers, as in the study of Ramakrishnan and Thakor (1984), see Breuer (1993, pp. 120–129).

<sup>91</sup> Breuer (1993, pp. 127–128) criticizes the work of Ramakrishnan and Thakor (1984) because the study does not explain the existence of financial intermediation but considers it as given.

pp. 1411–1414) and prohibits internal monitoring by the agents within a coalition (Millon and Thakor, 1985, p. 1404).

These two approaches illustrate the understanding of a financial intermediary that consists of various members (Millon and Thakor, 1985, p. 1416). Accordingly, financial intermediation requires a formation of a coalition. Due to this, the approaches are subject to criticism. They do not address the reasons for the existence of financial intermediaries but focus on forming coalitions and their benefits (Breuer, 1993, pp. 128–129).

Nonetheless, viewing financial intermediaries as financial appraisers, as opposed to the view of financial producers pointed out earlier, illustrates the broad roles and understanding of financial intermediation. The various studies expose the diversity of approaches to the theory of financial intermediation and highlight the non-uniform and non-final definitions of financial intermediaries. Still, they underline the necessity of financial intermediation to improve the capital market's functioning.

### 3.3 Financial Intermediaries in Distinction to Information Intermediaries

Intermediaries, as agents acting between two exchanging parties involved in the exchange of goods, exist in various markets.<sup>92</sup> Intermediaries acting on financial markets are generally considered financial intermediaries (Hax, 1997, p. 41). The research literature provides a broad range of studies addressing financial intermediation theory. Some studies, however, address *information intermediaries* on financial markets instead of *financial intermediaries* (e.g., Vergoossen, 1993; Lang *et al.*, 2004; Pownall and Simko, 2005; Hayne and Vance, 2019). This section specifies the different terms and whether information intermediaries are considered as a specific type of financial intermediaries or whether financial intermediaries are a sub-type of information intermediaries.

Rose (1999, p. 76) views information intermediaries as “*economic agents supporting the production, exchange, and utilization of information in order to increase the value of the information for its end-user or to reduce the costs of information acquisition*”. Hence, the focus is not on financial elements or material goods but on information (Rose, 1999, p. 77). Accordingly, the media or electronic commerce also act as information intermediaries – not acting on

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<sup>92</sup> Rose (1999, p. 51) defines an intermediary “*an independent, profit-maximizing economic agent mediating between two market sides in presence of market imperfections. Intermediation is the bridging the incompatibilities between the two (market) sides involved in a transaction by transformation of output attributes of the supply market side to appropriate input attributes of the demand market side*”.

financial markets (Walter, 2007, p. 57). Consequently, information intermediation is a generic term for intermediaries in various markets. Nevertheless, it is questionable why only a few studies regard agents on financial markets as information intermediaries.

Literature reviews on financial intermediation theory do not provide the answer. For instance, Bhattacharya and Thakor (1993) provide a review of the theory of financial intermediation. Even though they expound diverse types of financial intermediaries, such as banks, investment banks, rating agencies, and others, they state the basis of financial intermediation to informational problems. They also consider informational frictions as the common feature among the different approaches (Bhattacharya and Thakor, 1993, p. 14). However, they do not address the term information intermediary. They only mention financial intermediaries.

The same applies to the literature review of Scholtens (1992).<sup>93</sup> He underlines the importance of information processing in financial intermediation (Scholtens, 1992, p. 476). He explicates the different types of financial intermediaries, considering, among others, securities houses, insurance companies, mutual funds, banks, and investment trusts. Nonetheless, Scholtens (1992, p. 473) states that financial intermediation distinctly differentiates from other forms of intermediation. He justifies his argument by focusing on the financial element. Moreover, financial activities, subordinated to economic activities, undertaken by financial intermediaries include collecting and processing information associated with financial claims (Scholtens, 1993, p. 116). In his literature review from 1993, Scholtens (1993, p. 118) emphasizes that financial processes and intermediating procedures contribute to financial intermediation.

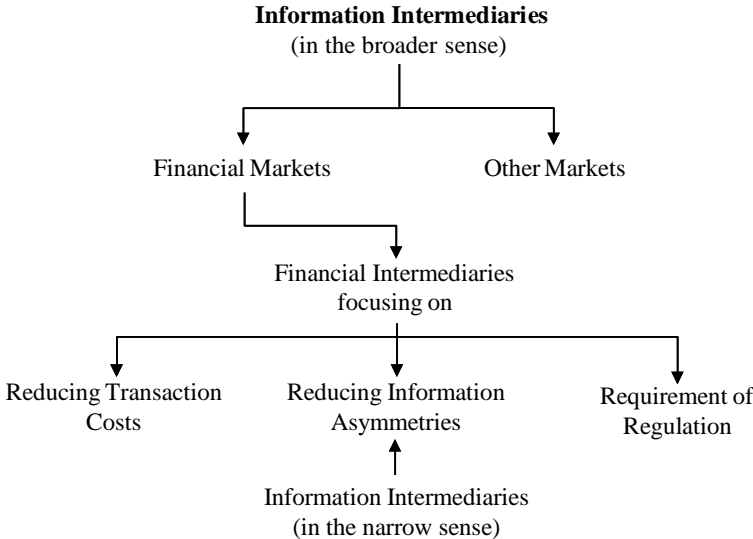
Nonetheless, studies considering the financial market address information intermediaries in a financial context. According to Hayne's and Vance's (2019, p. 970) understanding of the information intermediary role, information must be processed, leading to recommendations that are given to investors by the intermediaries. In addition, Pownall and Simko (2005, p. 945) demonstrate the process of informing the capital market through the intermediaries' research and information processing. Vergoossen (1993, p. 219) considers investment analysts, in particular, as information intermediaries providing financial information about a company and its performance to investors. He points out that Arnold and Moizer (1984) differentiate between investment analysts acting as portfolio managers and investment analysts being information intermediaries (Vergoossen, 1993, pp. 221–222). Arnold and Moizer (1984, p. 195) view the difference between the groups in the targets. The portfolio managers aim to maximize the

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<sup>93</sup> This literature review focuses on the internationalization of financial intermediation and, thus, considers cross-border or cross-currency impacts. Geographical or cultural effects are analyzed, for instance.

return, whereas the advisers aim to maximize their commission, which depends on securities' sales and purchases. Accordingly, Vergoossen (1993, p. 219) distinguishes between analysts operating as investors, for instance, in the case of portfolio managers, and analysts acting as information intermediaries considered investment advisers. They collect and interpret financial information and distribute it to other market participants. Considering the four different roles of financial intermediaries, according to Breuer (1993, pp. 9–14), portfolio managers and investment advisers are considered financial intermediaries. Portfolio managers are financial producers working for investment companies, whereas investment advisers are financial auctioneers, i.e., brokers.

**FIGURE 5:**  
*Consideration and Distinction of Information Intermediaries*



**Notes:** Following Hax (1997, p. 47).

In contrast, DeFond and Hung (2007, p. 379) use both terms, financial and information intermediaries, interchangeably. Following the former considerations, the information intermediaries are sometimes considered a specific sub-type of financial intermediaries providing other market participants with information based on their analysis. Thereby, the information flow is particularly stressed. Similarly, Hax (1997, pp. 46–47) justifies the consideration of financial intermediaries as information intermediaries if the reason for the delegation of the intermediaries is rather based on the elimination of information asymmetries than on other cost advantages

(see *FIGURE 5*). Additionally, Beaver (1989, p. 12) argues that the information intermediaries include financial (reporting) information and accentuates the consideration of information intermediaries being financial intermediaries:

*“The information intermediaries can be viewed as an industry whose factors of production include financial information and other types of data and whose product is analysis and interpretation. The output of information intermediaries is also a form of information. The intermediaries take primitive information and transform it into another type of information, which reflects their ability to understand, synthesize, and interpret the raw data” (Beaver, 1989, p. 12).*

To summarize, intermediation – independent of the market where it occurs – is generally referred to as information intermediation since information is the basis to mediate between two parties. This is due to the nature of intermediaries being a third party that collects and processes information. In financial intermediation literature, information intermediaries may be addressed to either emphasize a particular information flow in a narrow sense or because the agents are generally considered intermediaries in a broader sense (see *FIGURE 5*). In this study, the term *information intermediary* (or information intermediation) is used in specific to stress the relevance of the information flow delivered by a financial analyst, who is simultaneously a financial intermediary in general.



## 4 Financial Analysis as an Opportunity for Financial Intermediation

The previous remarks and research literature addressing financial intermediation theory highlight the broad range of roles and activities conducted by different types of financial intermediaries. Most pioneering studies analyzing the existence of financial intermediation do not directly refer to *financial analysts*. In contrast, more recent literature views financial analysts as financial intermediaries. The financial analysis<sup>94</sup> enables analysts to intermediate between capital borrowers and providers. To better understand financial analysts' activities and the usage of corporate information, the following represents a systematization of analysis perspectives, a distinction between different analyst types, and financial analysis procedures.

### 4.1 Consideration of Financial Analysts as Intermediaries

Beaver (1978, p. 46) states that the intermediaries' existence is indisputable and delimits *information intermediaries* to financial analysts, brokerage firms, rating agencies, and companies providing investment advisory services (Beaver, 1989, p. 10). Remarkably, later studies pointing out *information intermediaries* often refer to financial analysts, in particular (e.g., Vergoossen, 1993; Chung and Jo, 1996, p. 496; Barth and Hutton, 2001; Lang *et al.*, 2004; Pownall and Simko, 2005; DeFond and Hung, 2007).

Schipper (1991, p. 105) understands financial analysts as primary users of financial accounting information. She defines financial analysts as "*intermediaries who receive and process financial information for investors*". Accordingly, financial analysts are financial intermediaries (Hax, 1997, p. 41), exposing the information production task, i.e., information intermediaries. Financial analysts generally aim to meet investors' demands for information (DeFond and Hung, 2007, p. 378) by providing results of their information processing indicating value-relevant information for which the market participants ask (DeFond and Hung, 2007, p. 381). Lang *et al.* (2004, p. 592) stress financial analysts' essential role in mediating between the market and the company.

Beaver (1989, p. 13) considers financial analysts' role as information intermediaries being essential to represent investors' demand for financial reporting information. Moreover, he regards financial analysts as a professional source to investigate the need for and the extent of

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<sup>94</sup> In this particular study, the term *security analysis* as well as *stock analysis* is likewise used to address *financial analysis*.

corporate disclosure practices (Beaver, 1978, pp. 48–52). On that account, financial analysts acting as financial intermediaries are likewise information intermediaries and an essential community in investigating corporate reporting’s usefulness to investment decisions. Ultimately, corporate information is any information, whether numeric or non-numeric, and financial information or sustainability information. Accordingly, any information related to corporates can be relevant to financial analysts. In particular, information that can be material for investment decisions interests financial analysts.

#### 4.2 Objectives of Financial Analysis

Analysts<sup>95</sup> conducting financial analysis fulfill the role of monitors or screeners and, in particular, intermediaries to impact and enhance investors’ awareness about investment objects (Chung and Jo, 1996, p. 496). Accordingly, analysts investigate the market in detail (Roberts, 1959, p. 8). Financial analysts may be distinguished more precisely as equity, credit, strategy, or risk analysts (Penman, 2010, p. 22). Regardless of the type of financial analyst, which specifies the research object, it is a professional aiding investors to assess potential investments from a certain point of view. Financial analysis is, here, used interchangeably with security analysis, which describes the research of tradeable financial securities. It may be referred to as research. Thus, this dissertation focuses on financial analysts being security, or even equity, analysts.<sup>96</sup> The analysts act as agents on behalf of investors aiming for a precise prediction of future stock prices (Malkiel, 1996, p. 116). Security analysis, detached from the method applied, aims for a reliable indication or benchmark to support investors in decision-making (Graham and Dodd, 1934, pp. 18–19). The analysts’ information advantage aids in identifying the undervaluation of stocks (Pike *et al.*, 1993, p. 490), and financial analysts’ actions may result in investors’ profit (Treynor and Ferguson, 1985, p. 757).

Financial analysis serves various functions. Graham and Dodd (1934, pp. 15–23) allocate descriptive, selective, and critical functions to the analysis of securities. The descriptive function exposes factors, such as weaknesses or strengths, that might impact corporate performance. The selective function in security analysis aids in judging securities and deciding whether to buy, sell, or retain (Graham and Dodd, 1934, p. 15). In addition, critical judgment contributes to the functioning of security analysis. Analysts must critically consider accounting methods or

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<sup>95</sup> In this study, the term *analyst* is interchangeably used for *financial analyst*.

<sup>96</sup> The empirical investigation focuses on equity analysis.

presentations of corporate facts to prevent or identify errors or fraud (Graham and Dodd, 1934, p. 26). These functions lead to the presentation of essential facts. Investors can understand the presented facts more quickly than unprocessed corporate information (Fogarty and Rogers, 2005, p. 331).

Through conducting financial analysis or trusting in analysts' work, uncertainty connected to investments shall be minimized (Penman, 2010, p. 4). Concurrently, investments shall ensure future returns that are higher than the cash invested (Penman, 2010, p. 9). In sum, the objective of financial analysis is to support investors in investment decisions, usually aiming for high returns and low risks. The analysts' work is coined by expertise, neutrality, and actions detached from a social context (Fogarty and Rogers, 2005, p. 331).

#### 4.3 Systematization of Financial Analysis Perspectives

Even though financial analysts share the same objective and functions, they work in various fields of research within investment banking. Research, in general, contributes to a diverse set of business lines. However, research activities do not generate revenue as a separate business line but contribute to other revenue activities. Research supports business lines such as asset management, mergers and acquisitions (M&A), or corporate finance (Marshall, 1994, p. 295; Achleitner, 2002, p. 757). Consequentially, analyses are the basis for various business lines within investment banking. Through information processing and analyses, research teams provide recommendations about financing titles or macroeconomic changes. They distribute the results to various addressees (Achleitner, 2002, p. 759). The addressees depend on the research object and the area of research. Research areas or fields can be distinguished in various ways, but not selectively. The literature presents deviating perspectives and categorizations whose composition and interplay may vary. Analysts represent any research staff regardless of the field in which they work. Financial analysts, in particular, deal with securities or company valuation (Marshall, 1994, p. 296).

The distinction between research fields reveals different approaches. Marshall (1994, p. 296) categorizes investment research into three research groups: equity, fixed income, and quantitative. Equity analysts examine companies' values, i.e., their equity, to recommend whether to buy shares. Fixed-income analysts evaluate debt securities or fixed-income products, such as bonds. Quantitative research that is based on mathematical and statistical procedures is sometimes subsumed under fixed-income research because both research types focus on

quantitative characteristics more strongly than equity research (Marshall, 1994, pp. 296–297). A categorization based on investor lines is likewise conceivable (Marshall, 1994, p. 296). Achleitner (2002), in contrast, considers five categories of research. Strategic, economic, and quantitative research may coexist, but they can be subordinated under security analysis. If so, they are allocated to equity and fixed-income research (Achleitner, 2002, p. 762). Strategy research covers the market environment and potential influencing factors from a strategic point of view (Achleitner, 2002, pp. 763–764). Economic research investigates macroeconomic factors and changes to analyze the development of inflation or exchange rates, for instance (Achleitner, 2002, p. 765). Moreover, quantitative research differs in each bank because the houses may choose between various quantitative methods and can apply them to equity and fixed income. Banks can choose between fundamental quantitative<sup>97</sup>, statistical-mathematical<sup>98</sup> research, or style counseling<sup>99</sup> (Achleitner, 2002, pp. 779–781).

Financial analysis procedures comprise these different fields of research. On the one hand, if the focus is on equity titles, such as stocks, analysts conduct equity analysis.<sup>100</sup> On the other hand, if analysts focus on debt securities, such as bonds, they perform fixed-income analysis (Penman, 2010, p. 12). Fixed-income research subsumes derivatives or high-yield research. However, derivatives research may be embedded in quantitative research (Marshall, 1994, p. 296). Equity research provides investment recommendations for the selection of stocks.

Beyond literature, investment banks distinguish between other fields, such as sectors or industries, when categorizing research. Goldman Sachs, for instance, differentiates between research on equity, fixed income, currency, and commodities (Goldman Sachs, 2022). The Bank of America offers equity, credit, rates and currencies, commodities, ETF, and ESG research (Bank of America Securities, 2022). Especially the analysis of ESG matters in investing developed on a large scale. Investment banks, as mentioned before, and credit rating agencies, such as Fitch, S&P, and Moody's, conduct ESG analyses (Fitch Ratings, 2022; Moody's, 2022; S&P, 2022). Besides, Sustainalytics or MSCI as data providers offer ESG ratings obtained through their ESG research (MSCI, 2022; Sustainalytics, 2022).

Due to the recent development, ESG analysis is not a standardized research process. Depending on the field of research, ESG analysis procedures may vary. A data provider only

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<sup>97</sup> See *CHAPTER 4.6.2* for more information on fundamental analysis.

<sup>98</sup> See *CHAPTER 4.6.1* for some information on statistical-mathematical quantitative methods.

<sup>99</sup> Style counseling compares time series to identify investment styles based on statistically significant facts (Achleitner, 2002, p. 781).

<sup>100</sup> For a description of the development of security and equity analysis, see Muller (1994).

investigates environmental, social, and governmental corporate information. A credit rating agency considers the impact of ESG matters in the context of creditworthiness, whereas equity research may consider ESG matters and their impact on companies' valuation. Since this study focuses on stock analysis in particular, the consideration of ESG research is generally subordinated to equity analysis in the following.

#### 4.4 Differentiation of Financial Analysts

Similar to the systematization of the different financial analysis categories, the research staff is distinguishable based on divergent perspectives. The analysts conducting research deviate depending on the analysis perspectives, the principals they work for, and the objective of the analysis. The previously mentioned strategy analysts are inside analysts because they are professionals working inside an institution. They analyze the suitability of their strategy. For instance, the strategy to enter new markets must be evaluated before the company implements the strategy (Penman, 2010, p. 13). Equity and credit analysts belong to the group of investment analysts being outside analysts. Credit analysts investigate corporate debt focusing on risks and valuation. Professionals working for rating agencies, analyzing the creditworthiness of various companies are credit analysts, for instance (Penman, 2010, p. 12). Besides credit analysts, equity analysts consider business valuations. Equity analysts provide buy, sell, or hold recommendations on securities (Schipper, 1991, p. 106). They can be distinguished between sell-side and buy-side analysts, notwithstanding that they both prepare and publish earnings forecasts by investigating companies (Kothari, 2001, p. 152). Outside equity analysts are the focus of this study.

Sell-side and buy-side analysts differ in their objectives, as they have divergent employers. Similarly, their coverage, information gathering, processing, and distribution activities deviate. Investment banks and brokerage firms typically employ sell-side analysts. In contrast, pension, hedge, and mutual funds usually employ buy-side analysts (Kothari, 2001, p. 152; Fogarty and Rogers, 2005, p. 332; Penman, 2010, p. 12). Buy-side analysts' employers are institutional investors possessing securities portfolios (Fogarty and Rogers, 2005, p. 332). The information provided by buy-side analysts is private and only intended for portfolio managers (Groysberg *et al.*, 2008, p. 26). Sell-side analysts issue earnings forecasts for private and institutional investors (Schipper, 1991, p. 106). Whereas buy-side research reports are proprietary to investors, sell-side analysts write research reports for various interested parties. As a consequence, buy-

side analysts use sell-side research reports (Schipper, 1991, p. 106; Fogarty and Rogers, 2005, p. 332).

Similarly, sell-side analysts disclose more extensive research reports compared to buy-side analysts. As a result, their coverage size is smaller in contrast to buy-side analysts. The buy-side usually covers one sector per analyst, whereas the sell-side shares a sector among analysts (Groysberg *et al.*, 2008, pp. 25–26).

#### 4.5 Procedures in Equity Analysis

As the different research areas comprise divergent procedures, the following only focuses on the procedures of financial analysts performing equity analysis. As stated before, analysts conducting equity research aim for investment recommendations for stocks (Schipper, 1991, p. 106).<sup>101</sup> The analysts' actions aim at corporate valuations to find under or overvalued stocks (Pike *et al.*, 1993, p. 490). The equity analysis<sup>102</sup> procedures subdivide into three different stages. At first, analysts gather raw data. Afterward, analysts process the data into value-relevant information and perform a company valuation. Lastly, analysts forward the investment recommendation of a specific stock to private or institutional investors. Analysts forward investment recommendations in the form of reports containing, among others, forecasts (Brunnberg, 2016, p. 53). This last step, the dissemination of the result of the financial analysis, is crucial for financial intermediation. Sell-side analysts act as intermediaries between capital borrowers and potential capital providers who may base their investment decisions on the financial analysis' result. Buy-side analysts only forward their analysis to their employer (Fogarty and Rogers, 2005, p. 332).

To determine a company's value, financial analysts consider a variety of information sources. Companies' disclosures are indispensable to understanding a business and contribute to the efficiency of capital markets (Healy and Palepu, 2001, p. 406). Information published by the company ranges from annual reports or interim reports to ad hoc announcements. Hence, a crucial source of corporate disclosure is financial reporting information (Previts *et al.*, 1994, p. 55). Using the information, analysts make judgments about corporate performance (Vergoossen, 1993, p. 219). Financial information, in specific, can be subdivided more precisely. Damodaran (2001, pp. 9–10) differentiates three types of information. Current financial statements,

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<sup>101</sup> Others argue that more than three types of recommendations exist, see, e.g., Marshall (1994, p. 298).

<sup>102</sup> In the following it is referred to as financial, security, or equity analysis interchangeably. Thus, the explanations address equity analysis procedures in specific.

including balance sheets, income statements, or cash flow statements, serve as an essential source to determine actual or future profitability. Risks may be determined based on historical information about companies' earnings or market prices. Additionally, peer groups are compared with the valuation objects to identify companies' growth and risks.

Moreover, information reported by the media, information obtained from corporate websites, or press conferences are of interest to analysts (Brunnberg, 2016, pp. 51–53). Analysts regard direct communication, such as discussions in personal meetings, one-on-one meetings, or analyst conferences, with companies' management as indispensable (Pike *et al.*, 1993, p. 494). Qualitative information on competitors, industries, or other general economic impacts is likewise valuable for the analysis (Previts *et al.*, 1994, p. 65).<sup>103</sup>

In the second step, analysts process the extensive amount of information from divergent sources that is presented as numerical or non-numerical information. Financial analysts apply different valuation methods to investigate companies' values and to detect over or undervaluations. Whereas technical analysis is based on historical stock price charts, the fundamental analysis includes more diverse information and similarly entails a variety of methodological approaches (Pike *et al.*, 1993, p. 495; Previts *et al.*, 1994, pp. 94–95; Barker, 1999, p. 198).<sup>104</sup> Besides discounted cash flow (DCF) models<sup>105</sup>, analysts apply multiples valuation or sum-of-the-parts valuation (Barker, 1999, p. 197; Achleitner, 2002, pp. 772–773; Huang *et al.*, 2022, pp. 1–6).<sup>106</sup>

Lastly, the valuation model's results are combined with investment recommendations and published in reports. Analysts write at least one research report per covered company per year. Whereas sell-side analysts write reports for the public, buy-side analysts only address their recommendations to specific employers (Fogarty and Rogers, 2005, p. 332). Analysts provide further updates by disclosing comments or short analyses (Brunnberg, 2016, p. 59). Analysts are likewise in charge of the companies' presentations to the capital market and sharing the essential corporate information as well as the equity story (Achleitner, 2002, p. 768).

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<sup>103</sup> See *CHAPTER 6.1.1* for research findings on information sources in financial analysis procedures.

<sup>104</sup> See *CHAPTER 4.6* for a more detailed description of the application of the different methods.

<sup>105</sup> See Barker (1999) for further valuation methods, such as the dividend discount model or price-cash flow ratio.

<sup>106</sup> See *CHAPTER 4.6* for the explanations of the methods.

## 4.6 Information Processing and Valuation

### 4.6.1 Analyzing Methods

To achieve the formerly mentioned objective and to fulfill the various functions, analysts may choose between different analyzing and valuation methods. Considering the theory of capital market efficiency, securities' prices reflect differing amounts of information. As *CHAPTER 2.3* emphasizes the debate on the various forms of capital market efficiency, investors may benefit from financial analysis when not considering strong but the likelihood of either weak, semi-strong, or inefficient capital markets (Malkiel, 2003, pp. 59–61). Different security analysis methods exist that financial analysts can apply to meet the investors' interests.

Research literature discusses the suitability of different security analysis methods applied in business practice. Financial analysts may base their company performance and corporate valuation judgments on different analyzing methods. Academics widely accept the fundamental analysis and consider it a traditional method, whereas technical analysis is sometimes regarded as less traditional and more subjective due to its characteristics (Lo *et al.*, 2000, pp. 1705–1706). Quantitative or systematic analyses using mathematical and statistical tools (Lo *et al.*, 2000, pp. 1705–1706) are generally considered within portfolio stock analyses to manage portfolios (Rudd, 1991, p. 19). In quantitative analysis, analysts assume dependencies between different stocks and their price developments (Steiner *et al.*, 2017, p. 310). As quantitative analysis uses mathematical and statistical methods for its portfolio valuation, it cannot be delimited sharply from fundamental analysis (Eller and Dreesbach, 2001, p. 20). Meanwhile, the analysis of behavioral finance is also considered because academics suspect bounded rationality among market participants. Psychological or cognitive aspects, such as overconfidence, may impact investors' and analysts' decision-making (Höfer, 2014, pp. 24–25).

The following presents the foundations of fundamental and technical analysis as well as analyzing procedures based on behavioral finance.<sup>107</sup> This chapter also classifies the analyzing methods in the broader valuation context but emphasizes methods relevant to stock analysis.

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<sup>107</sup> Vergoossen (1993) emphasizes the variety of methods to analyze companies. He addresses the existence of methods beyond ratio, beta-, fundamental, and technical analysis. Nonetheless, in this study, the focus is on fundamental analysis.



## 4.6.2 Fundamental Analysis

### 4.6.2.1 Objective and Classification in Company Valuation Methods

Fundamental analysis is also referred to as stock analysis (Perridon *et al.*, 2016, p. 232), and in contrast to technical analysis, it is closely connected with the efficiency of capital markets as it focuses on valuation aiming for the identification of mispriced securities (Kothari, 2001, pp. 108–109).<sup>108</sup> As analysts investigate the intrinsic value of securities to find undervalued securities that are attractive to buy for investors, the intrinsic value is compared to the market value to determine discrepancies indicating the potential for profit or loss (Graham and Dodd, 1934, p. 14).<sup>109</sup> The intrinsic value and its determination are not definite (Graham and Dodd, 1934, p. 17). The fundamental analysis assumes that stock prices fluctuate around the intrinsic value (Perridon *et al.*, 2016, p. 232). It mirrors a company's potential to earn profit by presenting a value based on a judgment about specific facts (Graham and Dodd, 1934, p. 17). Financial analysts' actions may result in investors' profit if the market correctly estimates new information's impact on the stock price and the likelihood that the market already considered the information (Treyner and Ferguson, 1985, p. 757).

Fundamental analysts investigate essential corporate information to determine the actual intrinsic value of a company. Value-relevant information not yet considered in the stock prices allows for achieving excess returns (Perridon *et al.*, 2016, p. 232), although financial analysts may consider a range of information to determine a company's value. Qualitative and quantitative information impact the valuation procedures. Analysts investigate the quality of the management and products or services and try to turn qualitative information into quantifiable measures. All information, especially financial information, is analyzed before forecasts are published (Penman, 2010, pp. 84–85; Steiner *et al.*, 2017, pp. 244–246). Information is taken from past and current financial statements. Additionally, industry-specific and macroeconomic information is considered when analyzing (Kothari, 2001, p. 109). In sum, the information determines a company's value, and the valuation does not necessarily indicate the market price (Ou and Penman, 1989, pp. 296–297).<sup>110</sup> The deviation from the intrinsic value to the stock

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<sup>108</sup> Kothari (2001, p. 121) highlights that different research strands, such as research on capital markets, alternative accounting performance measures, market efficiency, as well as valuation and fundamental analysis, sometimes overlap, even though the motivations vary.

<sup>109</sup> The literature considers Benjamin Graham as the “*father of fundamental security analysis*” (Malkiel, 1996, p. 191).

<sup>110</sup> Ou and Penman (1989), however, consider a different approach in their study. They assume that stock prices determine companies' values.

price serves as a benchmark and reveals an under- or overpriced investment option (Ou and Penman, 1989, p. 296).

Fundamental analysis consists of three different analyses. Analysts conduct global, industry, and company analyses.<sup>111</sup> Depending on the analyzing approach, analysts conduct the sequence of the analyses opposingly. Analysts may apply the *bottom-up* or the *top-down approach*. Following the top-down approach, the investigation starts with global fundamentals (Steiner *et al.*, 2017, p. 237). Following the bottom-up approach, analysts begin by analyzing company-specific fundamentals. In particular, sell-side analysts cover a specific industry or sector, which makes applying the bottom-up approach more appropriate (Achleitner, 2002, p. 770; Groyberg *et al.*, 2008, pp. 25–26). Using a top-down analysis outlines an investigation from a macroeconomic perspective, in particular. In contrast, the bottom-up analysis stresses company-individual considerations and comparisons to peers (Achleitner, 2002, pp. 770–771).

The global analysis focuses on macroeconomic factors, such as the national and international economic situation and development. This information shall support forecasts as the impact of other economies on the investigation object is considered. Global analysts analyze figures, such as interest rates, exchange rates, or stock exchange developments (Steiner *et al.*, 2017, pp. 239–240). In contrast to the global analysis, analysts can conduct industry analysis on an international or national level. For instance, size, order situations, or stocks highlight industry figures indicating the supply and demand and, hence, the development of a specific industry (Steiner *et al.*, 2017, pp. 241–242). Lastly, company analysis aims for a valuation of a company.

First, an overview of various valuation methods and their differences is given. Generally, in Germany<sup>112</sup>, income approaches, including DCF and capitalized earnings<sup>113</sup> analyses, are typically conducted to value companies while the going-concern assumption prevails (IDW S1, 2008, p. 4, no. 4–5). It is based on the present value concept to determine companies' values. Accordingly, the future cash flows are discounted to the valuation date to obtain the present value of the expected cash flows. The free cash flows are the sum of the operating activities' cash flows, generally inflows, and the investment cash flows generally outflows (Penman, 2010, p. 119). One distinguishes between discounting dividends, cash flows, or earnings to the present

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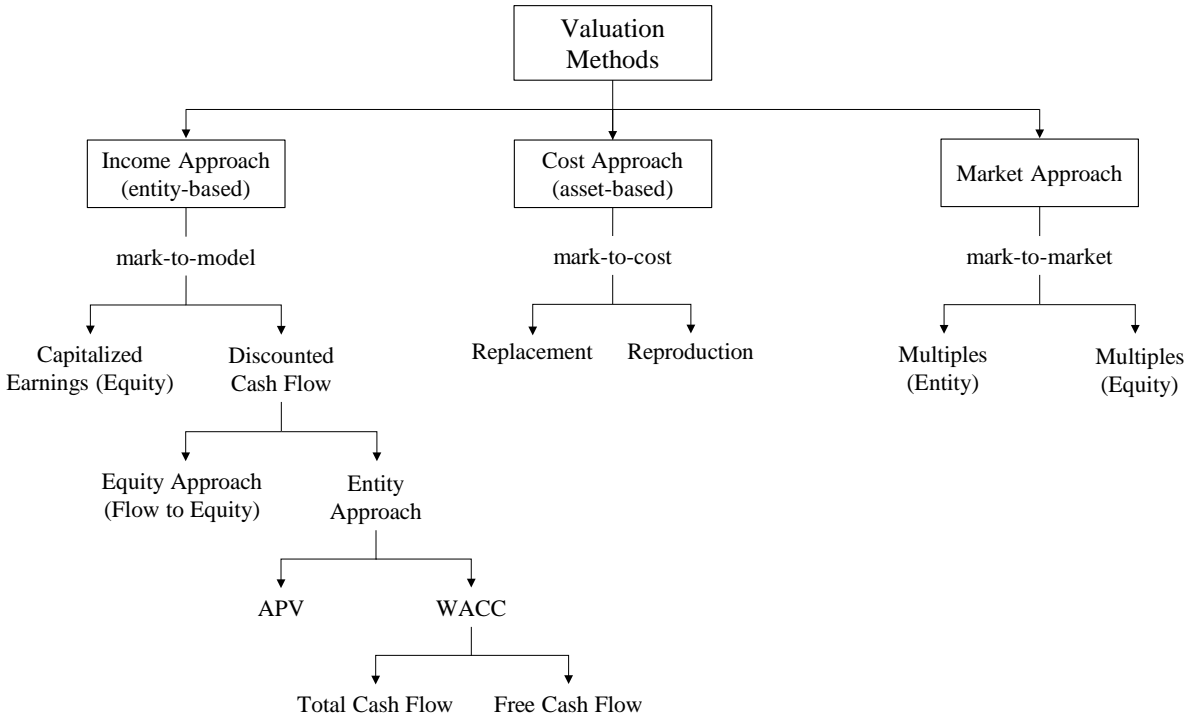
<sup>111</sup> Demirakos *et al.* (2004) consider five steps to realize a fundamental analysis. The first part starts with a strategic analysis which includes getting to know the business.

<sup>112</sup> Differences among the application of valuation models may exist depending on the country (e.g., Perridon *et al.*, 2016, p. 228).

<sup>113</sup> In Germany, it is commonly known as *Ertragswertverfahren*.

day (Perridon *et al.*, 2016, pp. 230–236). Besides, liquidation valuation methods (IDW S1, 2008, p. 4, no. 5) and simplified market approaches using multiples exist (IDW S1, 2008, p. 29, no. 143). See also a simplified presentation and classification of methods in *FIGURE 6*.<sup>114</sup>

**FIGURE 6:**  
*Overview of Valuation Methods*



**Sources:** Following Matschke and Brösel (2013, p. 123), Großfeld *et al.* (2020, p. 45), and Ballwieser and Hachmeister (2021, p. 9).

Second, selective methods relevant to fundamental analysis procedures are pointed out in further detail.

When estimating companies’ values, literature distinguishes between asset-based and entity-based valuation (Ballwieser and Hachmeister, 2021, p. 9). Asset-based valuation considers the summation of all assets and liabilities individually, resulting in the net asset value, the equity (Ballwieser and Hachmeister, 2021, p. 11). The entity-based valuation, in contrast, regards the company as a single entity and considers a single value. DCF analyses, such as *weighted*

<sup>114</sup> See Großfeld *et al.* (2020, p. 45) or Matschke and Brösel (2013, p. 123) for more detailed and divergent overviews of valuation methods.

*average cost of capital* (WACC) analyses, are mostly entity-based valuation methods (Steiner *et al.*, 2017, pp. 170–172).

Literature additionally considers a sum-of-the-parts valuation as an asset-based valuation because different corporate sectors are added up to determine a firm's value. However, a sum-of-the-parts valuation aims for an entity's value. Thus, this valuation method is also seen as resembling an entity-based approach. If companies are diversified, as they have various product or service lines, a value for each of the segments is first estimated before the sum of the values leads to the estimated value of a firm (Achleitner, 2002, p. 772).

A possible distinction between valuation methods can differentiate between income, cost, and market approaches. The cost approach is asset-based and contains two methods. The first does not assume going concern, as it results in a company's liquidation (replacement, *Liquidationswert*). The second considers the costs to construct a comparable substitute to the company (reproduction, *Substanzwert*) (Ballwieser and Hachmeister, 2021, pp. 243–244).

The capitalized earnings analysis is an equity approach, which resembles the flow-to-equity (FTE) approach but differs in the risk premium (Ballwieser and Hachmeister, 2021, p. 165). The market approach includes multiple analyses, which focus on valuations based on multiples. The methods may either rely on an entity (*Bruttoansatz*) or equity (*Nettoansatz*) approach (Großfeld *et al.*, 2020, p. 45).

The income approach differentiates between the DCF and capitalized earnings analyses. In Germany, the DCF method is widely accepted (Perridon *et al.*, 2016, p. 228) and offers three methods. First, the FTE approach is an equity approach focusing on cash flows available to equity shareholders. The expected cash flows that are available to equity capital providers are discounted by the equity capital costs (Perridon *et al.*, 2016, p. 243). Second, the WACC method is an entity approach, similar to the third, the *adjusted present value* (APV) method. The entity approaches differ in the assumption of the financing (Perridon *et al.*, 2016, p. 228).

The following presents selective methods that are relevant to this study. The cost approach is not explicated in further detail as it does not assume going concern.

#### 4.6.2.2 Discounted Cash Flow Analysis

DCF analyses are widely applied in practice (Demirakos *et al.*, 2004, p. 221). Analysts can choose between three DCF entity-based valuation methods to determine an estimated corporate

value (Penman, 2010, pp. 84–85; Steiner *et al.*, 2017, pp. 244–246) that is based on future net cash flows and a risk-adjusted discount rate. Risks, growth, earnings, dividends, management’s quality, the general perspective of the industry, and other fundamental aspects are assessed to determine the expected cash flows and the discount rate (Vergoossen, 1993, p. 224; Malkiel, 1996, p. 117).

First, the APV method assumes a debtless company to determine the corporate value (CV). The present value of the APV method is based on expected free cash flows ( $E(Z)$ ), which consider incorrect taxes due to the equity financing assumption (Steiner *et al.*, 2017, pp. 258–259). Instead of the discount rate WACC, a discount rate ( $r$ ) for the costs of equity capital (EK) is used ( $r_{EK}^u$ ) and a self-financed company (u) is assumed (Ballwieser and Hachmeister, 2021, pp. 166–173). The tax advantage through debt financing is added, and lastly, the debt capital (FK) is deducted from it (Perridon *et al.*, 2016, p. 228). The tax advantage is calculated by discounting the product of debt capital costs ( $r_{FK} * FK$ ) and the corporate tax rate ( $s$ ) with the debt capital cost rate ( $r_{FK}$ ).

The forecast horizon is finite, which is why a terminal value is calculated at the end of the forecast period. Different assumptions and calculations for the terminal value exist (Penman, 1998, p. 303). Two phases are the basis of the company valuation, having a detailed planning period until period ( $t$ ) = T+1 and constant perpetuity (starting in T+1) (Perridon *et al.*, 2016, pp. 245–246). See *FORMULA 1* (Perridon *et al.*, 2016, p. 247; Ballwieser and Hachmeister, 2021, p. 169):

$$(1) \quad CV_0 = \left( \sum_{t=1}^T \frac{E(Z_t)}{(1 + r_{EK}^u)^t} + \frac{E(Z_{T+1})}{r_{EK}^u * (1 + r_{EK}^u)^T} \right) + \left( \sum_{t=1}^T \frac{s * r_{FK} * FK_{t-1}}{(1 + r_{FK})^t} + \frac{FK_t * s}{(1 + r_{FK})^T} \right) - FK$$

$CV_0$	=	corporate value (to the present day)
$E(Z_t)$	=	free cash flows for the period t during the detailed planning period
$E(Z_{T+1})$	=	free cash flows (following the detailed planning period)
$FK$	=	debt capital
$EK$	=	equity capital
$r_{EK}^u$	=	discount rate of equity capital costs for a self-financed company (u)
$r_{FK}$	=	discount rate of debt capital costs
$s$	=	corporate tax rate

In contrast to the APV method, the WACC methods differ in their discount (Steiner *et al.*, 2017, pp. 251–252). The WACC approach considers the firm’s weighted average equity and debt capital costs which the discount rate WACC represents and by which the future free cash flows are discounted (Penman, 2010, p. 120).

Second, the *Free Cash Flow* (FCF) variant, similar to the APV method, assumes only equity financing in the free cash flows but differs in the discount. The discount rate, WACC, hence, adjusts the incorrect assumption of equity financing by integrating debt capital costs after taxes (Ballwieser and Hachmeister, 2021, pp. 166–167). *FORMULA 2* presents the FCF method (Perridon *et al.*, 2016, pp. 245–246), and *FORMULA 3* the WACC after taxes (Ballwieser and Hachmeister, 2021, pp. 201–202). The cash flows can be distinguished into two phases, a detailed planning period and a constant perpetuity (starting in T+1) (Perridon *et al.*, 2016, pp. 245–246):

$$(2) \quad CV_0 = \left( \sum_{t=1}^T \frac{E(Z_t)}{(1 + WACC_s)^t} + \frac{E(Z_{T+1})}{WACC_s * (1 + WACC_s)^T} \right) - FK$$

$$(3) \quad WACC_s = r_{EK}^v \frac{EK}{GK} + r_{FK}(1 - s) \frac{FK}{GK}$$

- $CV_0$  = corporate value (to the present day)
- $E(Z_t)$  = free cash flows for the period t during the detailed planning period
- $E(Z_{T+1})$  = free cash flows (following the detailed planning period)
- $FK$  = debt capital
- $EK$  = equity capital
- $GK$  = total capital
- $WACC_s$  = WACC after taxes
- $r_{EK}^v$  = rate of equity capital costs for a company in debt (v)
- $r_{FK}$  = rate of debt capital costs
- $s$  = corporate tax rate

Third, the *Total Cash Flow* (TCF) variant considers the tax shield (TS), which is the tax advantage due to the debt capital interests, within the cash flow estimation. Thus, the discount rate WACC includes debt capital costs before taxes (Ballwieser and Hachmeister, 2021,

pp. 166–167). *FORMULA 4* points out the TCF method with the discount rate WACC before taxes (see *FORMULA 5*) (Ballwieser and Hachmeister, 2021, p. 226):

$$(4) \quad CV_0 = \left( \sum_{t=1}^T \frac{E(Z_t) + TS_t}{(1 + WACC)^t} + \frac{E(Z_{T+1}) + TS_{T+1}}{WACC * (1 + WACC)^T} \right) - FK$$

$$(5) \quad WACC = r_{EK}^v \frac{EK}{GK} + r_{FK} \frac{FK}{GK}$$

- $CV_0$  = corporate value (to the present day)
- $E(Z_t)$  = free cash flows for the period t during the detailed planning period
- $E(Z_{T+1})$  = free cash flows (following the detailed planning period)
- $FK$  = debt capital
- $EK$  = equity capital
- $GK$  = total capital
- $TS$  = tax shield
- $r_{EK}^v$  = rate of equity capital costs for a company in debt (v)
- $r_{FK}$  = rate of debt capital costs

To determine the equity cost of capital, analysts apply the Capital Asset Pricing Model (CAPM). *FORMULA 6* presents the CAPM (Perridon *et al.*, 2016, p. 295).

$$(6) \quad E(R_i) = R_f + (E(R_M) - R_f) \beta_i$$

- $E(R_i)$  = expected rate of return for the security (i)
- $R_f$  = risk-free rate of return
- $E(R_M)$  = expected market return
- $\beta_i$  = systematic risk of the security (i)

The equity costs of capital depend on the systematic risk ( $\beta_i$ ) of the security (i), the risk-free (f) rate of return ( $R_f$ ), and the market (M) risk premium ( $E(R_M) - R_f$ ), which is the expected market return less the risk-free rate of return (e.g., Sharpe, 1964, pp. 431–432; Lintner, 1965; Mossin,

1966; Penman, 2010, p. 452). The systematic risk, known as beta ( $\beta_i$ ), determines the sensitivity of stock price movements if market prices change (Penman, 2010, p. 112; Perridon *et al.*, 2016, p. 295). Therefore, when applying the CAPM, analysts consider risks to evaluate the expected rate of return (E(R)) corresponding with the costs of equity capital, which they integrate into the calculation of WACC and afterward into the DCF model (Perridon *et al.*, 2016, p. 245).

#### 4.6.2.3 Multiples Analysis

In contrast to DCF analysis, multiples analysis considers peer groups and common valuation multiples to determine the intrinsic value of a company (Steiner *et al.*, 2017, p. 271).<sup>115</sup> Multiples analysis uses less information than fundamental analysis applying the income approach (Penman, 2010, p. 76). Analysts estimate corporate values only by multiplying a relevant measure of the company in question and the median or average multiple of a peer group (Lie and Lie, 2002, p. 47).<sup>116</sup> The approach can also be applied to plausibility checks (IDW S1, 2008, p. 29, no. 143).

A multiple is generally a ratio that consists of the stock price and another figure (Penman, 2010, p. 76). The price-earnings ratio (PER) is a common multiple to evaluate a company (Demirakos *et al.*, 2004, p. 222). In addition, earnings before interest and taxes (EBIT) or earnings before interest, taxes, depreciation, and amortization (EBITDA) are commonly used as relevant corporate financial figures but can be used as multiples (Lie and Lie, 2002, p. 47).

In summary, various methods to evaluate a company's value exists. Depending on the method, the information sources, as well as the information processing, vary.<sup>117</sup>

#### 4.6.3 Technical or Chart Analysis

The basic idea of technical analysis is that security price movements are not random. Market participants may identify trends through reoccurring patterns that enable investors to make correct investment decisions. Technical analysts expect trends in price changes or market actions to repeat (Perridon *et al.*, 2016, p. 231). Technical analysts do not require more extensive corporate financial information because they expect changing market prices to reflect demand and

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<sup>115</sup> See Imam *et al.* (2008), for instance, for further valuation methods, such as the *Economic Value Added (EVA)* or the *Cash Flow Return on Investment (CFROI) model*.

<sup>116</sup> See Lie and Lie (2002) who investigate the use of multiples in corporate valuation.

<sup>117</sup> CHAPTER 6.1 describes research findings on the application of valuation methods in business practice.



supply, considering all valuable information (Meyers, 1989, pp. 3–4). No excess returns can be achieved if all valuable information is reflected in the stock prices. Hence, the capital market efficiency hypothesis must be rejected following the technical analysis (Perridon *et al.*, 2016, p. 232). Therefore, technicians do not need to determine the intrinsic value of a stock. Accordingly, all information is reflected in the price. As market actions are assumed to be repetitive, stock prices as well as their charts and stock volumes are objects to study in technical analysis (Meyers, 1989, pp. 4–5). Technical Analysis is also known as (price or stock) chart analysis.<sup>118</sup>

Technicians consider patterns on stock charts to recognize regularities over time (Lo *et al.*, 2000, pp. 1707–1708). They investigate historical price movements to predict future stock prices (Malkiel, 2003, p. 59). Patterns in stock charts offer implications for the future because technical analysts assume that past development reflects upcoming trends (Roberts, 1959, p. 1). Technical analysis focuses on visual elements and geometrical tools, contrasting quantitative methods, for instance, using numerical tools (Lo *et al.*, 2000, p. 1706).

Chart analysis identifies trends and may lead to profit when such a trend is interrupted (Mattern, 2005, p. 15). Line, bar, candlestick, or point and figure charts differ in the presentation and the stock prices entailed. Line charts usually consider daily closing prices in which the series is connected with a line. Technical analysts choose closing prices in line charts because they regard them as the crucial price of a trading day (Meyers, 1989, p. 15). Bar and candlestick charts, additionally, take opening prices and the high and low prices for the day into account (Meyers, 1989, pp. 15–16; Mattern, 2005, p. 16; Nison, 2011, pp. 39–46). Candlesticks also consider different colors to present whether a closing price is above or below the day's opening price (Nison, 2011, pp. 39–40). Besides the stock prices on the vertical axis, the charts consider different short or long-term periods depending on the investment horizons on the horizontal axis. The time scale of the stock prices may vary between hourly, weekly, or even monthly considerations (Meyers, 1989, p. 15).

Technical analysts investigate the price charts for repetitive price patterns independent of the presentation form. They focus on three trends and reversals of trends to make sound investment decisions (Meyers, 1989, pp. 29–30). The analysis includes upward, downward, and sideways trends indicating whether the peaks and troughs of the prices rise, fall, or remain constant over specific periods (Murphy, 2004, pp. 63–65). Thus, specific patterns may be viewed as *top* or *bottom* depending on the orientation of the price change. Technicians consider various chart

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<sup>118</sup> It is also referred to as “*charting*” (Lo *et al.*, 2000, p. 1705).

patterns, namely *key reversals*, *head and shoulders*, *ascending and descending triangles*, *double and triples*, *diamonds*, *rising and falling wedges*, *spikes*, *flags*, and others (Meyers, 1989, pp. 30–68; Eller and Dreesbach, 2001, pp. 81–94).<sup>119</sup> Moreover, technicians consider different analytical tools to investigate patterns. They analyze gaps in stock charts as well as trendlines or trend channels of stock prices (Meyers, 1989, pp. 75–130).

Analyzing trends leads back to the chart analyst Charles H. Dow and his “*Dow Theory*”. The theory is based on the concept that markets, represented by various averages,<sup>120</sup> reflect and discount all activities and information impacting the supply and demand of stocks (Meyers, 1989, p. 219). Besides the apparent trends in which the stock charts move upward, downward, or sideways, Dow considers three timely trends. The primary trend is long-term and corrected by secondary reactions. Short-term fluctuations are minor trends correcting the secondary trend.<sup>121</sup> Based on the theory, (bull or bear) trends are signaled if a trend change or reversal of one average is confirmed by another average (Meyers, 1989, pp. 218–220).<sup>122</sup>

Like Dow, Ralph Nelson Elliott investigated trends and the formation of specific chart patterns and expanded the “*Dow Theory*” with the “*Wave Principle*” or the “*Elliott-Wave Theory*”. He considers certain price formations that mirror price movements based on specific ratios and cycles (Murphy, 2004, pp. 314–319). The approach considers three- and five-wave patterns that determine price movements (Mattern, 2005, pp. 17–18). Furthermore, the extent of each wave is based on Fibonacci. Different approaches based on Fibonacci exist as analytical tools of technical analysis (Eller and Dreesbach, 2001, pp. 168–173). For instance, the Fibonacci ratio determines Fibonacci retracement levels that explain stock price changes (Mattern, 2005, p. 17).<sup>123</sup> Overall, different methods exist to conduct technical analysis based on various theories and approaches. Various technical indicators exist to aid in predicting price movements. Indicators based on historical prices and patterns shall either signal an ongoing trend or as oscillators alerting for price setbacks (Mattern, 2005, p. 16).<sup>124</sup>

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<sup>119</sup> See Meyers (1989, pp. 29–61) for stock charts representing the different formations of patterns.

<sup>120</sup> Dow compared the Dow Jones Industrial Average, the Dow Jones Transportation Average, and the Dow Jones Utilities Average (Eller and Dreesbach, 2001, pp. 55–56).

<sup>121</sup> The primary trend lasts longer than a year, the secondary trend between three weeks and a year, and the minor trend is shorter than three weeks (Eller and Dreesbach, 2001, pp. 55–57).

<sup>122</sup> For criticism of the *Dow Theory*, see Meyers (1989, pp. 221–223).

<sup>123</sup> See Eller and Dreesbach (2001, pp. 168–173), Fischer and Fischer (2003, pp. 9–13), or Murphy (2004, pp. 328–330) for an explanation of the Fibonacci summation series and the Fibonacci ratio.

<sup>124</sup> Technical indicators, such as *moving average convergence/divergence* (MACD), the *rate of change* (ROC), the *relative strength index* (RSI), and others, support technical analysis (Murphy, 2004, pp. 227–262).

In academic literature, Treynor and Ferguson (1985), Lo and MacKinlay (1988), Pruitt and White (1988), and Brown and Jennings (1989), for instance, support the usefulness of technical trading strategies, whereas other studies debate on the suitability of technical analysis<sup>125</sup> because of its subjective characteristics (Roberts, 1959, p. 1).<sup>126</sup> Nonetheless, empirical evidence on technical trading strategies indicate controversial results.<sup>127</sup>

#### 4.6.4 Analysis based on Behavioral Finance

The previous explanations of technical and fundamental analyses highlight divergent characteristics and proceedings. As fundamental analysis focuses on the fundamentals of corporate information or macroeconomic aspects, market participants' behavior is not at the center of attention. Technical analysis, in contrast, does not base on fundamental information but on market prices. They could reflect market participants' behavior, but the technical analysis does not analyze behavior; technicians only investigate its results reflected in market prices. Studies analyzing stock price movements similarly question whether those movements can only be based on certain news if price changes can be observed without specific news being published or events occurring (e.g., Cutler *et al.*, 1989).

Moreover, academics accentuate human action impacting the financial market's behavior. As humans act on financial markets and interpret information in various manners, different beliefs arise about information and its impact on companies (Bondt, 1995, p. 7). Investors are

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<sup>125</sup> See Malkiel (1996) for arguments against the suitability of technical analysis.

<sup>126</sup> Roberts (1959) investigates the suitability of technical analysis by building upon Kendall's (1953) analysis of economic time series. Roberts (1959) points out the so-called chance model and compares gambling with technical analysis, as in neither situation memory exists. He underlines the chance model's independency (Roberts, 1959, pp. 3–4).

<sup>127</sup> Lo *et al.* (2000) investigate the efficacy of technical analysis based on a US-American sample of stock returns and specific technical patterns. Their findings state a probability of technical analysis being able to support investment decisions correctly. Moreover, Brock *et al.* (1992) highlight the history of technical analysis and point out that technical trading strategies trace back to the 19<sup>th</sup> century prior to the vast disclosure of corporate financial information and, hence, prior to the development of fundamental trading strategies. They find evidence supporting the suitability of technical analysis procedures based on a long-term view of the Dow Jones Industrial Average index and buy and sell signals based on the moving average rule. Following this rule, two moving averages are compared, a short-run and a long-run average of prices (Brock *et al.*, 1992, p. 1735). The short period may cover the price of a single trading day, the long period may range from 50 to 500 days (Ready, 2002, p. 46). According to the rule, a buy signal results from the short-period average exceeding the long-period average, and for the sell signal, the opposite applies (Brock *et al.*, 1992, p. 1735). Ready (2002), however, finds contradicting evidence to the study of Brock *et al.* (1992). For the years following Brock's *et al.* (1992) sample period, the moving average rule leads to opposite results (Ready, 2002, p. 60). In addition, Ready (2002) compares the results of Brock *et al.* (1992) with the results from the study of Allen and Karjalainen (1999), leading to the same conclusion, not supporting the evidence of Brock *et al.* (1992).

subject to differing perceptions of risks and consequently react differently to new information (Tversky, 1995, p. 2).

Behavioral finance emerged as an additional method to analyze securities and their price formations. This analyzing method, in contrast to the other two established methods, concentrates on market participants' psychological impact on pricing (Braun, 2007, p. 69). Although economic theory assumes maximizing and rational behavior in markets, "*near-rational*" behavior may lead to divergent equilibria (Akerlof and Yellen, 1985). Accordingly, market participants behave rationally to a limited extent. Hence, behavioral finance is based on the study of psychology and bounded rationality (Simon, 1955, pp. 99–100). Emotional, mental, cognitive, and motivational boundaries impact market participants' processes and their decision-making (Kahneman *et al.*, 1982, p. xii; Höfer, 2014, p. 14). The fear of making losses or the greed for profits, for instance, can affect markets (Mattern, 2005, p. 19).

As behavioral finance focuses on psychological impacts, analysts may apply this method for short and long-term periods, in contrast to the rather short or medium-term technical analysis and the rather long or medium-term fundamental analysis (Mattern, 2005, pp. 20–21). However, the study of psychological effects on stock price movements and investment decision-making procedures is still emerging. Research does not provide clear guidance on how to apply the study of psychological impacts to security analysis procedures, which is why this dissertation does not focus on behavioral finance in detail.

## 5 Corporate Reporting as an Information Source for Financial Analysis

Financial analysts consider corporate reporting information to estimate earnings forecasts and to value companies to provide stock recommendations. To understand which information financial analysts incorporate in their procedures, it is essential to know which information companies disclose and why they disclose it from a theoretical perspective and in business practice, whether it is obligatory or voluntary. First, for comprehending the incentives to report, companies' purposes must be considered. Following the theoretical considerations justifying corporate reporting and illustrating its users, the fundamentals of financial and sustainability reporting are presented in this chapter. The explications allow an understanding of the disclosed corporate information that financial analysts process and may view as relevant. Additionally, this chapter delineates the uncertainty, missing comparability, and increasing amount of sustainability reporting that companies have faced in recent years and the transition they currently have to face due to the regulation of sustainability reporting. The explanations allow an understanding of the profound change in sustainability reporting in the future.

### 5.1 Organizational Environments and Strategic Business Goals

Understanding the objectives of corporate reporting and the reasons for information disclosure to the public requires comprehending a company's purpose. The responsibilities of organizations and the strategic objective of managing an organization are strongly intertwined. In a business environment, conducting transactions comprises different parties. Based on the perceived responsibilities of an organization and the focus on specific but potentially divergent parties, different theories justify various corporate strategic orientations.

#### 5.1.1 Shareholder Theory

The shareholder approach considers the business environment with its heterogeneous parties involved. However, companies' management and strategic planning align with their owners. The interests of corporate owners and companies' management may differ, which requires diverse incentives to let the managers act in the interest of the owners.<sup>128</sup> The corporations'

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<sup>128</sup> CHAPTER 5.2 considers the agency relationship between managers and owners and the resulting agency issues.

shareholders' interest is to maximize their return obtained through dividends (Rappaport, 1986, p. 1; Rappaport, 1999, pp. 3–4). Yet, the owners' interests may collide with the individual managers' self-interests or utility maximization (Rappaport, 1986, pp. 6–9), as assumed in agency theory.<sup>129</sup> The shareholder approach implies that corporates aim to create economic value through the most profitable allocation of resources.<sup>130</sup> The highest shareholder value is achieved through strategies aiming for the best competitive advantage. Consequently, companies lay out their strategic plans to create value for their shareholders.<sup>131</sup>

The economic value can be determined by anticipating discounted cash flows (Rappaport, 1981, pp. 139–141; Rappaport, 1986, pp. 11–13).<sup>132</sup> Different concepts to estimate shareholder value exist. Rappaport (1986, pp. 50–77) defines shareholder value as the corporate value reduced by corporate debts. The corporate value represents the sum of the present value of cash flows, the residual value, and marketable liquidatable securities. On the contrary, Stewart (1998) determines the Economic Value Added (EVA) to measure created value, considered residual income. He does not focus on cash flows but a profit figure. Accordingly, the spread between the rate of capital's return and capital's costs is multiplied by the book value of the capital (Stewart, 1998, pp. 136–150).<sup>133</sup> Like Rappaport (1986), Copeland *et al.* (1991) value companies based on cash flows. They estimate value using a *component model* based on the equity value.<sup>134</sup> It equals the present value of all equity holders' cash flows and represents the shareholder value. However, they estimate the value by reducing the present value of operations, measured through operating free cash flows, by the present value of its debt, as estimated by the debtholders' cash flows.<sup>135</sup>

Rappaport (1999, pp. 6–14) agrees with the existence of other parties involved in a business environment and with their deviating interests. Likewise, he affirms their impact on a company's existence and going concern. Due to the various parties of the organizational environment and their interests, social responsibilities are allocated to businesses. Rappaport (1999, pp. 7–9) accentuates the necessity to subordinate other parties' interests and needs to the

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<sup>129</sup> See *CHAPTER 2.2* for details on the assumptions of agency theory.

<sup>130</sup> This theory can, hence, be named the shareholder value approach.

<sup>131</sup> Fruhan (1979) focuses on increasing shareholder wealth through management efforts without considering managers' motivation. He points out several processes to raise shareholder value; see Fruhan (1979, pp. 65–90).

<sup>132</sup> For a more detailed explanation of the execution and analysis of the shareholder value approach, see Rappaport (1981, pp. 141–148).

<sup>133</sup> See Stewart (1998, pp. 136–150) for further details on the estimation of the EVA.

<sup>134</sup> For details, see Copeland *et al.* (1991, pp. 95–230).

<sup>135</sup> More detailed explanations on valuation can be found in *CHAPTER 4.6*.

shareholders' interest in creating value. Accordingly, if a company performs well and creates value, the other parties will benefit similarly.

Likewise, the other parties will suffer if a company is not creating shareholder value. For instance, employees might earn less or lose their job, the government receives fewer tax revenues, customers might be exposed to lower-quality products, or companies even fail to comply with contractual agreements (Rappaport, 1999, pp. 7–9). On these grounds, Friedman (1970) considers increasing shareholders' profits as the company's social responsibility, which is why the executives' responsibility, acting in the interest of the company and its shareholders, is also to raise the stockholder's return. Thus, executives can only spend money on other activities to fulfill social interests if they increase shareholders' returns.<sup>136</sup>

In addition to this perspective, shareholder theory is criticized as being narrow, which is why other theoretical approaches evolved or co-exist (e.g., Donaldson and Preston, 1995, pp. 80–88).

### 5.1.2 Stakeholder Theory

Friedman (1970) already points out that additional societal responsibilities exist beyond the businesses' profit maximization. Accordingly, individuals may spend their money on social purposes, but in his view, not the companies or their executives. Further literature emphasizes the contrary and introduces the stakeholder theory.

Freeman (1984) introduces the stakeholder approach, which presents a company model aiming to achieve more effective management considering relationships resulting from the entire business environment. The stakeholder approach considers all organization's stakeholders, meaning any individual impacted by the company or any individual who impacts the company and its actions (Freeman, 1984, p. 46).<sup>137</sup> The stake in the company, understood as an interest, right, or claim, results from transactions or activities (Clarkson, 1995, p. 106). The stakeholder approach includes not only the insiders of a firm, such as employees or even owners, but also

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<sup>136</sup> Friedman (1970) discusses whether companies can have responsibilities and how the responsibilities can be met. Accordingly, corporations can be understood as artificial persons with artificial responsibilities. Managers or corporate executives act as agents for the corporations' owners. The managers' actions represent their responsibilities towards the owners of companies. Furthermore, the managers' responsibilities in the organizational context are not the ones that the managers have as individual persons that may go beyond the business.

<sup>137</sup> Different definitions of stakeholders exist. Mitchell *et al.* (1997) provide a (chronological) review of various approaches defining stakeholders. They represent different relationships and dependencies between stakeholders and firms.

external groups, such as the government, competitors, suppliers, the media, customers, and others (Freeman, 1984, pp. 3–27). Different stakeholder classes can be identified. Clarkson (1995), for instance, distinguishes between primary and secondary stakeholders. Primary stakeholders contribute to a company's going concern because their participation is indispensable for the corporate's survival, as in the case of customers, employees, suppliers, or shareholders. In contrast, secondary stakeholders might affect the company but do not participate in transactions. For example, the media is a secondary stakeholder group that can cause damage but is not engaged in transactions (Clarkson, 1995, pp. 106–107). Similarly, Mitchell *et al.* (1997) distinguish between primary and secondary stakeholders. They consider owners primary and non-owners secondary stakeholders (Mitchell *et al.*, 1997, pp. 853–854).<sup>138</sup>

Even though different stakeholder classes exist, the management and the firm must identify stakeholders whose interests and claims are essential to consider for the company.<sup>139</sup> Consequently, Mitchell *et al.* (1997, pp. 863–870) evaluate the relationships between the company's management and stakeholders based on three attributes. They investigate the stakeholder attributes of power, legitimacy, and urgency to evaluate a stakeholder's importance to the company. The different stakeholder classes meet the attributes' requirements to different extents (Mitchell *et al.*, 1997, pp. 872–879). Thus, issues arise when classifying stakeholders and interpreting their meaning and relevance to the firm.<sup>140</sup>

Freeman (1984, pp. 176–181) highlights the difficulties of measuring corporate performance with stakeholders and introduces a scorecard providing measures for different stakeholder categories.<sup>141</sup> Similarly, Kaplan and Norton (1992) introduce the *Balanced Scorecard*, considering the perspectives of different stakeholders and defining their goals to find measures that enable a performance assessment.<sup>142</sup> Nonetheless, difficulties arise in determining a company's value with respect to stakeholder theory if the shareholders' value is not in focus. Meanwhile, researchers discuss companies' purposes taking into account the interests of shareholders

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<sup>138</sup> Again deviating from these approaches, Lawrence and Weber (2011, pp. 8–10) distinguish between market and nonmarket stakeholders.

<sup>139</sup> Donaldson and Preston (1995) provide an overview of studies arguing about the purpose of stakeholder theory. They differentiate between descriptive, instrumental, and normative approaches. Descriptive studies aim at describing corporate behavior, whereas instrumental studies identify connections between corporate goals and stakeholder management. Normative studies analyze a company's function. For further information, see Donaldson and Preston (1995).

<sup>140</sup> The study of Charreaux and Desbrières (2001) provides an attempt to measure stakeholder value and discuss the model's suitability.

<sup>141</sup> The stakeholder theory is also named the stakeholder value approach, even though its value is difficult to determine.

<sup>142</sup> For further information on the Balanced Scorecard, see Kaplan and Norton (1992) or Kaplan and Norton (1993).



and stakeholders (Honold, 2020). Debates on performance measurement and the main or sub-purposes of companies exist (e.g., Weißenberger, 2020; Weißenberger, 2021).

### 5.1.3 Legitimacy Theory

Legitimacy theory resembles the stakeholder approach, in which companies consider the organizational environment, including various stakeholders essential to business activities.<sup>143</sup> Legitimacy denotes the relationship between organizational efforts and its environment, a social system with norms of acceptable behavior (Dowling and Pfeffer, 1975, p. 122). Even though definitions of legitimacy are scarce and do not coincide completely, research literature points out a few attempts. Following Meyer and Scott (1984, p. 201), legitimacy stresses the extent to which the organization experiences cultural support for its actions. Accordingly, no questions about a legitimate organization can be raised because any property is indisputable and crucial to the organization (Meyer and Scott, 1984, p. 201).<sup>144</sup> An organization's environment and cultural beliefs take center stage within legitimacy theory.<sup>145</sup> Companies not only impact society through their operating activities, but society also influences them; the interplay of both characteristics determines the organizations' actions (Suchman, 1995, p. 571). Parsons (1960, p. 175) views the social system as the provider of common values impacting the actions of parties involved in the social system.<sup>146</sup> Suchman (1995, p. 574) specifies organizational legitimacy as "*a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions*".

Various strands of literature on organizational legitimacy emerged, wherein distinctions exist between varying types of legitimacy. Aldrich and Fiol (1994) differentiate between cognitive and sociopolitical legitimacy. The latter refers to key stakeholders or the government, which determines norms or laws that specify appropriate behavior. Cognitive legitimation describes a status in which the social system takes action for granted (Aldrich and Fiol, 1994, p. 648).<sup>147</sup> Since individuals manage organizations, Elsbach (1994) also considers personal legitimacy. In this context, attention is also given to impression management theories that

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<sup>143</sup> Stakeholder and legitimacy theory overlap in some assumptions (e.g., Deegan, 2002, p. 295).

<sup>144</sup> Meyer and Scott (1984) highlight the legitimacy of local government arrangements, specifically, but also consider organizational legitimacy in general.

<sup>145</sup> Jepperson (1991, pp. 146–151) distinguishes between three types of institutions: cultures, formal organizations, and regimes. He considers institutionalism as a framework of rules that empowers and controls.

<sup>146</sup> The work of Parsons (1960) is viewed as fundamental to legitimacy theory (e.g., Suchman, 1995, p. 571).

<sup>147</sup> Suchman (1995) further differentiates between cognitive, moral, and pragmatic legitimation.

consider individuals<sup>148</sup> and to institutional theories that focus on the entire organization and the organizational practices accepted in society (Elsbach, 1994, pp. 57–60).<sup>149</sup>

Legitimacy can be better achieved through accounting practices, i.e., the disclosure of information. Meyer and Rowan (1991, p. 50) reveal the organizations' need to account for their activities. Otherwise, such organizations risk being questioned and viewed as less legitimate organizations whose actions are irrational. Therefore, the disclosure of corporate reporting information may impact the legitimacy of a company. Nonetheless, legitimacy theory received reserved attention to explain managerial behavior in organizations (Deegan, 2002, p. 282), specifically in connection with disclosing reporting information. Deegan (2002, p. 283) considers the disclosure of sustainability information to legitimize organizational actions within “*a social contract*”. Society sanctions deviating behavior by reducing a product's demand, for instance (Deegan, 2002, p. 293). Literature on sustainability reporting gives greater attention to legitimacy theory than the literature on financial reporting.<sup>150</sup>

## 5.2 Theoretical Implications for Corporate Reporting

### 5.2.1 Information Asymmetries and Corporate Reporting

The previously presented theories delineate that various market participants are involved in business actions and that the objectives of corporates and their stakeholder or shareholder focus deviate. The theories form the basis for why and for whom companies report and disclose corporate information. This chapter depicts different theoretical implications for corporate reporting. Although literature typically addresses financial accounting, corporate reporting information can include any information related to companies. In that sense, the theoretical approaches can be transferred to any corporate information, whether related to financial or sustainability matters.

The capital market uses a diverse information set. Accounting information, ordinarily as a product of financial accounting, is only one source of information to satisfy the market's information demand (Beaver, 1973, p. 54). Corporate disclosure information can be considered a public good (Beaver, 1978, p. 50) and can similarly be addressed in agency theory. Capital

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<sup>148</sup> Hence, personal legitimacy assumptions are assumed.

<sup>149</sup> For specific studies assigned to the different strands of literature, see, e.g., Elsbach (1994) or Suchman (1995).

<sup>150</sup> Berg (2017) investigates the relation between legitimacy and sustainability information on the German capital market. Additionally, Gray (2002) reviews social accounting literature in which he considers different studies related to any accounting or reporting practice that is not considered within financial accounting.

markets are characterized by information asymmetries<sup>151</sup> between different parties involved in business transactions (Beaver, 1989, pp. 34–39; Scott, 2009, p. 13).<sup>152</sup> They accompany conflicts of interest or incentive problems<sup>153</sup> that can be allocated to agency theory (Beaver, 1989, pp. 37–44). Beaver and Demski (1974) demonstrate a fundamental decision process, the one of an investor as a financial statement user. Simultaneously, they lead the argument that a single investor setting is not a representative setting. Instead, a multi-person setting that affects other people in an exchange economy must be considered (Beaver and Demski, 1974, pp. 171–172; Demski, 1974, p. 226). Therefore, diverse agency relationships may exist in capital markets, leading to various decision processes.<sup>154</sup> Contrasting the agency relationships in *CHAPTER 2* and *CHAPTER 3* that focus on capital allocation, the agency relationships justifying accounting practices focus on different market participants.

## 5.2.2 Agency Theory and Corporate Reporting

In agency theory, accounting information and its disclosure to the public could minimize the information advantage of managers (Lambert, 2001, p. 8).<sup>155</sup> In this setting, a moral hazard problem arises if shareholders or creditors, acting as principals, cannot observe managers' actions. This incentivizes the managers to use their position at the shareholders' expense (Beaver, 1989, p. 39; Scott, 2009, pp. 13–14). The obligation to publicly disclose essential corporate information to reduce the managers' superior positions or the implementation of auditors as management monitors can resolve moral hazard problems (Beaver, 1989, pp. 39–40).<sup>156</sup> Hiring auditors combats the agents' and principals' moral hazard problems. However, a new agency relationship and another potential moral hazard problem arise between the principals and the

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<sup>151</sup> As described in *CHAPTER 2.2.2*, agency theory is based on information asymmetries between (at least) two transacting parties. For further details on agency theory, see *CHAPTER 2.2.2*.

<sup>152</sup> Brooks (1996) provides an example of information asymmetries between traders and firms. The corporate disclosure of information, in this case through announcements of earnings and dividends, reduces the level of asymmetric information.

<sup>153</sup> See Lambert (2001, pp. 5–6) for a more detailed description of possible conflicts of interests and their related incentive problems.

<sup>154</sup> Hirshleifer and Riley (1979) provide a broad overview of insights and studies related to decision-making processes and market equilibriums, considering the economics of uncertainty and information.

<sup>155</sup> See Lambert (2001) for an extensive review of the literature addressing agency theory and accounting.

<sup>156</sup> Other decision-making procedures and other agency relationships exist within capital markets. With a focus on managerial accounting, Baiman (1990) investigates the impact of managerial accounting procedures on different agency relationships.

auditors. Baiman *et al.* (1987) investigated this contract agreement to ensure efficiency despite the other agency relationship.<sup>157</sup>

The disclosure of accounting information ensures the capital market's information supply and may resolve the incentive problems resulting from information asymmetries. That is why disclosing information, i.e., corporate reporting practices, leads to better decisions (Lambert, 2001, p. 5).

### 5.2.3 Regulation of Corporate Reporting

The theory of capital market efficiency also addresses the information processing of the capital market and its efficiency. As pointed out earlier, following Fama (1970), capital markets are informationally efficient if security prices reflect all available information.<sup>158</sup> Accordingly, financial reporting disclosures reduce information asymmetries, increase capital market efficiency, and minimize the gap between the efficient market value and the fundamental value of a company (Scott, 2009, pp. 104–105).

Going beyond the theoretical justifications to disclose corporate information publicly, research literature discusses the necessity to regulate corporate disclosure and insider information. Literature addresses the issues that arise from aiming for capital market equilibriums and information-production decisions (Fama and Laffer, 1971; Gonedes and Dopuch, 1974; Jaffe, 1975; Gonedes, 1976). In theory, government regulations or private-law contracts, as laid down in employment contracts, are options to ensure capital market efficiency and reduce agency conflicts (Gonedes and Dopuch, 1974; Schildbach, 1975, pp. 129–144; Picot and Dietl, 1994, pp. 124–135; Walz, 1994, pp. 89–99).

From a theoretical perspective, various arguments support disclosing corporate information. Still, a debate moves on a continuum between companies sufficiently voluntarily reporting information and the necessity of mandating the disclosure of information.<sup>159</sup> Thus, further aspects must come into consideration. Concerning information economics, regulation of corporate disclosure can be favorable in the light of reducing information asymmetries and preventing agency problems. Even when considering the market efficiency hypothesis, public disclosure is advantageous to the efficiency of capital markets. Nonetheless, agency costs, as well

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<sup>157</sup> For further information on the agency relationship of an auditor and the incentives to acquire auditing services, see Ng (1978), Ng and Stoeckenius (1979), Antle (1982), and Penno (1985).

<sup>158</sup> For a more detailed explanation of the theory of capital market efficiency, see *CHAPTER 2.3*.

<sup>159</sup> See *CHAPTER 5.3.3* for further details on voluntary reporting.

as costs of information generation, must be taken into account. Jensen and Meckling (1976) point out that costs arise from agency relationships.<sup>160</sup>

Gonedes and Dopuch (1974) highlight a variety of information production activities. They discuss free-rider issues due to costs in the absence of regulation. These costs may incentivize some market participants not to invest in activities to prevent agency problems, such as monitoring activities. That is why the effect of imposing disclosure laws is considered (Gonedes and Dopuch, 1974; Picot and Dietl, 1994, pp. 125–131). Free riders trust in the other market participants' need to control and verify publicly disclosed information. The free riders benefit from the others to whom their investment in control activities is more profitable (Picot and Dietl, 1994, p. 125), leading to an insufficient supply of verified publicly disclosed information. Therefore, governmental regulation counteracts the free-rider issues related to monitoring activities and the risk of a deficit in verified disclosures (Picot and Dietl, 1994, p. 131).

Information generation is costly, and incentives to acquire information only exist if arbitrage profits result from the information advantage based on the asymmetrical information setting (Grossman and Stiglitz, 1980; Hellwig, 1982; Picot and Dietl, 1994, pp. 114–115). However, returns can only be earned if market prices do not fully reflect all information, which contradicts the market efficiency hypothesis. Accordingly, Picot and Dietl (1994, p. 115) assign efficiency to the state of affairs where the highest difference is reached between the achieved information benefit and the generated information costs. Against this background, research debates whether and how to regulate information on capital markets, even though financial accounting requires public disclosure. Some information asymmetries remain despite regulation between corporate insiders and outsiders, known as inside or private information.<sup>161</sup>

If (private) information is regulated, the disadvantages that non-insiders have compared to insiders are reduced.<sup>162</sup> Indeed, if inside information is not publicized, it has no social value. Public information, in contrast, has a social value because it impacts decisions (Hirshleifer,

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<sup>160</sup> See *CHAPTER 2.2* with supplemental explanations on agency costs arising from agency relationships, as explained by Jensen and Meckling (1976), as well as costs of information generation as emphasized by Grossman and Stiglitz (1980) or Hellwig (1982), for instance.

<sup>161</sup> Laws against trading insider information exist. For details, see *CHAPTER 5.3.2.3*. Researchers discuss the necessity of regulating insider trading concerning information economics. For further details, see, e.g., the studies of Jaffe (1974a); Carlton and Fischel (1983), Schmidt (1984), Easterbrook (1985), Schmidt (1991), or Picot and Dietl (1994).

<sup>162</sup> The regulation of insider information is a particular case of corporate disclosure; thus, the focus is not on insider trading regulation. Picot and Dietl (1994) discuss the control and sanction mechanisms to prevent disadvantageous insider trading and the costs involved. Due to more substantial criminal consequences through governmental sanction mechanisms, they consider governmental sanctioning more efficient than private law sanctioning. See *CHAPTER 5.3.2.3* for regulatory information on trading insider information.

1971). If more information is available to the public, the decisions remain either at least as good or can even improve (Hirshleifer, 1971). On the contrary, disclosure laws are only helpful if not all information is already publicized.<sup>163</sup> Regulation of corporate reporting shall serve as a mechanism to prevent the beforementioned agency conflicts. A social optimum can be achieved through legal requirements because the law prohibits companies from selling information for trading purposes (Fama and Laffer, 1971). Moreover, if governmental regulations exist for corporate reporting, standardization and comparability are assured and lead to a reduction in agency costs which is of interest to the disclosing companies. Not only costs for information production and disclosure are reduced, but also costs for verification through control mechanisms, such as auditing services (Watts and Zimmerman, 1986, pp. 312–313; Busse von Colbe, 1994, pp. 17–19; Picot and Dietl, 1994, p. 131; Walz, 1994, pp. 94–97). Lambert (2001) emphasizes the essential property of accounting to aggregate information and provide signals to market participants.

Notwithstanding, other arguments against governmental regulation exist because inefficiencies may result from legal requirements. Optimum equilibriums between costs and benefits may not be achieved with regulation (Picot and Dietl, 1994, p. 132).

Nonetheless, corporate reporting is subject to governmental regulations. So far, a differentiation between the legal requirements of financial reporting and sustainability reporting is required. While financial reporting information is predominantly mandated, though differently depending on the accounting principles to follow, companies disclose a vast majority of information voluntarily, in particular sustainability information years (e.g., KPMG, 2020, p. 10). The European Union (EU) currently more strongly regulates sustainability reporting and demands stricter disclosures in the years to come (e.g., Directive (EU) 2022/2464).

In summary, the arguments in favor of regulating corporate reporting apply to both financial and sustainability disclosures, albeit regulation for corporate reporting also entails disadvantages.

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<sup>163</sup> Verrecchia (1979) discusses the influence of a firm's size besides the impact of market participation. He expects smaller firms to publicize accounting information earlier because he considers greater importance of the accounting information to investors of smaller companies.

## 5.3 Financial Reporting

### 5.3.1 Objectives and Users of Financial Reporting

Even though diverse theoretical foundations of corporate reporting emerged and advantages as well as disadvantages of private or governmental laws were identified, governmental disclosure laws developed globally. Regardless of the various theoretical implications for corporate reporting practices and their regulation, the objectives of corporate reporting are discussed. Research literature declares that the primary purpose of financial reporting on capital markets is to provide market participants with decision-useful information (e.g., Beaver and Demski, 1974, p. 170; Gjesdal, 1981, p. 208). Similarly, standard-setting boards such as the Financial Accounting Standards Board (FASB)<sup>164</sup> and the International Accounting Standards Board (IASB)<sup>165</sup> agree to this within their frameworks. These two boards share the same objective because both institutions jointly conducted a convergence project resulting in a conceptual framework containing a common purpose of financial reporting (FASB, 2010, BC1.2; IASB, 2010).

According to the version of the Conceptual Framework of the IASB (2010, OB2) and the FASB (2010, OB2), to which the EU refers,<sup>166</sup>

*“[t]he objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity. Those decisions involve buying, selling or holding equity and debt instruments, and providing or settling loans and other forms of credit.”*

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<sup>164</sup> The FASB is mentioned because it is the organization that establishes corporates' financial accounting and reporting standards in the United States (US) of America, which are called US-Generally Accepted Accounting Principles (GAAP) (FASB, 2022).

<sup>165</sup> The IASB is the fundamental standard-setting board for accounting standards applied internationally (IFRS) (IFRS Foundation, 2022a), but also in Germany, which is especially important for this dissertation. The focus of this study lies on public or capital-market-oriented companies that are, hence, subject to the IFRS according to § 315e HGB. See also *FOOTNOTE 180*.

<sup>166</sup> The Conceptual Framework of the IASB, as published in 2010 and revised in 2018, but not endorsed by the EU, as well as the one of the FASB, issued as Concept Statement No. 8 in 2010 and amended in 2021, are addressed. They result from the convergence project and most recent versions of the frameworks. Within these versions, primary users are the essential user group of financial reporting. Assumingly, the focus shifted towards a stronger emphasis on primary users, such as investors, lenders, and other creditors (e.g., IASB, 2010, OB5, OB10, BC1.9-11). The framework contrasts with an earlier version of the Conceptual Framework that the EU explicitly referred to in the appendix of the commentary on Regulation No. 1606/2002. It explicitly points out a greater variety of users and addressees, e.g., employees, customers, or the general public. This version of the framework was published by the IASB in 1989 and accepted by the IASB in 2001. Even though it is not a standard or interpretation that has to be transferred into legal law, the EU emphasized its relevance through the publication within the appendix of the formerly mentioned commentary. However, the EU has not officially endorsed later versions of the framework (European Commission, 2003).

On these grounds, financial reporting aims to provide useful information to various users to aid in making economic decisions (decision usefulness).<sup>167</sup> Financial accounting ensures the provision of information, whereby it reduces information asymmetries and fulfills decision usefulness in the broader sense (Fülbier and Gassen, 2009, pp. 139–140). In the narrow sense, two subordinated objectives can be identified, whose role and interplay researchers discuss. On the one hand, disclosed information shall serve as an information source in a contracting setting and allows an assessment of the management's actions (stewardship<sup>168</sup>). Contracting leads to the coordination of the management's compensation, taxation, or any other contractual relationships (Fülbier and Gassen, 2009, pp. 139–140).

On the other hand, financial accounting information shall be used in a valuation setting. It allows valuing companies and helps market participants to assess the usefulness of accounting information and make better valuation-related decisions (valuation) (e.g., Gjesdal, 1981; Christensen and Demski, 2003, pp. 172–298; Christensen *et al.*, 2005).<sup>169</sup> Valuation usefulness is regarded as a natural objective of financial accounting information because it serves as an information source allowing a valuation of companies' shares (Gonedes, 1976). It is a trade-based valuation because financial accounting information impacts the trading terms between economically rational market participants by assessing the value of a company (Christensen and Demski, 2003, pp. 145–146).<sup>170</sup> Considering a capital market, financial accounting's objective of providing valuation-relevant information is essential to public companies. In contrast, the distribution of contracting-relevant information is more essential to private firms (Fülbier *et al.*, 2010, p. 1358).

However, research represents different opinions on whether the two concepts, valuation and stewardship, are considered central objectives or subordinated objectives of decision-usefulness in particular. Debates on the role and relevance of stewardship and valuation usefulness exist. Some studies expound the concept of stewardship and consider stewardship as a central objective of financial reporting (e.g., Rosenfield, 1974; Chen, 1975; Gjesdal, 1981; Donaldson

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<sup>167</sup> For instance, Gassen and Schwedler (2010) investigate the decision usefulness of different accounting measurement concepts by conducting a survey with professional investors.

<sup>168</sup> Different terms are used for the assessment of management's activities, such as stewardship (e.g., O'Connell, 2007) or stewardship demand (e.g., Gjesdal, 1981), but also contracting (e.g., Lambert, 2001) or contracting usefulness.

<sup>169</sup> Ohlson (1995) points out how a market value is connected to accounting information. Moreover, Feltham and Ohlson (1995) investigate how companies' market values depend on disclosed accounting information about operating and financial activities.

<sup>170</sup> It is essential to distinguish between valuation and value relevance. For studies addressing value relevance and its impact on standard-setting, see Barth *et al.* (2001), Holthausen and Watts (2001), and others.



and Davis, 1991; Dickhaut and McCabe, 1997; Bushman *et al.*, 2006; O’Connell, 2007).<sup>171</sup> Rosenfield (1974) regards financial statements as reports on management’s stewardship and views stewardship or accountability<sup>172</sup> as one of several objectives of financial statements. Associated with stewardship are the responsibilities of stewards based on contracts or laws (Rosenfield, 1974, pp. 123–124). The stewards’ actions require control that is reported on (Gjesdal, 1981, pp. 208–209). As stewards of companies, managers have stewardship responsibilities towards the companies’ owners, for instance, and report on their activities (Rosenfield, 1974, pp. 123–124).

Other studies only differentiate between two central financial reporting objectives. One is stewardship, and the other is decision-usefulness (e.g., O’Connell, 2007). Gjesdal (1981, p. 208) similarly distinguishes between the contracting (stewardship) and the valuation role. Yet, he understands the valuation role as the decision usefulness “*for making investment decisions*”. Therefore, neither the definitions nor the classifications of the subdivisions can be distinguished selectively. Lambert (2001), Christensen *et al.* (2005)<sup>173</sup>, Bushman *et al.* (2006)<sup>174</sup>, and Fülbier and Gassen (2009) subsume the valuation and contracting role under the decision usefulness of financial accounting information.

Research literature discusses the role of the two sub-objectives and their interplay, even though the IASB and the FASB do not directly address stewardship as a sub-objective in their joint conceptual framework anymore (FASB, 2010, BC1.24–28).<sup>175</sup> They still directly address the valuation usefulness as the assessment of investors, lenders, and creditors for an entity’s future cash flow prospects (IASB, 2010, OB3; FASB, 2010, OB3). In contrast, stewardship is only indirectly considered as “*an indication of how well management has discharged its responsibilities to make efficient and effective use of the reporting entity’s resources*” (FASB,

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<sup>171</sup> For a review on the development of the stewardship concept in accounting, see Chen (1975). See Gjesdal (1981) for an agency approach highlighting the interplay of agency problems and the relevance of stewardship accounting.

<sup>172</sup> Cyert and Ijiri (1974) and Rosenfield (1974) suggest using the term accountability instead of stewardship. They explain the term and its relevance to financial statements. Accountability asks a company to report its activities and impact (Cyert and Ijiri, 1974, pp. 30–31). However, different accountability relationships can exist based on contracts, law, or moral obligations. In this setting, accounting serves as a system that ensures the functioning of the parties involved in the accountability relationships (Dickhaut and McCabe, 1997, pp. 61–62).

<sup>173</sup> Christensen *et al.* (2005) investigate changes in earnings components and their impact on the usefulness of accounting in contracting and oppose it to the usefulness of accounting in valuation.

<sup>174</sup> Bushman *et al.* (2006) consider stewardship and valuation as two objectives of financial accounting and, hence, address the convergence project of the FASB and IASB. They analyze valuation and compensation earnings coefficients and find a positive correlation, indicating compatibility of the two financial accounting objectives.

<sup>175</sup> For an overview of stewardship and the discussion of its consideration as an objective to financial reporting, see O’Connell (2007). He also addresses the convergence project of the IASB and FASB.

2010, OB16; IASB, 2010, OB16). The FASB and IASB argue that both sub-objectives are essential for making decisions, and one or the other cannot be proven to be less or more relevant (IASB, 2010, BC1.27–28; FASB, 2010, BC1.27–28).

Indeed, research literature constitutes the relevance of providing decision-useful financial information to various capital market participants<sup>176</sup> and points out a consensus on decision usefulness as the central aim of disclosing financial reporting information (e.g., Beaver and Demski, 1974).<sup>177</sup>

According to the Conceptual Frameworks of the FASB and IASB, primary users of financial reporting are potential and existing investors<sup>178</sup>, lenders, as well as other creditors. However, market participants are heterogeneous and, thus, have different and maybe even contradictory information needs.<sup>179</sup> As a consequence, the boards aim to satisfy as many information needs as possible (FASB, 2010, OB5, OB8; IASB, 2010, OB5, OB8). Considering the primary users of financial reporting information according to the Conceptual Frameworks of the IASB and FASB, one can assume that the goal to maximize companies' profits represents the interest of investors and lenders. As the Conceptual Frameworks state, other groups using financial reporting information likewise exist. Besides the primary users, other market participants process and benefit from the information provided through financial reporting (FASB, 2010, OB10, BC1.9, BC1.10; IASB, 2010, OB10, BC1.9, BC1.10). Users may range from the general public, governments, and other agencies to customers, suppliers, employees, and other interested parties (FASB, 2010, OB10, BC1.10; IASB, 2010, OB10, BC1.10).

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<sup>176</sup> See Beaver and Demski (1974) for further information on the variety of market participants and their information needs.

<sup>177</sup> However, especially in Germany, it is crucial to consider that the beforementioned financial reporting roles exist for public firms in capital markets. The aim to reduce information asymmetries by providing decision-useful information is not focused when analyzing private instead of public firms. In addition, the central functions of financial reporting for private firms or of disclosing separate financial statements are the assessment of taxes or the obligation of documentation (e.g., Schmidt, 1982). The implementation of capital markets realized a shift towards protecting investors. In the past, the focus of financing in Germany was on creditors (Wagenhofer and Ewert, 2015, pp. 25–26).

<sup>178</sup> Beaver (1989, pp. 8–12) addresses the diverse information demands of common shareholders, as investors, due to different preferences, knowledge, access to information, or skills of interpretation.

<sup>179</sup> For a more detailed study on information demand, see Kihlstrom (1974), who develops a general theory and an information demand model.

## 5.3.2 Regulatory Disclosure Environment in German Capital Markets

### 5.3.2.1 Separate and Consolidated Financial Statements

Different disclosure requirements ensure the objective of providing useful financial accounting information to various market participants. In Germany, disclosure requirements generally result from German Commercial Law. Complementary regulations apply to public or capital-market-oriented firms.<sup>180</sup> Pursuant to § 264 German Commercial Code (*Handelsgesetzbuch*, HGB), capital-market-oriented corporations must prepare separate financial statements in accordance with §§ 242 et seqq. HGB. They must disclose a statement of financial position, a statement of profit or loss, a statement of changes in equity, a statement of cash flows, and notes. Those public firms can additionally report on operating segments (§ 264 (2) 2 HGB). Supplementary to the separate financial statements, a management report must be prepared per § 289 HGB. Corporations must prepare separate financial statements and the management report within three months after the fiscal year-end (§ 264 (1) HGB).<sup>181</sup>

However, public companies preparing group financial statements (§ 290 HGB) must apply the IFRS according to § 315e HGB in conjunction with Article 4 of the European Regulation No. 1606/2002.<sup>182</sup> International Accounting Standard (IAS) 1.10 determines the components of a set of financial statements. It requires a statement of financial position, a statement of profit or loss (including other comprehensive income (OCI)), a statement of changes in equity, a statement of cash flows, and notes. Moreover, IFRS 8.2 asks a public parent company of a group to report on operating segments within the consolidated financial statements.<sup>183</sup> In addition, § 325 (3) HGB in conjunction with § 325 (1) HGB requires the disclosure of an additional group management report following § 315 HGB.<sup>184</sup>

Further, corporations have to disclose a report of the supervisory board, the auditor's report on its approval or refusal, a declaration of conformity with the German Corporate Governance Code according to § 161 of the German Stock Corporation Act (*Aktiengesetz*, *AktG*), the

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<sup>180</sup> Public or capital-market-oriented firms are defined per § 264d HGB. Accordingly, those firms use organized capital markets. § 2 (11) WpHG defines organized markets that are either domestically, in another member state of the EU, or within member states of the European Economic Area (EEA).

<sup>181</sup> §§ 264 – 289f HGB are relevant to preparing separate financial statements and management reports.

<sup>182</sup> For the preparation of group financial statements and group management reports, see §§ 290 – 315e HGB.

<sup>183</sup> Similarly, IFRS 8.2(a) asks public companies to report on operating segments within their individual financial statements.

<sup>184</sup> The same applies to subsidiaries and their individual financial statements supplemented by management reports according to § 264 (1) HGB in conjunction with § 289 HGB. An exception exists for companies that voluntarily disclose their separate financial statements applying IFRS per § 325 (2a) HGB.

assurance of a true and fair view of the financial statements<sup>185</sup> pursuant to § 264 (2) 3 HGB, as well as a declaration of conformity with § 289 (1) 5 HGB, assuring the compliance of the reporting practices (§ 325 (1) HGB). According to § 325 (1) HGB, public corporations have to electronically submit the required documents to the Electronic Federal Gazette (*Bundesanzeiger*). This applies to separate and group financial statements. The companies must hand in the requested documents within four months after the fiscal year-end (§ 325 (3–4) HGB), and the companies must disclose the documents immediately after that (§ 325 (1a) HGB).<sup>186</sup> Whereas public companies issuing group financial statements have to apply IFRS, public companies issuing separate financial statements must follow German Commercial Law for the preparation. Large corporations can disclose separate financial statements following IFRS.<sup>187</sup>

### 5.3.2.2 Interim Reports

The objective to provide decision-useful accounting information is reflected in the disclosure requirements for German public companies. In contrast to private firms that only prepare their financial statements for a fiscal year, public companies have further obligations based on the German Security Trading Law. Public companies must prepare and disclose interim reports according to § 115 of the German Security Trading Act (*Wertpapierhandelsgesetz*, WpHG). The requirements apply to individual and consolidated financial statements according to § 117 WpHG in conjunction with § 115 WpHG. For the first six months of a fiscal year, the disclosure of a report is requested. It must be disclosed within three months following the reporting period (§ 115 (1) 1 WpHG).<sup>188</sup> The public companies may engage auditors to review the interim reports (§ 115 (5) WpHG).

§ 115 (3) WpHG requires organizations to prepare their interim reports applying the same accounting principles as for the annual financial statements. Public companies preparing group financial statements apply IFRS and, thus, have to consider IAS 34.<sup>189</sup> Pursuant to § 115 (2) WpHG, the interim report generally includes a condensed set of financial

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<sup>185</sup> This declaration is obligatory for corporations issuing securities domestically under § 2 (14) WpHG.

<sup>186</sup> An exception exists for public companies according to § 325 (4) HGB in conjunction with § 327a HGB.

<sup>187</sup> This only applies to the disclosure pursuant to § 325 (1) HGB in conjunction with § 325 (2a) HGB. The submission to the Electronic Federal Gazette according to § 325 (1) HGB remains unaffected.

<sup>188</sup> The German Accounting Standard 16 (*Deutscher Rechnungslegungs Standard (DRS)*) specifies the requirements of interim reports. It applies to public companies that are obliged to interim report according to the German Security Trading Law, but also for companies issuing consolidated financial statements (DRS 16, no. 4).

<sup>189</sup> IAS 34 must be applied if companies are obliged to or voluntarily publish an interim report (IAS 34.1).

statements<sup>190</sup>, an interim management report<sup>191</sup>, and the declarations of conformity with § 289 (1) 5 HGB and § 264 (2) 3 HGB. Those companies applying IAS 34 must include, according to IAS 34.8, a statement of financial position, a statement of profit or loss (and other comprehensive income), a statement of changes in equity, a statement of cash flows, as well as notes within their condensed interim financial reports.

Trading transactions in financial instruments according to § 2 (4) WpHG, which includes securities under § 2 (1) WpHG, and derivative transactions according to § 2 (3) WpHG, can be concluded with the aid of the Frankfurt Stock Exchange (FSE) (§ 1 of the Exchange Rules (*Börsenordnung*, BörsO) of the FSE). Public firms use organized capital markets as defined in § 264d HGB.<sup>192</sup> The FSE, in particular, differentiates between General and Prime Standard, considering the admission of securities to the regulated market (§§ 45–57 BörsO). The Prime Standard is a subdivision of the General Standard entailing additional obligations (§ 48 (1) BörsO). Consequently, if listed at the FSE, the issuers of shares must prepare a quarterly statement as of each fiscal year's first and third quarter (§ 53 (1) BörsO).<sup>193</sup> Under § 53 (2) BörsO, quarterly statements must include a statement on the financial position and performance as well as material events and transactions of the reporting period and their impact on the financial position.<sup>194</sup>

### 5.3.2.3 Ad hoc Disclosure

Besides interim reports, public companies are subject to further disclosure requirements. § 25 WpHG refers to the Market Abuse Regulation (MAR) (Regulation No. 596/2014), which the EU introduced and which immediately replaced the German national law as of July 3, 2016 (Article 39, para. 1–3 MAR). Beforehand, the German Securities Trading Act prescribed the disclosure of ad hoc information (§§ 12 et seqq. WpHG, old version, November 1, 2007<sup>195</sup>). The MAR applies to financial instruments traded on a regulated market (Article 1 MAR). It is

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<sup>190</sup> The condensed set of financial statements must consist of at least a statement of financial position, a statement of profit or loss, and notes. See § 115 (3) WpHG.

<sup>191</sup> § 115 (4) WpHG requires the disclosure of essential events of the reporting period and their impact on the financial statements as well as the disclosure of essential chances and risks for the next half of the fiscal year. In addition, it is asked to disclose material transactions with related parties. Companies can publish this information within the management report or the notes.

<sup>192</sup> See *FOOTNOTE 180* for detailed information on public firms and organized capital markets.

<sup>193</sup> §§ 51–52 BörsO define further requirements for the annual financial statements and the half-year interim reports for public companies being part of the Prime Standard.

<sup>194</sup> Further requirements preparing and disclosing quarterly statements can be found in § 53 BörsO.

<sup>195</sup> The regulations have changed on July 2<sup>nd</sup>, 2016. Prior to this date, the WpHG prescribed ad hoc disclosures.

binding for public companies in Germany (and other member states of the EU). The regulation provides a framework for the disclosure of inside information, insider dealing, and combatting market abuse (Article 1 MAR). According to Article 7 MAR, inside information is defined as:

*“information of precise nature, which has not been made public, relating, directly or indirectly, to one or more issuers or to one or more financial instruments, and which, if it were made public, would be likely to have a significant effect on the prices of those financial instruments or on the price of related derivative financial instruments.”*

The MAR (Articles 14–16 and recital 7) aims at impeding market abuse, which comprises unlawful behavior in the form of insider dealing, market manipulation, or illegitimate disclosure of inside information. Article 17 MAR specifies the disclosure requirements of inside information, i.e., ad hoc disclosure. Public companies must disclose inside information publicly, ensuring the market participants fast access and assessment of the information. An issuer must publicize inside information immediately if it directly affects the issuer. Other inside information concerning business activities must be disclosed on time (Article 17, para. 1 MAR). Issuers may only disclose inside information with delay if certain specifications are met (Article 17, para. 4–7 MAR). Also, the MAR requires any person obtaining inside information not to use it to trade financial instruments (Articles 14 and 15 MAR). The German Federal Financial Supervisory Authority (*Bundesanstalt für Finanzdienstleistungsaufsicht*, BaFin) provides further specifications in their issuer guideline on the requirements of the MAR (BaFin, 2020).

As stated in the MAR, public companies’ ad hoc disclosure requirements lead to a more significant reduction in information asymmetries between market participants (e.g., Fülbier, 1998). In short, the MAR ensures greater transparency in the capital market and prevents market abuse through inside information (BaFin, 2020, pp. 24–25).

### 5.3.3 Voluntary Disclosure

Although public companies underly the most demanding disclosure requirements in Germany, which consists of the disclosure of annual reports and interim reports or quarterly statements throughout the year, public companies additionally voluntarily disclose supplemental

information (e.g., Dye, 1990; Bagnoli and Watts, 2007; Koonce *et al.*, 2011; Ball *et al.*, 2012; Kyung *et al.*, 2019; Cho *et al.*, 2020).<sup>196</sup>

Following the financial reporting objective to provide decision-useful information to market participants, it is questionable whether the users of voluntarily disclosed information can make better decisions. Penno (1997) finds that the assumption of more significant information asymmetries accompanied by a larger amount of voluntary disclosure is not generally applicable. Serafeim (2011) similarly emphasizes a reduction in information asymmetries and an increase in shareholders' equity value through unregulated financial reporting information. The voluntarily disclosed information may reduce information asymmetries between corporations' management and other market participants and result in lower capital costs (Hughes *et al.*, 2007). Therefore, the supplemental disclosure of information could result in better decision-making procedures. Still, issues may arise due to lacking comparability or traceability of metrics and information. Moreover, self-selection biases may result because companies are more likely to voluntarily report if they can disclose “good news” (Lev and Penman, 1990, p. 51).

Typically, companies voluntarily disclose sustainability information that they are not (yet) mandated to share with the public (e.g., Dhaliwal *et al.*, 2011; Cho *et al.*, 2020). Hitherto, in Germany, companies fulfilling the criteria of large corporations under § 267 (3) 1 HGB that are capital-market-oriented (§ 264d HGB) must disclose non-financial statements per § 289b (1) HGB. Similarly, group management reports have to be complemented by group non-financial statements per § 315b (1) HGB.<sup>197</sup> Many corporates either integrate or additionally disclose a sustainability report, which may be called CSR or ESG report (Duffe, 2020).<sup>198</sup> As sustainability reporting is about to be regulated in the EU<sup>199</sup>, the relevance of ESG information is acknowledged; hence, sustainability reporting can be decision-useful for market participants (COM(2021) 189 final, p. 3).

The same applies to measures not following the Generally Accepted Accounting Principles (GAAP), the so-called non-GAAP measures.<sup>200</sup> These performance measures can typically be

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<sup>196</sup> Verrecchia (2001) reviews the literature on accounting disclosures and provides an overview of different categories of disclosure types in which voluntary disclosure is considered.

<sup>197</sup> See CHAPTER 5.4.2.3.2 for further details on the German requirements for non-financial statements.

<sup>198</sup> Other terms are used to describe information on environmental, social, or governmental issues. For further details, see CHAPTER 5.4.1.

<sup>199</sup> See CHAPTER 5.4.2 for current projects and the regulation of sustainability reporting.

<sup>200</sup> The US Securities and Exchange Commission (SEC) defines a non-GAAP financial measure as “a numerical measure of a registrant’s historical or future financial performance, financial position, or cash flow that: a. excludes amounts, or is subject to adjustments that have the effect of excluding amounts, that are included in the most directly comparable measure calculated and presented in accordance with GAAP in the statement of comprehensive income, balance sheet or statement of cash flows of the issuer; or b. includes amounts, or

found in capital markets, even though regulation does not require their disclosure. However, non-GAAP measures<sup>201</sup> are considered to be more informative than traditional GAAP metrics, which leads to stronger reactions in the capital market (e.g., Bhattacharya *et al.*, 2003; Brown and Sivakumar, 2003; Abarbanell *et al.*, 2007; Bhattacharya *et al.*, 2007; Guillamon-Saorin *et al.*, 2017). Companies disclose various non-GAAP measures (e.g., SEC, 2009, 8120.2; Young, 2014). In the US, non-GAAP measures are subject to *Regulation G* (SEC, 2003). Accordingly, companies must follow specific disclosure requirements, such as the provision of a reconciliation statement from a non-GAAP measure to its most comparable financial GAAP measure (SEC, 2003).<sup>202</sup> Similar to sustainability information, German public companies are free to decide on which financial measures to disclose and how to adjust them. Those non-GAAP measures risk being misleading because of companies' impression management (e.g., Guillamon-Saorin *et al.*, 2017). Moreover, they are not necessarily comparable among different companies, nor are the traceability and the justification of the adjustments assured.

In addition, German annual reports contain voluntary company reports at the beginning of the annual report, including pictures or information on the company that is not mandated. Whether the voluntary company reports support information asymmetries between market participants and hinder better decision-making procedures is questionable.

In general, capital market participants' demand for voluntary information is indicated through the EU's endeavor to regulate sustainability reporting practices as well as the SEC's regulation of non-GAAP disclosure. Thus, the information that is still voluntarily disclosed in Germany is requested by capital market participants and may be useful in their decision-making. At least, in the case of ESG information, the EU<sup>203</sup> is about to stronger regulate sustainability reporting to improve the quality and ensure its comparability.<sup>204</sup> That is why German public companies are currently facing a reform of sustainability reporting.

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*is subject to adjustments that have the effect of including amounts, that are excluded from the most directly comparable GAAP measure so calculated and presented"* (SEC, 2003, 2.a).

<sup>201</sup> Different terms are used to designate non-GAAP measures. Pro forma earnings, street earnings, and alternative performance measures are used to describe GAAP metrics that are adjusted by the management by special effects that are either unique or uncommon, even though those measures are not prescribed and defined by law (Bhattacharya *et al.*, 2003, p. 286).

<sup>202</sup> Black *et al.* (2012) investigate the impact of the US-American regulation for disclosing non-GAAP measures. They find that the quality has improved, and investors' perceptions of non-GAAP measures have changed.

<sup>203</sup> As a member state of the EU, those regulations will apply to Germany.

<sup>204</sup> For more detailed information, see *CHAPTER 5.4.2.3*.



## 5.4 Sustainability Reporting

### 5.4.1 Terms and Definitions

#### 5.4.1.1 Sustainability in a Business Context

In contrast to financial reporting that is mainly regulated – regardless of national legislation or global reporting standards – the interest in the topic of sustainability increased in corporate reporting practices, especially voluntarily. In a business context, the demand for so-called CSR, sustainability, non-financial, or ESG information rose (e.g., Amel-Zadeh and Serafeim, 2018, p. 87; Christensen *et al.*, 2021, pp. 1177–1179, Christensen *et al.*, 2022, pp. 147–148). However, inconsistent uses of different terminologies exist to describe disclosures on topics that exceed the current mandatory financial reporting information. So far, those reporting practices are primarily voluntary and based on various frameworks, standards, or other guidance.

The notion of *sustainability* is ubiquitous nowadays. Not only corporate reporting considers sustainable topics, but sustainability also coins corporate strategies and actions. Nevertheless, the concept of sustainability is not newly founded. In 1713, von Carlowitz published the idea of sustainable management of the forests due to the anticipated lack of the resource wood.<sup>205</sup> Von Carlowitz mentioned the term “*sustained*” (“*nachhaltend*”) (Carlowitz, 1713/2012, p. 47). He aimed to manage forests in a forward-looking and continuous manner to achieve sustained timber yields and make provisions for future generations. Even though he did not refer explicitly to sustainability, today’s understanding of sustainability is based on the same idea and concept (Carlowitz, 1713/2012, pp. 44–50).<sup>206</sup> Lack of resources due to climate change, in particular, lead to the necessity of sustainable actions to make provisions for the current and future generations.

The demand for sustainable development in a business context arose and increased due to the report *Our Common Future* by the World Commission on Environment and Development (WCED) in 1987.<sup>207</sup> The WCED stressed the need for sustainable development and the role of the economy within such development:

*“Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits – not absolute limits but limitations imposed by the*

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<sup>205</sup> The mining operations required the supply of wood (firewood and pit timber).

<sup>206</sup> Carlowitz (1713/2012, pp. 47–48) additionally points out further possible origins of the concept of sustainability.

<sup>207</sup> It is known as the *Brundtland Report*. For further details, see CHAPTER 5.4.2.1.

*present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth” (UN, 1987, recital 27).*

Moreover, sustainability considers various matters that are increasingly relevant in a business context and defined within the Directive (EU) 2022/2464 of the European Parliament and of the Council, it is known as the Corporate Sustainability Reporting Directive (CSRD)<sup>208</sup>, which was published on December 16<sup>th</sup>, 2022. Accordingly, sustainability matters address “*environmental, social and human rights, and governance factors, including sustainability factors defined in point (24) of Article 2 of Regulation (EU) 2019/2088*” (Article 1, point (2) (b) (17) CSRD).

The business practice uses different terminologies. Sustainability, sustainable actions, and sustainable matters exist without a uniform definition but refer to corporate responsibilities (CR) that exceed the financial perspective of solely maximizing profit. The notion of CSR used to be prevalent in academic literature<sup>209</sup>, especially in older studies. In business practice, companies commonly addressed CR or CSR. By contrast, globally, various terminologies exist that seemingly experience a shift toward ESG or sustainability reporting.<sup>210</sup>

The most essential and commonly used terms differ slightly and are explained in the following. This work, however, subsequently refers interchangeably to sustainability reporting or ESG reporting for simplicity and due to the absence of a uniform definition.

#### 5.4.1.2 Corporate Social Responsibility

Several decades ago, Bowen introduced the nowadays generally referred concept of CSR in his book *Social Responsibilities of the Businessmen* (Bowen, 1953).<sup>211</sup> Different academics commented on this idea and its relation to businesses. Simultaneously, literature debated shareholder and stakeholder orientation. Friedman (1970) highlighted the societal responsibility of companies to maximize profit. Even though he set the focus on shareholders in a business

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<sup>208</sup> In the following, Directive (EU) 2022/2464 will be referred to as CSRD.

<sup>209</sup> See, e.g., Huang and Watson (2015, p. 2).

<sup>210</sup> In 2013, KPMG conducted and published the *Survey of Corporate Responsibility Reporting*, which investigated the reporting terminology used among 4,100 international companies. Albeit CR, CSR, and sustainability accounted for a large proportion, KPMG referred to CR reporting (KPMG, 2013). However, in 2020 they renamed their survey to the *Survey of Sustainability Reporting* (KPMG, 2020).

<sup>211</sup> For a review of the history of CSR, see Carroll (2009).

context, he acknowledged the existence of social responsibilities. In contrast, McGuire (1963, p. 144) considered the social responsibilities of companies as obligations exceeding economic or legal corporate responsibilities.<sup>212</sup> Carroll (1979, pp. 499–500) defines CSR as a compilation of obligations related to companies. Besides economic and legal responsibilities, Carroll (1979) considers ethical and discretionary obligations that belong to the set of social responsibilities.

Elkington (1998) developed the triple bottom line approach based on companies' corporate responsibilities towards society. He considers organizations as parts of society and, thus, emphasizes the accountability and performance of companies based on a triple bottom line instead of focusing solely on the financial perspective. Accordingly, companies' performances are based on three pillars: economic, environmental, and social responsibilities. The economic pillar usually covers the interest of shareholders. The other two pillars contrast the shareholder view, as companies care for other stakeholders' interests. Consequently, the triple bottom line approach better corresponds with business stakeholder theory.

Until today, no universal definition of CSR exists, and the last decades yielded many considerations. Although CSR activities may be in the interest of shareholders, it is more evident that CSR activities do not exclusively maximize shareholder value. Companies strive to meet various stakeholders' needs, not only shareholders', which justifies the existence of CSR. Christensen *et al.* (2021, p. 1181) define CSR as “*corporate activities and policies that assess, manage and govern a firm's responsibilities for and its impacts on society and the environment*”.

#### 5.4.1.3 ESG Matters and Sustainable Finance

In contrast to the terms of sustainability or corporate (social) responsibility that experienced a more extended history of use and development, the relevance of the acronym ESG increased continuously in the 21<sup>st</sup> century.<sup>213</sup> The European Commission considers ESG as part of sustainable finance. Accordingly, “*the process of taking environmental, social and governance (ESG) considerations into account when making investment decisions in the financial sector, leading to more long-term investments in sustainable economic activities and projects*” presents the concept of sustainable finance (European Commission, 2022).

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<sup>212</sup> For an overview of varying perceptions of corporate social responsibilities, see Carroll (1979).

<sup>213</sup> KPMG published the Corporate Responsibility Reporting Survey in 2013 and emphasized that among 4,100 companies only two percent named their report “*environmental and social report*”. However, the study does not refer to the additional term of governance nor the acronym ESG. ESG could only be included within the group of “*Other*” which adds up to 6 % of the sample (KPMG, 2013).

Therefore, according to the *Principles for Responsible Investment* (PRI) “responsible investment” is driven by considering ESG factors. In 2006, a group of institutional investors introduced and signed the PRI, for which the United Nations (UN) called in 2005. The UN Global Compact and the UN Environment Program Finance Initiative (UNEP FI) supported the institutional investors (UN, 2006) who formed PRI’s eponymous initiative. In three of the six principles<sup>214</sup>, the PRI directly refers to ESG factors and highlights the relevance of ESG issues impacting corporate performance. Thus, the PRI aims at long-term value creation through a global sustainable financial system (PRI, 2021, p. 6). Exemplary ESG factors impacting companies’ performances are, for instance, climate change (environmental), working conditions (social), or board diversity and structure (governance) (PRI, 2021, p. 4).

Whereas the investment community mainly uses the terminology ESG, which derives from the financial sector, the notions of CSR and sustainability allow considerations in a broader context.

#### 5.4.1.4 (Corporate) Sustainability Reporting

Concerning the increasing amount and demand for reporting information on sustainability matters, different terminologies exist due to the predominantly voluntary nature of reporting on such matters. In general, CSR and sustainability include ESG matters.<sup>215</sup> Nonetheless, ESG, CSR, sustainability reporting, non-financial disclosures, and climate-related financial or climate-related disclosures are common terminologies.

In the past, CSR reporting was a common term (e.g., KPMG, 2013; Huang and Watson, 2015, p. 2). Yet, since the regulation and the demand of the investment community for corporate ESG information increased, terms such as ESG reporting and sustainability reporting became familiar. Even though differences exist between the various terms, they are mainly used interchangeably (e.g., Christensen *et al.*, 2021, p. 1179).

Within the proposal for a CSRD, and ultimately in the published CSRD, the European Commission and the European Parliament stressed the unsuitability of the term non-financial

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<sup>214</sup> The six principles are the following: “1. We will incorporate ESG issues into investment analysis and decision-making processes. 2. We will be active owners and incorporate ESG issues into our ownership policies and practices. 3. We will seek appropriate disclosure on ESG issues by the entities in which we invest. 4. We will promote acceptance and implementation of the Principles within the investment industry. 5. We will work together to enhance our effectiveness in implementing the Principles. 6. We will each report on our activities and progress towards implementing the Principles” (PRI, 2021, p. 6).

<sup>215</sup> See CHAPTER 5.4.1 or Christensen *et al.* (2021, p. 1185).

reporting. The Directive 2013/34/EU, called Accounting Directive<sup>216</sup>, formerly referred to non-financial information. In contrast, the CSRD states that stakeholders find the term inappropriate as naming such information *non-financial* could imply having no financial implications when the contrary may be true. For this reason, the stakeholders and the CSRD suggest and use the notion of *sustainability reporting* instead (recital 8 CSRD).

Since most sustainability disclosures are not yet regulated in Germany<sup>217</sup>, issues arise due to a lack of comparability (e.g., COM(2021) 189 final, p. 3). De Franco *et al.* (2011) find that comparability of financial reporting information positively impacts the quality and quantity of accounting information and reduces the costs related to information acquisition. Indeed, the comparability of sustainability reporting information might benefit from stricter regulation.

Contrasting sustainability reporting with financial reporting, some differences can be found in its fundamental basics. According to the CSRD, investors and civil society actors are primary users of sustainability reporting information. Non-governmental organizations (NGOs), as well as social partners, belong to the group of civil society actors. Moreover, other stakeholders may be users of sustainability reporting information (recital 9 CSRD).

Depending on the users, the reasons for their interest in information vary. Investors focus on risks and opportunities resulting from sustainability matters to make optimal investment decisions. In addition, all users are interested in the impact of corporate activities on society and the environment (recital 9 CSRD). NGOs, for instance, aim to make companies accountable for their activities based on the reporting information (COM(2021) 189 final, p. 2). Therefore, the primary user group for sustainability information is broader than financial reporting users. Accordingly, the shareholder value maximization theory is difficult to apply to explain sustainability reporting. More likely is the consideration of the stakeholder or legitimacy theory in this setting. The considerations of solving principal-agent problems and reducing information asymmetries apply to financial and sustainability reporting.<sup>218</sup>

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<sup>216</sup> In the following, Directive 2013/34/EU is referred to as Accounting Directive.

<sup>217</sup> § 289b HGB requires a non-financial statement. Additionally, § 289 (3) HGB in conjunction with § 289 (1) HGB asks for the disclosure of essential non-financial performance indicators. For further information, see *CHAPTER 5.4.2.3*.

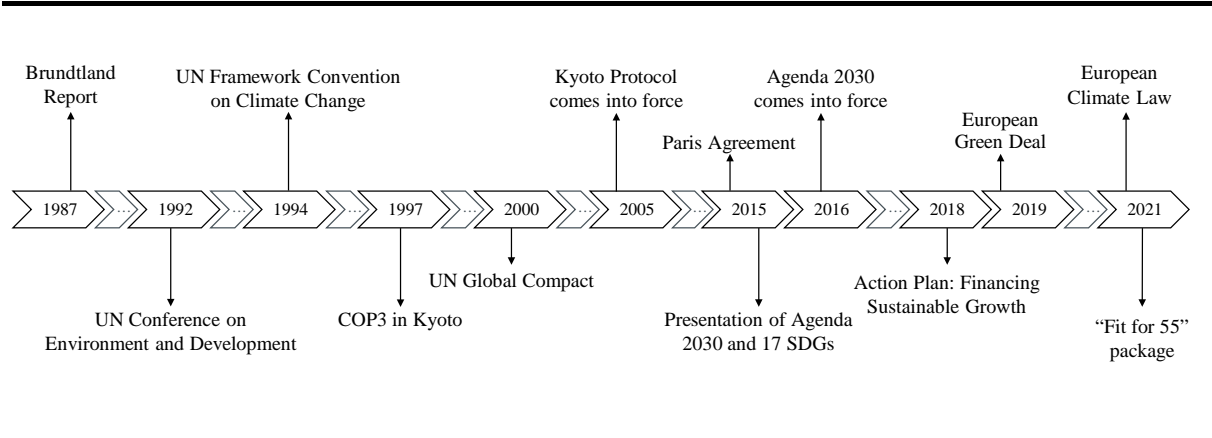
<sup>218</sup> To find out which effects sustainability reporting information has, see *CHAPTER 6.2*, which points out different studies investigating the impact of sustainability reporting.

5.4.2 Development and Status Quo of Sustainability Reporting

5.4.2.1 International Milestones and Efforts

Although sustainability and ESG issues have become increasingly prominent in corporate actions in recent years, various milestones had addressed these issues long before any European regulation came into force. These milestones underline the importance of the topic considering corporate actions (see *FIGURE 7*). In 1983, the UN General Assembly asked Gro Harlem Brundtland to establish a commission to develop a “*global agenda for change*”. Resulting from this call, the WCED, with Gro Harlem Brundtland as its chairwoman, presented the report *Our Common Future*, known as the *Brundtland Report*, to the General Assembly of the UN in 1987 (UN, 1987, Chairman’s Foreword).

**FIGURE 7:**  
*Overview of Sustainable Development*



**Notes:** The timeline illustrates milestones and initiatives that impacted the sustainable development transition. The position of the arrows only refers to the year; during the year, they are not assigned to scale. The positioning of the events, whether above or below the timeline, is arbitrary.

The *Brundtland Report* aims to protect future generations and their interests. The report introduces the concept of sustainable development<sup>219</sup> that addresses the demand for change in any country and “*seeks to meet the needs and aspirations of the present without comprising the ability to meet those of the future*” (UN, 1987, chapter 1, no. 48–49). This framework considers three key figures of sustainable development. It is essential to aim for economic growth to ensure that society can meet its substantial needs through equal opportunities. On these grounds,

<sup>219</sup> See *CHAPTER 5.4.1.1* for details on the concept of sustainable development according to the *Brundtland Report*.

*economic and social development* are aspired (UN, 1987, chapter 2, no. 1–8). Society’s needs and limitations impact the concept of sustainable development (UN, 1987, chapter 2, no. 1). In this concept, environmental damage is a risk resulting from economic growth leading to the necessity of *environmental protection* (UN, 1987, chapter 1, no. 50), the third key figure. The report calls for action to achieve changes and stop old patterns to ensure social and ecological stability while striving for economic growth (UN, 1987, chapter 12, no. 1–4). It proposes long-term strategies considering environmental protection to achieve sustainable development by the 21<sup>st</sup> century (UN, 1987, Chairman’s Foreword).

Following the *Brundtland Report* of the WCED, the United Nations Conference on Environment and Development (UNCED) took place in Rio de Janeiro in 1992.<sup>220</sup> The UNCED resulted in the so-called *Agenda 21*, a global framework to face and combat the challenges of the 21<sup>st</sup> century jointly to ensure sustainable development (UN, 1992a, Preamble). Moreover, the Commission of Sustainable Development and the United Nations Framework Convention on Climate Change (UNFCCC) emerged at the UNCED (UN, 1992b). The UNFCCC<sup>221</sup> admits climate change, humankind’s impact on greenhouse gas emissions, and the necessity of effective environmental legislation. The convention aims to stabilize greenhouse gas concentrations, enable the ecosystem to adapt to climate change naturally and ensure sustainable economic development (UNFCCC, Article 2). Meanwhile, 197 parties ratified the convention, which came into force in 1994 (BMUV, 2022).

Annually conferences of the parties (COP) of the convention are held in various places (Article 1, para. 1 Kyoto Protocol)<sup>222</sup>. In 1997, the third COP, referred to as COP3, occurred in Kyoto, Japan, and resulted in the Kyoto Protocol. As requested by its Article 25, para. 1, in 2005, the Kyoto Protocol entered into force after a ratification rate of 55 % of the parties responsible for the total 1990 carbon dioxide (CO<sub>2</sub>) emissions had been achieved (UNFCCC, 2022). It provides legally binding limitations on greenhouse gas emissions for the parties (Articles 2–4 Kyoto Protocol). The Kyoto Protocol and the Paris Agreement are based on the UNFCCC. In 2015, the COP21 took place in Paris, where the parties agreed upon a global climate deal. Article 2, para. 1, point (a) Paris Agreement<sup>223</sup> states the objective to limit global warming; hence, temperature increases preferably to 1.5 °C, but below 2 °C compared to pre-industrial levels. Thereby climate change and its impact on society shall be reduced.

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<sup>220</sup> It is named the “*Earth Summit*” (UN, 1992b).

<sup>221</sup> The UNFCCC is referred to as the *convention*.

<sup>222</sup> See UN (1998) for the Kyoto Protocol.

<sup>223</sup> See UN (2015a) for the Paris Agreement.

In 2015, the United Nations Sustainable Development Summit was held in New York. In 2012, the United Nations Conference on Sustainable Development, taking place in Rio de Janeiro, agreed upon the development of the *Sustainable Development Goals* (SDGs) (UN, 2012). The summit in 2015 then introduced the *2030 Agenda for Sustainable Development*, which they consider “*a plan of action for people, planet and prosperity*” (UN, 2015b). The resolution states 17 SDGs that form together with 169 associated targets the Agenda 2030 (UN, 2015b, no. 18). The Agenda 2030 came into force in January 2016. It is expected to improve the planet, the living, and the wealth of humankind by 2030 (UN, 2015b, no. 21).<sup>224</sup>

The UN Global Compact also exposes the SDGs. In 2000, the UN Global Compact was launched as an initiative to support UN goals. Providing ten principles and the 17 SDGs shall improve management practices concerning the environment, human rights, labor, and anti-corruption (United Nations Global Compact, 2022a). Approximately 16,500 companies in almost 160 countries signed the compact<sup>225</sup> emphasizing the relevance of the compact’s principles and the global willingness to achieve a transformation in the economy.

Whereas the UN took former actions, in 2019, the EU published a communication presenting the *European Green Deal* (COM(2019) 640 final). This plan stresses the aim of Europe to become the first climate-neutral continent by 2050 and shall aid in implementing the UN 2030 Agenda and the 17 SDGs. The Green Deal provides a roadmap and actions to combat challenges resulting from climate change (COM(2019) 640 final, pp. 1–3). By 2030, greenhouse gas emissions shall be reduced by at least 50 %, preferably 55 %, compared to 1990. To become the first climate-neutral continent, the Green Deal considers the implementation of a *Climate Law* (COM(2019) 640 final, p. 4). The communication also points out specifications for various industry sectors to prevent further damages and risks due to climate change. In March 2020, the European Commission presented the proposal of the *European Climate Law* (COM(2020) 563 final), which finally entered into force in July 2021 (Regulation (EU) 2021/1119). Its Article 2, para. 1 requires greenhouse gas emissions to be reduced to net zero by 2050. The 2030 Agenda is addressed in Article 4, para. 1 and obliges the EU to reduce its greenhouse gas emissions by 2030 by at least 55 % compared to the level of 1990. In addition, in 2021, the European Commission presented a “*Fit for 55*” package (COM(2021) 550 final). It is a package containing proposals aiming to achieve the 2030 climate targets with its reduction in greenhouse gas emissions to 55 %. The commission’s communication results from the European Green Deal. The

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<sup>224</sup> The 17 SDGs can be found in *APPENDIX I*.

<sup>225</sup> See United Nations Global Compact (2022b) for details.



included proposals address and revise existing legislation and introduce new initiatives striving for a transformational change in the EU and its economy.

In sum, the global efforts that have been made to strive for sustainable development and a significant change in the economy elucidate that the topic of sustainability increasingly impacts the business environment.

#### 5.4.2.2 Guidance, Frameworks, and Standards

The industrial and green transition is visible in companies' actions and corporate disclosures on these actions. Different initiatives, frameworks, and standards have developed in the 21<sup>st</sup> century to guide companies on how to (voluntarily) report sustainability matters. The different initiatives partially share resembling goals and register content overlaps. Due to similarities among the initiatives and the partial simultaneous development, the merging of different initiatives seems reasonable. The following presents a not-encompassing selection of essential frameworks, standards, and guidelines as well as their development and, in some cases, their merging.<sup>226</sup>

##### 5.4.2.2.1 Sustainable Development Goals

The formerly mentioned goals for sustainable development, the SDGs, compiled by the UN, serve as guidance for companies. The 17 goals (see *APPENDIX I*), with their supplemental 169 targets, provide topics on which corporates may take action and report. Even though the target 12.6<sup>227</sup> demands businesses of any size to integrate sustainable reporting information, the SDGs cannot be understood as a framework for reporting practices. The 2030 Agenda already asked for the measurement of the yearly progress towards the agenda's achievement (UN, 2015b, no. 48). Hence, reporting information on the SDGs is required, and that is why the agenda addresses all businesses to solve the existing issues and to become involved in sustainable development (UN, 2015b, no. 67). In addition, the *SDG Compass* highlights the relevance of companies to the achievement of the 2030 targets. Furthermore, the UN Global Compact, as well as the GRI, set up guides for companies to implement the SDGs in business practices (United Nations

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<sup>226</sup> Other initiatives worth mentioning are the International Organisation for Standardisation's ISO26000, the Value Balancing Alliance, the Organisation for Economic Co-operation and Development (OECD), and others.

<sup>227</sup> Target 12.6 refers to the twelfth goal (to “ensure sustainable consumption and production patterns”) which considers a variety of targets. Here, the sixth target is addressed.

Global Compact, 2015). The SDG Compass stresses companies' importance, activities, and transparent disclosure to achieve sustainable development (United Nations Global Compact, 2015).<sup>228</sup>

#### 5.4.2.2.2 TCFD Framework

The Financial Stability Board (FSB) established the *Task Force on Climate-related Financial Disclosures* (TCFD) in 2015. The TCFD's task was to increase transparency and market efficiency by supporting companies to improve corporate reporting on climate-related information. Climate change may have financial implications resulting from risks and opportunities that may impact investors' decisions on capital markets. Thus, the market demands the disclosures of climate-related information (TCFD, 2022b). Nonetheless, companies face challenges in assessing their financial impact. Missing knowledge on climate-related issues prevents the risks' identification. Focusing on the short-term when making those risks measurable, challenge the assessment (TCFD, 2021, p. 9). The financial impact is determined by the climate-related risk or opportunity and by the company's risk management and strategic planning. The TCFD differentiates between transition and physical risks<sup>229</sup> as well as opportunities that influence either the financial performance or financial position of a company (TCFD, 2021, pp. 9–10).

In 2017, the TCFD developed and released recommendations on climate-related financial disclosure and guidance on how to implement climate-related reporting practices and on sector-specific information that should be considered while implementing those reporting practices (TCFD, 2017). Additionally, in 2021, the TCFD updated the recommendations and their guidance. Four core corporate operating activities comprise the recommendations' framework: governance, strategy, risk management, as well as metrics and targets. Each topic demands other disclosures (TCFD, 2021, pp. 14–15).<sup>230</sup> Moreover, the TCFD provides general disclosure recommendations for all sectors, supplemental guidance for financial and non-financial sectors, and guides each sector individually. To enable users to assess climate-related information's financial impact, the TCFD developed seven principles for adequate disclosure: Climate-related

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<sup>228</sup> The *Sustainable Development Goals Report 2022* emphasizes that achieving the 2030 Agenda and the SDGs is in danger due to multiple recent crises. For further information, see the report (UN, 2022).

<sup>229</sup> Transition risks are, e.g., risks resulting from a policy constraining greenhouse gas emissions or decreasing market demand; physical risks arise due to property damage, for instance. For further details on the distinction between the two risk classifications, see TCFD (2021, pp. 10–12).

<sup>230</sup> *APPENDIX II* points out the disclosure recommendations on the four core elements of the TCFD framework.

financial disclosure shall be relevant, comparable, specific, clear, consistent over time, and provided regularly (TCFD, 2021, pp. 70–72).<sup>231</sup>

In 2021, the FSB published the fourth status report on the TCFD. Compared to 2018, the number of TCFD supporters increased by 72 % to more than 2,600 supporting institutions in 89 countries in 2021. In eight countries, the recommendations and guidance of the TCFD are part of mandatory reporting requirements. Among others, the United Kingdom (UK), Japan, and Switzerland are part of that group (FSB, 2021, pp. 4–5). Likewise, the European Parliament and Council addressed the TCFD in the CSRD. The directive states that the new sustainability reporting standards should consider former sustainability standards and frameworks, such as the one of the TCFD (recital 43 CSRD).<sup>232</sup>

#### 5.4.2.2.3 GRI Sustainability Reporting Standards

The *Global Reporting Initiative* (GRI) was founded in Boston in 1997 and later relocated to Amsterdam in 2002. Through guidelines and sustainability reporting standards, the GRI aids companies in increasing their transparency and reporting on their sustainability impacts. That is why GRI is a standard setter for impact reporting and provides globally applied standards (GRI, 2022). At first, in 2000, the GRI only published guidelines (*GRI GI*). After several guidelines had been published, GRI adopted the SDGs in 2015 and introduced GRI Sustainability Reporting Standards in 2016. Beforehand, the standard-setting body of GRI was created, the Global Sustainability Standards Board (GSSB) (GRI, 2022). Based on the former guidelines, the GSSB provides GRI universal, sector, and topic standards that are constantly developed.

Universal Standards are applied by all organizations and emphasize the fundamental principles to prepare reports applying GRI standards. In 2016, the universal standards, *GRI 101*, *102*, and *103*, were developed and rested on the former guidelines. In 2019, the GSSB presented a proposal to review the universal standards (GSSB, 2019b). An exposure draft was published in 2020, to which comments could be forwarded to the GSSB. Following a due process, the revised universal standards were approved in July 2021. The standards are in effect as of January 1, 2023, but an earlier application is recommended. The GSSB renamed the revised universal standards. *GRI I*<sup>233</sup> highlights the purpose of sustainability reporting and the application of

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<sup>231</sup> For more information on the TCFD, see TCFD (2022a).

<sup>232</sup> CHAPTER 5.4.2.3.3 presents details of the CSRD.

<sup>233</sup> The title of this revised standard is *GRI I: Foundation 2021*.

the GRI Sustainability Reporting Standards. *GRI 2*<sup>234</sup> focuses on a company's sustainability impact, which shall be revealed through disclosures. *GRI 3*<sup>235</sup> describes topics that are material to apply the sector and topic standards (GSSB, 2021, pp. 4–6).

The sector standards aid the companies in determining a sector's material impact and the essential topics related to the sector (GSSB, 2021, pp. 4–6). *GRI 11: Oil and Gas Sector*, *GRI 12: Coal Sector*, and *GRI 13: Agriculture, Aquaculture, and Fishing Sectors* are newly introduced in 2021 and 2022. So far, they are the only sector standards that the GSSB has already released. The *GRI Sector Program* considers a set of 40 sectors for which standards shall be developed in the future. However, the program assigns different priority grades for the development of standards to the various sectors (GSSB, 2019a; GSSB, 2020). The sector standards illustrate the sustainability topics that may be material for organizations within specific sectors. Therefore, the topic standards indicate which information organizations must report on (GSSB, 2021, pp. 4–6). Topic standards are distinguished based on the three ESG pillars, on which the companies must disclose information and its impact on the corresponding ESG pillar. The topics are determined to impact the economy, environment, or society substantially. Thus, topic standards starting with *GRI 201* and the following represent economic topics, whereas *GRI 301* and onward represent environmental topics, and *GRI 401* and the following represent social topics (GSSB, 2021, pp. 6–8).<sup>236</sup>

Although the EU introduces sustainability reporting requirements, the GRI sustainability reporting standards remain relevant. On the one hand, the GRI offers reporting standards that are globally applied (GRI, 2022), while only the EU is introducing mandatory sustainability reporting. On the other hand, the GRI collaborates with the EU, i.e., the EFRAG (EFRAG, 2021, p. 18), and the IFRS Foundation, which is currently working on a sustainability equivalent to the IFRS (IFRS Foundation, 2022e).

#### 5.4.2.2.4 International Integrated Reporting Framework

In addition, the GRI and Accounting for Sustainability (A4S) founded the International Integrated Reporting Council (IIRC) in 2010. The goal was to set up a global framework for

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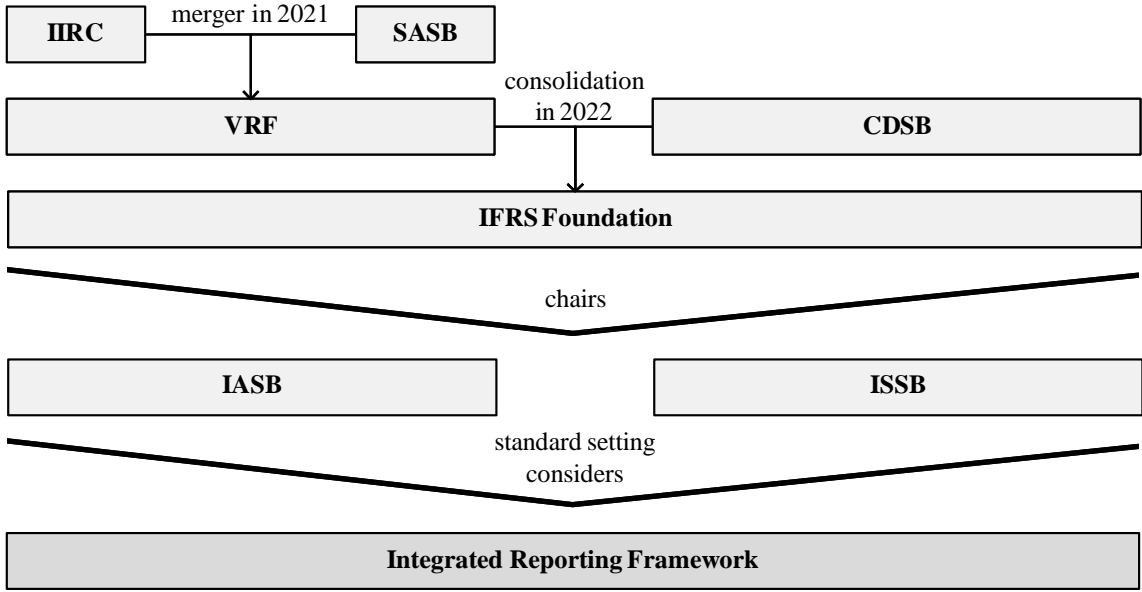
<sup>234</sup> The new title of this standard is *GRI 2: General Disclosures 2021*.

<sup>235</sup> *GRI 3: Material Topics 2021* is the new title for the third universal standard.

<sup>236</sup> In 2022, the complete set of GRI standards consists of three universal GRI standards, *GRI 1* to *GRI 3*, three sector standards, *GRI 11* to *GRI 13*, and 32 topic standards. Seven topic standards address the economy, and eight environmental and 17 social standards exist.

sustainability accounting, including financial and ESG information (IFAC, 2010). The IIRC comprised a set of various institutions, such as businesses, the accounting profession, the investment community, standard setters, politicians and regulators, and academia. They published an International Integrated Reporting (IR) Framework in 2013, which was replaced in 2021 and applies to fiscal years starting in January 2022 (IIRC, 2021, p. 1). The IIRC developed additional Integrated Thinking Principles as they strive for a world of business practices coined by integrated thinking and simplified through the guidance of the IR framework (IIRC, 2021, p. 2).<sup>237</sup> Following this approach, companies share information on value creation based on corporate strategies, performance, or governance (IIRC, 2021, p. 10).

**FIGURE 8:**  
*Development and Assignment of the IR Framework*



**Notes:** The figure presents the development of the IIRC and the IR Framework. Different organizations have been involved in recent years, which is why the organizations are displayed in a lighter coloring than the IR Framework.

The purpose of integrated reporting is to assure financial stability and sustainable development. IR aims for a more efficient allocation of capital, disclosures that highlight impacting factors

<sup>237</sup> For an overview of the development of the IR framework and the IIRC, see Rowbottom and Locke (2016).

on corporate value creation, and support decision-making procedures. The framework strives to combine separate parts of corporate reporting, such as financial statements, with sustainability disclosures (IIRC, 2021, p. 2).

In 2021, the Value Reporting Foundation (VRF) was established through a merger of the IIRC and the Sustainability Accounting Standards Board (SASB). After that, the VRF was responsible for the IR Framework, the Integrated Thinking Principles, and the SASB Standards. As presented in *FIGURE 8*, a year later, in August 2022, the IFRS Foundation consolidated the VRF and is now responsible for the IR Framework (VRF, 2022, pp. 2–3).

#### 5.4.2.2.5 Climate Disclosure Standards Board Framework

The CDP, formerly the Carbon Disclosure Project (CDP)<sup>238</sup>, established and introduced the Climate Disclosure Standards Board (CDSB) in 2007. The CDSB provides guidance on communicating climate disclosures and environmental and social information in corporate reporting that is understandable, comparable, and supportive for decision-making. In 2010, the CDSB published the first framework, the Climate Change Reporting Framework. This version accentuated the impact of climate change on undertakings and their risks and opportunities. Another framework, the CDSB Framework for Reporting Environmental and Climate Change Information, was published in 2015 and revised and amended in 2018 and 2019. In 2022, the last framework, the CDSB Framework for Reporting Environmental and Social Information, was released (CDSB, 2022a, pp. 6–7).

When the implementation of the ISSB was announced in 2021, the integration of the CDSB into the ISSB was initiated and communicated concurrently. Thereupon, it took place in January 2022. Following the consolidation, the CDSB stopped producing and publishing additional content and guidance. However, the existing CDSB work will remain accessible on the CDSB website until the ISSB adopts IFRS Sustainability Disclosure Standards (CDSB, 2022b).<sup>239</sup>

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<sup>238</sup> The CDP is a global non-profit organization launched in 2000 with the aim to build a sustainable economy striving for change through disclosure. Investors, companies, or cities are addressed by the CDP and motivated to take action based on their environmental impact. CDP measures institutions' impacts and provides organizational information on its CDP platform that may be used by capital market participants (CDP, 2021).

<sup>239</sup> For an overview of the development of the CDSB, see *FIGURE 8*.

#### 5.4.2.2.6 Sustainability Accounting Standards Board Standards

In 2011, the SASB was established as a US-American non-profit organization. It is a standard setter for industry-specific sustainability standards. The foundation rested on the idea of aiding companies and investors to report and understand the financial impacts of sustainable matters. SASB Standards were launched to provide decision-useful information for investors, in that sense, sustainability information that impacts companies' financial performance (SASB, 2022a). As a result, different SASB standards exist for varying industries because material topics may differ among sectors and industries. SASB provides 77 sets of sustainability accounting standards for 77 different industries that can be subordinated to 11 sectors. The SASB uses its classification system, the *Sustainable Industry Classification System (SICS)*, to assign companies to different industries based on their sustainability impact, resource dependency, business model, and sustainable innovation potential (SASB, 2022b).

Until 2017, the SASB was responsible for setting the standards. Thereupon, the SASB divided the governance structure into two pillars. The SASB Standards Board was responsible for standard setting, whereas the SASB Foundation Board oversaw the standards board. In 2021, the SASB and the IIRC merger into the VRF took place. In 2022, the SASB became part of the IFRS Foundation by consolidating the VRF into the ISSB.<sup>240</sup> The SASB Standards are now considered for developing the ISSB sustainability reporting standards. The SASB standards shall be only applicable until the ISSB issues the sustainability reporting standards (SASB, 2022a).

#### 5.4.2.2.7 IFRS Sustainability Disclosure Standards

As previously pointed out, various voluntary sustainability reporting initiatives exist. To develop globally accepted sustainability reporting standards, the IFRS Foundation strives to combine the existing expertise. On November 3<sup>rd</sup>, 2021, the IFRS Foundation announced the formation of the ISSB at COP26 in Glasgow (IFRS Foundation, 2021c).<sup>241</sup> Generally, the IFRS Foundation aims at developing global standards through the two standard-setting boards, the ISSB and the IASB. Whereas the IASB is in charge of developing *IFRS Accounting Standards*, the newly introduced ISSB is responsible for *IFRS Sustainability Disclosure Standards* (IFRS

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<sup>240</sup> For an overview of the development of the SASB, see *FIGURE 8*.

<sup>241</sup> This resulted from the formerly published consultation paper on sustainability reporting and the exposure draft to amend the constitution to implement the ISSB and IFRS sustainability standards (IFRS Foundation, 2020; IFRS Foundation, 2021a, p. 5; IFRS Foundation, 2021b).

Foundation, 2021a, p. 6). By August 2022, the IFRS Foundation had completed the consolidation of the VRF, being in charge of the SASB Standards as well as the IR Framework (IFRS Foundation, 2021c; IFRS Foundation, 2022f), and earlier, in January 2022, the CDSB from CDP into the IFRS Foundation (IFRS Foundation, 2022d).<sup>242</sup> Thus, the development of sustainability disclosure standards is based on the experience of the Technical Readiness Working Group (TRWG), consisting of the CDSB, the VRF, the IASB, the TCFD, and the World Economic Forum (WEF) (IFRS Foundation, 2021c).

In March 2022, the IFRS Foundation published exposure drafts of two proposed standards considering general sustainability-related disclosures, IFRS S1,<sup>243</sup> and climate-related disclosures, IFRS S2,<sup>244</sup> and received more than 1,300 comment letters by August 2022. Similar to the Conceptual Framework and IAS 1 of the IFRS, these two standards address the general requirements, such as the objective, the scope, materiality, and other topics. According to the IFRS Foundation, the primary users of sustainability reporting information are the same for financial reporting information, i.e., investors, creditors, and lenders (IFRS Foundation, 2022b, p. 40). This contrasts primary user groups according to the CSRD, as pointed out in *CHAPTER 5.4.1.4*. The disclosures of sustainability-related risks and opportunities and financial information expose the importance of the financial implications of sustainability information (IFRS Foundation, 2022b, p. 22).

#### 5.4.2.2.8 German Sustainability Code

In contrast to the other international guidelines, frameworks, or standards, the German Sustainability Code, *Deutscher Nachhaltigkeitskodex*, mainly guides German companies but allows a global application. Users of the Sustainability Code fulfill the requirements of non-financial statements according to German Commercial Law<sup>245</sup> and comply with the Taxonomy Regulation.<sup>246</sup> Thus, reporting on sustainability matters with the help of the framework's recommendations satisfies the (present) regulatory requirements in Germany. However, the code also

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<sup>242</sup> For an overview of the composition of the ISSB, see *FIGURE 8*.

<sup>243</sup> See Exposure Draft IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information (IFRS Foundation, 2022b).

<sup>244</sup> See Exposure Draft IFRS S2 Climate-related Disclosures (IFRS Foundation, 2022c).

<sup>245</sup> The requirements to prepare a non-financial statement according to the German Commercial Law originate from the Non-Financial Reporting Directive (NFRD) and the CSR-RUG.

<sup>246</sup> See *CHAPTER 5.4.2.3* for a detailed explanation of the regulatory requirements for sustainability reporting.



addresses users who do not have to prepare non-financial statements or do not yet report any sustainability information voluntarily (RNE, 2020, p. 4).

The German Council for Sustainable Development, *Rat für Nachhaltige Entwicklung* (RNE), an independent organization advising the Federal Government in sustainability matters, initiated the framework. It was founded in 2001, and the Federal Government appoints 15 members to the council every three years. In 2010, the RNE developed the first draft of the German Sustainability Code, which aids companies to start reporting on sustainability matters (RNE, 2022a; RNE, 2022b). The German Sustainability Code consists of 20 criteria. They are subject to the “*comply-or-explain approach*”. Users either report on a particular criterion and explain how the entity complies with it or why they cannot report on a particular topic. The 20 criteria cover four topics. Thereby, corporate strategy and process management refer to sustainability concepts, whereas the environment and society cover sustainability matters (RNE, 2020, p. 7).

Additionally, users must report on performance indicators. They choose between performance indicators according to GRI or the European Federation of Financial Analysts Societies (EFFAS). The performance indicators as per EFFAS amount to 16; the set of GRI performance indicators consists of 29 (RNE, 2020, p. 7).

To sum up, various – national and international – frameworks, standards, and guidance for sustainability reporting exist. Irrespective of the differences, the various efforts indicate the growing importance of sustainability to the business environment. The merging of different institutions appears reasonable due to the overlapping goals and approaches. Furthermore, standardization or regulation may positively impact uniform terminology and consistent reporting practices.

#### 5.4.2.3 German and European Regulatory Landscape<sup>247</sup>

##### 5.4.2.3.1 NFRD and its German Implementation Act

Besides different standards and frameworks<sup>248</sup> companies can voluntarily apply for their sustainability reporting practices, a regulatory landscape for mandatory reporting on sustainability

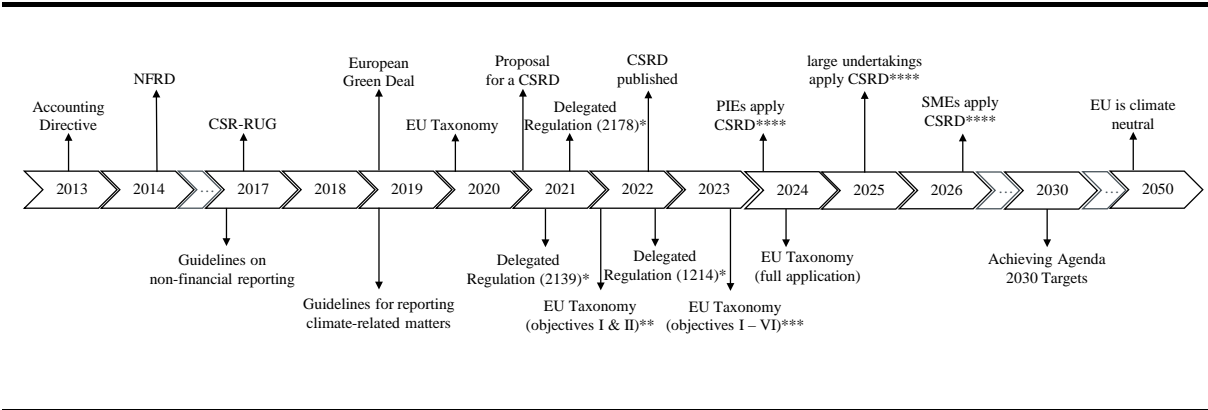
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<sup>247</sup> This chapter includes events and publications that occurred until December 2022. As this is a dynamic topic that is still evolving, the newest occurrences that may have happened in 2023 are not addressed in this dissertation.

<sup>248</sup> See the European Commission’s guidelines on non-financial information (2017/C 215/01) for an extensive list of international and European frameworks and standards to aid in sustainability reporting.

matters has evolved in Europe, particularly Germany. *FIGURE 9* illustrates the regulatory development of sustainability reporting in Europe and, specifically, in Germany.

**FIGURE 9:**  
*German Regulatory Landscape for Sustainability Reporting*



**Notes:** The timeline depicts the development of sustainability reporting requirements with essential regulatory changes at the European and German level. The position of the arrows only refers to the year; during the year, they are not assigned to scale. The positioning of the events, whether above or below the timeline, is arbitrary.

- \* Delegated Acts based on the EU Taxonomy
- \*\* with additional simplifications as of January 1<sup>st</sup>
- \*\*\* with additional simplifications for financial undertakings as of January 1<sup>st</sup>
- \*\*\*\* as of January 1<sup>st</sup>

The European Directive 2014/95/EU, the so-called Non-Financial Reporting Directive (NFRD)<sup>249</sup>, entered into force on November 15<sup>th</sup>, 2014. It has been the first directive addressing social and environmental information and its disclosure, and amended the Accounting Directive. The NFRD addresses the EU member states, and Article 4, para. 1, s. 1 NFRD obliged them to transpose the directive’s content into national law by December 6<sup>th</sup>, 2016. According to Article 4, para. 1, s. 2 NFRD, the fiscal year beginning on January 1<sup>st</sup>, 2017, was the first year for which the requirements of the NFRD had to be applied. In Germany, the national implementation act of the NFRD, known as the *CSR-Richtlinien-Umsetzungsgesetz* (CSR-RUG), entered into force with delay on April 19<sup>th</sup>, 2017. Still, Article 11, para. 5 states that the new regulations had to be applied for fiscal years starting after December 31<sup>st</sup>, 2016.

Article 2 NFRD states that the Commission provides supplemental guidance for reporting non-financial information. Therefore, two non-binding guidelines were developed to aid companies in reporting on sustainability matters. The European Commission published the so-called

<sup>249</sup> In the following, the Directive 2014/95/EU is referred to as NFRD.

*guidelines on non-financial reporting* (2017/C 215/01) in 2017. They directly refer to various international and European frameworks and their organizations, as the guidelines are based on their knowledge. The guidelines provide fundamental principles explaining which ESG information companies should disclose.

Moreover, exemplary key performance indicators (KPIs) are pointed out, such as greenhouse gas emissions, the consumption of non-renewable energy, recycling rates, gender diversity, gender rates of parental leave, employee turnover, the number of events having an impact on human rights, the number of trainings for employees on anti-corruption, and others.<sup>250</sup> In 2019, the European Commission disclosed an additional guideline (2019/C 209/01) for reporting climate-related matters, which refers to the NFRD, particularly to the national legislation that transposed the NFRD. The supplement is an answer to the long-term strategic vision of the EU (“*A Clean Planet for all*”) to achieve climate neutrality by 2050 (COM (2018) 773 final). It emphasizes the recommendations of the TCFD to report on climate-related issues.

#### 5.4.2.3.2 Non-Financial Statements under German Commercial Law

The NFRD and the German Commercial Code, based on the amendments due to the German implementation act of the NFRD, demand the disclosure of non-financial statements. As these regulations address the term *non-financial* information, it is used in the following. The subsequent explanations present the requirements for sustainability reporting based on German Commercial Law.<sup>251</sup> So far, these are the only binding regulations on non-financial reporting that companies can be obliged to disclose in Germany.

Non-financial statements must complement management reports per § 289b (1) HGB if the disclosing company fulfills the criteria of a large corporation under § 267 (3) 1 HGB<sup>252</sup> in two consecutive fiscal years<sup>253</sup>, if it is a capital-market oriented corporation according to § 264d HGB, and if the corporation engages more than 500 employees on an annual average in

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<sup>250</sup> See the European Commission’s guidelines on non-financial information (2017/C 215/01) for further examples of KPIs.

<sup>251</sup> The legislation for non-financial statements is based on the NFRD, but its requirements are not particularly addressed, as the requirements of the German Commercial Law are presented.

<sup>252</sup> A corporation is considered large per § 267 (3) HGB if it is either capital-market oriented under § 264d HGB or if it exceeds two of the three criteria of § 267 (2) HGB: a balance sheet total of 20,000,000 euros, sales of the reporting period amounting to 40,000,000 euros, and 250 employees on an annual average. As § 289b (1) HGB asks for the fulfillment of the criteria; it is irrelevant that capital-market oriented corporations are understood as large corporations under § 267 (3) HGB.

<sup>253</sup> § 289b (1) 2 HGB asks to apply § 267 (4) HGB, which emphasizes that the exceedance of the criteria has to occur in two consecutive years.

two consecutive fiscal years.<sup>254</sup> Similarly, group management reports have to be complemented by group non-financial statements per § 315b (1) HGB. The corporation, being a parent company under § 290 HGB, has to be capital-market oriented according to § 264d HGB and the consolidated companies do not fulfill the criteria for size-based exemptions per § 293 (1) 1 no. 1 HGB or § 293 (1) 1 no. 2 HGB (§ 315b (1) no. 2 lit. a HGB) and jointly employ on an annual average more than 500 employees (§ 315b (1) no. 2 lit. b HGB).

A corporation can be exempted from the obligation to prepare a non-financial statement. According to § 289b (2) 1 no. 1–2 HGB, an exemption applies to corporations integrated into the parent company's group management report and if the group management report includes a non-financial statement per the Accounting Directive. Exemptions apply to corporations disclosing a separate non-financial report under § 289 (3) HGB.

Therefore, different disclosure options for non-financial information exist following German Commercial Law. Generally, the non-financial statement is part of the management report according to § 289b (1) 1 HGB. If non-financial information is disclosed beyond the section of the non-financial statement, § 289b (1) 3 HGB allows corporations to refer to the other disclosures within the management report. § 289b (3) HGB allows corporations to prepare and disclose a non-financial report instead of a statement. However, the non-financial report is not part of the management report but similarly has to fulfill the content-related requirements of § 289c HGB. The report has to be disclosed per § 289b (3) no. 2 lit. a HGB together with the management report following § 325 HGB or per § 289b (3) no. 2 lit. b HGB on the corporation's website.<sup>255</sup>

§ 289c HGB specifies the content of the non-financial statement. A business model description is requested (§ 289c (1) HGB). Furthermore, environmental, employee, and social matters, as well as respect for human rights and combating corruption and bribery, represent the minimum requirements that must be addressed under § 289c (2) HGB. Nonetheless, disclosures shall be made on matters that are material to understand the business model, its financial performance and position, and the impact of the corporations' activities on the non-financial matters as stated before according to § 289c (3) HGB. Corporations need to disclose concepts

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<sup>254</sup> See *FOOTNOTE 253* and, in addition, § 289b (1) 2 HGB in conjunction with § 267 (5) HGB determines how to calculate an annual average of employees. Accordingly, the average number of employees as of March 31, June 30, September 30, and December 31 has to be calculated (including the employees working abroad).

<sup>255</sup> Suppose the corporation discloses the non-financial report on its website. In that case, it must be disclosed within four months after the reporting date, accessible for at least ten years, and the management report has to refer to the disclosure on the company's website.

and their results (§ 289c (3) no. 1–2 HGB), material risks related to the business activities (§ 289c (3) no. 3 HGB), and business relations (§ 289c (3) no. 4 HGB). Moreover, § 289c (3) no. 4 HGB demands the disclosure of material non-financial performance indicators.<sup>256</sup>

To prepare non-financial statements, companies can use national, European, or international frameworks or standards, but they must disclose which framework they use or explain why they did not use a framework (§ 289d HGB).<sup>257</sup> If necessary, a corporation can refer to the annual report's numbers to facilitate the understanding of its explanations (§ 289c (3) no. 6 HGB). Suppose a corporation cannot disclose information on any of these topics because it is not pursuing a particular concept. In that case, it must present the reasons instead of the disclosures, which describes the “*comply-or-explain approach*” per § 289c (4) HGB. Additionally, § 289e HGB allows corporations to omit certain disclosures on the required matters if the disclosure substantially disadvantages the corporation or if the non-disclosure leads to the same understanding of the business position, performance, and the impact of companies' activities.

The audit of the management report only has to assure the disclosure of the (group) non-financial statement or report according to § 317 (2) 4 HGB; its content does not have to be verified by the auditor. Instead, per § 171 (1) 1 AktG, the supervisory board is obliged to verify the management report, including the non-financial statement pursuant to § 289b (1) 1 HGB. If a company prepares a non-financial report under § 289b (3) HGB, the supervisory board must verify the report per § 171 (1) 4 AktG.<sup>258</sup> However, the supervisory board can commission an external content-related audit of the (group) non-financial statement or report per § 111 (2) 4 AktG. If this voluntary audit is commissioned, § 289b 4 HGB requires the audit result to be disclosed in the same manner as the statement or the report has been published.

#### 5.4.2.3.3 Corporate Sustainability Reporting Directive (CSRD)

In 2019, the European Commission published the European Green Deal (COM(2019) 640 final). In the communication, the commission announced to review the NFRD. Accordingly, in April 2021, the commission disclosed a communication (COM(2021) 189 final), referred to as the proposal for a CSRD. In the Explanatory Memorandum, the commission stated the necessity

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<sup>256</sup> Exemplary KPIs for non-financial information are listed in *CHAPTER 5.4.2.3.1*.

<sup>257</sup> For a list of frameworks, see *FOOTNOTE 248*.

<sup>258</sup> The same applies to group non-financial statements and reports per § 171 (1) 1 AktG and § 171 (1) 4 AktG.

to reform sustainability reporting because current sustainability reporting information disclosed by companies does not meet primary users' information needs. The issues arise from missing reliability and comparability and non-disclosure of relevant information or disclosure of irrelevant information (COM(2021) 189 final, pp. 2–3). In addition, various voluntary frameworks or standards exist and do not ensure comparability. This leads to additional costs that arise due to information requests by stakeholders (COM(2021) 189 final, recital 32, p. 3). The commission stated that investors' demand for sustainability information has increased, particularly due to the financial implications of risks resulting from sustainability matters. Thus, users of such information allocate financial implications to sustainability information, which is why the European Commission, among other institutions, recommends using the term *sustainability* instead of *non-financial* information (COM(2021) 189 final, recitals 7–9).

Moreover, the commission identified two primary groups of users of sustainability reporting information. On the one hand, sustainability's impact on a company's risks and opportunities stresses investors' interests. On the other hand, various organizations, such as NGOs, are interested in corporate impacts on the environment and society (COM(2021) 189 final, recital 8).

The proposal for a CSRD aimed to amend the Transparency Directive<sup>259</sup>, the Audit Directive<sup>260</sup>, the Audit Regulation<sup>261</sup>, and the Accounting Directive, which has been modified with the NFRD (COM(2021) 189 final, p. 4). The commission strived for essential changes. First, sustainability information and its reporting practices should be specified through mandatory European sustainability reporting standards. Second, the scope of the companies having to report on sustainability matters should be expanded. Third, companies should include such information in their management reports and in a machine-readable format. Fourth, reported sustainability information should be verified by an external instance, such as an auditor (COM(2021) 189 final, p. 5).

On December 16<sup>th</sup>, 2022, the final act, the Directive (EU) 2022/2464, commonly referred to as the CSRD, has ultimately been published in the Official Journal of the European Union.

The new directive expands the scope of the Accounting Directive. It stipulates that all public interest entities (PIEs)<sup>262</sup>, hence, all companies listed on a regulated market, except for

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<sup>259</sup> *Transparency Directive* is the name of the Directive 2013/50/EU.

<sup>260</sup> The Directive 2006/43/EC is named *Audit Directive*.

<sup>261</sup> The Regulation (EU) No. 537/2014 is called *Audit Regulation*.

<sup>262</sup> Article 2, point (1)(a) Accounting Directive defines public interest entities. Besides, particular definitions apply to insurance companies and credit institutions.

micro-undertakings, must report on sustainability information within the management report. As a result, the CSRD's Article 1, point (3) replaces the former requirement for large undertakings having more than 500 employees to prepare non-financial statements.<sup>263</sup>

FIGURE 9 shows the order of the CSRD's application for different undertakings. According to the CSRD, large PIEs with a greater average number of employees than 500, that were already obliged to report in accordance with the NFRD, have to report on sustainability matters as of January 1<sup>st</sup>, 2024 (Article 5, para. 2, point (a)(i) CSRD). Large undertakings<sup>264</sup>, which are not affected in 2024, have to report on sustainability matters as of January 1<sup>st</sup>, 2025 (Article 1, point (3) and Article 5, para. 2, point (b) CSRD). Small and medium-sized enterprises (SMEs) that are PIEs according to Article 2, point (1)(a) Accounting Directive have to disclose sustainability information for fiscal years starting on January 1<sup>st</sup>, 2026 (Article 1, point (3) and Article 5, para. 2, point (c) CSRD). However, SMEs additionally obtain the opportunity not to report on sustainability matters for the first two fiscal years until the fiscal year 2028 (starting January 1<sup>st</sup>) begins. This is known as "*opt-out*". In such a case, the undertaking has to shortly justify why it is not reporting on these matters (amended Article 19a, point (7) Accounting Directive).

Parent companies of large groups<sup>265</sup> have to report and disclose sustainability information in group management reports following the CSRD (Article 1, point (7) CSRD). Subsidiary undertakings are exempted from disclosing the information if the subsidiaries are included in the group management report per the CSRD's amendment of Article 19a, para. 9 Accounting Directive.

Whereas the non-financial requirements of the NFRD are subject to approximately 11,600 large companies in the EU, the proposal's requirements for a CSRD would affect around 49,000 entities (COM(2021) 189 final, p. 10). In Germany, around 500 companies have to report non-

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<sup>263</sup> See Article 1, point (1) NFRD.

<sup>264</sup> According to Article 3, para. 4 Accounting Directive large undertakings are companies exceeding at least two of the following three criteria: balance sheet total of 20,000,000 euros, net turnover of 40,000,000 euros, and an average annual employees number of 250.

<sup>265</sup> According to Article 3, para. 7 Accounting Directive large groups exceed at least two of the three criteria: a balance sheet total of 20,000,000 euros, a net turnover of 40,000,000 euros, and an average annual employee number of 250. Moreover, the group consists of parent and subsidiary undertakings that are part of a consolidation.

financial statements. In contrast, considering the CSRD, around 15,000 German companies will have to apply the new requirements for sustainable reporting (DRSC, 2021, p. 2).<sup>266</sup>

Following the CSRD, undertakings have to report on sustainability matters that impact the corporate's performance, position, and development (Article 1, point (4) CSRD). The proposal referred to the "*outside-in perspective*" (COM(2021) 189 final, p. 1). Additionally, companies must report on the corporate's impact on sustainability matters, such as the environment and society initiated through its activities (Article 1, point (4) CSRD), referred to as the "*inside-out perspective*" (COM(2021) 189 final, p. 1). These two perspectives are considered "*double materiality*".

According to the CSRD's recital 33 and the amendment of Article 29b, para. 3 Accounting Directive, sustainability disclosures are expected to be quantitative as well as qualitative in nature. Furthermore, companies are asked to report in a forward-looking and retrospective manner. In addition, companies must report sustainability information on their operating activities and consider their supply chain (recital 33 CSRD). The amendment to Article 19a, para. 2 Accounting Directive emphasizes the sustainability contents that the undertakings have to include in the management reports and substantiate with suitable key figures. The business model, strategy, risks, and opportunities related to sustainability matters shall be displayed. Moreover, companies are asked to explain how their strategies correspond with the Paris Agreement to limit global warming to 1.5 °C and how the entities consider the stakeholders' interests and the business impact on sustainability. Likewise, companies must disclose the goals and achievements related to ESG matters and explain the role of the management and supervisory board as well as the business policies regarding sustainability. The amendment to Article 19a, para. 3 Accounting Directive stresses the opportunity of member states to introduce the "*comply-or-explain approach*" allowing corporates not to disclose certain information if the disclosure puts the economic situation of a company at risk. However, the non-disclosure may not obfuscate the true and fair view of the company's performance, position, and influence of its action.

The amendment to Article 19a, para. 4 Accounting Directive, in conjunction with its amended Article 29b, asks for sustainability reporting standards to specify the former mentioned sustainability-related reporting matters. The amended Article 29b, para. 1 requires the commission to adopt delegated acts following Article 49 Accounting Directive. As of June 30<sup>th</sup>,

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<sup>266</sup> Since the companies suggested by the proposal do not deviate from the companies affected by the final act of the CSRD, the undertakings impacted by the increasing disclosure requirements correspond with the proposal. Only the application dates differ compared to proposal, the users are the same.



2023, the reporting requirements must be specified, and supplemental information requests shall be specified as of June 30<sup>th</sup>, 2024. The amended Article 29b, para. 2 Accounting Directive addresses the topics that the sustainability reporting standards have to specify. Environmental, social, and governmental aspects are pointed out as these matters demand clarification. The implementation of sustainability reporting standards strives for comparability, representativeness, clarity, assurability, and a faithful presentation of material reporting information.

Article 1, point (13) of the CSRD addresses the amendment of Article 34 Accounting Directive and thereby the compliance with sustainability reporting standards and the assurance of sustainability reporting information, in general. The amended Article 19a Accounting Directive does not address the audit of sustainability reporting requirements, but its amended Article 34 introduces a limited assurance of such information. The opinion shall include compliance with the Accounting Directive's requirements and the process to report such information, also considering the compliance with sustainability standards per the amended Accounting Directive's Article 29b or Article 29c. Moreover, compliance with the requirements of the amended Article 29d and Article 8 Regulation (EU) 2020/852, the so-called EU Taxonomy, is expected to be considered within the opinion on a limited assurance. Following the amended Article 34, para. 3 Accounting Directive, member states obtain the right to allow audit firms or statutory auditors, other than the auditor of the current financial statements, to prepare such an assurance opinion of sustainability reporting.

The amended Article 49, point (b) Accounting Directive points out that for the adoption of the delegated acts, advice of the EFRAG shall be taken into account. Further, appropriate due processes and oversight ought to be ensured. On that account, the Commission asked the EFRAG to introduce a second sustainability reporting pillar, besides the financial, and to consider a broader range of stakeholders for developing sustainability reporting standards than for financial reporting standards (COM(2021) 189 final, p. 9).

Meanwhile, different institutions shape the future of sustainability reporting. Following the disclosure of the proposal for a CSRD, the European Commission addressed a letter to the EFRAG in specific. Concerning the proposed timeline, the European Commission asked the EFRAG to prepare the first set of *European Sustainability Reporting Standards* (ESRS) by June 15<sup>th</sup>, 2022. Additionally, the EFRAG was asked to make necessary changes to its governance to develop sustainability reporting standards (European Commission, 2021). In November 2021, the *Project Task Force on European Sustainability Reporting Standards* (PTF-ESRS) issued a status report. The report underlined the current status of technical work on various

clusters aiming for the submission of the first set of ESRS to the European Commission by mid-2022 and, among other topics, the cooperation between the EFRAG and the GRI striving for international convergence (EFRAG, 2021, pp. 18–19).

In 2022, the PTF-ESRS published the ESRS Exposure Drafts and received comments that resulted in amended ESRS. In November 2022, the EFRAG forwarded the first set of ESRS to the European Commission. These drafted ESRS consist of 12 standards. One distinguishes between cross-cutting and topical standards (EFRAG, 2022b).

**FIGURE 10:**  
*First Set of Draft ESRS Submitted to European Commission*

Drafted ESRS Set 1			
Cross-cutting Standards	Topical Standards		
	Environment	Social	Governance
Draft ESRS 1 General Requirements	Draft ESRS E1 Climate Change	Draft ESRS S1 Own Workforce	Draft ESRS G1 Business Conduct
Draft ESRS 2 General Disclosures	Draft ESRS E2 Pollution	Draft ESRS S2 Workers in the Value Chain	
	Draft ESRS E3 Water and Marine Resources	Draft ESRS S3 Affected Communities	
	Draft ESRS E4 Biodiversity and Ecosystems	Draft ESRS S4 Customers and End-Users	
	Draft ESRS E5 Resources and Circular Economy		

**Notes:** The first drafted set consists of 12 individual standards that can be subsumed under different categories. One distinguishes between cross-cutting and topical standards. The latter can be differentiated between environment, social, and governance standards.

ESRS 1 emphasizes the general provisions. General principles to apply ESRS and the concepts of the CSRD, to prepare and present sustainable information, to establish links to other corporate reporting information, and general disclosure requirements are pointed out by ESRS 1 (EFRAG, 2022a). Another cross-cutting standard is ESRS 2, which defines general disclosures. The other drafts relate to certain ESG matters, which is why they represent topical standards. See *FIGURE 10*, combining all standards of the first set. Among others, drafted standards on

pollution (ESRS E2), water and marine resources (ESRS E3), own workforce (ESRS S1), workers in the value chain (ESRS S2), and business conduct (ESRS G1) are forwarded to the European Commission (EFRAG, 2022b).

Before the European Parliament adopts the first set of drafted standards and before they will be published in the Official Journal of the EU as delegated acts, the European Commission forwards the drafted standards of the first set to member states and EU bodies. The second set of drafted ESRS is announced for 2023 and includes ESRS for SMEs (EFRAG, 2022b).

#### 5.4.2.3.4 EU Taxonomy

Besides the amendment of the Accounting Directive through the NFRD and the CSRD, the European Commission announced a communication containing an action plan for financing sustainable growth in March 2018. The communication depicts the EU strategy for sustainable finance and an agenda for a more sustainable economy. A reorientation of capital shall ensure sustainable economic growth, financial risks resulting from ESG matters are expected to be managed, and transparency and long-term orientation of economic activities shall be encouraged (COM(2018) 97 final). The action plan asks, among other actions, for a taxonomy enabling a classification of sustainable activities. It introduces the implementation of a technical expert group (TEG) on sustainable finance that is supposed to assist.<sup>267</sup> Moreover, the action plan strives for better sustainability disclosures and addresses the EFRAG to develop best practices of corporate reporting, in particular, environmental accounting encouraged (COM(2018) 97 final).

In July 2018, the European Commission set up the TEG on sustainable finance to provide recommendations for the EU Taxonomy. The TEG published the final report in March 2020, including recommendations for the taxonomy design and technical screening criteria (Technical Expert Group on Sustainable Finance, 2020). After that, Regulation (EU) 2020/852, the so-called Taxonomy Regulation, entered into force on July 12<sup>th</sup>, 2020.<sup>268</sup> The regulation includes a classification system to define environmentally sustainable economic activities, considered the EU Taxonomy.

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<sup>267</sup> For further details on the proposed actions of the communication, such as the role of the European Corporate Reporting Lab or the European Securities Markets Authority (ESMA), the creation of green bond standards, the amendment of Markets in Financial Instruments Directive (MiFID) II, and others, see COM(2018) 97 final.

<sup>268</sup> In the following, Regulation (EU) 2020/852 is referred to as Taxonomy Regulation.

The Regulation provides criteria for the companies to determine environmentally sustainable activities (Article 1, para. 1 Taxonomy Regulation). According to Article 3, four conditions must be met to consider an activity environmentally sustainable. First, the economic activity must significantly contribute<sup>269</sup> to at least one of the six environmental objectives, as pointed out in Article 9. Second, it does not significantly harm<sup>270</sup> any of the six objectives. Third, it must comply with minimum safeguards. Fourth, it must comply with the technical screening criteria.<sup>271</sup>

Companies that are obliged to prepare and disclose a (consolidated) non-financial statement<sup>272</sup> must apply the Taxonomy Regulation per Article 1, para. 2, point (c).<sup>273</sup> Those undertakings shall include information on the economic activities, particularly how and to which degree the activities are considered environmentally sustainable per Article 8, para. 1 in conjunction with Articles 3 and 9 Taxonomy Regulation. Besides, non-financial undertakings<sup>274</sup> must include in their non-financial statements the proportions of their turnovers, their capital expenditures (CapEx), and operating expenditures (OpEx) that qualify as environmentally sustainable according to the Taxonomy (Article 8, para. 2, points (a) and (b) Taxonomy Regulation).<sup>275</sup>

Article 9 delineates six environmental objectives. The first two objectives, climate change mitigation (1) and adaption (2), shall be applied as of January 1<sup>st</sup>, 2022. Whereas the other four objectives, sustainable use and protection of water and marine resources (3), transition to a circular economy (4), pollution prevention and control (5), and protection and restoration of biodiversity and ecosystems (6), must be applied a year later, as of January 1<sup>st</sup>, 2023.<sup>276</sup> Therefore, in 2022, undertakings have to publish information only on the first two objectives for the fiscal year 2021. In 2023, for the first time, companies have to disclose the information for all six objectives for the financial year 2022. Articles 10–16 Taxonomy Regulation specify the requirements for the six objectives.

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<sup>269</sup> Substantial contributions to the different objectives are specified in Articles 10–16 Taxonomy Regulation.

<sup>270</sup> Article 17 specifies activities that harm the various environmental objectives.

<sup>271</sup> The technical screening criteria are presented in Article 19.

<sup>272</sup> The undertakings must disclose a non-financial statement according to the national law, which is based on Article 19a or Article 29a of the amended Accounting Directive.

<sup>273</sup> Furthermore, financial market participants, the EU, and its member states must apply the Taxonomy Regulation under Article 1, para. 2, points (a) and (b).

<sup>274</sup> The supplemental Delegated Act addressing Article 8 Taxonomy Regulation also distinguishes between financial and non-financial companies (Article 1, points (8) and (9) Delegated Regulation (EU) 2021/2178).

<sup>275</sup> If a company discloses a separate report instead of a non-financial statement, the requested information shall be included in the report according to Article 8, para. 3 Taxonomy Regulation.

<sup>276</sup> See Article 27 of this Regulation for the effective dates.

In December 2021, the *Disclosures Delegated Act* was published in the Official Journal of the EU (Delegated Regulation (EU) 2021/2178). It specifies the disclosure requirements of the information requested by Article 8 Taxonomy Regulation. The Disclosures Delegated Act addresses the methodology, content, and presentation of information to be disclosed by financial and non-financial companies. Additionally, the Disclosures Delegated Act reveals some simplifications. In 2022, non-financial undertakings that apply the EU Taxonomy are subject to facilitations. They must only disclose the proportion of taxonomy-eligible and non-eligible economic activities<sup>277</sup> and qualitative information (Article 10, para. 1 Taxonomy Regulation). However, starting in January 2023, non-financial undertakings are obliged to comply with all reporting requirements. From then on, they must disclose KPIs (Article 10, para. 3 Taxonomy Regulation). In contrast, financial undertakings are subject to these obligations only after January 1<sup>st</sup>, 2024. They benefit from simplifications for the first two years of the Taxonomy's application; hence, until December 31<sup>st</sup>, 2023 (Article 10, para. 2 and 4 Taxonomy Regulation).

Moreover, the Commission published the *EU Taxonomy Climate Delegated Act* to specify the technical screening criteria for the first two objectives in December 2021 (Delegated Regulation (EU) 2021/2139). Even though Article 8, para. 4 Taxonomy Regulation requested the delegated act for the first two objectives to be adopted by December 31<sup>st</sup>, 2020. The aim was to enable the application of the delegated act by January 1<sup>st</sup>, 2022 (Article 10, para. 3 and Article 11, para. 3 Taxonomy Regulation), which Article 3 of the EU Taxonomy Climate Delegated Act likewise requests. The *Complementary Delegated Act*<sup>278</sup> addressing the other four objectives was supposed to be adopted by December 31<sup>st</sup>, 2021 (Article 12, para. 2; Article 13, para. 2; Article 14, para. 2; and Article 15, para. 2 Taxonomy Regulation). Again, with delay, it was published in July 2022 but still asks for its application starting in January 2023 (Article 3 Delegated Regulation (EU) 2022/1214).

The EU Taxonomy, which some companies already partially apply, as well as the changes in sustainability reporting that the CSRD elicits, accentuates the transition that is currently taking place in corporate reporting. Although companies have increasingly disclosed sustainability information in recent years, the years ahead will lead to a tremendous transition in reporting practices. The impact of the newly disclosed information will assumingly exceed the reporting

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<sup>277</sup> Taxonomy-eligible and taxonomy-non-eligible economic activities are defined in Article 1, points (5) and (6) *Disclosures Delegated Act*. Accordingly, economic activities for which a description is included in the delegated acts are considered taxonomy-eligible. In contrast, activities that are not described in the delegated acts are referred to as non-eligible.

<sup>278</sup> Sometimes it is referred to as the *Environmental Delegated Act*, see, e.g., C(2021) 4987 final.

practices to date and will influence many other fields besides the companies reporting on sustainability.

## 6 Prior Literature and Research Questions<sup>279</sup>

The previous explanations underline the theoretical implications of financial analysis to intermediate between capital borrowers and providers. Besides, the practice-oriented execution of financial analysis, including corporate reporting disclosures serving as an information source for financial analysts, is considered. However, financial analysts' actual usage of corporate reporting information is not presented. That is why this chapter expounds on research findings on the procedures of financial analysts, including the usage of corporate reporting information. Due to the increasing amount of ESG disclosures, the impact and processing of sustainability information in capital markets are likewise examined. Building upon the findings of prior literature, research questions are derived to shed light on the remaining research gaps in financial analysts' processing of corporate reporting information and the role of sustainability in financial analysis.

### 6.1 Research on Procedures in Financial Analysis

#### 6.1.1 Information Sources

In contrast to research on analyst forecasts providing large-scale evidence<sup>280</sup>, financial analysts' information processing and valuation methods are less frequently investigated (Arnold and Moizer, 1984, p. 196; Bradshaw, 2009, pp. 1076–1078). Although research on financial analysts has increased in recent decades, the research fields and related studies differ in scope and number (Bradshaw, 2011, pp. 2–4). Studies addressing the analysts' information sources, the organizational procedures, and the information processing, including the valuation methods, exist. However, some studies address investment professionals<sup>281</sup> and only partially contemplate financial analysts (e.g., Cascino *et al.*, 2021). Furthermore, research examining investors or financial analysts, in specific, and their acquisition or use of information is typically quantitative (e.g., Drake *et al.*, 2016; Han *et al.*, 2018; Lehmann, 2019; Gibbons *et al.*, 2021).

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<sup>279</sup> This literature review contains parts of the working paper “*Relevance and Use of Financial Accounting and Sustainability Information in Financial Analysis*”, presented at the EAA Conference 2022 in Bergen, Norway.

<sup>280</sup> Brown (1993) reviews earnings forecasting literature and highlights the diversity of forecasting research from the 1970s to the early 1990s. Based on his literature review, he points out future research areas. Besides, Ramnath *et al.* (2008) review the extensive research literature on financial analysts published after 1992 and categorize the different research areas to point out in which fields further research is desired. Earlier research by Givoly and Lakonishok (1984) addresses analysts' earnings forecasts.

<sup>281</sup> Studies focusing on investors, and not financial analysts in particular, also investigate the use of financial reporting disclosures. See, for instance, Lawrence (2013).

Fewer studies examine financial analysts field-based. Consequently, the qualitative research strand investigating financial analysts' activities and the reasons for their actions is more scarce. Bradshaw (2009, p. 1076) defines two distinct "*black boxes*" that could benefit from further research: first, the information processing of financial analysts resulting in forecasts; second, the valuation of financial analysts resulting in stock recommendations.<sup>282</sup>

Schipper (1991, pp. 105–106) and Brown (1993, pp. 313–315) already underlined in the early 1990s the need to understand how financial analysts process financial accounting information to better prepare financial statements. Furthermore, studying financial analysts' activities interests practitioners and academics (Bradshaw, 2011, p. 2). Ramnath *et al.* (2008) and Cascino *et al.* (2014) partially review the subsequent research studies addressing the formerly mentioned research gaps. Nonetheless, to reveal and understand the still existing "*black boxes*" of analysts' proceedings, the research literature on financial analysts' information sources, information processing, and valuation methods needs to be considered before remaining research gaps can be identified.<sup>283</sup> Financial analysts have access to a vast amount of information from divergent sources. It is questionable which sources they contemplate.

Early research from Lee and Tweedie (1981)<sup>284</sup>, Arnold and Moizer (1984)<sup>285</sup>, and Vergoossen (1993) addresses the relevance of annual reports to financial analysts. Lee's and Tweedie's (1981) and Arnold's and Moizer's (1984) research results highlight that financial analysts use various information sources. Still, the most vital influence of annual reports' components is assigned to profit and loss statements (P&L), followed by balance sheets and interim results. Lee and Tweedie (1981, pp. 77–78) distinguish between 12 different sections of annual reports, which were surveyed whether they were read briefly, thoroughly, or not read.

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<sup>282</sup> Bradshaw (2004) analyzes how these two "*black boxes*" are related. He studies how earnings forecasts are related to analysts' stock recommendations. Depending on the valuation model, he finds divergent results. Whereas residual income valuation models are not related or negatively related to analysts' recommendations, a positive relation was found between analysts' recommendations and price-earnings-to-growth (PEG) models.

<sup>283</sup> As most studies do not solely focus on financial analysts, the following points out studies addressing investment professionals in a broader sense.

<sup>284</sup> Lee and Tweedie (1981) surveyed financial intermediaries of major financial institutions in the UK. They investigated the use of financial intermediaries' information sources. Most of the respondents ask for more corporate reporting information even though the findings point out that analysts do not consider all available information (Lee and Tweedie, 1981, pp. 140–141).

<sup>285</sup> Arnold and Moizer (1984, p. 195) point out the importance of understanding analysts' procedures of decision-making as well as recommendations to buy or sell shares to accounting policymakers. They combine interviews and surveys to analyze investment analysts' behavior in the UK. They differentiate between investment analysts as advisers and investors, such as portfolio managers. This distinction addresses sell-side and buy-side analysts.



Lee and Tweedie (1981, pp. 94–97) questioned the use of other information sources, such as interim reports, financial press reports, or industry or economic data. Arnold and Moizer (1984, pp. 202–203) expanded the information sources to 18, partially included in annual reports and partly in other sources. They distinguish between nine parts of the annual report, including, among others, balance sheets, profit and loss statements, (un)qualified audit reports, the chairman’s statement, and the director’s report. Additionally, they consider interim results, such as quarterly or half-year statements. Accordingly, the interim reports are essential following the profit and loss statements and balance sheets.

Moreover, they question the relevance of the financial press, trade journals, and direct communication with company personnel and other investment analysts.<sup>286</sup> Arnold and Moizer (1984) expand the analysis of Lee and Tweedie (1981) and compare their results. Though having divergent methodologies and samples, both studies reveal the analysts’ perceived impact of profit and loss statements and balance sheets, followed by interim results. In addition to identifying essential information sources taken from annual or interim reports, Arnold and Moizer (1984, pp. 203–204) accentuate the impact of direct communication with companies on analysts’ proceedings. Similarly, Lee and Tweedie (1981, pp. 104–116) investigated the relevance of company visits.

Both studies point out the impact of discussions with company personnel following the former mentioned essential parts of annual and interim reports (Arnold and Moizer, 1984, p. 205). On these grounds, Arnold and Moizer (1984, p. 204) determine private communication with companies’ management as a privileged source. They conclude that an analyst’s core feature is being dependent on the informational setting. Analysts always aim to be better than analysts without experience or privileged sources of information.

Complementary to the findings from the UK, Vergoossen (1993) focuses on the usage of annual reports by investment analysts in the Netherlands.<sup>287</sup> He addressed a postal survey to investment analysts. The findings indicate differences in the sources and use of information depending on the methods applied and the role of an analyst (Vergoossen, 1993, p. 224). He distinguishes between three varying roles. Accordingly, the use of information from portfolio managers, investment advisers as information intermediaries, and directors or heads of

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<sup>286</sup> The other information sources are value-added statements, funds’ sources and applications, and current cost data. Moreover, they questioned the impact of data from employee newsletters, statistical and information services, and governmental statistics (Arnold and Moizer, 1984, pp. 202–203).

<sup>287</sup> This confirms the studies of Lee and Tweedie (1981) and Arnold and Moizer (1984) as they investigate financial analysts’ proceedings in the UK.

departments differs (Vergoossen, 1993, p. 226). Besides annual reports, communication with a firm's management or interim reports are other vital information sources. Within Vergoossen's (1993, pp. 228–230) study, communication with companies' management is ranked second, after current annual reports, followed by interim reports. The study also investigates essential parts of annual reports. Consequently, the income statement is the most crucial part, followed by the balance sheet and the notes (Vergoossen, 1993, pp. 234–237).

He concludes that the annual report is an essential source of information, but it is studied more by investment advisors than portfolio managers. As a result, portfolio managers consider other analysts' reports more often than investment advisors (Vergoossen, 1993, p. 239). Therefore, depending on the function of a financial analyst, the perceived importance of information sources varies. Furthermore, Vergoossen (1993, p. 220) regards studies on this topic as relevant to identify unnecessary information within annual reports.

More recent studies still indicate the relevance of financial statements and direct communication, as stated by Arnold and Moizer (1984) and Vergoossen (1993). In their literature review, Ramnath *et al.* (2008, pp. 38–42) focus on findings about analysts' decision processes. They address information sources of financial analysts and conclude that the outputs of various studies stress the importance of reported financial figures, management communication, and segment reports.

Furthermore, Gassen and Schwedler (2010) investigate the decision usefulness of financial accounting measurement concepts through a survey that investors and their advisors answered. The sample mainly consists of buy-side and sell-side analysts, complemented by fund managers and others. The more significant portion of the sample focuses on equity instruments. In addition to previous findings, the study addresses the importance of management commentaries or notes, analysts' meetings, and voluntary corporate disclosure. Gassen and Schwedler (2010, pp. 502–503) distinguish between the relevance and reliability of such information sources. They find that those information sources that are not audited are viewed as less reliable than relevant, whereas audited information sources are as reliable as they are relevant.

Cascino *et al.* (2014) review the literature on how various European capital providers use financial information from financial reports. They examine studies that provide direct evidence through surveys, experiments, or interviews. One group of capital providers that Cascino *et al.* (2014, pp. 190–191) focus on are professional equity investors.<sup>288</sup> Equity analysts, including

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<sup>288</sup> Further, Cascino *et al.* (2014) studied debt providers and trade creditors.

buy-side and sell-side analysts, belong to this group.<sup>289</sup> The studies under consideration show that analysts base their work on financial statements (Cascino *et al.*, 2014, p. 191). Communication with companies is similarly emphasized. Among the different findings, the relevance of alternative information sources, besides financial statements and communication, does not result in consensus (Cascino *et al.*, 2014, p. 191). Cascino *et al.* (2014, p. 191) review various studies focusing on analysts from different countries. Nonetheless, they conclude that other capital providers, including financial analysts, have heterogeneous information needs and use diverse information sources. They find that little research exists on the information usage of differing capital provider groups. Thus, they ask for future (ideally field-based) research on using financial information by varying users with divergent objectives (Cascino *et al.*, 2014, pp. 200–201).

In contrast, Soltes (2014) only focuses on the private communication channel of corporate management and financial analysts. He investigates the interaction from a large-cap company with sell-side analysts based on private meeting records. He obtained additional results by conducting interviews with research directors and through public data from databases (Soltes, 2014, pp. 249–250). His findings stress that interaction at analysts' conferences represents only a small portion of private interaction between analysts and companies' managers (Soltes, 2014, p. 247). Phone calls are the majority of private communication between the two parties. Besides public communication at conferences, office meetings allow personal interaction (Soltes, 2014, p. 246). Soltes (2014, p. 246) demonstrates that analysts use this communication channel throughout the year. Still, interactions frequently occur in close temporal proximity to a corporation's news release. Based on his results, Soltes (2014, pp. 269–270) asks for further research on private interaction, particularly internal processes concerning external reporting questions.

Furthermore, Brown *et al.* (2015) contribute to prior research twofold. First, they respond to Cascino's *et al.* (2014) call by surveying and interviewing a broad sample of financial analysts, specifically sell-side analysts. Second, they shed light on the two "*black boxes*" of analysts' procedures. They investigate the input to analysts' earnings forecasts and stock recommendations. In contrast to prior literature, Brown *et al.* (2015, p. 3) figure that private communication with a company's management is more critical to analysts than studying interim or annual reports. Accordingly, analysts regard personal phone calls, rather than conference calls, as indispensable communication channels. Nevertheless, the results indicate that private

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<sup>289</sup> See Cascino *et al.* (2014, pp. 190–191) for a literature review on equity analysts, highlighting studies investigating analysts' use of information in France, Germany, the Netherlands, Spain, Sweden, and the UK.

communication is essential besides financial statements, as prior literature states. Furthermore, Brown *et al.* (2015, pp. 25–41) investigate analysts' incentives to monitor information, e.g., the determinants of compensation or the consequences of disadvantageous earnings forecasts.

Drake *et al.* (2019) analyze the importance of financial statement components based on the assumption of a disclosure overload. They address a diverse set of professional users of financial statements, which include, among others, sell and buy-side equity analysts (Drake *et al.*, 2019, p. 1937). Drake *et al.* (2019, p. 1937) investigate the usefulness and usage of particular financial reporting components by providing a survey to professionals. Taking the disclosure overload argument as a starting point, Drake *et al.* (2019, p. 1937) find controversial results indicating that many users desire more information but do not consider all of the existing financial reporting information. The study considers not reading footnotes as an indicator of disclosure overload. In contrast, Drake *et al.* (2019, pp. 1946–1948) figured out that most professionals read the fine print at least partially, albeit to varying degrees.

Additionally, the results illustrate the different importance of the components of financial statements depending on the analyst's objective. For the users, the balance sheet, for instance, is not as important as the income and cash flow statements to estimate future cash flows (Drake *et al.*, 2019, pp. 1955–1958). However, the balance sheet is crucial in evaluating credit risk. Nevertheless, all three above elements are essential to calculate a firm value (Drake *et al.*, 2019, pp. 1955–1958).

More in-depth, Fülbier *et al.* (2021)<sup>290</sup> investigate financial analysts' information processing, the relevance of annual reports and their components, and additional information sources. They conducted a field study with a German bank house and their sell-side analysts. The results highlight the importance of communication with the management and competing companies (Fülbier *et al.*, 2021, p. 2). Furthermore, they show that analysts consider public appearances of the management at general meetings, for instance, and study the management's gestures and facial expressions. By studying public presentations, appearances, and management communication, analysts attempt to read “between the lines” (Fülbier *et al.*, 2021, p. 2). Nevertheless, analysts view the financial information published in the income or cash flow statement as indispensable. Though, they only consider the management report in detail when a company is first covered. Fülbier *et al.* (2021, p. 3) emphasize that financial analysts regard

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<sup>290</sup> The study of Fülbier *et al.* (2021) presents preliminary results of this study. The data used by Fülbier *et al.* (2021) corresponds partially with the data used in this dissertation. The author of this study expanded the data. See CHAPTER 7.2.

the notes as a “reference book” they address when a question or ambiguities arise. Besides the annual or interim reports, financial analysts make use of the disclosure of ad hoc announcements (Fülbier *et al.*, 2021, p. 2).<sup>291</sup> Fülbier *et al.* (2021, p. 3) present the importance of non-GAAP measures. Accordingly, the analysts admit that non-GAAP measures are not always traceable, but the market focuses on these disclosed corporate measures.

Most recently, Cascino *et al.* (2021) studied the perceived usefulness of financial accounting information by investment professionals to analyze the decision-usefulness of disclosed corporate information. A minor part of the study’s participants are sell-side analysts; the more significant number of participants are fund managers, of which some declare themselves as analysts from the buy side (Cascino *et al.*, 2021, p. 80). The findings of their study, consisting of a survey experiment and an additional task-based experiment, underline the relevance of financial accounting information to decision-making processes. Financial accounting information serves as the professionals’ primary input factor. The relevance of financial accounting information varies depending on the information acquisition objective. If professionals aim at a firm valuation, they are more interested in information that helps estimate cash flows and understand the business (model). The financial accounting information is less relevant to professionals aiming at a managerial performance evaluation (Cascino *et al.*, 2021, p. 75).

In addition, other studies address analysts’ site visits as a personal communication channel. Cheng *et al.* (2016) present the opportunity for “*face-to-face talks*” when analysts conduct site visits. They find that analysts’ earnings forecast accuracy is greater for analysts visiting their covered companies (Cheng *et al.*, 2016, p. 1246). Moreover, Han *et al.* (2018) find evidence that earnings forecasts are more accurate if analysts visit the covered companies and ask questions to the management during their site visits (Han *et al.*, 2018, pp. 1844–1845). Thus, different studies indicate an advantage of personal communication with companies’ management as an information channel.

Recapitulatory, research studies expose the variety of information sources available to market participants, particularly financial analysts. Most of the above studies agree with the relevance of financial reports and additional personal communication with companies’ management. Although the findings may differ regarding prioritization orders of information sources, the types or origins of investment professionals studied, or the professionals’ objectives, the

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<sup>291</sup> For instance, Basu *et al.* (2013) investigate the relevance of earnings announcements in contrast to dividend announcements, management forecasts, regulatory filings such as annual reports, and others. They find that earnings announcements have a more relevant informational role for the capital market than other information sources.

studies provide insights into information sources used by financial intermediaries and the significance of financial reporting information. Still, studies (e.g., Cascino *et al.*, 2014; Soltes, 2014 ) ask for further research. Since it is questionable how financial analysts use these information sources, the following presents research results on analysts' information processing, partially based on the studies mentioned above and others.

### 6.1.2 Information Processing

The second research strand focuses on information processing activities, including valuation models. An early study from Arnold and Moizer (1984, p. 200) elucidates that most analysts conduct fundamental analysis and more frequently apply fundamental than technical analysis. According to the research findings, analysts base their activities on financial results from the past five years and consider various financial ratios (Arnold and Moizer, 1984, pp. 200–201). They estimate key figures such as the PER or future dividend yields (Arnold and Moizer, 1984, p. 200). The study's findings stress the importance of fundamental information, such as management quality, earnings, product quality, or growth ratios. The analysts, however, rarely apply DCF methods. They rather focus on various factors leading to an "*idea of what the [PER] should be*" (Arnold and Moizer, 1984, pp. 200–201). Arnold and Moizer (1984, p. 207) conclude that future research still needs to investigate how analysts forecast future earnings and which methods they use to estimate. They recommend research methods to process analysts' decision-making through direct observations or interviews.

Besides Vergoossen's (1993) formerly presented findings on the information sources, his study points out further insights into analysts' information processing. Even though financial analysts could apply varying valuation methods, most analysts rely on fundamental analysis at least to some extent (89,8 % of the respondents). Vergoossen (1993, pp. 224–225) accentuates the importance of accounting numbers within the fundamental analysis compared to other valuation methods. Nevertheless, Vergoossen (1993, p. 226) figures that most analysts (73,7 % of the respondents) spend less than four hours studying an annual report. 30,9 % of his sample even spend less than an hour reading and analyzing a single report. Consequently, the analysts focus on examining certain parts, such as the consolidated income statements, balance sheets, and notes. Reports from the supervisory board or the auditor are not as relevant to the study's respondents (Vergoossen, 1993, pp. 234–237).

In addition, the study of Lie and Lie (2002, p. 44) focuses on multiples valuation because they view DCF models to value companies as laborious to apply. They base their investigation on the fact that no consensus exists about using a single suitable multiple and aim for a comparison of various multiples (Lie and Lie, 2002, p. 45). The study considers ten divergent multiples that partially adjust corporate cash levels (Lie and Lie, 2002, p. 46). The multiples in consideration can be assigned to equity and enterprise valuation. Equity valuation multiples are either PER or forecasted PER measures, while enterprise valuation is based on adjusted or unadjusted multiples. Lie and Lie (2002, p. 48) distinguish between asset value, sales, and earnings multiples. They find that the valuation of asset multiples performs best and sales multiples worst. In addition, earnings multiples based on EBITDA result in better estimates than EBIT-based multiples. Adjustments of corporate cash levels do not result in better estimates (Lie and Lie, 2002, p. 53). However, Lie and Lie (2002) only analyze the performance of differing multiples valuations and not other valuation methods.

In contrast, Demirakos *et al.* (2004) generally study the choice of valuation models. They distinguish between multiperiod models, such as DCF or residual income valuation models, and single-period comparative valuations, usually based on a multiple. They analyze different multiples ranging from earnings to sales, assets, or dividend yield multiples. They also consider some hybrid valuation models (Demirakos *et al.*, 2004, p. 228). They conduct content analyses of analyst reports from 1997 to 2001 for UK companies to analyze the choice of valuation models (Demirakos *et al.*, 2004, p. 226). According to their findings, the specific PER multiple is most commonly used to value companies and is sometimes complemented by further investigation; but analysts only apply DCF models in a few reports (Demirakos *et al.*, 2004, p. 238).

Furthermore, Imam *et al.* (2008) study the use of valuation models by financial analysts, but investigate why and how analysts use which model (Imam *et al.*, 2008, p. 506). They highlight a change in financial analysts' practice based on their results compared to previous literature. The interviews and the content analysis of research reports emphasize that analysts use varying valuation models. The DCF model seems more relevant than assumed by prior literature. Nevertheless, as Arnold and Moizer (1984) investigated, the PER still plays a role in valuation. Analysts apply multiple valuation models and consult additional qualitative information (Imam *et al.*, 2008, p. 529). The findings justify different reasons for using a DCF model, but it is considered a primary valuation model (Imam *et al.*, 2008, pp. 529–530). Analysts view the advantage of a DCF model as a technical factor. In contrast to earnings, cash flows are less vulnerable to manipulation and less subjective (Imam *et al.*, 2008, p. 518). However, the results

indicate that different methods are most suitable depending on the circumstances. That is why some analysts combine methods to achieve short-term and long-term forecasts (Imam *et al.*, 2008, p. 519).

Moreover, comparability among peers is not always ensured, which sometimes prevents the application of specific valuation models (Imam *et al.*, 2008, p. 520). Imam *et al.* (2008, p. 521) discover that analysts base their valuation model choices on their clients' demands. Hence, the analysts present the market's interest. Therefore, Imam *et al.* (2008, p. 531) ask for further research on the relationships between different market participants and the interface between financial analysis and accounting information.

Similar to Imam *et al.* (2008), more recent studies, such as the studies of Gassen and Schwedler (2010), Cascino *et al.* (2014), Brown *et al.* (2015), Cascino *et al.* (2021), or Fülbier *et al.* (2021), provide additional insights on analysts' proceedings using survey designs or interview studies. Gassen and Schwedler (2010) investigate the decision usefulness of financial accounting measurement concepts through a survey that investors and their advisors answer. The results show that depending on asset classes, the usefulness of a measurement concept differs. The study differentiates between historical cost, mark-to-model fair value, and mark-to-market fair values which seem to be the best-known concepts. Other concepts, such as value in use or lower of cost or market, are not focused on by Gassen and Schwedler (2010, p. 504). Their results stress that the mark-to-market measurement concept is the most decision-useful concept for all asset classes, even though the respondents with more expertise regard fair value concepts as less applicable (Gassen and Schwedler, 2010, p. 505).

Cascino's *et al.* (2014) literature review on how capital providers use financial information from financial reports focuses on studies investigating primary evidence obtained from interviews or surveys, for instance. The study's results show that professional investors, being information intermediaries, are commissioned by capital providers because their ability to process information is limited due to the increasing complexity of accounting information (Cascino *et al.*, 2014, p. 200). Nonetheless, Cascino *et al.* (2014, p. 200) conclude that analysts use multiple information sources. Still, research does not provide enough insights into the usage of the information itself. Thus, they ask for further field-based research on the use of financial information (Cascino *et al.*, 2014, p. 201).



Following the study of Cascino *et al.* (2014), Brown *et al.* (2015) respond to the call as they survey and interview financial analysts, sell-side analysts in particular.<sup>292</sup> Brown *et al.* (2015) study the inputs to financial analysis, e.g., the determinants of earnings forecasts. Furthermore, analysts' incentives to monitor information, analysts' compensation, or the consequences of disadvantageous earnings forecasts are analyzed. Following the results of Brown *et al.* (2015, pp. 41–42), an analyst's most essential input to stock recommendations is industry knowledge. The findings highlight that private communication is vital because more than half of the respondents talk directly with a company's management at least five times per year (Brown *et al.*, 2015, p. 3). Similarly, an analyst has various incentives to estimate the earnings forecasts accurately. If the forecast is not in the interest of the corporation's management, it might change the future collaboration with the analyst. As a result, the analyst's credibility toward his clients could be affected. Private conversations between the analyst and the management offer details the analyst can use. He questions the company's processes and ensures the model's accuracy by challenging the management (Brown *et al.*, 2015, pp. 16–20). Further, some analysts do not ask questions at public meetings to ensure that other analysts do not benefit from valuable information (Brown *et al.*, 2015, p. 20).

Like Cascino *et al.* (2021)<sup>293</sup>, Fülbier *et al.* (2021)<sup>294</sup> study financial analysts' perceived usefulness and usage of specific reporting information. Their field-based study focuses on equity analysis and processing information within the financial analysts' daily routines. Fülbier *et al.* (2021, pp. 2–3) present analysts' processes following an event. For instance, the event mirrors either an ad hoc announcement or the disclosure of an annual or interim report (Fülbier *et al.*, 2021, p. 2). Following an event, a morning meeting occurs within the bank house. If expectations change due to the news, analysts might have to conduct further investigations and adapt the estimates and the DCF model. The analysts may address additional questions on the same day in a conference call with the covered company. On the following day, the bank house publishes a comment. It includes remarks on the event and its impact on the estimates and the model. If questions remain, the analysts will conduct further investigations in the following days (Fülbier *et al.*, 2021, pp. 2–3).

The results additionally address the relevance of non-GAAP measures. The findings emphasize the relevance of non-GAAP measures as they are in the market's interest (Fülbier *et*

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<sup>292</sup> In contrast to Brown *et al.* (2015), Dichev *et al.* (2013) consider the preparers' perspective when surveying Chief Financial Officers (CFOs).

<sup>293</sup> See CHAPTER 6.1.1.

<sup>294</sup> See FOOTNOTE 290 and CHAPTER 7.2.

*al.*, 2021, p. 4). The analysts question the adjustments but consider them within their estimates. Analysts comment on deviations only if analysts' forecasts of the non-GAAP measures deviate from the companies' estimates. They take action because the market cares about deviations (Fülbier *et al.*, 2021, p. 5).

Furthermore, Fülbier *et al.* (2021, pp. 5–6) question the suitability of IFRS reporting and its requirements. The analysts criticize the dynamic changes in IFRS reporting requirements. Moreover, they particularly criticize the requirements of IFRS 16 on leasing activities. The study's results stress the analysts' desire to obtain more information rather than less, albeit they admit that much information is not read.

To sum up, Bradshaw (2011, p. 43) and Cascino *et al.* (2014) concluded that further research on analysts' proceedings is desired. Following the calls for research, more insights into the analysts' processing were obtained through additional investigations. However, research literature shows that qualitative empirical studies are more scarce than quantitative empirical studies on financial analysis procedures, whereas this review mainly focuses on qualitative empirical research. The academic literature, though, has still not fully revealed the information processing of financial analysts as companies disclose even further information, particularly on ESG matters.

## 6.2 Research on Sustainability Information

### 6.2.1 Impact of Sustainability Information

Similar to the development of primarily voluntary sustainability reporting and its increasing regulation efforts, academic research on sustainable information has been expanding in recent years. Different studies address the activities and reporting on CSR, sustainability, or ESG matters. However, some academics and practitioners question the suitability of ESG information which is why debates on greenwashing arise. The absence of ESG reporting requirements elicits questions about ESG information and whether it is valuable to investors (Larcker and Watts, 2020, p. 3). Research literature also addresses the willingness of investors to forego financial benefits for ESG-friendly investments (Larcker and Watts, 2020, p. 21).<sup>295</sup>

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<sup>295</sup> Larcker and Watts (2020) study green and non-green municipal bonds to investigate the existence of a so-called greenium. It is a premium paid for a bond to ensure ESG-friendly investments (Larcker and Watts, 2020, p. 22).

On the one hand, it is questionable whether and how ESG information impacts companies and how investors may benefit. On the other hand, it is questionable how the information is processed, whether financial analysts consult it, and how investors use ESG information. Existing research literature investigates the impact and usage of sustainable information. The findings of the studies vary. The following differentiates between studies pointing out the effect of sustainable information and activities on corporate measures or real effects resulting therefrom and studies investigating the processing of sustainable information. In a broader sense, ESG ratings mirror the processing of sustainability information from a specific perspective. In a narrow sense, analysts' and investors' use of ESG information is of interest.

Research results indicate that ESG activities and reporting may impact companies and other market participants. Cho *et al.* (2013) highlight the aim to reduce information asymmetries in the capital market by disclosing information. They investigate whether CSR<sup>296</sup> performance reduces information asymmetries. They measure CSR information resulting in scores to proxy for performance. By measuring bid-ask spreads, they proxy for information asymmetry. They show that positive and negative CSR performance reduces the capital market's information asymmetry, although negative CSR performance has a stronger impact. Hence, Cho *et al.* (2013, p. 82) suggest more reporting on positive, as well as negative, CSR performance to improve the capital market's efficiency.

Dhaliwal *et al.* (2011) analyze CSR activities and their impact on the costs of equity capital. The results elucidate a positive effect on the costs of equity for firms with better CSR performance after disclosing a CSR report for the first time compared to industry peers. The same applies to the analyst coverage that increases with better CSR performance. They also find evidence that standalone CSR reports are associated with higher costs of equity in the year before the first disclosure (Dhaliwal *et al.*, 2011, pp. 94–95).

Furthermore, Dhaliwal *et al.* (2012) examine the relationship between non-financial disclosure and earnings forecasts. They study the issuance of CSR reports from 31 divergent countries. The disclosure of a standalone CSR report shall represent the existence of sustainability disclosure (Dhaliwal *et al.*, 2012, p. 724). Thus, they find evidence that disclosing non-financial information is associated with lower financial analysts' earnings forecasts (Dhaliwal *et al.*, 2012, pp. 752–753).

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<sup>296</sup> The following literature review individually considers the terminology of the presented study. Here, it is CSR; later, it may be ESG or sustainability, for instance.

Matsumura *et al.* (2014) investigate voluntary disclosures of carbon emissions, in specific, and their impact on firm valuation. Their sample is based on US-American firms. They find a negative relation between the disclosure of carbon emissions and firm values, which they justify by a penalizing capital market (Matsumura *et al.*, 2014, p. 698). Nonetheless, Matsumura *et al.* (2014, pp. 698–699) highlight the more significant punishment of the capital market if companies do not voluntarily disclose their carbon emissions compared to companies that voluntarily report the emissions.

Further, partially opposing insights on voluntary environmental disclosure are presented by Plumlee *et al.* (2015). They investigate the relationship between ecological disclosure quality and firm valuation based on a sample from the United States. To examine firm values, they consider future cash flows and costs of equity. The disclosure quality of environmental information is measured through an index following GRI standards (Plumlee *et al.*, 2015, p. 336). The results of the study by Plumlee *et al.* (2015, p. 359) expose a significantly positive relationship between voluntary environmental disclosure quality and firm value components.

In contrast to Plumlee *et al.* (2015), Ioannou and Serafeim (2017) focus on mandatory sustainability reporting. They examine the impact of compulsory sustainability reporting on management activities (Ioannou and Serafeim, 2017, pp. 3–4). According to their results, each of the three ESG pillars is positively affected after firms are obliged to report on sustainability matters. Management practices and overall corporate activities turn towards greater social responsibility and sustainable development after implementing mandatory ESG reporting (Ioannou and Serafeim, 2017, pp. 29–30).

Similar to the study of Ioannou and Serafeim (2017), Downar *et al.* (2021) examine the real effects of compulsory carbon disclosure reporting on the development of greenhouse gas emissions as well as on corporate financial operating performance. The reporting mandate only requires companies to disclose their carbon footprint but does not prescribe any limit on emissions (Downar *et al.*, 2021, p. 1138). The study by Downar *et al.* (2021) is based on public companies from the UK that have been obliged to report on their greenhouse gas emissions since 2013. They compare the pre and post-period of mandatory carbon disclosure reporting and investigate differences between the UK public firms and a control group from the UK and European countries that are not subject to compulsory sustainability reporting requirements (Downar *et al.*, 2021, p. 1139). Downar *et al.* (2021, p. 1169) figured out that compared to the other sample group, firms subject to the mandatory reporting requirements significantly reduce their carbon emissions. Examining the pre and post-period of the reporting mandate in 2013

highlights a reduction in carbon emissions. Downar *et al.* (2021, pp. 1138–1139) justify the findings by the existence of different stakeholder groups and potential stakeholder pressure, which is why companies might be incentivized not to exhibit negative attributes in their reporting information or to emphasize improvements in carbon emissions. Thus, Downar *et al.* (2021) find the real effects of the carbon disclosure mandate on greenhouse gas emissions. However, the mandate does not affect corporate financial performance (Downar *et al.*, 2021, pp. 1137–1138).

Christensen *et al.* (2017) analyze the real effects of integrating social responsibility disclosures concerning mine-safety provisions within companies' financial reports. Christensen *et al.* (2017, p. 285) compare SEC-registered firms owning mines with non-registered firms. Mine-safety records are publicly available on the internet, which is why Christensen *et al.* (2017, p. 298) can solely examine the real effects of the integration of social responsibility disclosure within the financial reports. Accordingly, disclosing mine-safety records within financial reports increases safety as injuries decline. Christensen *et al.* (2017, p. 299) assume greater awareness than without disclosure but simultaneously labor productivity declines.

Therefore, various real effects may result from disclosing ESG information regardless of the ESG pillar. As pointed out earlier, sustainable activities and their disclosures may impact companies and their valuations, corporate measures, and other capital market participants.

Further studies examine the relationship between ESG performance and stock returns. Similar to the formerly presented results studying the impact of ESG disclosures, the findings on ESG performance provide no clear evidence. Either research literature finds higher stock returns for companies with higher ESG performance (Khan *et al.*, 2016; Lins *et al.*, 2017) or lower stock returns for companies with higher ESG performance (El Ghouli *et al.*, 2011; Chava, 2014).

In addition, Berg *et al.* (2021) analyze the impact of ESG performance on stock returns based on the knowledge of differing ESG ratings. They investigate the relationship between stock returns and ESG performance using ESG ratings from different agencies but eliminate the bias of the varying ratings through a noise correction (Berg *et al.*, 2021, pp. 2–4). The unbiased results indicate that ESG performance impacts stock returns even more strongly than previous research findings revealed (Berg *et al.*, 2021, p. 2).

Besides Berg *et al.* (2021), Bartov *et al.* (2021) analyze ESG performance's impact on stock prices, hence, firm valuation. Indeed, they focus on the interplay of CSR performance and

negative events as represented by financial statement restatements announced through SEC filings (Bartov *et al.*, 2021, p. 82). They distinguish between fraudulent and inadvertent restatements and, thus, expect different market reactions (Bartov *et al.*, 2021, p. 100). Bartov *et al.* (2021, pp. 100–101) find that higher CSR performance leads to a less negative stock price change following an inadvertent restatement. However, following a fraudulent restatement, the stock price change is more negative if the CSR performance is high. Bartov *et al.* (2021, p. 101) justify this relation with a loss of trust in the firm's management.

The previously presented studies show various impacts of ESG activities, their disclosure, and ESG performance. One strand of literature exposes capital market effects, such as the effect of sustainability reporting or ESG performance on firm values, costs of equity, or stock returns. Another strand of literature considers the real effects of sustainability reporting.<sup>297</sup> However, the previous explanations have not considered the processing of ESG information, which is why the following literature review focuses on the market participants' usage of sustainability information.

### 6.2.2 Users and Processing of Sustainability Information

The above findings present sustainability's various impacts and question whether, by whom, and how ESG information is processed and influences investors' decisions. The increases in ESG investments and ESG ratings underline the growing demand for sustainability information. Due to the expanding disclosures of ESG matters, not only the interest of investment professionals increased but also the complexity of such information, resulting in the implementation of agencies analyzing ESG information and disclosing ESG ratings. Besides investment professionals processing a large amount of corporate information, ESG specialists process an extensive amount of sustainable information. ESG rating agencies provide the market with processed sustainable information by issuing ESG ratings.

Indeed, the study of Chatterji *et al.* (2016) detects that ESG ratings from different providers covering the same companies mainly disagree. They question the validity of ESG ratings as their findings point out low correlations between ratings from six providers (Chatterji *et al.*, 2016, p. 1598). Likewise, Berg *et al.* (2020, p. 2) examine ESG ratings from six institutions and discover that the ratings diverge. In addition to the former results, they trace the ratings'

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<sup>297</sup> See Christensen *et al.* (2021) for an extensive literature review on sustainability reporting's economic consequences and impacts on the capital market, its market participants, and the companies disclosing sustainability matters.

disagreements back to three sources of divergence. The weighting, measurement, and scope of the categories used to determine a rating score vary among the raters (Berg *et al.*, 2020, p. 3). Consequently, investors face divergent ESG ratings and might not consider ESG performance within their decision-making procedures. Moreover, stock prices tend not to incorporate ESG performance (Berg *et al.*, 2020, p. 2). That is why Berg *et al.* (2020, p. 4) study the reasons for divergence by implementing a taxonomy. The results emphasize that measurement divergence, followed by scope divergence, mainly contributes to the rating disagreements. Thus, the choice of relevant attributes describing a firm's ESG performance (*scope*) and the selection of indicators to make the attributes quantifiable (*measurement*) differ among the rating providers (Berg *et al.*, 2020, p. 12).<sup>298</sup>

Similar to Berg *et al.* (2021), Christensen *et al.* (2022) focus on the disagreement between the agencies' ESG ratings but investigate the relation between the deviating ESG ratings and the corporate ESG disclosures. The results of their study show that greater corporate disclosure on ESG matters intensifies the divergence between ESG ratings (Christensen *et al.*, 2022, p. 169). That implies that the more ESG disclosures are available to analysts, the greater the disagreement in understanding and processing ESG information. Furthermore, they find evidence for an association between greater ESG ratings' disagreement and higher volatility in return (Christensen *et al.*, 2022, p. 169).

ESG specialists process sustainability information for investment professionals. Other capital market participants' processing of sustainable information and ESG ratings are also of interest. Eccles *et al.* (2011) highlight the market's interest in sustainability information. They investigate which information interests equity and fixed-income investors in US-American and global markets (Eccles *et al.*, 2011, p. 114). Their results accentuate the equity investors' interest in risks and chances resulting from ESG matters, whereas fixed-income investors' are more interested in risks (Eccles *et al.*, 2011, p. 113). Even though both investor types consider overall ESG scores and governance metrics, environmental measures, particularly carbon emissions, are more relevant to equity investors (Eccles *et al.*, 2011, p. 123). Specifically, sell-side analysts focus on greenhouse gas emissions, which is why Eccles *et al.* (2011, pp. 126–127) suggest obtaining a more holistic view of a company by integrating other ESG metrics. Nonetheless,

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<sup>298</sup> Based on the former findings that disagreement exists among ESG ratings from different rating agencies, Berg *et al.* (2021) conducted a noise correction to ESG ratings to examine the proper relation between stock returns and ESG performance. According to their results, ESG performance positively impacts stock returns (Berg *et al.*, 2021, pp. 1–2).

the question arises of how investors incorporate such information in their investment decisions or how analysts include it in their stock recommendations.

The study of Ioannou and Serafeim (2015) relates to the impact of sustainability on investment recommendations. They investigate sell-side analysts' recommendations and their relation to CSR ratings while examining a potential paradigm shift to stakeholder theory. Ioannou and Serafeim (2015, p. 1061) analyzed publicly traded US companies, their corporate metrics, and analysts' recommendations over 15 years from 1992 to 2007. They find that analysts' recommendations combined with higher CSR ratings become more optimistic over time, while in the early 1990s the analysts' assessments combined with higher CSR ratings were more pessimistic (Ioannou and Serafeim, 2015, pp. 1053–1054). Ioannou and Serafeim (2015, p. 1071) stress a changing understanding and perception of CSR matters and justify the shift by an increasing stakeholder orientation. On that account, Ioannou and Serafeim (2015, p. 1075) ask for further research on the financial analysts' shifting perceptions concerning various stakeholders and their demands. Ioannou and Serafeim (2015) find that sustainability matters increasingly positively impact analysts' recommendations. Still, their study does not answer why and how analysts consider sustainability information.

Supplementary, Reimsbach *et al.* (2018) experimentally study investors' information processing. They examine the relevance of the integration into financial reports and the assurance of ESG information to investors. Integrated CSR reports and separate standalone CSR reports are handed out to professionals. The reports were either assured or non-assured (Reimsbach *et al.*, 2018, p. 560). The study shows that fewer investors choose to read standalone reports. However, supposedly an investor decides to read sustainability information; he processes the information the same way, regardless of the reporting format, whether integrated or published in a single annual report (Reimsbach *et al.*, 2018, p. 575). Moreover, if sustainability information is assured, investors judge better about a company's sustainability performance (Reimsbach *et al.*, 2018, p. 575).

Similarly, Bucaro *et al.* (2020) examine whether separate or integrated CSR reports significantly impact investors' judgments. Their experimental findings illustrate that investors pay more attention to CSR measures if reported separately from financial information in an additional report. Bucaro *et al.* (2020, p. 684) conclude that the way companies issue sustainability information may impact investors' consideration of such information. According to the study, investors may assume that financial information is more essential than sustainability matters if presented within the same report. On the contrary, if disclosed separately, investors take a



different perspective considering both types of information side by side (Bucaro *et al.*, 2020, pp. 683–684).

Going further, Amel-Zadeh and Serafeim (2018) surveyed US-American investors to analyze investment professionals' motivation and their use of sustainability information. The survey's respondents were, among others, portfolio managers, ESG specialists, chief executive officers, chief financial officers, and some investment analysts (Amel-Zadeh and Serafeim, 2018, p. 90). The findings highlight that most professionals (82,1 % of the respondents) consider ESG information to make investment decisions. Most justify the consideration by its financial materiality (Amel-Zadeh and Serafeim, 2018, pp. 91–92). Nevertheless, the respondents criticize the ESG disclosures' comparability, the missing reporting standards, the low specification of available information, missing quantifiable measures, and the costs of collecting and interpreting sustainable data (Amel-Zadeh and Serafeim, 2018, p. 93). Despite criticism, around a third of the respondents fully integrate ESG information within their valuation models (Amel-Zadeh and Serafeim, 2018, p. 96). Still, due to the nature of the survey, it remains unanswered how and which ESG information the investment professionals incorporate into a stock's valuation.

### 6.3 Deduction of Research Questions

As the presented prior literature and the previous explanations on the milestones, institutions, and regulatory development of sustainability reporting delineates, the increasing demand for sustainability matters and the growing amount of ESG disclosures are of interest to market participants, particularly investors. The literature review of the information processing in financial analysis and the impact and processing of ESG information leave questions unanswered, and others emerge from there.

The theory of financial intermediation and the previously presented studies on financial analysis procedures show that financial analysts prepare and process available information for investors. Financial analysts work as information intermediaries in the interest of investors to recommend whether to buy, sell, or hold stocks. They are considered information intermediaries to emphasize the relevance of the information to their procedures, although they are still financial intermediaries. The focus is on reducing information asymmetries between the different market participants (see *CHAPTER 3.3* and *CHAPTER 4.1*).

On that account, any information that may be of interest to the market participants could be valuable information to the information intermediaries. Here, the financial analysts acting as information intermediaries, in specific, should – in theory – consider any information. As the regulatory development and the presented research findings reveal an increasing interest of investors in sustainability information, it should play a role in financial analysts' work fulfilling the intermediation task.

As Schipper (1991, pp. 105–106) highlights the necessity to understand how financial analysts acting as financial intermediaries use corporate financial information, the same should apply to sustainability information. This dissertation aims to identify the contemporary role of sustainability in financial analysis while examining the use and relevance of financial and sustainability disclosures.

First, one has to understand how financial analysts work and how they come up with recommendations. Second, one must understand how financial analysts and their recommendations may benefit from ESG information. Thereupon, it should be possible to better classify the role of sustainability information in financial analysis procedures and to compare it with the role of financial information when the two are opposed.

Existing research literature mainly examines the information processing of investment professionals, in general, but not solely of financial analysts or equity analysts from the sell side, in particular. Few studies focus on this group, and even fewer on the German capital market. Still, the previous studies' results do not fully reveal the proceedings of financial analysts. This may partially be due to the methodologies used within the studies. Consequently, Cascino *et al.* (2014, pp. 200–201) asked for further field-based research. Brown *et al.* (2015) answered this call, but they emphasized the existing “*black boxes*” of financial analysts' information processing. Moreover, most existing studies indicate which financial statement components are of interest to analysts, but the results mainly do not present the reasons for the information selection.

Furthermore, the research findings do not entirely reveal the organizational workflows of analysts. Little is known about the internal processes (Soltes, 2014, pp. 269–270) or in-house regulations that may require certain information and similarly may justify the analysts' actions. Therefore, the first research question is intended to shed more light on the information processing of financial analysts and the reasons for their information selection:

**RQ 1:** *How do organizational workflows and in-house regulations impact financial analysts' equity analysis' procedures?*

Building on the first research question, the aim is to gain further insights into how financial analysts consult financial reporting information based on their standardized workflows:

**RQ 2a:** *How do financial analysts integrate financial reporting information in their analysis?*

The research findings indicate that financial analysts desire to obtain as much information as possible. Concurrently, sustainability reporting evolves. The increasing demand for sustainability information and the growing disclosure of such information expose its rising relevance; similarly, the number of rating agencies focusing on ESG performance highlights the topic's significance. The previously presented studies show the impact of sustainability on analysts' stock recommendations (Ioannou and Serafeim, 2015) and the growing interest of investors (e.g., Reimsbach *et al.*, 2018; Bucaro *et al.*, 2020).

Nevertheless, research on processing sustainability reporting information to date is relatively scarce. This may be because sustainability reporting still evolves and has been little regulated. Supposing a financial analyst monitors all available information to estimate in the best possible manner, it is questionable whether financial analysts consider sustainable information. The previous chapter presents insights into the usage of ESG information and its impact. However, the findings do not demonstrate whether and how financial analysts consider ESG reporting information or even ESG ratings within their analysis, valuation, or stock recommendations.

It appears reasonable to investigate a country with few sustainability regulations but further reporting requirements in the future. For this reason, the study focuses on the German capital market, where non-financial statements are disclosed<sup>299</sup> and companies voluntarily publish ESG information. The dissertation examines which impact sustainability information has nowadays in financial analysis procedures. Consequently, the third research question addresses this research gap:

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<sup>299</sup> See CHAPTER 5.4.2.3.2.

**RQ 2b:** *How do financial analysts integrate sustainability reporting information into equity analysis?*

As pointed out, ESG analysts are not conclusively defined<sup>300</sup> but may work for ESG rating agencies. The research findings demonstrate that ESG rating agencies specialize in information processing of sustainability matters, although divergent ratings are obtained. *CHAPTER 4.4* shows varying analyst types, and Vergoossen (1993, p. 239) reveals that different intermediaries collaborate. Buy-side analysts, for instance, use sell-side research reports (Schipper, 1991, p. 106; Fogarty and Rogers, 2005, p. 332).

The question arises whether sell-side analysts collaborate with other information intermediaries that are specialists in sustainability information processing. Hence, they might collaborate with ESG analysts to incorporate sustainability information within their financial analyses because it may be in the interest of investors.

That is why the last research question addresses the cooperation of varying analysts:

**RQ 3:** *How do sell-side analysts collaborate with other information intermediaries, specifically ESG analysts?*

Overall, the four research questions aim to shed light on financial analysts' information processing. This investigation shall reveal insights into the German capital market that research has not answered hitherto. The focus is on the how of analysts' actions to improve the understanding of financial analysis procedures. The study's objective is to clarify ESG information's role in financial analysis.

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<sup>300</sup> See *CHAPTER 4.3*.

## 7 Research Design of the Qualitative Case Study

This chapter derives a proper methodology that is suitable to answer the dissertation's objective and the four research questions derived in *CHAPTER 6*. The explications on prior literature emphasize that few in-depth studies on financial analysts' processes exist and that financial and sustainability information processing, in particular, requires further in-depth examinations.

The nature of the dissertation's objective and its research questions show that a qualitative empirical analysis providing insights from the field is appropriate to apply. A quantitative, large sample analysis would not provide proper answers because the results would not grant detailed insights. In contrast, a qualitative case study design is applied to provide the desired findings from the field. Furthermore, a case study allows for conflating theoretical implications and research results. Based on the financial intermediation theory and the previous argument of considering sustainability reporting information as it is in investors' interest, the research findings allow deriving theoretical implications from this qualitative research design.

The case study approach clarifies the data collection method. In addition, to evaluate the data sets, content analysis is applied. This chapter presents the fundamentals and the procedures of this study.

### 7.1 Methodological Classification of a Case Study

In general, quantitative and qualitative empirical studies distinguish to the extent of generalization. While quantitative analysis results in findings that often allow *statistical generalization*, commonly referred to as generalization, *analytical generalization* characterizes qualitative analysis. Quantitative approaches include large samples, and their results will enable a generalization of the findings to a larger population (Yin, 2014, pp. 40–44). Qualitative studies refer to small samples, not representing a larger population, but only an instance (Rohlfing, 2012, p. 27). They allow to generalize findings based on a theory or theoretical propositions, which the results reject, advance, or corroborate (Yin, 2014, pp. 40–44). In particular, Cooper and Morgan (2008, p. 159) regard case studies as valuable to practitioners as well as to theory development.

Case studies depend upon the field and its state of research. If details from the field are already known and explicated by other case studies, no additional study is necessary to conduct. However, if in-depth studies can shed light on unknown phenomena, a case study is appropriate

to perform (Gerring, 2004, p. 353). Gerring (2004, p. 342) defines a case study as “*an intensive study of a single unit for the purpose of understanding a larger class of (similar) units*”.

The starting point of a case study is the research problem and questions (Merriam, 2009, p. 50). *How* and *why* questions aim for explanations to reveal insights into the research problem (Yin, 2014, p. 10). A case study strives for “*meaning and understanding*” by providing descriptive results (Merriam, 2009, p. 39). The in-depth analysis is based on a case, which Yin (2014, p. 16) considers a *phenomenon*. It can incorporate quantitative as well as qualitative analyses (Gerring, 2004, p. 353). Examining several sources of information, such as documents, interviews, or observations, allow the investigator to understand the case (Merriam, 2009, p. 43).

Various case definitions exist, which is why Gerring (2004, p. 342) refers to a “*definitional morass*”. Defining approaches range from studies being performed in a given field, studying small samples<sup>301</sup>, or, most popular, examining a particular phenomenon (Gerring, 2004, p. 342). Hence, he conflates that the case study methodology is the “*way of defining cases, not a way of analyzing cases or (...) modeling causal relations*” (Gerring, 2004, p. 341).<sup>302</sup>

Research debates on single or multiple-case designs (Yin, 2014, pp. 18–19; Smith, 2020, p. 200). Multi-case studies examine different cases for which the investigation is similarly performed. For instance, if research analyzes differences between institutions, each institution may be understood as a single case<sup>303</sup>, but the analysis incorporates all cases (Yin, 2014, p. 56).<sup>304</sup> Following a replication logic in a multi-case design, the analysis would be repeated for some cases. If they do not support the propositions, they are revised and additionally tested with another set of cases (Yin, 2014, pp. 57–58). In multi-case designs, the investigator must completely study and conclude each case. The results lead to an aggregate conclusion of all cases (Yin, 2014, p. 59).

A single-case design only focuses on one case. Yin (2014, p. 51) introduces five types that justify the single-case design. A *critical case* focuses on the theory development, whether it can be extended, confirmed, or rejected. *Extreme cases* represent deviations from routines or standards. A *longitudinal case* examines a phenomenon several times, while a *revelatory case*

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<sup>301</sup> See Gerring (2004, p. 344) for an explanation, why case studies with a “*high-N*” also exist.

<sup>302</sup> Gerring (2004) particularizes the difference between case and non-case studies.

<sup>303</sup> However, depending on the study, an institution is not always a case. It can be a unit of analysis or a population (e.g., Gerring, 2004, p. 342).

<sup>304</sup> In distinction to Yin (2014), Merriam (2009, p. 49) distinguishes between multi-site and multi-case studies. While multi-site studies examine various institutions, multi-case studies focus on varying phenomena.

underlines the opportunity to have first-time access to a phenomenon. A *common case* considers daily or standard procedures or circumstances (Yin, 2014, pp. 51–52).

Furthermore, case study designs may be either *holistic* or *embedded*. In holistic studies, single as well as multiple-case designs only have a single analyzing unit. In contrast, embedded single and multiple-case designs have various units of analysis.<sup>305</sup> If subunits of analysis exist within a case design, it is an embedded design that is more complex and contrasts a holistic investigation (Yin, 2014, pp. 53–56).

Defining a case or a unit of analysis depends on the research design and its argumentation. A case can be a country, an individual, an institution, or a phenomenon that is studied and limited in space and time. The challenge arises, however, as an institution, for instance, is not always defined as a case. It could also be a unit of analysis or the population of which the sample is selected (Gerring, 2004, p. 342). On these grounds, the selection of a case and its analyzing units depend on the context of a study and its purpose.

Concerning the purpose of a case study, Yin (2014, p. 238) distinguishes between different types. Explanatory, exploratory, and descriptive case studies follow other functions. An exploratory case study establishes the research questions needed for an additional research study. An explanatory case study focuses on relationships of events or conditions by analyzing the reasons, as it focuses on *how* and *why* questions. A descriptive case study considers the case within its environment to explore a phenomenon, which is considered a case.

This dissertation is a descriptive case study that aims to present sustainability reporting information's role in financial analysis. The four research questions aim at insights into the procedures of financial analysts. Based on the financial intermediation theory, information is the crucial input factor for financial analysts serving as intermediaries. Assumingly the nature of information (even if sustainability information is not reported in the forms of, e.g., income or cash flow statements) should not matter to the intermediary if it reduces information asymmetries in the capital market.

As the study is based on a theoretical fundament of financial intermediation theory and few in-depth analyses about the financial analysts' workflows exist, a case study design is suitable to apply. The research questions aim to spotlight the case of *sell-side financial analysts' information processing*. It is a single-case design, as a *common case* is the basis. The profession of

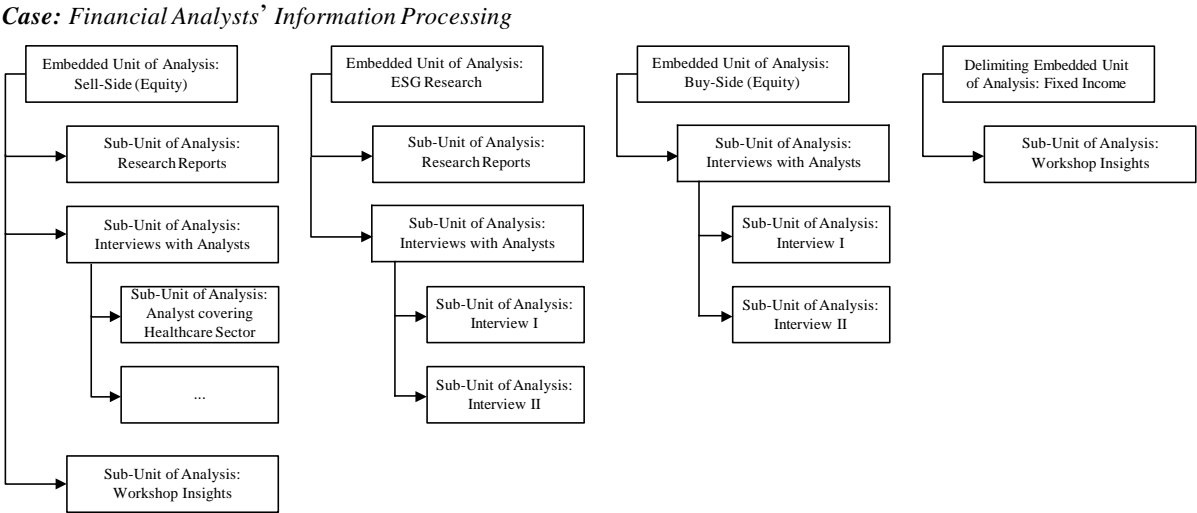
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<sup>305</sup> Accordingly, one differentiates between holistic single and multiple-case designs as well as embedded single and multiple-case designs.

financial analysts is considered the population of which a sample is selected, and their daily activities underline a *common descriptive case*. Even though financial analysts may diverge in nature, the dissertation focuses on equity analysts from the sell side.

Nonetheless, the different research areas deviating from the sell side are also examined to obtain insights into possible collaborations from other perspectives. This is the reason for a single-case study design, as the case to analyze is the phenomenon of *processing information*. Moreover, the study does not focus on differences between analyzing perspectives, bank houses, or financial analyst types in particular, which could justify a consideration of multiple cases.

**FIGURE 11:**  
*Embedded Single-Case Design*



**Notes:** Own case and sub-unit consideration following Yin (2014, p. 50).

Furthermore, when different analysts from the same bank house were interviewed, the interview was adapted to the level of knowledge. Thus, the analysts represent different sub-units of analysis, but not individual cases, as the study has not completely been conducted with each interviewee. The four types of analysis (equity sell side and buy side, ESG, and fixed income) illustrate the embedded units of analysis (and not cases). Different sub-units on different hierarchical levels can be allocated to the sell-side, buy-side, ESG, or fixed-income unit of analysis. Fixed



income, as the least relevant unit of analysis, serves to better classify and differentiate equity analysis from fixed income analysis. Thus, only a few insights are generated from this unit within the workshop. The set of embedded units of analysis and their divergent sub-units results in an embedded single-case design that *FIGURE 11* demonstrates. The study's purpose is based on the research problem and *how* questions that require a descriptive case that illustrates financial analysts' procedures.

Therefore, a qualitative case study design is suitable to examine the research questions and the study's objective as it draws upon financial intermediation theory and financial analysts' role as information intermediaries. The study extends the predominant quantitative empirical literature in the intersection of accounting and financial analysis with an in-depth qualitative approach.

## 7.2 Methods of Data Collection

### 7.2.1 Triangulation and Data Sources

Qualitative research strives for triangulation. It shall validate the results to prevent uncertainty in the findings' interpretation (Misoch, 2014, p. 238) and ensures the width and depth of the methodological approach. Triangulation can be differentiated into four types: data, theory, methodological, and researcher triangulation (Flick, 2021, p. 519), which can be conducted either alone or jointly (Misoch, 2019, p. 252). Data triangulation, in particular, considers different data sources. Accordingly, studies ideally consider data from different periods, places, and people (Flick, 2021, pp. 519–520). Data triangulation allows the researcher to adopt different perspectives as the data vary. Closely connected to data triangulation is methodological triangulation. Using divergent methods often results in obtaining various data formats (Misoch, 2014, pp. 238–239). Researcher triangulation ensures that different researchers perform the collection as well as the evaluation of data to eliminate individual biases (Misoch, 2014, p. 238). Theory triangulation combines different theories and is seldom applied (Misoch, 2019, p. 253). Depending on the research approach, a suitable type of triangulation or an appropriate combination is required to ensure validity (Misoch, 2019, pp. 252–255).

Typically, direct observations, interview data, or documentary evidence allow a qualitative analysis (Smith, 2020, p. 201). In short, a qualitative case study approach requires the analysis of multiple information sources (see *TABLE 1*).

**TABLE 1:**  
*Data Sources Ensuring Triangulation*

<b>Label</b>	<b>Expert Interviews</b>	<b>Label</b>	<b>Supporting Documents</b>	<b>Label</b>	<b>Field Notes</b>
	<b>Sell Side</b>		<b>Research Reports</b>		
I1	Workshop Sell-Side Analyst	RR1	Company-Specific Report	FN1	Field Notes, File 1
I2	Workshop Sell-Side Analyst	RR2	Company-Specific Report	FN2	Field Notes, File 2
I3	Workshop Sell-Side Analyst	RR3	Company-Specific Report		
I4	Workshop Sell-Side Analyst	RR4	Company-Specific Report		
I5	Interview Sell-Side Analyst	RR5	Company-Specific Report		
I6	Interview Sell-Side Analyst	RR6	Company-Specific Report		
I7	Interview Sell-Side Analyst				
I8	Interview Sell-Side Analyst	RR7	Cross-Industry Report		
I9	Interview Sell-Side Analyst	RR8	Cross-Industry Report		
I10	Interview Sell-Side Analyst	RR9	Cross-Industry Report		
I11	Interview Sell-Side Analyst	RR10	Cross-Industry Report		
I12	Interview Sell-Side Analyst				
I13	Interview Sell-Side Analyst	RR11	Industry-Specific Report		
I14	Interview Sell-Side Analyst	RR12	Industry-Specific Report		
I15	Interview Sell-Side Analyst	RR13	Industry-Specific Report		
I16	Interview Sell-Side Analyst				
I17	Interview Sell-Side Analyst				
I18	Interview Sell-Side Analyst				
I19	Interview Sell-Side Analyst				
I20	Interview Sell-Side Analyst				
	<b>ESG</b>		<b>ESG Files</b>		
I21	Interview ESG Analyst	E1	ESG Score		
I22	Interview ESG Analyst	E2	ESG Master List		
		E3	ESG Report		
	<b>Buy Side</b>		<b>Other Documents</b>		
I23	Interview Buy-Side Analyst	O1	Research Coverage		
I24	Interview Buy-Side Analyst	O2	Capital Market Presentation		
		O3	Capital Market Presentation		

**Notes:** The table provides an overview of the data sources of this study that contribute to data triangulation. Different labels are used to determine the expert interviews with their interviewees (I), supporting documents, such as research reports (RR), ESG files (E), and other documents (O), as well as field notes (FN).

Thus, this dissertation assures methodological triangulation by collecting information differently. Interviews, a workshop, research reports, and other supporting documents (e.g., ESG Master List) underline the variety of methodological data collection as shown in *TABLE 1*. The study focuses on financial intermediation theory solely. Hence, theory triangulation is not ensured. Likewise, researcher triangulation is not addressed because the coding and the analyses are only performed by a single author.<sup>306</sup> However, data triangulation is given by considering evidence from different bank houses and different persons as various sell-side analysts are interviewed. Complementary interviews with ESG and buy-side analysts were conducted to examine the case from different perspectives, still focusing on the sell side. Data triangulation for different periods is given as interviews are taken in two different years. In one bank house, interviews were taken in both years (see *TABLE 2*).

The dissertation's data collection aimed at triangulation, which the following chapters will demonstrate by explaining the research design.

### 7.2.2 Workshop

Observing or interviewing would allow an understanding of the financial analysts' processing and their reasons for information selection. As observing their actions would be time-consuming, and as it is difficult to obtain access to observe financial analysts' daily work, a two-day workshop at a German private bank house was conducted to learn about equity analysis. This workshop took place on-site in 2020 and explicated insights into the daily work. The workshop was conducted conjointly with another researcher.<sup>307</sup> In two days, four experts, i.e., financial analysts with high hierarchy levels, explained different workflows and topics related to financial analysis. Equity analysis was in focus, even though additional insights from the fixed-income analysis pointed out the differences in analyzing procedures and the divergent relevance of information sources. Two heads of equity research and two members of a corporate finance team led through the two days and shared their expertise. The four experts are listed in *TABLE 1* and *TABLE 2*.

The workshop started with introductory words and the history of the German private bank house. The company structure, the different products and services, the clients and investors, the sales structure as well as the bank house's coverage were presented first to understand the

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<sup>306</sup> Due to the format of the dissertation as a monography, researcher triangulation cannot be achieved.

<sup>307</sup> The preliminary findings are presented in Fülbier *et al.* (2021). See also *FOOTNOTE 308*.

background of the research. Second, creating research reports, including new initiations or follow-up reports based on events, was explained. Data extraction, as well as valuation procedures, were discussed afterward. Further insights were obtained from a different perspective as the importance of credit ratings and the procedures of credit contracting were presented and opposed to equity analysis. In addition, the suitability of IFRS and German Commercial Law was discussed from the perspective of financial analysis.

This workshop provided insights into equity analysis procedures and the distinction to and differences in debt analysis. The workshop has not been audio-taped, but field notes have concurrently been taken to be analyzed afterward. The workshop resulted in 99 pages of handwritten field notes that were subject to content analysis based on coding.

### 7.2.3 Expert Interviews

#### 7.2.3.1 Selection of Interviewees

The workshop's insights allow a general understanding of the daily routines of financial analysts. Even though meaningful insights were generated, additional actual observations could be insightful but would require questioning the analysts' decision-making procedures. Hence, it is adequate and efficient to interview, rather than to observe, financial analysts because one can directly address the questions.

The focus is not on the individual but on the interviewee as a representative of the profession. Thus, the selection of interviewees strives for financial analysts who are experts in equity analysis. Their experience and expertise shed light on the formerly developed research questions (Misoch, 2014, pp. 120–121). Expert interviews are not a method to conduct interviews. It is a target group selection (Kruse, 2015, p. 166). The interviewees' expertise and representativeness is assured by several years of working experience and high hierarchical levels (Borchardt and Göthlich, 2009, p. 38).

As the profession of financial analysts is challenging to reach and as the focus is on the German capital market, the choice of interviewees is limited and results in a relatively small sample size. This justifies the aims of interviewing experts and reaching out to a diverse group of experts working for various bank houses of different sizes. The search for appropriate interviewees started off with convenience sampling. Financial analysts from renowned bank houses of different sizes were asked to participate in interviews. With convenience sampling, interviewees were asked to participate because it was convenient to establish contact as the network

was available (Merriam, 2009, p. 78). Continuing the search for interviewees with snowball sampling led to a satisfying sample. Snowball sampling refers to asking interviewees to suggest or reach out to other candidates that could be enlightening to interview (Magnusson and Marecek, 2015, p. 38). In this case, participants were asked for alternative analysts covering other industrial sectors or working for other houses. Additional interviews with analysts from the same bank house were not conducted if the previous interviews were satisfactory or if no further interviewees could be found.

Throughout conducting the interviews with sell-side analysts, it appeared enriching to conduct complementary interviews with buy-side and ESG analysts. They were conducted to expand the understanding of the collaboration between the buy side and sell side as well as the ESG analysts and the sell side. As the interviews pointed out that the integration of ESG matters varies depending on the bank house, ESG analysts were interviewed. Some houses have ESG teams analyzing sustainability matters. Others expect financial analysts to cover such issues. As a result, these supplementary interviews reveal a broader view of the different analytical procedures within equity analysis.

Interviews with 20 individuals were conducted in 2020 and 2021 (*see TABLE 2*). Besides, four experts were part of the workshop in 2020. For reasons of consistency and research ethics, all interviews are anonymized, and the interviewees signed a declaration of consent in advance. Two group interviews<sup>308</sup> with three financial analysts each were conducted in addition to the workshop. The participants work for the same bank house but cover divergent industrial sectors. The group interviews took place on-site in person. Afterward, fourteen single interviews were conducted via phone or video call.<sup>309</sup> Prior to the conduction of the interviews, requests were sent via e-mail, and in addition, preliminary talks were held via phone. In a few cases, only e-mails were exchanged to inform about the interview. Still, the preliminary talks ensured a better understanding of the analysts' position and work.

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<sup>308</sup> The two group interviews were conjointly conducted with another researcher. Even though the workshop (*see FOOTNOTE 307*) and the group interviews were run together with the other researcher, the author of this study determined the transcription as well as the coding rules solely.

<sup>309</sup> This was a result of the COVID-19 pandemic.

**TABLE 2:**  
*Interviewees and Experts of the Workshop*

<b>Label</b>	<b>Position</b>	<b>Data</b>	<b>Date of Interview</b>	<b>Duration (min)</b>
I1	Head of Equity Research	FN	January 13 and 14, 2020	
I2	Head of Equity Research	FN	January 13 and 14, 2020	
I3	Corporate Finance, Head of DMM	FN	January 13 and 14, 2020	
I4	Head of Corporate Finance	FN	January 13 and 14, 2020	
I5	Sell-Side Analyst	RT	January 13, 2020	150 (A)
I6	Sell-Side Analyst	RT	January 13, 2020	151 (B)
I7	Sell-Side Analyst	RT	January 13, 2020	151 (B)
I8	Sell-Side Analyst	RT	January 13, 2020	150 (A)
I9	Sell-Side Analyst	RT	January 13, 2020	150 (A)
I10	Sell-Side Analyst	RT	January 13, 2020	151 (B)
I11	Sell-Side Analyst	RT	June 21, 2021	59
I12	Sell-Side Analyst	RT	June 28, 2021	58
I13	Sell-Side Analyst	RT	June 30, 2021	56
I14	Sell-Side Analyst	RT	July 7, 2021	78
I15	Sell-Side Analyst	RT	July 8, 2021	48
I16	Sell-Side Analyst	RT	July 16, 2021	66
I17	Sell-Side Analyst	RT	July 19, 2021	75
I18	Sell-Side Analyst	RT	July 21, 2021	55
I19	Sell-Side Analyst	RT	August 18, 2021	41
I20	Sell-Side Analyst, formerly Head of ESG Research	RT	July 2, 2021	62
I21	Head of ESG Research	RT	June 15, 2021	61
I22	Head of ESG Research	RT	April 16, 2021	44
I23	Buy-Side Analyst	RT	August 13, 2021	59
I24	Buy-Side Analyst, formerly Sell-Side Analyst	RT	August 27, 2021	58

**Notes:** The data were either recorded and transcribed (RT), or field notes (FN) were concurrently taken. The interviewees I5–I10 were interviewed in two groups: *Group A* and *Group B*. I3 is part of the Corporate Finance Team and Head of Debt & Mezzanine Markets (DMM). The insights generated within the workshop from I3 serve to better differentiate equity from fixed income analysis, which is why it is not the focus.

Similarly, the preliminary talks enabled the interviewee to better understand how the interview would be conducted. About four hours of preliminary talks either led to the conduction of an interview, the cancellation due to the unsuitability of the dialogue partner for the study, or to the passing on to a more appropriate interviewee. Some requests remained unanswered. A few potential dialogue partners never answered or did not further answer when scheduling a meeting or did not join the agreed call.

The interviewees work for six different bank houses of divergent sizes and with origins and headquarters in different countries. The requests and preliminary talks included further analysts from the previously mentioned six and two other bank houses. Sixteen sell-side analysts were interviewed, and to obtain complementary insights, two ESG analysts, as well as two buy-side analysts, participated in the study. Eighteen interviewees are German-speaking, one of whom works in Austria but covers the German market. The others are all working in Germany. Two participants work in London (UK), but they are the two ESG analysts. In both cases, ESG research is managed centrally. Hence, the main contact, an expert with a high hierarchical level, works in London. These two interviews were held in English, while the others were conducted in German. All interviewees represent high hierarchical levels and, hence, many years of work experience.

The interviews lasted between 41 and 151 minutes; the mean interview time was about 73 minutes (min). The interviews were audio-taped and transcribed afterward. The audio tapes were manually transcribed with the software *f4transkript*. This resulted in about 19 hours of audio data and 345 pages of transcripts.<sup>310</sup>

### 7.2.3.2 Interview Method and Conduction

The conduction of interviews can be distinguished with respect to their preparation and structure. Interviews may range from unstructured to semi-structured to standardized interviews. Standardized interviews resemble a survey because the questions, as well as their order, are predetermined, and the researcher does not deviate (Merriam, 2009, pp. 89–90). In contrast, unstructured interviews usually appear like a conversation that aids the researcher in understanding a case. It is an exploratory conversation because the researcher has no or little knowledge about a certain case. Thus, the interview enables the researcher to ask specific questions after learning from the interview (Merriam, 2009, pp. 90–91). Semi-structured interviews

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<sup>310</sup> Upon request to the author of this dissertation, the transcripts might be provided.

are in the continuum between standardized and unstructured interviews. The interview follows a guideline, although deviations from the predetermined questions are allowed and result from the participants' answers. Conducting semi-structured interviews allows the researcher to discuss new ideas or questions that result from what is learned while interviewing (Merriam, 2009, pp. 89–90). Still, it ensures that the interviewer follows a given thematic path, although detailed questions may vary (Kruse, 2015, p. 209).

To address the research questions, a semi-structured interview guideline was prepared before conducting the interviews. Based on the research literature, the identified research gaps, and the objective of the study, questions were raised and integrated into the guideline. The interview guideline is enclosed in *APPENDIX III*.

In this study, semi-structured interviews are suitable as the interviewees may vary in their covered industry, requiring divergent information sources, procedures, or deviating relevances. Furthermore, some interviewees work for the same bank house. After conducting the first interview, some processes of the specific bank house are known and do not have to be questioned in detail again. Since research literature already points out the fundamentals of financial analysis, an unstructured interview seems inappropriate to apply. As more detailed information is of interest to the study, a standardized interview neither seems suitable.

The semi-structured interviews offered the flexibility to address different questions about the interviewee's position, the already obtained knowledge about the bank house's procedures learned in earlier interviews and the insights that arose during the interview. The interview guidelines' basis was the same for sell-side, ESG, and buy-side analysts. *APPENDIX III* demonstrates the identical basis and the different main parts of the three interview guidelines that vary due to the analysts' divergent tasks. As the interviews were semi-structured, the emphasis on particular topics and questions varied in all conversations, irrespective of the analyst type.

ESG and buy-side analysts were supplementarily questioned about the collaboration with sell-side analysts, and the questions on ESG information, for instance, differed when interviewing an ESG analyst. *APPENDIX III* illustrates the divergent main parts of the three interview guidelines.

Nevertheless, throughout all interviews, the main parts were addressed to obtain comparability and a comprehensive understanding of the procedures within financial analysis and the relevance of financial and sustainability information.



The sell-side interviews with the group and individual expert interviews follow the interview guideline that can be structured into four main parts to learn about (1) the interviewee's personal career and current position, (2) the daily workflows, (3a) the sources and relevance of financial information, (3b) the processing of information including valuation, as well as (4) the relevance and processing of sustainability information within the financial analysis. Due to the semi-structured interview guideline, the interviews may have varying foci depending on the analyst's position and sometimes inconsistent thematic orders, as topics were addressed when the interviewee raised a matter of interest.

The first interview guideline section begins with the interviewees introducing themselves and talking about their position, the industries and companies they cover, career paths, and tasks so that the interviewees feel comfortable with the situation. This way, they start talking freely and at length, which is desired for the following explanations.

Second, the interviewees are asked to describe their daily workflows and routines. The information sources they use for these proceedings and how relevant different types of information are to the analysts are likewise questioned. Moreover, it is of interest why they search for specific information.

Third, the valuation procedures of financial analysts are addressed: the daily operating workflows, the use of valuation models, the choice of estimates, and others. Additionally, specific types of information, primarily financial information, are referred to, and their relevance is questioned. ESG analysts are not asked about these procedures.

Fourth, the questions focus on the relevance of sustainability information. The interviewees are asked whether and how they integrate sustainability information into their analysis. They are asked about which ESG information is most relevant to their proceedings, and the financial implications of ESG information are addressed. While ESG analysts are asked in detail about ESG scores and ESG models, financial analysts are questioned about the integration of ESG matters in their valuation models. In particular, the reasons for consideration and its impact is of interest to the study.

Following the guideline, the interview closes with questioning the participant whether he has any further remarks or questions.

### 7.2.3.3 Transcription of the Recorded Audio Tapes

The German and English audio tapes' transcriptions followed the rules based on Dresing and Pehl (2018, pp. 21–22). Kuckartz *et al.* (2008) define resembling transcription rules upon which Dresing and Pehl (2018) build. The transcription guideline is attached in *APPENDIX IV*. Depending on a study's objective, different sets of transcription rules seem appropriate. Here, the focus is on semantic content, which is why the transcription rules are less strict and, thus, less detailed. The transcription aims for easy readability and understanding of the content. The text is smoothed if an interviewee stutters, repeats a word twice, or if he uses filling words. Dialects are adapted to written German or English. Other than that, each word is transcribed (Dresing and Pehl, 2018, pp. 21–22).

Non-linguistic actions, such as volume, speed rate, stressing of words, or pauses, are not noted (Dresing and Pehl, 2018, pp. 17–18). Only relatively long pauses are written down in the transcripts and marked with this specific character sequence: (...). However, within the presentation of the research results, this character sequence (...) indicates the omission of text passages within citations. Breaking off sentences is marked with a slash. Furthermore, short sentences are aimed for because they are easier to understand. Hence, interpunctuation preferably considers a period, not a comma (Dresing and Pehl, 2018, p. 21). The transcripts are saved in a rich text format (RTF) file and denote labels to differentiate between the interviewer and the interviewee. Supplementary time markers follow each speaker change (Dresing and Pehl, 2018, p. 22).

### 7.2.4 Research Reports and Other Documents

Besides closing the interview by asking for further remarks, questions, and sometimes for potential interview partners, it was asked for exemplary research reports or other documents that contribute to the understanding of financial analysts' information processing and information distribution, fulfilling the intermediation task of financial analysts. Moreover, the relevance of sustainability in research reports was examined by studying the documents and comparing the findings to the insights from the interviews.

In total, 19 documents were obtained from four different institutions. Three documents address ESG investments and indicate how the bank house stresses the importance of sustainability. The interviewees provided thirteen research reports that can be distinguished into three

types: industry-specific, company-specific, and cross-industry studies. *TABLE 1* provides an overview of the anonymized documents.

The three industry-specific studies consult different companies of one industry each. The six company-specific reports only describe a single stock each. The six reports differ in detail. While a full note analyzes a company in detail, the five comments on companies confine to less detailed descriptions. The four cross-industry reports stress different companies from different industries. The studies point out different formats, such as a daily, monthly, and yearly overview of stocks, that are emphasized due to an event or due to its performance in the past year, for instance. In addition, three other documents are obtained. One document considers the whole coverage of a bank house, and two documents from a covered company are discussed while interviewing. The analyst explained which information he looks at to understand the processing of information.

These documents, as a third information source, are additionally investigated with a content analysis by coding the research reports, ESG files, and other documents.

### 7.3 Method of Data Evaluation

This chapter first explicates the fundamentals of qualitative content analyses to justify the procedures of this dissertation. *CHAPTER 7.3.2* adapts the fundamentals to the dissertation's processes.

#### 7.3.1 Fundamentals of the Content Analysis

In a qualitative empirical analysis, it is convenient to examine information sources, such as field notes of observations, transcripts of recordings, visual data, and other documents based on content analysis. Qualitative analysis taps into the complexity of human behavior. It contrasts quantitative analysis, which concentrates on variables and making information quantifiable. The generalization objective of quantitative analysis challenges qualitative research, which more often focuses on individual cases (Mayring, 2015, pp. 20–23). The content analysis offers possibilities of quantitative as well as qualitative approaches while examining texts (Krippendorff, 2009, p. 87). Texts and the description of research results, for instance, are qualitative by nature, while the content and text units could be analyzed quantitatively by counting (Krippendorff, 2009, p. 87). The focus is on qualitative content analysis in the following.

Various components contribute to successful content analyses. Data in content analysis is first unitized. Unedited texts, which represent any data type and are relevant to the analysis, follow a systematization that aids in identifying varying units (*unitizing*). Data refer to written documents or descriptions of something that could be heard or observed (Krippendorff, 2009, pp. 83–89). Furthermore, *sampling* procedures follow to generate representative insights (Krippendorff, 2009, pp. 83–84). *Recording* and *coding* enable the comparability of the various units, irrespective of their presentation. Audio types are transcribed. The written format allows coding, whereas images are similarly coded to ensure analyzability and comparability (Krippendorff, 2009, p. 84). It is followed by simplifying the texts' representation or reducing the texts' diversity (*reducing*). This procedure allows the researcher to identify the meaning of texts or derive phenomena that result from the knowledge about the context but are not represented in the text (*inferring*). Lastly, presenting the research results (*narrating*) may stress, e.g., recommendations, the suitability of content analysis, or the research's significance (Krippendorff, 2009, p. 85).<sup>311</sup>

Content analysis may benefit from coding as a technique to analyze data. Other techniques, though, can be appropriate alternatives (Saldana, 2016, pp. 2–3). Coding results from the classification of various units (Kuckartz, 2018, p. 31). It allows searching for patterns to understand and examine a phenomenon (Krippendorff, 2009, p. 125). A code represents data's content through naming or describing (Saldana, 2016, p. 4). One distinguishes between two coding techniques. In *deductive* coding, theoretical propositions or theories mirror the base for a coding system. Various codes are derived and applied to the data. In contrast, the data is the basis of *inductive* coding: the content is generalized, and thereby codes are derived. Mayring regards *inductive* coding as less biased because the procedures are not built upon any assumptions (Mayring, 2015, pp. 85–86).

The coding process is expected to ensure an appropriate codebook that mirrors the desired level of abstraction, which is specified first. With the data at hand, a first coding cycle is conducted for a portion of the material. Codes and subcodes are defined. Afterward, the coded material is revised with the set of codes. During a second coding cycle, all material is coded and is followed by another revision, including redefinitions and subordinations of codes. A third coding cycle is performed. If an additional revision of the code set does not require any

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<sup>311</sup> The components' order may vary or overlap (Krippendorff, 2009, p. 85).

adjustments, the analysis follows. If the codes are adjusted, the researcher must conduct another coding cycle (Mayring, 2015, pp. 86–87). The interpretation and analysis follow the final coding.

Different types of codes exist to classify units. Some code types depict the nature of a code, such as *evaluation*, *process*, or *value* codes. *Evaluation* codes include judgments about the data's significance or worth (Saldana, 2016, pp. 140–141), while *value* codes point out participants' views and attitudes, beliefs, or perspectives (Saldana, 2016, pp. 131–136). *Process* codes designate data describing activities or routines emphasizing time, changes, or sequences (Saldana, 2016, pp. 111–114). *In-vivo* codes refer to words or formulations used in the data to describe them as accurately as possible (Kuckartz, 2018, pp. 34–35). *Attribute* codes mostly appear at the beginning of the data. It emphasizes essential information about the data, an institution, or a participant. In the case of a transcript, for instance, it illustrates descriptive information on the characteristics of an interviewee (Saldana, 2016, p. 291).

Other types of codes highlight the process of coding. For instance, *sub-coding* allows the subordination of codes to other codes (Saldana, 2016, pp. 91–93), while *simultaneous coding* allows the researcher to allocate different codes to the same unit if it fulfills different attributes simultaneously (Saldana, 2016, pp. 94–96). After the first set of codes and coded content exists, *focused coding* allows the identification of categories. Similarities in codes with respect to themes or concepts are identified, and the codes are allocated to categories (Saldana, 2016, p. 294). In addition, *axial coding* identifies subordinations among the categories (Saldana, 2016, p. 291).

After coding, theorizing and interpreting follow. In a content-structuring analysis, in contrast to an evaluative content analysis, the findings are delineated based on main codes. The order of the codes is arranged to provide the best insights. The findings that are sub-coded are presented if they are of crucial importance (Kuckartz, 2018, pp. 118–119). The coding allows the identification of relationships and hierarchies (Kuckartz, 2018, pp. 118–121). Interpretation in qualitative analysis depends on the technique of analysis. Whereas frequency analyses count elements or codes of the content to investigate (Mayring, 2015, pp. 13–14), contingency analyses examine the relations between codes (Mayring, 2015, p. 16). Case study analyses investigate small samples and expose the results descriptively using explications and specific content examples (Mayring, 2015, p. 23).

### 7.3.2 Procedures of the Content Analysis

Following the selection of sampling units that *CHAPTER 7.2* describes, the units of analysis are determined. The sampling units must not equal the units of analysis (Kuckartz, 2018, p. 30). The data to analyze consists of the workshop's field notes, the transcripts of the interviews, and the research reports and frameworks obtained from different bank houses. The various documents may be considered as units of analysis having further subunits. All documents are coded using MAXQDA, a software for qualitative data analysis. The coding is similarly performed for German and English data.<sup>312</sup>

Inductive coding was performed to better structure, understand, and analyze the data. Simultaneous coding was partially applied if two or more codes were allocatable to a unit. For coding, only text units that were helpful in answering questions were of interest. Codes were only assigned to the interviewees' comments, not to the interviewer's comments, as the interaction between the interviewer and interviewees was not analyzed and only served to make the interviewee tell his story (Saldana, 2016, p. 17).

The data-driven inductive coding approach justifies a first coding approach that has not been performed for all sources. It was based on five interviews, including a group interview and interviews with an ESG, a buy-side as well as a sell-side analyst. After a revision of the identified codes and subcodes, the naming and the subordination of codes were adjusted. Based on this first set of codes, a codebook was prepared. The codebook includes the codes' names, descriptions, exemplary citations, and types of codes. The types distinguish between *in-vivo*, *attribute*, *evaluation*, *value*, and *process* codes. The type's identification helps to define the code precisely and to code the data properly.

The complete data (transcripts, field notes, and documents) were coded with this first set of the codebook. Additional codes and subcodes were identified, and the codebook was adjusted. After coding the first cycle completely and complementing the codebook with the new codes, their definitions, their code types, and exemplary citations, the codebook was revised again. Some codes were renamed, redundant codes were merged together with other codes, and some codes were reordered.

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<sup>312</sup> If citations are used in the description of the research findings, they are translated into English (if necessary).

Based on the revised first cycle codebook, another coding cycle has been carried out. The same adjustments as for the first cycle were conducted, leading to a second version of the codebook after the second cycle of coding. Subsequently, *focused* and *axial coding* followed.

A coding example of the codebook is delineated in *APPENDIX V*.<sup>313</sup> The codebook points out ten main categories and the allocated codes and subcodes on diverse levels. For each code, a definitory explanation, as well as an example of the data, is provided. Moreover, the allocation to the type of code, whether the content mirrors a process, an evaluation, an attribute, or values, aided in identifying the nature of the content. Most attribute codes are more important for the research design to explain the nature of a document or the education and career of an interviewee, whereas the other codes permit insights into analyzing procedures or the relevance of certain information.

The definitions, exemplary citations, and code type allocation eased the coding process. The major findings have lastly been highlighted in different colors to elucidate first the codes and then the themes, concepts, and interpretations derived from them. In addition, the codes belonging to the group of most frequently mentioned codes were identified and examined for their representativeness.

The content analysis is based on the various codes that illustrate different contents. Since quantification, such as counting codes, does not provide valuable answers to the dissertation's objective and research questions, the interpretation of the data is explicated. The results of the dissertation are presented in a meaningful order and supported with citations based on the formerly performed coding.

#### 7.4 Quality Criteria in Qualitative Research

Empirical research, irrespective of quantitative or qualitative research, considers particular criteria to ensure the high quality of research projects and their findings. These quality criteria differ in quantitative and qualitative research. By ensuring compliance with specific guidelines when collecting data up to analyzing data, society can trust in the relevance of the empirical findings (Misoch, 2014, p. 231). Empirical analyses generally employ three interdependent criteria to assess quantitative research: objectivity, reliability, and validity. However, the suitability to adapt these quality criteria to qualitative research is limited (Misoch, 2014, pp. 231–232). If problems and objectives of research studies differ, their design and assumptions also vary,

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<sup>313</sup> Upon request to the author of this dissertation, the codebook might be provided.

resulting in various quality criteria to ensure trustworthy research (Merriam, 2009, p. 210). Therefore, qualitative researchers aim for reliable results while focusing on validity and reliability (Merriam, 2009, pp. 234–235).<sup>314</sup>

Yin (2014, p. 45) further defines four criteria for case studies, which may be subsumed under validity and reliability. The four criteria represent tests to ensure trustworthy, credible, and confirmable results as well as reliable data. He distinguishes between three types of validity. *Construct*, *internal*, and *external validity* shall ensure the appropriateness of the chosen research design, the data collection, and their subsequent analysis (Yin, 2014, p. 45).

*Construct validity* requires the study's identification of concepts and associated operational measures. This criterion guarantees that the researcher prevents or adapts to deficits in the selected measures (Yin, 2014, pp. 46–47). Yin (2014, p. 47) suggests, among others, data triangulation to ensure *construct validity*. In this study, the field notes of the workshop, the transcripts of various interviewees, and the research reports and frameworks for investors allow data triangulation. For instance, the consideration of research reports beyond the analysis of interview transcripts allows preventing shortcomings of the analysts' perceptions of the relevance of particular information that is differently presented and distributed to potential investors.

The test of *internal validity* is only suitable for explanatory case studies and often addressed in experimental research. It relates to the analytical procedures within case studies as the focus is on establishing causal relationships (Yin, 2014, pp. 47–48). This study is a descriptive study and is not tested for internal validity.

*External validity*, though, is tested. It addresses the analytical generalization (see *CHAPTER 7.1*). The research design benefits from the use of theory or theoretical propositions (Yin, 2014, p. 48). Here, the consideration of financial intermediation theory while establishing research questions and the research design assures the study's external validity.

*Reliability* aims for proper documentation that would allow a researcher to conduct the same case study arriving at the same findings and conclusion. This quality criterion assures the minimization of errors or biases (Yin, 2014, p. 49). Throughout the data collection, notes were taken. The interview guideline, the transcripts, the field notes, the transcription guideline, and

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<sup>314</sup> Different types of qualitative studies lead to differences in the application of quality criteria. Likewise, different terminologies were developed to consider quality criteria (Merriam, 2009, p. 211).



the coding workbook allow the traceability of the procedures from the data collection to the analysis of the data.<sup>315</sup> Furthermore, the study's procedures are pictured in detail in this chapter.

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<sup>315</sup> Upon request to the author of this dissertation, the codebook and the transcripts might be provided.

## 8 Research Findings of the Qualitative Case Study Analysis

The study's objective to clarify the role of ESG information in financial analysis requires different investigations. The four research questions aid in providing insights to understand the financial analysts' procedures and the use of certain financial as well as ESG information. Insights on the collaboration with other intermediaries that might impact the role of ESG information processing by financial analysts are also obtained.

The results are delineated descriptively and divided into three main categories. First, the results of analysts' information processing are described. Findings into the daily routines and tasks that sell-side analysts perform are presented (*RQ 1*). Second, sell-side analysts' relevance and use of corporate information are explicated and distinguished between financial (*RQ 2a*) and sustainability information (*RQ 2b*). Third, insights into the relationship and collaboration with other information intermediaries, particularly ESG analysts, are depicted (*RQ 3*). Based on the findings, the role of ESG information in financial analysis is discussed, and implications for future research are derived.

### 8.1 Procedures in Financial Analysis

#### 8.1.1 Equity Research's Objective and Its Clients

When examining the analysts' work, it is essential to know their objective to understand why they act in specific ways. Investors, not sell-side analysts, make investment decisions. Even if an investor does not invest, the analyst proceeds with his research activities. Other investors to whom analysts forward their research might have different investment strategies (I19, #00:07:26#). In contrast, to earlier years, in which analysts<sup>316</sup> offered customer services to anyone by distributing research, an economic evaluation of a company is only given to paying customers (FN1, p. 11).

Analysts aim to “*determine the future viability of an industry or company in order to create a value proposition*” (I12, #00:20:27#). They are interested in the cash generation potential to derive an opinion about the covered company's future (I8, #00:25:20#).

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<sup>316</sup> The findings distinguish between general statements made by the interviewees about the profession and statements made by an individual, some, or all of the analysts interviewed. Even if all interviewed analysts agree upon a topic, no generally statements can be derived that are valid for the whole profession. This is due to the methodology (see CHAPTER 7). Still, they provide indications about the profession and its procedures.

*“Markets need opinions. (...) [Financial analysts] are not auditors. [They] are people who express an opinion about a company, on transactions, and on assessments of the development of the share price. [They] have a clear opinion, and it is based on the value of the company when [they] say ‘buy’ or ‘sell’” (I10, #01:12:20#).*

However, the investment decision depends on the perspective and objective of the investor. Even though an analyst provides an

*“investment recommendation, whether [one] should buy, sell, or hold [stocks]. There are always two levels: the investment case and the valuation. [One] ha[s] to separate the investment case a bit from the valuation. A stock can be very cheap and still have a bad investment story. If it is not doing well and the themes are not interesting, it can still be very interesting for long-term investors because the stock is favorably valued. But it is not interesting for the momentum” (I14, #00:13:04#).*

Some clients aim for short-term investments, others for long-term investments. In the short term, clients search for outperformers. In the long term, high-quality companies are of interest to the clients (FN1, p. 3). Depending on the bank, the clients are distinguished between institutional and private customers, if private customers exist at all (I14, #00:13:04#).

### 8.1.2 Coverage and Initiation

Financial analysts from the sell side have diverse tasks to fulfill. Analysts’ daily routines and activities need to be understood in order to classify the role and relevance of sustainability in financial analysis. A sell-side analyst’s coverage mirrors companies from the same industry. Sometimes, the analysts only cover a sector and not all of the covered companies that belong to a specific industry. The coverage is usually around ten to fifteen firms. Analysts focus on their coverage in their daily doings, but also on their peers (FN1, p. 3).

The processes must be distinguished between the first-time initiation of a newly covered company and follow-up analyses of covered companies (FN1, pp. 3–4). An initiation demands an in-depth examination of available corporate information that an investor would not be able to read due to its complexity (FN2, p. 5). Covering a new stock takes an analyst about one to three months (FN1, p. 118), in which an annual report, for instance, is completely read (I14, #00:20:46#). Analysts *“read in more detail to get a basic feeling”* about the company as they are interested in corporate management and the general risks of a company (I10, #01:23:10#).

*“During an initiation, [the analysts] have to dig really deep. Then, [they] have time for all the information, which [the analysts] defined as less essential before. It is, of course, crucial when getting to know the company to understand the company. What is driving the company? How does it work? What do [analysts] have to look at? Which figure is relevant? That is when all information is much more relevant” (I1, #01:26:17#).*

After the initiation research, an analyst must know where the company stands. Afterward, the analyst will not investigate the company’s disclosures to the same extent anymore (FN1, p. 14). Therefore, the initiation is not comparable to the daily workflow of an analyst. The research is much more time-consuming and more detailed than the subsequent research activities.

### 8.1.3 Processing Information

#### 8.1.3.1 Daily Routines

The financial intermediation task is visible through the distribution of research reports from financial analysts to investors. Nonetheless, prior to the distribution, the analysts fulfill diverse activities resulting in the disclosed recommendations. Analysts *“have to write reports, do marketing, meet with investors, go to conferences, [and] hone [their] industry expertise” (I18, #00:20:46#)*. Similar to the various tasks conducted by financial analysts, the sample’s research reports vary in format and depending on the bank house.

The daily workflows of analysts differ due to the variety of activities. Nevertheless, bank houses provide some guidance on how to organize an analysis, which is why the bank houses might structure research differently. Still, all bank houses involved in the sample conduct fundamental analysis, which is described in more detail in *Chapter 8.1.3.2*. The research activities may deviate in detail depending on a research team within the same bank house:

*“[T]here are guidelines from the Group Head of Research on how research should be structured, what the key components are, and there is agreement within (...) other teams, on how to evaluate companies and what the most important components in an analysis should be” (I11, #00:03:09#).*

Still, the processes in case of an *event*, for instance, resemble. An *event* can be the disclosure of an annual report, interim reports, or ad hoc disclosures throughout the year. The financial analysts adopt new figures to their spreadsheets when the company publishes them in an annual or interim report:

*“I always take the history from the original. (...) I have a spreadsheet containing fifteen years of historical [company] figures. I do not take them from Bloomberg. I take them directly from [the company]. I always build it up from scratch, even if I take something from a colleague. Because I want to know the figures and where they come from. I want to understand them and ensure that nothing is wrong. (...) But I make all the estimates for the future myself. That is what everyone does here. (...) So, the future I do myself and the history I take from the company” (I17, #00:10:52#).*

Besides adjusting the figures in the spreadsheet based on the company’s reporting, analysts consider strategic factors, such as risks and chances. Growth or competitiveness (RR1, p. 5), as well as risks and opportunities (RR11, p. 38), are addressed in research reports. Strategic factors may be integrated into a SWOT analysis:

*“The only thing that we additionally do: we always include a SWOT analysis. So, we say that these are the opportunities, risks, and dangers (...), which must be quantified somewhere, but not always. Often simply because the investors say, ‘the risk is too high for me. I cannot quantify it. It is too diffuse for me or simply unattractive to invest in the share.’ Then, that is something qualitative. For me, such an analysis is simply saying that something is happening, and I have to quantify that relatively quickly” (I17, #00:13:55#).*

If the event is not the publication of a corporate report but an ad hoc announcement, procedures might slightly differ. The analysts must react instantly:

*“[A]n ad hoc company announcement is important. I want to see how important it is, and I have to evaluate it immediately in my head. Then, I must write something. (...) That is when something happens, either through the press, through newsflow from competitors, or through news from the company itself. The price rises or falls by more than ten percent - roughly speaking. So that is a so-called strong price-moving event. That is just a calculation and, of course, a bit of gut feeling” (I14, #00:58:00#).*

The procedures following an event differ from activities scheduled all year round. Enhancing industry expertise or understanding a company’s operations may consist of conversations with the management or observations (e.g., I18, #00:20:46#) on-site (FN1, p. 5). To estimate the order situation, observations, such as watching suppliers entering the factory entrance, may be possible (FN1, p. 5).

Conversations with companies via the investor relations team or the management take place irregularly, but if there is a need to talk:

*“We talk to investor relations and management on an as-needed basis, sometimes every few days, sometimes every few weeks, every few months, depending on the situation. Depending on the need and where we expect things or see that it is necessary to exchange information. Basically, before each quarter and before the end of the year, we do pre-close calls with the companies. We then talk about the expected developments for the quarter and what could potentially change in the outlook for the full year or where the journey is going. The company has what is called guidance, an outlook. It says ‘this year I have this target’. Then, we must assess whether the target is more realistic or unrealistic over time. Where do I have to adjust this target if the company surprises positively compared to the previously communicated targets or negatively? And the same thing happens with the quarterly numbers. Accordingly – I just had a conversation like this– they are not allowed to give us any inside information, of course” (I18, #00:20:46#).*

Analysts obtain their previous knowledge during reporting season as well as through pre-close calls (I18, #00:20:46#) and financial press conferences, which is why the market mirrors a preview (FN1, p. 3).

Considering the disclosure of an annual report as an *event*, financial analysts download the annual report early in the morning and form a first opinion while taking a look at the profit and loss statement, the balance sheet, and the cash flow statement. The profit and loss statement is the most relevant, and the cash flow statement is compared to the analyst’s estimates, whether the cash flows are higher or lower. Accordingly, the analyst might adapt his valuation model (FN1, pp. 13-14; I7, #01:37:08#).

Following an event, some analysts focus first on the company’s press release before they examine any details:

*“When an announcement like this comes out, a press release always comes along. That includes the most important information the company thinks the investor wants to know on one or two pages. In any case, I always read that first in the morning because it already highlights the most important figures, which is always very important” (I7, #01:37:08#).*

The disclosed numbers in newly published reports are discussed during the first internal morning meeting with financial analysts and salespeople from the bank house. Before the conference call, the stock price reflects the information published in the annual report. Due to differences in time zones, conference calls might be scheduled in the morning but also in the early afternoon. The conference call allows financial analysts to ask questions that are not directly understood by skimming the annual report. In most cases, the disclosure of an annual report does not

require adjustments, as previous ad hoc disclosures usually lead to earlier adjustments (FN1, p. 13-14).

If it is a highly price-sensitive event, the analysts prepare a note for the next day that some refer to as a *comment* and others as a *flash*, for instance. The analyst's *comment* or *flash* considers the event, impacts resulting therefrom, and possible adjustments to the estimates and valuation model (FN1, p. 14; I14, #01:00:02#). If the event is not time-sensitive or highly price-sensitive, the analysts might comment on the event during the following days but not immediately on the next day (I14, #01:00:02#).

### 8.1.3.2 Conduction of Fundamental Analysis

#### 8.1.3.2.1 Quantitative Research

The financial analysts included in the study perform fundamental analysis, which justifies examining quantitative measures or stock prices and qualitative information that provides fundamental insights.

*“Since we do fundamental analysis, (...) we naturally type the figures from the annual report and look at the pure basis of the figures. We also read through all the prose of the Board of Management, the segment reporting, and the explanations and everything. Because we are looking for how to interpret these figures. So I would say that the combination of both [quantitative and qualitative information] is what you need” (I13, #00:42:03#).*

Nevertheless, the valuation in financial analysis differs depending on the analyst as well as on the bank house. At first, the analysts determine estimates of financial figures in their spreadsheets and plan for periods up to ten years ahead (FN1, 5). The DCF model considers a detailed forecast period, a transitional period, and, lastly, the terminal value. Whereas the detailed forecast period usually covers three years, the transitional period addresses 35 years, followed by the terminal value (RR3, p. 3; FN1, 5). The income and cash flow statements, as well as the balance sheet, are estimated for future periods. Some research reports disclose planning periods of five years, but key figures only for four years ahead (RR5); others emphasize planning periods of only three years (e.g., RR1). However, one has to distinguish between what the bank houses disclose in their reports and what they plan in their spreadsheets. A detailed forecast period usually consists of three years (I15, #00:16:57#; RR3, p. 3), which is illustrated in research reports (RR3, p. 3–4).

The estimates are based on the financial statement figures, which are crucial to determine the future:

*“I have to estimate the entire P&L<sup>317</sup>, the entire cash flow statement, and basically the entire balance sheet, which of course, is not quite as decisive; but still, one has to estimate the entire balance sheet, so that all adds up again, to be able to show a complete financial statement for [the next year] so that it results in a comprehensive forecast” (I23, #00:09:16#).*

Consequently, the basis is financial statements indicating the corporate history. “[O]n the one hand, it is clear that it relates to the past; on the other hand, it is the foundation on which the future is built” (I10, #00:16:50#), which is why they are crucial for the analysts’ work.

*“The main work is to make all the models, i.e., to derive profit and loss statements, that are company forecasts and market forecasts. We do exactly what the company publishes: the profit and loss statement, the balance sheet, and the cash flow statement. We have a huge model, which we basically reproduce, and we estimate the future. A company usually gives a one-year forecast, sometimes a medium-term forecast, but we always try to put that into concrete figures. Five years is usually the forecast period” (I14, #00:13:04#).*

In addition, valuation plays an important role in analysts’ procedures, which demand forecasts. The spreadsheets accentuate the fundament of the financial analysis, and they determine the procedures of the financial analysts to a large extent:

*“I have to be honest; we are very busy feeding our Excel models with figures. They have to be transferred to sales and earnings either in the three-year planning horizon that we have in the detailed planning or at least in the DCF model in the transition period” (I15, #00:16:57#).*

The valuation method may be prescribed by the company or the research team.

*“There are guidelines from the Group Head of Research on how research should be structured, what the essential components are, and of course, there is agreement within [a] team, for example, (...) on how to evaluate companies and what the most important components in an analysis should be (...) in order to simply be consistent” (I11, #00:03:09#).*

Some analysts have the choice of which method they regard as best suitable to apply:

*“We have a self-created model in equity analysis, where you have different options, which is always left to each analyst to have his own analysis style. So this is a very dedicated model, which has been developed over, I think, 20 years, with*

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<sup>317</sup> P&L is the abbreviation for profit and loss statements.



*which the analysts can work. They have different possibilities to take things into account” (I20, #00:39:21#).*

The advantage of DCF models, and the reason why they are dominant, is that they are always conductible (FN1, p. 6).

*“We have DCF in there by default. But we do not necessarily have to use that, but we can. For various reasons, it is sometimes not so opportune. In principle, you can justify any value using a DCF” (I18, #00:09:29#).*

Although many comments do not include the complete model, a full note may illustrate the complete valuation model (e.g., RR3). Other houses, however, only provide a section of the forecasting period and disclose essential figures, such as the beta, WACC, or the market’s risk premium (RR5, p. 6).

The discount factor is crucial for financial analysts. The analysts consider the volatility of the particular stock in comparison to the market and, hence, the risks related to the stock by determining the beta. The former mentioned qualitative analysis examines qualitative factors that aid in determining the beta.

*“We take [qualitative information] into account in the discount factor. One can discuss whether we should do this with the levered beta. But we do it that way. That is why certain aspects play a role, as they do for me now” (I14, #00:39:24#).*

**FIGURE 12:**  
*Exemplary Model Parameters*

Model parameter		Derivation of Beta:		Valuation (m)	
Derivation of WACC:		Derivation of Beta:		Present values until 2059e	3,687.9
Debt Ratio	45.0 %	Financial Strength	0.60	Terminal Value	723.3
Cost of debt	1.8 %	Liquidity	0.60	Financial liabilities	1,827.1
Market return	7.0 %	Cyclicalit	0.50	Pension liabilities	62.1
Risk free rate	1.5 %	Transparency	0.50	Hybrid capital	148.6
Risk premium	5.5 %	Others	0.60	Minority interest	7.1
Cost of equity	4.6 %			Market val. of investments	0.0
<b>WACC</b>	<b>3.11%</b>	<b>Beta</b>	<b>0.56</b>	Liquidity	231.0
				<b>Equity Value</b>	<b>2,597.4</b>
				No. of shares (m)	137.8
				<b>Value per share (EUR)</b>	<b>18.85</b>

**Notes:** This is an extract of a research report illustrating exemplary model parameters (RR3, p. 3). The layout has been uniformly adjusted to make it anonymous.

If qualitative, instead of market betas are used, the beta includes various factors influencing the final beta being below or above 1 (see *FIGURE 12*; RR3, p. 3). The example taken from a

research report points out the composition of factors resulting in a qualitative beta. They use “qualitative betas (...) by estimating the market risk. This then results in a beta smaller or larger than one” (I13, #00:29:53#). Financial strength, liquidity, cyclicity, transparency, and a combined factor of other parameters conflate into a single value of beta. Each factor is equally weighted to determine the qualitative beta (see *FIGURE 12*).

Although the interviewed financial analysts do not perform chart analysis, some analysts conduct a supplemental historical analysis (I17, #00:08:52#), showing historical figures or multiples to emphasize the development. The mean is in consideration, and whether a figure is below or above the mean results in a buy or sell recommendation (I18, #00:11:52#).

Applying the DCF method is generally regarded as suitable, but analysts view multiple valuations in some cases as more appropriate.

*“The market looks more at multiples. Accordingly, I go with multiples. So peer groups, sum-of-the-parts, which is then essentially multiple-based, normalized multiples, current multiples, or estimated multiples. And what we have as standard, which perhaps distinguishes us from one or the other, we go with Return on Capital Employed. So we do a ROCE model/ROE-COE model. So what is the return on equity versus the cost of capital? You form a multiple on the book value accordingly and then extrapolate what the fair value is (...). That is a derivation from the figure, which is, to a certain extent, multiple-driven, but not peer-multiple-driven, rather derived from the balance sheet, i.e., the estimates.” (I18, #00:09:57#).*

Contrasting DCF and multiple valuations elucidate that the application of DCF models is more applicable for the long-term, which is not always the focus of the capital market participants.

*“DCF is long-term oriented. If I have short-term fluctuations and the investors all say they are long-term oriented, but in fact, they are interested in measures on a monthly or daily basis. (...) I have to do performance now, in the next weeks and months. That means you have to look earlier, in the medium term. (...) Three-year horizon, five-year horizon – okay, fine. But above the terminal value, you can use the betas, i.e., the pure input factors that determine the share factor, to steer the result so massively in the right direction that it is almost irrelevant how the company develops in the next one or two, or three years. And that drives share prices, so the market is already more short-term oriented. And accordingly, when we talk to investors, we tend to look at short term” (I18, #00:11:52#).*

Furthermore, depending on the sector, the availability of a proper peer group deviates, which in case of an insufficient or absent peer group justifies the use of a DCF model (I14, #00:10:17#; I17, #00:07:21#). As a particular type of multiple valuations, analysts apply a sum-of-the-parts

valuation which they view “as more sophisticated than the peer-group consideration” (I18, #00:13:12#) that is not based on various segments (see, e.g., FIGURE 13).

*“I put a multiple on my estimate per segment. Then, I want to see whether the sum of the segments adds up to more than the model represents now in total. That is what I mean by sum-of-the-parts. This is a subform of the peer group valuation. You could say that for Siemens you now have ten companies in one pot, which is my peer group. And then, you apply that to the EPS of Siemens for the next year and add the multiple of the peer group, simply the average, for example (...). That would be the classic peer group. But if I say I am looking at different sub-segments, for example, Digital Factory, Mobility, i.e., Rail or Energy or something like that, then I make specific peer groups for them, i.e., sub-groups, and evaluate each individual segment separately. Then, I add that up and then subtract the group deduction item. The results may differ” (I18, #00:13:12#).*

**FIGURE 13:**  
*Exemplary Multiple-Based Sum-of-the-Parts Valuation*

Segment (mio. EUR)	Sales 2022e	Share of the Group	EBITDA 2022e	Return	Sector Multiple	Enterprise Peers Value
Speciality Additives	3.488	26%	945	27,1%	9,5	8.980 AAJ
Nutrition & Care	3.382	25%	656	19,4%	8,5	5.577 DSDC
Smart Materials	3.753	28%	698	18,6%	7,5	5.236 AJM
Performance Materials	1.991	15%	179	9,0%	6,5	1.165 LBL
Services, Corporates & Other	811	6%	-123		2,0	-246
<b>Group (adjusted)</b>	<b>13.425</b>		<b>2.356</b>	<b>17,5%</b>	<b>8,8</b>	<b>20.712</b>
- Net Debt (excluding pension provisions)						1.513
- Pension Provisions						4.688
- Third Party Shares						118
+ Joint Shares						75
<b>Market Capitalization</b>						<b>14.468</b>
<i>Average number of shares, fully diluted (million)</i>						<i>466,0</i>
<i>Fair Value per share (EUR)</i>						<i>31</i>

**Notes:** The figure has been translated, and the layout has been uniformly adjusted to make it anonymous (RR13, p. 38).

Still, applying a sum-of-the-parts valuation may even consist of a combination of multiples valuation and DCF valuation, as presented in FIGURE 14 (e.g., RR4, p. 3). A combination of both valuation types is considered if the valuation of different sectors requests different valuation methods to evaluate the segment at its best consideration. If applying the multiples valuation for a certain segment or a whole company, the discount factor and the integration of risks naturally do not play a role.

**FIGURE 14:**  
*Exemplary Sum-of-the-Parts Valuation*

<b>Sum of the parts</b>					
<b>Business segment</b>	<b>Fair value (mEUR)</b>	<b>WACC</b>	<b>No. of shares (m)</b>	<b>Fair value / share</b>	<b>% of total value</b>
Project development	897,56	-	14,35	62,53	67,94%
Power generation	360,88	3,24%	14,35	25,14	27,32%
O&M management	84,43	7,44%	14,35	4,36	4,74%
<b>Total Value</b>	<b>1342,87</b>			<b>92,04</b>	

**Notes:** The sum-of-the-parts valuation is based on three segments, for each of which a fair value is pointed out (in a million (m) euros (EUR)). The figure has been uniformly adjusted to make it anonymous (RR4, p. 3.).

In summary, financial analysts apply different valuation methods depending on the bank house's requirements and other circumstances, such as the existence of a suitable peer group. Overall, analysts have some latitude in determining the value of a company in the best possible manner.

#### 8.1.3.2.2 Qualitative Research

In addition to the indispensable quantitative analysis, qualitative information is of value to financial analysts:

*“[E]specially if you do fundamental analysis, you do not just look at the financials, but also at the strategy, the people, equality, future viability, and so on. You can certainly read out specific themes. (...) You can make particular cross-reads in terms of the strategic development of the company” (I13, #00:14:43#).*

For instance, qualitative information from an annual report is investigated to interpret and better understand the financial figures (I13, #00:42:03#). Even non-numerical information may provide important information, which is why it must be considered and understood. Financial analysts read “*between the lines*”, as companies' choice of words may deliver particular, even price-relevant, insights (I1, #01:29:19#). Moreover, it is essential for the financial analyst to understand the equity story and to know how the company is positioned in the market (I5, #00:39:37#). Strategic information indicating risks and chances allows insights for quantitative research even though their nature is non-numerical. “[M]arket issues and strategic issues have

*an impact on the entire P&L forecasting. In other words, on the development of sales” (I13, #00:22:59#).*

Some analysts conduct a SWOT analysis to examine a company’s strategic positioning. The information may be qualitative corporate information, or implications may be derived from information that relates to the market and goes beyond a specific firm exposing its strengths or weaknesses (I14, #00:38:29#).

The business model also indicates chances and risks that can be determined as qualitative factors. However, these qualitative factors are essential for the application of a DCF model to determine the discount factor (I14, #00:39:24#). Hence, DCF models can more easily integrate strategic information in comparison to multiples valuation:

*“[P]rincipally these change issues, strategic issues, structural winners or losers, can probably, at first glance, be better discussed in the DCF than in multiple valuations” (I18, #00:54:10#).*

Recently, qualitative disclosures have been shaped by sustainability. Partially, they can be regarded as strategic information. Some analysts perceive the impact of ESG information small as many other strategic topics and their effects exist:

*“There is so much more day-to-day business, so much newsflow, so much news, competitor action, and trading flows and whatever affects stock prices, all that overrides [ESG] ” (I18, #00:54:10#).*

In contrast, others argue that sustainability information can increasingly affect operative and strategic matters that are relevant to the quantitative analysis of a financial analyst:

*“I believe that the issue has taken on a new urgency. And that in the meantime, it has really taken on a completely different importance in terms of operations and strategy” (I12, #00:17:09#).*

Irrespective of its impact on quantitative research, ESG information plays a role in the consideration of qualitative research. CHAPTER 8.2.2 describes how such information is used and which sustainability information, in particular, is relevant to financial analysts.

## 8.1.4 Collecting Information from Different Sources

### 8.1.4.1 Corporate Reporting

The information that financial analysts process stems from divergent sources. Corporate information, in general, is obtained through corporate reporting, in the form of annual or interim reports, through communication in conference calls, capital market presentations, or in conversations via phone with the management, for instance (I5, #00:14:10#).

The financial analysts' objective is to map a company's future, and their work is mainly based on corporate reporting information. Analysts include corporate financial information in spreadsheets to set up future forecasts and value the company. The stock recommendations provided by the analysts are based on valuation. Hence, the financial reporting figures are crucial to the analysts, even if the analysts do not need every financial figure of the annual or interim report to estimate essential figures and to value a company:

*“In principle, you enter the current figures you need into the model as they appear in the annual report. But we do not need all the figures by a long shot” (I18, #00:20:46#).*

While this chapter concentrates on information sources, *CHAPTER 8.2* addresses the relevance and usage of the figures, sections, and contents of annual reports in detail.

Nonetheless, besides the indispensable quantitative information of corporate reporting, qualitative information taken from corporate reports provides relevant insights to analyze companies:

*“We are looking for how to interpret the figures. I would say that the combination of both [quantitative and qualitative information] is what you need. (...) Numbers are great. But there has to be something additional to it. Because a pure number, I have to be honest, is not a good way to make a recommendation” (I13, #00:42:03#).*

### 8.1.4.2 Communication with Companies and Other Analysts

Analysts believe that communication with corporates provides more trustworthy and more resilient information. Communication does not necessarily indicate face-to-face meetings on-site, but at least conversations via phone or video call and sometimes in person. Analysts but also investors differ in their perception of the communication channel. Some analysts want to view facial expressions and gestures:

*“I tell you honestly, all the things that are softer, those are things that I discuss face to face with the board. I want to see [the board of management’s] face” (I7, #00:18:52#).*

Even investors insist on the analysts meeting the companies in person, in some instances:

*“Sometimes there are old-school colleagues. They say, ‘I only invest in companies where [the analyst] ha[s] seen the management’, but they have very concentrated portfolios. It is all very narrow. That is their own approach. But you do not necessarily have to see an issuer. We would not be able to do that in terms of time” (I24, #00:46:16#).*

Direct communication aids the analysts in obtaining a personal opinion on a crucial matter that requires some sense of gut feeling:

*“I can go back into direct contact with the companies, with the management boards. I go in and see where the few critical points are, where the [other] analysts disagree, and what my opinion is. And, of course, we do not get any insider information from the board members, but you get a good feeling or sense of the direction in which things might go. So it is sometimes wrong, sometimes right” (I23, #00:09:16#).*

Forming an opinion about a company based on communication with its management depends on the trust that evolved over the years:

*“[I]t is about the question of trust. If the analyst or the capital market has no confidence in the CFO, then it is difficult anyway. And you have to form an opinion. Suppose you have accompanied the CFO over the years or the Board of Management (...) over the years. In that case, I have confidence in the capital market communication, or I have no confidence in the capital market communication” (I3, #00:53:18#).*

Furthermore, financial analysts talk with analysts from other bank houses (I12, #00:37:15#).

They compare their recommendations to other analysts to delimit their own position:

*“I do take a look at what the market says for a company where I might be unsure at the moment or where a lot is happening. So what are their estimates? You take a look at that. Sometimes you include that in your research. You say that the consensus is there, and I am above it or below it because I am now more positive for the stock, people have overlooked something, or I am a better analyst” (I24, #00:10:52#).*

However, some financial analysts might even adopt other analysts’ recommendations. Although this does not reflect the proper financial analysis:

*“[T]he ideal analyst relatively quickly says ‘that makes three euros for the share’ after something has happened. (...) [O]f course some analysts look at what everyone else has written and then say ‘okay, that is three euros’” (I17, #00:10:52#).*

#### 8.1.4.3 Media Reporting

In addition to corporate reporting information, corporate communication, and communication with other analysts, information published in the media is sometimes crucial for financial analysis. One has to distinguish between daily media and the financial press. Depending on the industry and the circumstances, media reporting might be of interest to analysts. Some events reported in the press enable analysts to derive risks (I19, #00:18:31#). Moreover, the media might submit information that may impact companies in the short term, such as during the COVID-19 pandemic:

*“[The] Bild<sup>318</sup> [newspaper] is incredibly powerful and important for capital markets – with all these COVID-19 issues. It is very important for my sector; it is extremely important. Which vaccine? What are the new findings? What is happening? I get all the information from the Bild newspaper, from Focus, from Spiegel. I have to see what is happening. The companies themselves often do not even know. The company – the management – is very slow because it has to deal with operations. It is busy with day-to-day business. What comes next? (...) [I]n this pandemic, the most important sources of information for me as an analyst were the newspapers and the television. I have to see what happens next. (...) You have to anticipate a lot of important information, the big picture, the story, and what is happening. That is why the media is extremely important. There is nothing more important if you want to see the big trends” (I14, #00:53:57#).*

Nevertheless, daily media reporting is only crucial for such dynamic topics, which contrasts financial press that is generally relevant if a journalist conducts an in-depth investigation:

*“I have to say that [media reporting] is an important indicator if it really is a topic that is important for the moment. In my case, of course, it was the COVID-19 pandemic. Otherwise, nobody is interested in health care, or not nobody; that is an exaggeration, but not as much. The financial press, however, is always important. The Handelsblatt, and others, I can always pick up on any article. It is relevant and explosive, even if something delicate is taken up” (I14, #01:00:40#).*

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<sup>318</sup> The newspaper *Bild* is often referred to as the German yellow press.



Topics that are in the financial press, that annual or interim reports would only enlighten from the retrospective, when the impact may already have hit, are relevant information sources to the analysts:

*“There is usually something to be found if a reputable house researches something. Then there is something to it, and that is very important. Every takeover that is in the media beforehand usually happens. That is much more important than what is written retrospectively in the annual report” (I14, #00:53:57#).*

#### 8.1.4.4 External Databases

Going beyond figures that the companies disclose in their annual or interim reports, bank houses use external databases for industry-specific information on products, for instance, to improve forecasts and calculations:

*“We buy relatively expensive data on registration figures of cars worldwide, for instance” (I10, #01:25:30#).*

Data is bought from external data providers for information that is not accessible through a single company report:

*“I only take Bloomberg for what I said: If I want to have prices of certain raw materials, finished products, intermediate products, crude oil prices and things like that” (I17, #00:10:52#).*

Depending on the industry, additional data are not always required. If only a few companies of a specific sector exist that the bank house covers, it is not beneficial as databases are too expensive.

*“We have a large amount of data via Bloomberg that we can request, for raw materials or precursors in the chemical industry, for example. In pharmaceuticals, many suppliers can still be bought in, which are very expensive and which I do not need right now” (I17, #00:07:21#).*

Thus, external databases are consulted to obtain information that exceeds financial reporting information, as they can also be helpful for calculations. In contrast, although companies meanwhile disclose sustainability information, external databases are addressed to search for ESG information. Even though ESG ratings are sometimes provided to the bank houses, databases explicate the information that is used to result in a particular rating:

*“I can trace back how this rating, or the score that we assign for this rating, is created at MSCI. The rating reports are 20-page documents. They tell you exactly*

*which data points are included, how they are weighted, and how they are calculated. You can have a look at the terminology of these scoring or rating models on their website. To be honest, I think I am the only one in the house who has ever done it because it is a lot of stuff, and I do not think it was relevant for the others” (I13, #00:36:15#).*

Other houses build their own ESG model and insert information that is taken from a database:

*“[T]he information comes from Sustainalytics. And if I had to do it myself, of course, I would need the reporting” (I16, #00:07:14#).*

Recapitulatory financial analysts consider various information sources to form recommendations. Corporate financial reporting is an indispensable source and is complemented by company communication. Databases are usually considered to obtain information about products or topics related to multiple companies. This information enables financial analysts to classify the company’s position compared to peers and others. Daily media and financial press may be of interest to financial analysts. However, daily media reporting only matters to an analyst if dynamic circumstances impact a company in society or the corporate environment. Most recently, financial analysts have considered additional data from ESG databases to display an ESG rating. Only in particular cases, the analyst addresses the information behind the ESG rating. Some houses use the data to establish an ESG rating or score themselves (see *CHAPTER 8.2.2.2*).

#### 8.1.5 Distributing Information with Research Reports

The research reports, which are the means of financial intermediation between potential investors and companies, may differ in format. Some banks distinguish between private and institutional customers. Private investors obtain a condensed research report compared to institutional investors (I14, #00:13:04#). Company-specific publications may range from comments on an event to detailed research reports on a specific company. A *daily* usually points out different companies that are worth studying due to a preceding event the day before or a few days earlier (FN1, p. 14; I14, #01:00:02#). An investor usually obtains several dailies from different brokers (FN1, p. 3). The company-specific comment in the *daily* consists of a note on the event and its impact that is written by the analyst. Additionally, the valuation model, the estimates, and other key figures can be found in the comment (e.g., RR8). They are automatically updated and included in the document without the analyst doing it (FN1, p. 5).

A company-specific *full note* is more detailed than a comment (e.g., RR1, RR5). It contains, similar to the comment, a recommendation, estimates, key figures, and a valuation model.

Furthermore, it includes a detailed company description and a greater variety of estimates. Key figures and the balance sheet, profit and loss, and cash flow statements are estimated.

Moreover, industry-specific reports contain various company-specific reports. For instance, cross-industry reports include research studies of companies from different industries that performed well during previous months or during the last year (e.g., RR10). Additionally, companies with changes in recommendations may be addressed (e.g., RR9).

The financial analysts, serving as information intermediaries, distribute condensed information to investors. The different research reports mirror the amount of essential information that (potential) investors desire, which is why different formats exist.

## 8.2 Relevance of Corporate Reporting

The previous explications highlight the general proceedings of financial analysts. The following addresses the usage and relevance of particular corporate information, precisely financial (*CHAPTER 8.2.1*) and sustainability (*CHAPTER 8.2.2*) corporate information. As prior research has mainly focused on financial information (see *CHAPTER 6*) and as *CHAPTER 8.1* already describes the procedures in equity analysis, this chapter investigates the use of sustainability information in more detail than financial information. This chapter presents to which extent financial analysts use the information, which figures are of interest, and which parts of the reports are considered by the analysts.

### 8.2.1 Use of Financial Information

#### 8.2.1.1 Group and Individual Financial Statements

*CHAPTER 8.1.4* explicates different information sources for analyzing corporate financial information. This chapter describes the usage of the disclosed corporate financial information. First, defining which corporate financial information the analysts consult, is essential. When analyzing companies, financial analysts usually consider consolidated financial statements. Only on rare occasions do they consider individual financial statements:

*“The consolidated financial statements are crucial for me and the model. But suppose I see very interesting developments in the individual financial statements that I would like to explain to myself and cannot (...). In that case, I am quite willing, and it is the utmost necessity to question that. But normally, if the company is not in an extreme situation (...) the consolidated financial statements are always binding for me” (I9, #01:13:29#).*

A certain case has shown that analysts usually focus on consolidated financial statements and not on individual financial statements, although it can offer added value:

*“Once, there was an event [on a single-entity level]. A company skipped the dividend due to insufficient coverage in the individual financial statements. That is a story that slipped through my fingers; I have to admit. But it was the same for everyone. That is why the share price plunged on that day like never before. (...) [T]hey d[id] not have the money to pay out, not in the individual financial statements. They had more than enough money in the consolidated financial statements(...). [T]hey had a huge issue there” (I10, #01:14:01#).*

Consequently, equity analysts pay greater attention to group financial statements, and individual financial statements are only consulted under certain circumstances.

#### 8.2.1.2 Usage of Financial Figures

As *CHAPTER 8.1* illustrates, the consolidated figures of the balance sheet, the income statement, and the cash flow statement play a significant role in determining the forecasts and evaluating companies. Nonetheless, the financial components underline a divergent relevance to financial analysts. Whereas income and cash flow statements are essential to corporate valuation, the balance sheet is necessary to fill out the spreadsheets to determine the forecasts, even though they are less significant to equity analysts than debt analysts (FN2, p. 3). The balance sheet is referred to as the “*accessory*” (I8, #00:26:17#). It contrasts the relevance of other (interim) reporting figures:

*“I look at the balance sheet last because I assume that the balance sheet of the last quarter has not changed dramatically. This means that I look very closely at the development of the P&L and cash flow in case of quarterly financial statements” (I5, #00:39:37#).*

The different figures of the financial statements are not equally essential whether they are disclosed in annual reports or interim reports (FN2, p. 3), even though they are integrated into the forecasts and valuation models (I17, #00:11:20#). Due to reporting day effects, analysts focus on profit and loss statements’ quarterly figures, while in contrast, all figures, including the balance sheet and cash flow statements, are relevant when disclosed in the annual report:

*“We actually only take the P&L into account in the quarterly figures because there are too many reporting date effects at the quarterly level, which has little value – in the full-year figures, of course, rather everything” (I7, #00:41:28#).*

The analysts, however, focus on different figures depending on the companies, and they must also distinguish between initial assessments and determining the forecasts. When they plan ahead, they consider every figure and not only specific ones:

*“I think when the numbers come in, it is about initial assessments. We always talk about this analysis activity. Assessing, what is the result actually? Are we talking about high aggregates? And those can be different from company to company. For one, it is free cash flow to equity, and for another, it is EBITDA; for the third, it is revenue. That is very different. But when we come to the forward planning, then again, afterward, actually everything is relevant. Almost everything is relevant because you must think about the future and what cash potential*

*comes from R&D, sales, or whatever. You must look at where that comes from in the individual positions” (I5, #00:33:13#).*

The financial figures fulfill different functions for financial analysts:

*“Financial accounting is the basis or provides the official indication about the performance, target achievement, target measurement of the company. These are the data on which I ultimately have to rely fundamentally, or I hope to be able to rely upon to assess the company’s performance over time” (I8, #00:11:40#).*

Although the figures are related to the past, they are intertwined with future forecasts:

*“Normally, the past and the future are always in a relatively fixed relationship. And, of course, I need to see a) how the company has developed in the past, under which conditions it has operated, whether something drastic new could possibly be added here, or whether my expectations can develop further along the historically given development of the company in the coming periods – with regard to what we see here perhaps macro- or also company-specific. Accordingly, the corresponding data that the company has published is also the linchpin of my forecast for the coming years” (I9, #00:14:06#).*

Which position interests the analyst also depends upon *“how the equity story is classified and where the company stands” (I10, #00:39:37#)*. Still, in financial analysis procedures, relevant financial figures are often the same, but anomalies are especially of interest:

*“Most of the time, you already estimate revenue, EBIT, EBITDA, EPS as the metrics that you put up front and, then, when there are anomalies, you go into it a lot” (I1, #00:35:36#).*

### 8.2.1.3 Goodwill

The asset side of the balance sheet provides information about cash-generating assets and serves as an indication of a liquidation value. However, in this context, the goodwill does not matter, as no one would be willing to pay for the goodwill in case of a divestiture (I1, #01:01:31#). Still, positions such as goodwill can also be relevant to financial analysts:

*“[G]oodwill is ultimately a market yardstick for measuring the M&A quality of a company that may want to acquire again in the future. If you see that something has gone significantly wrong in the past because they regularly had goodwill impairments, then, of course, you also have to ask whether the cash allocation, for example, in M&A transactions, actually makes sense for this company” (I9, #00:38:07#).*

The goodwill as a book value is not in focus because analysts view themselves ahead of accounting experts but know about the potential risks for write-offs:

*“[The goodwill] was paid once, yes. But that is no longer decision-relevant. That was in the past. If you have to write it off, that tells me something about how good or bad the management was in the past. But the point is, normally, before the auditor sees it as a problem, I have already seen it as a problem three years before” (I6, #01:08:21#).*

Even though the analysts do not derive decision-relevant implications from the book value of a goodwill, it is an indication of balance sheet quality:

*“[T]his goodwill is an item for us, so the balance sheet works. But it does not give us any indication as to whether it is recoverable or not. (...) We are people who express an opinion on a company, on transactions, and on assessments of the share price development. We have a clear opinion, and that is based on the value of the company when we say ‘buy’ or ‘sell’. The quality of the balance sheet is a key indicator. Of course, goodwill also plays a role here.” (I10, #01:12:20#).*

Moreover, analysts are not interested in the book value of a goodwill but in what the market thinks about an acquisition:

*“[I]t is important, for example, when I look at things like capital, or capital value quality, when I look at ROCE. If the management board cannot deal with money and just buys in junk, the goodwill explodes. Then, he has a huge capital employed and must first generate a return on it. And that is why I would logically like to have it. So it is always a question of what you ask. And, of course, I want to know where the goodwill comes from. And it is also interesting to me, what I think the market value of the company is, not necessarily the book value, and then based on that, at some point, I question what the market thinks of this acquisition. (...) But that is the relevant information, not how high the goodwill is exactly” (I7, #01:13:32#).*

#### 8.2.1.4 Deviations of Estimates

The financial information that matters to the analysts is deviations from the figures. Deviations may be found in comparison to the numbers of other companies or within the same company but over time. Financial analysts are interested in

*“ultimately every change in (...) every number, but also the change in the respective numbers over time and in comparison, especially in comparison to the expectations, why does it now deviate more than you thought (...). And that can*

*appear in very different places. It can start at the top of the sales: It can be found in the individual cost items” (I8, #00:25:20#).*

However, it is crucial, whether the deviations that the analysts examine are expected or whether the expectations diverge:

*“If you have changes exactly within your expectations, you can check that off. Suppose something is happening that you find unexpected or that is out of the norm, the historical, for example. In that case, that is highly interesting, and that can be or should be quite different numbers from company to company because of the different business models being driven” (I9, #00:32:38#).*

Even though the former statements emphasize the relevance of P&L, contrasting the relevance of balance sheet numbers, *“no figure in the balance sheet, cash flow statement, or P&L is uninteresting - especially if [analysts] either (a) see or (b) expect dramatic changes” (I9, #00:37:03#).*

Moreover, the relevance of deviations becomes evident when considering the *Other Comprehensive Income (OCI)*. Some analysts admit that they usually do not take a look at the OCI, as they argue that

*“[n]ormally, if I type in a balance sheet that was just published and if the equity is what I estimated and the earnings are what I estimated, then that is going to fit. If, in fact, equity somehow develops differently than I expected, then I already know where I have to look to find out what went wrong. I can look at the composition of equity. But normally, the equity develops as I expect if the earnings develop as I expect” (I7, #02:21:24#).*

Another analyst attributes the behavior of his colleagues to the mostly small variance, although he usually takes OCI into account:

*“I basically look at it, but only for the reason that it is usually the difference between my EPS estimate and the actual change in equity. If I see a big gap that cannot be explained by currency or interest rate changes in pension provisions or something, then I wonder what is going on. But normally, it is just a relatively small number” (I6, #02:24:12#).*

#### 8.2.1.5 Non-GAAP Measures

Deviations of GAAP measures are not only of interest to the analysts. Certainly, deviations from non-GAAP measures are essential to the market and may require the analysts' actions:



*“The whole market may look at the adjusted EBIT. Then, the adjusted EBIT comes in differently than expected, and if it is different than expected, I have to comment that because it will depend on how the share price develops in ten minutes” (I7, #01:00:07#).*

Some analysts even believe that “[i]n the short term, the market only looks at the deviations in the adjusted figures” (I6, #00:08:13#). The research reports also accentuate the presentation of adjusted figures, such as the adjusted EBITDA (e.g., RR13, pp. 26, 31, 37, 44), although regulated figures are predominant. Certainly, non-GAAP measures are key figures as the analysts do not have better knowledge about non-recurring special effects than what the company discloses:

*“We are quite pragmatic about this. We simply do not have a better indicator. It would be helpful if we could assess what compensation has been paid internally and whether the figure is higher or lower. To make any adjustments, we have to rely on the statements of the board of management, even if [the figures] are not regulated. You either believe them, or you do not believe them so much. But we are usually not in a position to have better information than the company gives us” (I1, #00:48:59#).*

The analysts are also aware of the advantage of having more information:

*“I have more information first of all. Whether this information is somehow targeted from the point of view of the CFO – predominantly positive on average – I can see that. I mean, that is not surprising. But it is more information than if he did not adjust. After all, there are the non-adjusted figures; I can see them; they are in the financial statements, and, additionally, they show an adjusted EBITDA” (I3, #00:47:47#).*

Simultaneously, they know about the disadvantage of having not regulated figures. Still, the increase in information prevails, as the analysts are attentive to the special effects and whether they are reoccurring:

*“[Non-GAAP measures] are relevant. Because, of course, you try to get a picture of one-time transactions that may affect performance. If I now take the year as a basis for my future projections, I try to get a sense of what was abnormal. What effects do I possibly not have in the future that have now occurred this year? In this respect, this has relevance to me. Nevertheless, it is, of course, exactly right that it is not regulated and that some companies may trick at this point” (I8, #00:45:48#).*

Still, analysts question the suitability of the disclosed non-GAAP measures and whether one-time effects are justified. Likewise, they construct their own non-GAAP measures if companies miss out on providing non-GAAP measures that could have been valuable:

*“If I have a company that has booked restructuring expenses every year for ten years, you can ask yourself, is this a one-time effect, or is this not a one-time effect? Still, some companies report no adjusted key figure or earnings-before-number at all. In those cases, I sometimes already think I have a one-time effect here, which I think will be gone in two years. In this case, I build myself a number, possibly communicate it, and put down on it” (I8, #00:45:48#).*

Accordingly, financial analysts must trust the measures provided by the companies in the first instance. However, they must also place the one-time effects in the context of the companies’ operating business:

*“Whether they are regulated or not, it becomes a question of trust. If a company has so much restructuring work every year for twenty years, then you have to say that this is simply part of the operating business. Restructuring this business to a certain extent is part of it. Then, that is an operating indicator for us. We would continue to forecast this for the future” (I1, #00:48:59#).*

Due to the relevance of the adjustments, analysts usually work with the non-GAAP measures that the companies disclose. Still, they know the companies’ latitude based on the lack of regulation. Generally, analysts take a look at the figures. Typically, they would retain these numbers or even create their own adjusted figures if the disclosed figures were not eliminated by one-time transactions (I8, #00:45:48#). The reason and the suitability of adjustments are based on the aim to forecast best the corporate’s future in which the one-time transactions will not reoccur, justifying its elimination (I8, #00:46:30#).

#### 8.2.1.6 Other Components of Reports

Moreover, in addition to the different numbers that companies publish, corporate disclosures, such as the notes, the management report, including opportunity and risk reports, for instance, or segment reports, are considered to different extents due to the divergent relevance. The notes are usually regarded as a “reference book” to understand the reported financial figures (I1, #00:40:30#). “[The analysts] consult the notes often and gladly, but always only to answer a specific question. So if [they] see anything that is unexpected, [they] flip to the notes” (I7, #00:41:28#). However, the analysts do not read and work through every single page of the notes

as it is too much information and much information that is not read (I5, #01:04:01#). The unread information may be relevant in the future, even though it has not been essential in the past. Analysts are aware that they ignore information that could be beneficial. Yet, they are not necessarily attentive to the information:

*“[T]here are guaranteed to be parts in the notes that we do not come across today, where the next time there is a crisis, one will say ‘you could have seen that. It was on page 285’, even if nobody asked about it for 20 years” (I7, #02:22:55#).*

In addition to the notes, the analysts usually do not thoroughly read the management reports. Only certain elements and information are of interest. For instance, the outlook that companies disclose in the management report containing the forecast about future business development is of interest to the analysts (I9, #01:21:16#).

*“The outlook is indeed interesting. (...) Some companies are more transparent than others. I use it as a plausibility check against my assumptions. Because the communicated corporate expectation is included in it” (I8, #01:20:28).*

Some analysts argue that they only read the report if they do not obtain or read the information provided through another information source:

*“That is an interesting thing, of course. But the analysts’ presentation and the press release present exactly what is in the outlook. Normally, this is a very important part, but the company already clearly highlights it in the presentation” (I14, #00:29:38#).*

Furthermore, the opportunity and risk report can be of importance for the analysts’ proceedings, but at irregular intervals:

*“I take a look [at opportunity and risk reports ] when I am covering the company for the first time or every now and then. Or when I am really getting to grips with dangers. Then, I would look in there. But not every time, because there is a lot of stuff, which is not a real risk” (I14, #00:28:51#).*

Only on certain occasions do the risk reports offer relevant insights about risks that may be value-relevant. Analysts do not regularly consult the report due to repeatedly and unspecific disclosed information:

*“If you have an analyst who has been covering a company for twenty years, he will not look at the opportunity and risk report because he has already read it twenty times” (I9, #01:26:19#).*

However, the analysts know the circumstances in which they must consult risks reports:

*“You have to know what you need to know. It is very important to know which page in the annual report you simply do not need to read, depending on the company. So if important legal disputes are pending, the opportunities and risks report is the first thing I open. And I will not open it for some traditional company that has never made a mistake in its three-hundred-year history” (I7, #01:04:25#).*

In addition, the analysts wish for a more transparent presentation of information, in the form of tables, for instance, rather than floating text in the management report (I10, #01:28:35). Still, the analysts emphasize the importance of the word choices within the floating text:

*“Actually, it is reading between the lines, are they now ‘strongly convinced’ or only ‘still convinced’ or are they assuming ‘very high growth’ or only ‘particularly high growth’? And is one word now higher or lower than the other? So you have to understand the language of the companies, and that can be price-related, which adjective they suddenly use” (I1, #01:29:19#).*

Furthermore, within floating texts, analysts assume that companies may *“very nicely hide anything relevant under footnotes in such a way that perhaps one percent of all inclined readers will actually make use of it” (I9, #01:36:36#)*. Although they know that it is *“unfortunately, the job of an analyst that it really starts to get interesting at the comments and footnotes” (I11, #00:50:15#)*.

Therefore, the analysts consult various parts of the financial statements and financial information that the companies disclose throughout the year. Nonetheless, they admit divergent relevances to the disclosed numbers as well as to the floating texts of the notes and the management reports.

### 8.2.1.7 Impacting Factors and Challenges

#### 8.2.1.7.1 Time Constraints

Financial analysis is driven by different factors impacting the intermediaries’ workflows that challenge the analysis. Time constraints determine the analyzing procedures, which justifies some of the analysts’ decision-making. One analyst explicates it as follows:

*“We all have ten or eleven companies with an annual report of at least 200 or 300 pages (...) you have four times reporting. That is 44 reporting dates. They disclose between 10 and 50 pages each time, sometimes even 80. No one can read all of it. We have to focus. (...) You must selectively look for where something is happening, what is interesting, and what is not. You will not manage to read*

*every footnote, and you do not need to. That is not our job. We are not auditors (...). [W]e do not have time to read the annual report in detail” (I18, #00:20:46#).*

The reason why time is so crucial for analysts is based on the market that is immediately interested in the event’s impact. Following an event – that can be an ad hoc announcement – the analyst

*“might have twenty minutes. So pace or time is a factor. If [he] take[s] a year, [he] can write the best research. But no one will be interested in a year from now in what happened a year ago when [he] started” (I17, #00:13:55#).*

The analysts have to react immediately because the market participants are interested at that moment. In the first instance, the analysts do not necessarily adjust their valuation models:

*“The whole market may look at the adjusted EBIT. (...) I have to comment on it that [the adjusted EBIT] comes in differently than expected because how the share price develops in ten minutes depends on that. But my DCF model does not care because it is based on free cash flows that are not adjusted” (I7, #01:00:07#).*

In the second instance, depending on the event and its impact, financial analysts might have to adjust their calculations after they have commented on the event. Ideally, financial analysts do not have to adjust their estimates or valuation model after an annual report is published. Suppose deviations exist between the estimates of the analyst and what the company discloses. In that case, the deviation indicates bad communication with the company and the analyst beforehand, resulting in poor forecasting (FN1, p. 12). Thus, if analysts deviate from the guidance, it is a surprise that is considered a communication problem (FN2, p. 3).

#### 8.2.1.7.2 Gut Feeling

The financial analysts’ daily actions require a diverse set of information and activities, as well as industry expertise (I18, #00:20:46#). These factors determine the financial analysts’ daily routines, including earnings forecasts and stock recommendations. Whereas time constraints limit them, additionally, an irrational influence becomes evident. The “*rule of thumbs*<sup>319</sup>, *gut feeling, or wealth of experience*” (I12, #00:24:52#) are addressed when explicating the identification of beta.

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<sup>319</sup> The analyst referred to the German phrase “*Pi mal Daumen*” which describes a rough estimation, not a heuristic.

Analysts want to determine the *discount factor* that is not solely calculated rationally but requires a solid numerical foundation when estimating risks.<sup>320</sup> The investors need a good gut feeling similar to the analysts who make use of it:

*“Maybe it results in a five percent difference to the discount factor, maybe ten percent, maybe 20. But that is a gut feeling. Everyone knows that we always try to have a pseudo-accuracy with all these numbers. But ultimately, it is a gut feeling. Even with all the market research, which plays a role and is converted into key figures. It gives people a good feeling” (I14, #00:38:29#).*

Likewise, the strong price-moving events demand gut feeling when calculating the stock price change (I14, #00:58:00#). Therefore, the daily routines of financial analysts involve a diverse set of activities and expertise that aids in using the right amount of gut feeling. It also depends upon the trust that rests on the auditor’s statement:

*“I must be able to trust the accounting data that are in accordance with the corresponding accounting standards. Of course, the auditor’s statement is always meaningful, at least to which extent he trusted the story. I then rely on the figures, which only reflect the company’s past” (I9, #00:14:06#).*

Thus, the analysts rely on the companies’ disclosures as the auditors assure them. The trust in the audited corporate information in combination with the analysts’ gut feeling to determine the impacts of events, emphasizes that the analysts’ actions are not solely rational. Subjectivity also plays a role in deriving stock recommendations.

#### 8.2.1.7.3 Complexity, Comparability, and Suitability

Discussions about increasing complexity and disclosure overload in corporate reporting practices exist. Besides financial reporting information, sustainability reporting increases. Disclosures expand, and the complexity of information, due to its diversity, likewise increases (I18, #00:47:58#). Nonetheless, financial analysts prefer to have more rather than less information disclosed by companies:

*“If [the analyst] had to pick it, [he] would say ‘better more than less’ because with more [he] can always fade out. If [he] do[es] not have it, then [he] cannot conjure it up” (I8, #01:38:01#).*

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<sup>320</sup> CHAPTER 8.1.5 refers in detail to risks and to the discount factor.

The analysts suggest improving the disclosure by providing more condensed information to ease their analyzing procedures.

*“In theory, the more information the better. In practice, the more condensed [information] you get, the easier it is. (...) A lot of information is good, but it should be presented as transparently as possible, which means less continuous text, more tables” (I10, #01:28:16#).*

One rare exception exists when companies disclose too much information. That is the case if it serves a misleading function:

*“There is too much information for an analyst only if the information or the multitude of information is used to hide what is really relevant. That happens when management reports maliciously” (I9, #01:32:02#).*

The analysts know that companies may hide information in footnotes or continuous text as many readers would not read it due to the increasing complexity of reporting disclosures (I9, #01:36:36#). However, the analysts do not regard complexity as a challenge. They desire one document with all reporting information because they make use of digital documents by using the search function, and that way, they can manage the increasing complexity:

*“In the age of digitalization, it does not really matter whether the document has 500 pages or 300. It probably makes sense to integrate [everything] because you do not have to search for an extra document. For reasons of practicability, it makes sense (...) because of the search function” (I18, #00:47:58#).*

Still, some analysts remark that topics exist on which too much disclosure exists, which could benefit from reductions:

*“For example, financial instruments are way too detailed for me (...). I skimmed that [report]. However, unfortunately, the point is I still cannot find out the actual important questions that I am interested in. I am interested in which average euro-dollar rate or yuan rate they are hedged. I cannot read that out of the report (...). I know an insane amount about the market value, but I have to make wild assumptions to even approximately derive the economically relevant number” (I6, #02:14:09#).*

In contrast, analysts wish for more transparency on minorities and earnings localization:

*“In fact, the transparency of minorities is often comparatively low. You often do not know where they come from (...) If you know that five percent of equity is minority interest, but then you see in the P&L that fifty percent of the result goes to minority shareholders, then you might ask, ‘Excuse me, who is actually earning all your EPS if you are not doing that?’” (I7, #02:25:40#).*

The transparency of segment reporting is also criticized as it deviates. Analysts wish for an increasing segment reporting:

*“The transparency at the segment level is incredibly different. So there are companies that are super. They tell me how much has been invested in which segment, and how much working capital is in which segment. Then I can also calculate the ROCEs at segment level at some point, but (...) that is not the standard” (I7, #02:13.48#).*

Furthermore, other factors challenging the financial analysis apart from the increasing complexity of reporting disclosures are pointed out by the study’s participants. As complexity is not considered a major challenge in the analysis, the missing comparability of certain information between companies is seen as a problem that should be solved in the future.

The usage of non-GAAP measures impedes the comparability of figures across companies, even if they belong to the same industry:

*“[T]he focus is fully on the adjustment. It is difficult for me to compare the adjusted EBITDA of [firm A<sup>321</sup>] with the adjusted EBITDA of [firm B] because it is not the same. They adjust for other factors. The adjustments are basically random. There are accounting standards that everyone has to follow. That would make it comparable. But all the special items are already included. That is the problem. Management defines its own special factors, which is legitimate, but they are no longer comparable with each other” (I14, #01:05:38#).*

The non-GAAP measures are crucial to integrating into financial analysis. For details, see CHAPTER 8.2.1. Still, the analysts cannot ignore the non-GAAP measures as eliminating special impacts is considered suitable (I1, #00:48:59#). Usually, companies explicate their adjustments or answer questions that arise due to non-GAAP measures:

*“I would ask what has been adjusted, but actually, that is usually clear, and it is also said. [The companies] usually ma[k]e clear what has been adjusted. People are also interested in that. There are also discussions about whether certain things should be adjusted or not. Sometimes it is also nicely calculated” (I14, #00:18:18#).*

As each company determines the special influences differently, the analysts desire regulations on what is allowed to adjust to better understand the adjustments and the calculations. Such regulation changes would simplify the analysts’ workflow:

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<sup>321</sup> The analyst provided two distinct company names which is why they are anonymized to *firm A* and *firm B*.



*“This adjustment calculation is incredibly annoying, in particular, to track every single case. Because – as I said – it is partially constructed. So it would be helpful (...) to introduce IFRS rules on what adjusted EBITDA or adjusted EBIT can be (...) if there were very clear specifications as to what can be adjusted” (I14, #01:06:27#).*

Moreover, sustainability reporting information lacks comparability and regulation. In contrast, to non-GAAP measures, ESG information is about to be further regulated, which may promise the analysts better comparability of such information. Although, until today, it is a challenge for financial analysts to understand ESG information and correctly assess its corporate impact. The existing regulations are regarded as not sufficient and not aiding in improving the understanding of information, and the comparability misses:

*“It is always difficult to understand from the outside. These are mostly topics where you do not have any reporting obligations or that are voluntary for the larger part. So a few regulations you have to meet, but that is a relatively low hurdle to jump over” (I9, #00:20:56#).*

So far, some financial analysts buy external ESG data to assure its comparability that the sustainability reporting information does not (yet) provide. The external data providers, acting as information intermediaries for the sell-side analysts, prepare, classify, and pre-assess ESG information allowing analysts to compare companies based on their sustainability:

*“We get the comparability through the third-party provider when we look at the score. (...) I can actually compare it myself by checking off indications according to a scheme. Then, it is certainly the case that you can compare it afterward, such as working capital, the company’s efficiency, and so on” (I15, #00:27:51#).*

In addition to the challenges of increasing complexity and missing comparability of little information that hamper the financial analysis, financial analysts do not generally question the suitability of the existing IFRS reporting standards. However, exceptions are addressed concerning the continuous implementation of new standards and the leasing standard (IFRS 16), specifically (I9, #00:16:06#). Some financial analysts would desire the implementation of new standards or adjustments of regulations only every few years to one particular date to assure the comparability of companies’ track records:

*“What strikes me negatively is that whether we had introduced IFRS 16 this year or next year, it would not have changed the world significantly. How about we save up changes? Then we say every five or every ten years, ‘now we are doing everything differently’ because that relates to the issue of comparability. I will now get the balance sheet for IFRS 16 for this year and last year, but not for the*

*years before. And, of course, I actually have a track record and a history, and you say, 'what did they earn historically?' And you say, 'okay, now it is more'. But that was under other IFRS regulations" (I7, #02:03:35#).*

Likewise, options that GAAP allow are considered negative, as it complicates the comparability and traceability of disclosures:

*"But I just want to say that this choice of accounting policy, the official and the unofficial latitude, is a thorn in the side of many" (I7, #02:03:35#).*

To sum up, financial analysts face different challenges in their analysis procedures. They get along with the difficulties arising from the increasing complexity and sometimes missing comparability. They do not generally question the suitability of IFRS; they instead wish to improve it through regulation that would enhance the comparability among companies over a more extended period.

#### 8.2.1.8 Distinction from Equity to Debt Analysis

In contrast to equity analysis procedures, the workshop delineated the differences with debt analysis to emphasize the functioning of equity analysts. Debt analysts investigate financial statements more deeply (FN1, p. 15) and often additionally obtain internal data, such as planning data (FN2, p. 23). Any accounting information is examined, whether group or individual financial statements (FN1, p. 66). Separate and subgroup financial statements are more relevant to debt analysis to determine the contingencies which are of interest to highly leveraged companies (FN2, p. 25).

Furthermore, any position of the balance sheets, profit and loss statements, or cash flow statements are considered (FN1, p. 63). In debt analysis, the past is even more relevant than in equity analysis which focuses on cash-generating potential. Debt analysts strive to learn from the past, although debt analysis also demonstrates a cash flow orientation and provides a company valuation (FN2, p. 23).

Moreover, the OCI, minorities, or the group structure are also crucial to the analyzing procedures (FN1, p. 71). Dynamics and volatility in accounting challenge debt analysis, as continuity is essential in debt contracting (FN1, pp. 73–74). "Frozen GAAP" and covenants guarantee a steady application as banks strive to have everything contractually assured (FN1, p. 76; FN2, p. 25).

The relevance of the components of a management report varies. The risk report contains many risks that are not relevant to debt analysis (FN1, p. 75). If information is crucial for debt contracting, it is included in the contract. Thus, sustainability disclosures are hitherto<sup>322</sup> generally not essential, but if they are of interest, they are considered in the contract (FN1, p. 75). Likewise, non-GAAP measures can be relevant, but if so, they are defined within the contracts (FN1, p. 78).

In summary, equity analysis requires financial figures to construct spreadsheets and determine the forecasts resulting in a company valuation and a stock recommendation. However, debt analysis is not event-driven and, hence, less time-sensitive in comparison to stock analysis. Debt analysts are also more strongly oriented toward the past than stock analysts, who aim to identify cash flow potential. Stock analysts do not examine every financial figure or component of the annual report if there is no reason. Their use of financial information is driven by time constraints and complemented by their expertise and gut feeling, which is why anomalies are crucial to stock analysts contrasting debt analysts.

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<sup>322</sup> The workshop took place in 2020. It is conceivable that nowadays, the relevance might have shifted towards a greater consideration of sustainability indicators.

## 8.2.2 Use of Sustainability Information

In contrast to the mainly regulated financial information, sustainability information is less regulated, though increasingly extensive (see *CHAPTER 5.4*). Irrespective of the increasing amount of sustainability information that companies disclose, the question remains, which role ESG information plays in financial analysis, as the analysts' task is to process corporate information that can include sustainability matters? The following delineates the increasing demand for sustainability information and its consideration in financial analysis. On the one hand, it is illustrated how financial analysts use ESG information and, on the other hand, how this topic is presented in research reports and communicated to investors.

The findings relate to the point in time in 2020 and 2021 when the interviews and the workshop took place. The proposal for a CSRD was already published when the greater portion of the interviews was conducted. Accordingly, the analysts perceived an upcoming change and an intensified relevance of this topic. However, the daily work of the financial analysts referred to corporate information built upon only a few requirements to disclose a non-financial statement.

Although companies were mostly voluntarily disclosing ESG information at that time, banking institutions showed increasing relevance, as most had already dedicated ESG research teams and were already providing ESG scores or labels to their investors. First, the increasing interest of investors in ESG information and the subsequent presentation of condensed ESG information from the analysts to the public is examined. Moreover, the information sources for the disclosed condensed ESG information that belong to ESG research instead of equity research are discussed. Second, the relevance and the analysts' interest in specific sustainability information and its impact on financial analysis are assessed.

### 8.2.2.1 Answering Investors' Demand for Sustainability Information

Sustainability reporting expects a reform, while companies publish increasing ESG information. Financial analysts notice, simultaneously, a growing interest of investors in sustainability, which justifies the bank houses' dealing with the subject (I11, #00:07:28#).

Financial analysts observe a change in perception of the buy side. Analysts perceive that specific ESG investors feel vindicated, as "*the topic of sustainability is growing in the traditional mainstream of investors*" (I20, #00:44:13#). The analysts expect the market to punish

companies in the long term if they do not “*meet certain minimum requirements. If [they] do not meet those, [they] are probably not investable for many investors*”(I11, #00:07:28#).

Sustainability “*is becoming more relevant or it has become relevant*” (I19, #00:07:26#) since “*on the buy side, the topic has an immense, really immense, importance (...). The customers, especially the portfolio managers, are under immense internal pressure*” (I13, #00:49:11#). Although the analysts realize the change in perception and declare it as a “*more recent trend from a personal and from an investor perspective*” (I22, #00:36:29#), not all investors were concerned about this topic in 2021<sup>323</sup>:

*“I wonder who reads this and who really cares or what of it has been done just to please politically. (...) I would not say it is greenwashing because it is not necessarily greenwashing. A lot has been done. But I think it has a lot to do with external presentation. It is a powerful marketing tool. Whether the information is really relevant or interesting to people is up to debate. I think for many people it is not really interesting. And I think many things are not read at all” (I14, #00:26:33#).*

Even if investors are interested in sustainability, the impact on investment decisions seems debatable:

*“[M]any investors have already taken up the sustainability cause. More or less. Funnily enough, they do not expect me to look at it. And the people I talk to, do not look at it either. They say, ‘we have an ethics committee that has to take a look at it’. I have never talked to them. But they will read it through. They will probably be able to evaluate it” (I7, #00:22:18#).*

Some financial analysts are not convinced about the information’s suitability for investment decisions:

*“From my point of view, anyone who only invests for the sake of sustainability is doing something wrong”(I17, #00:58:16#).*

Furthermore, analysts question the prioritizing of reasons for investing sustainably:

*“I am still very skeptical that investors will say, ‘I am willing to accept lower returns in the long term’” (I7, #00:33:44#).*

Overall, opposing views of financial analysts exist. Nonetheless, the analysts agree that investors are interested in achieving a return because “*sustainability is an investment topic. Also, someone who invests sustainably wants to get a return*” (I20, #00:25:05#). Some views

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<sup>323</sup> The interview with I14 was conducted after the publication of the proposal for a CSRD.

emphasize that sustainability “pays off for the investor” (I24, #00:23:20#), while others admit that “for differentiated stock picking this can make sense according to the motto which stock do I want to have? But the question is still, does that drive the share price?” (I18, #00:40:13#). Some analysts question the financial impact of sustainability, while others view it differently:

*“Our objective is not to save the world but to use this data to make our judgment more accurate and, thus, generate added value for the customer from a long-term perspective. And that implies that you can have advantages both on the return side, that you can recognize trends earlier (...) or that you can make risks more tangible, more measurable, and, therefore, avoidable” (I24, #00:23:20#).*

The interviewed financial analysts admit a change in the perception of sustainability matters. Some are convinced that “ESG is here to stay” (I22, #00:31:48#) and believe that

*“the core idea is, at some point, an investor does not only try to make a risk-return decision but a risk-return decision at an optimized ESG score. And then, they are either trying to optimize risk return at a given ESG score or finding risk return at an optimized ESG score. I think that is the trend where we are probably going in the long run” (I5, #00:23:34#).*

Others debate about the future of ESG and its impact on financial analysis since one has to distinguish between investors and analysts:

*“For us, it is really more about looking at how we want to deal with this in the future. And how do the investors deal with it? Because that is always a completely different story, some do not know what to do with it. They have an information overload. They are now receiving massive amounts of ESG information. But they do not know how to process it all” (I18, #00:27:08#).*

Accordingly, financial analysts perceive the increasing relevance of such information to investors. Simultaneously, uncertainty prevails on how to incorporate sustainability information and whether or which information is valuable to financial analysts.

#### 8.2.2.2 ESG Scores and Labels

Similar to the little-regulated sustainability reporting requirements resulting in divergent extents and divergent reporting on ESG matters, the research reports of different bank houses illustrate differing approaches to present sustainability in a condensed format. The four bank houses of this study, whose sell side was considered, provide ESG scores. However, not all banks disclose additional specific numerical and thematical information in their research reports.

**TABLE 3:**  
*ESG Scores in Research Reports and their Development*

	<b>Bank 1: ESG-Risk Score</b>	<b>Bank 2: ESG Score</b>	<b>Bank 3: ESG Label</b>	<b>Bank 4: ESG-Performance Score</b>
<b>Based on</b>	three components:  - ESG score - liquidity score - balance sheet score	hundreds of data points that are the basis to the ESG model	performance score that consists of four components:  - economy - environment - social - governance	ESG profile, which consists of twelve categories
<b>ESG Model</b>	created by financial research	created by ESG research team	created by a diverse ESG research team (also consisting of financial analysts)	created by ESG research team
<b>ESG Information Sources</b>	ESG ranking bought from external data provider	disclosed ESG information	ESG information bought from external data provider	ESG reporting information and additional information taken from external databases
<b>Involvement of ESG Research Team</b>	n.a.	created ESG model	created ESG model and develops ESG score	created ESG model and collaborates with equity analysts
<b>Involvement of Financial Analysts</b>	developed ESG-risk score	involved to determine the score and the financial materiality of the ESG information	part of the ESG research team that developed the EESG rating	answer ESG profiles and create ESG score
<b>Collaboration of ESG Research Team and Financial Analysts</b>	n.a.	collaborate to come up with ESG score	ESG research team teaches financial analysts on relevance and meaning of ESG scores	collaborate to come up with ESG score

**Notes:** The table depicts the four different compositions and developments of ESG scores. The results are based on the analysis of the sell-side analysts from the four different bank houses.

Some research reports contain ESG labels on the first page without providing further information about the ESG score and its components (e.g., RR5 or RR6). In this case, a label identifies the company as being sustainable. The label is not printed on the research report if it is not sustainable. Other reports provide a specific numerical ESG score on the report's first page (e.g., RR3 or RR4). The specific score is pointed out and can be understood as a rating for the company identifying the degree of sustainability. Although all bank houses of this study develop ESG scores, the development, the composition, and the presentation differ. Even if

specific ESG research documents provide detailed information (e.g., E1, E2, and E3), the research reports of sell-side analysts only contain little information presented as a score or a label.

This study identifies four different cases resulting in ESG scores (see *TABLE 3*). The composition of the presented scores deviates depending on the bank houses. Also, the case of providing an ESG label considers an ESG score beforehand. The ESG label only indicates that the company has exceeded a particular score value and has not been excluded due to controversies (I16, #00:27:57#). See *TABLE 3* for the different developments and compositions of the four ESG scores.

Research reports from one bank house were obtained for two consecutive years. Whereas in 2020, the reports did not entail any ESG information or score, in 2021, an ESG score was depicted. Within one year, the development and increasing relevance of sustainability can be perceived (e.g., RR2, RR7, RR3).

#### 8.2.2.2.1 ESG-Risk Score

First, an ESG-risk score is developed based on an ESG rating bought from a data provider. Either a numerical score is provided, or the ESG information is translated into numerics:

*“We get the rating, or the rating is translated in our scoring table and combined with the other two scores resulting in one number. What I can understand, of course, is how this rating or the score that we then assign for this rating is created at MSCI. The rating reports, which are 20-page reports, state exactly which data points are included, how they are weighted, and how this is calculated” (I13, #00:36:15#).*

Another balance sheet and market liquidity score supplement the ESG score based on the data provider. These three components add to the ESG-risk score (E1, p. 1; I13, #00:35:08#). Whereas the ESG rating is bought and the data provider’s scoring is accessible to the bank house, the other two financial components are developed by the bank. The balance sheet score mirrors the financial solidity. The third component presents the liquidity of a company. The three components are equally weighted, resulting in the ESG-risk score (E1, p. 1) illustrated on all research reports (e.g., RR4).

Financial analysts develop the ESG-risk score as no specified ESG research team exists. This may be why the two financial scores are likewise considered within the ESG risk score.



#### 8.2.2.2.2 ESG Score

Second, an ESG score is obtained from an ESG model that is developed and based on disclosed ESG reporting information:

*“We have our own model and use our own data to analyze companies (...) So we rely on disclosed information. So whatever we will get from the annual report, the CSR report, and stuff like that. But, you know, it is not just me doing these analyses; we also have sector analysts. So if I have an oil and gas analysis and I have a question about some of the data, they can always talk to the company (...) Even if we are not talking directly with the companies to build our own model, some of the analysts will always talk to the companies and have their own questions about ESG to clarify with the management” (I22, #00:14:34#).*

Regional differences in the reporting practices exist. The absence of ESG information is penalized, or information is bought from an alternative data source (I22, #00:23:33#). The information is weighted differently depending on its financial impact:

*“But the key thing to remember is that we focus on what is financially material. So we are looking at all the factors that impact the earnings or the return on equity. For that reason, we only group these factors in our model and the ones having the biggest impact on our year-end earnings. The different data will have different weights” (I22, #00:28:22#).*

Furthermore, differences in weighting depend upon sectors and regions, as the ESG reporting practices deviate:

*“We are going to have a different weight by sector and by region (...) For example, I know the environmental factors are much more important for an energy company, while governance is more important for a bank. So that is one way to think about it. Different sectors will have different ESG factors. And then different regions, it is going to be a different approach. I mean, Europe is very different from the US”(I22, #00:17:29#).*

The weights of the different ESG information are allocated to various data fields that are either quantifiable or yes-or-no questions:

*“We have hundreds of data fields in our model. So they will have a different weight, and they will have a different score (...). So do not imagine that it is just (...) whether a company is successful or not. There is much math behind that. Some of these factors are going to be driven by numbers. Some of these factors will be driven by policy: Binaries: yes or no” (I22, #00:26:00#).*

### 8.2.2.2.3 ESG Label

Third, an ESG label is presented on a research report without providing further information (e.g., RR6). However, it is based on an individually developed EESG performance score. Although the ESG information is bought from a data provider, the rating and its model are created by the bank house's ESG research team. The team consisted of various financial analysts, including analysts from the equity and debt capital side (I16, #00:30:12#). The first E component stands for *“the economic sustainability dimension, that is something that [they] research exclusively in-house. For the E, S, and G data, it is actually the case that [they] buy it in”* (I20, #00:15:34#). The economic sustainability component includes financial data that is taken from the financial analysts, as *“today [one] can no longer separate classical financial analysis and sustainability analysis. Therefore, [they] have this EESG model”* (I20, #00:18:24#).

The ESG information, in contrast, is generally bought from a data provider, who transfers information on various ESG topics into numerics, which are integrated into the model:

*“There are 120 data points in the model that can be fed approximately. We do not feed them ourselves because there are about five thousand emitters. We did tailor the model, more or less tailor it, but the data points come from Sustainalytics. (...) They go from zero to a hundred. That means if a company's environmental strategy is rated well by Sustainalytics, they get a hundred points and correspondingly less. We have defined the factors (...), which are also weighted by us and then put together in this way. We do this, but the information itself comes from Sustainalytics. And if I had to do it myself, I would, of course, need the reporting. If that were not there, then it would be difficult to assess the emitters at least uniformly or to draw on a model or an approach”* (I16, #00:07:14#).

Even though it is a standardized model, which is updated monthly (I16, #00:25:08#), some criteria to determine the score are the same for all industries; other criteria and their weighting depend on the industrial sector that the company to investigate belongs to (I24, #00:25:08#):

*“We have a weighting matrix done for about forty industries. The E, the S, and the G are each weighted differently. It can be that some are weighted the same. So insurance companies and banks, there will not be much difference, but financial companies and automotive companies will. And there are also sub-indicators; they are used only for individual industries”* (I16, #00:15:53#).

Moreover, for the 120 datapoints score values are extracted from the data provider. Still, the analysts could read reports explicating the score values that the data provider passes on to the bank house. However, the *“sad truth”* is that the data points are usually just entered into the model without checking for plausibility (I16, #00:09:55#).

Furthermore, the 120 data points may be supplemented by another 20. The analysts can adjust these data points individually based on ESG reporting information, for instance. The implementation is still insufficient and rarely used:

*“There are another twenty individual data points. So we can design them ourselves according to what we think and what we research ourselves. I would say that the approach is good, but the capacities are lacking. So most of these data points are set to neutral. Because there, again, it is presumptuous to say, ‘we know this; we are just making twenty data points for five thousand emitters’. You cannot. If necessary, if you have strong indications, you do that for individuals, but theoretically, you would have to be able to justify that. Again you can justify that in individual cases, but I would have to say if I start with one in a peer group, I have to look at it for the others as well. From that point of view, this possibility is theoretically there, but we do not use it very often in practice. I think that was the theory. (...) And in theory, I think it sounds quite good, but in practice, it is not easy to fill it with life” (I16, #00:11:26#).*

The companies’ data points are set to neutral by default, meaning they score 50 out of 100 if they are not filled (I16, #00:12:45#). Otherwise,

*“this is a score value between 0 and 100; the higher, the better. And in addition, further criteria are used for the decision. We look at whether there are any controversies. Are there certain exclusion criteria? So, are there hard or soft exclusion criteria? A candidate is immediately classified as unsustainable if there are human rights violations. For other things, in controversial business areas such as tobacco and alcohol, there are certain turnover limits. We say that from ten percent of sales, a corresponding emitter is classified as non-sustainable” (I20, #00:12:56#).*

Therefore, an ESG score of 100 indicates a well-performing sustainable company. Indeed, such a score is rarely distributed:

*“Not many people see the score itself. What is communicated to the outside world is: sustainable or non-sustainable, and if non-sustainable, the question is, of course, why it is non-sustainable. And then there is the indication that the score value is not high enough, there are hard exclusion criteria – these are hard violations of human rights, et cetera – or there are soft exclusions – these are the ten percent marks (...) – or there are controversies” (I16, #00:24:48#).*

The soft criterion of obtaining ten or more percent of the sales with certain services, such as the arms industry, alcohol or tobacco products, nuclear energy, or coal industry, leads to the declaration of a non-sustainable company (I16, #00:21:43#), even if the ESG score would exceed the threshold of being sustainable (e.g., E2, p. 3).

#### 8.2.2.2.4 ESG-Performance Score

Fourth, even though some bank houses distinguish between different sectors and adapt their criteria and weighting, others apply a generic model, including broad indicators, to make the model universally applicable. In this case, twelve major areas question ESG matters, and the answers form an ESG profile standardized among all industries (I21, #00:36:52#).

The financial analysts select the information to be integrated into the ESG profile and the model to obtain the score. Based on the qualitative ESG profiles, the quantitative ESG score was recently developed. The ESG research team provides the framework for the ESG profiles and the model with the twelve major indicators addressing ESG to the financial analysts, so they have to answer them. Additionally, they obtain a list of key factors specifying the major areas:

*“The way that works is that we have – what is called – ESG profiles, which can be three or four pages or twelve or thirteen pages if they are very detailed. Typically, we have set up an ESG framework starting with corporate governance, with a list of key factors we want our analysts to comment on. So typically, it would be board structure and other good counterpoints to protect the rights of minority shareholders, who are our clients. Similarly, how is remuneration structured? Is there some constructive long-term incentive package for the CEO and board that makes the company sustainable in terms of its business model but also factors in ESG, and decarbonization, for instance (...)? And then, our analyst responds to these questions, and we have the same structure for the S and E” (I21, #00:23:31#).*

The increasing relevance of sustainability and its development also mirrors the score’s development. In 2021, the bank house changed the score from a qualitative to a quantitative score.

*“For each of these twelve major areas across E, S, and G, the analyst has to score out of five on how well he thinks the company is doing. And one of the areas in which I think – as a broker – we are quite different from data providers (...). We are very different because our analysts would take the ESG data and put it into a purely business context and a forward-looking strategy (...)” (I21, #00:23:31#).*

Although the twelve major indicators are universally applicable, depending on the sector, the weighting of the ESG matters, as well as the list of identified sector-specific key indicators, vary (I11, #00:28:54#).

The four different compositions of the ESG scores elucidate the divergent use of ESG information sources. Albeit every bank house considers the necessity to provide ESG information

in a condensed format to the investors, the presentation varies. To obtain the score, some bank houses collaborate with an external specified ESG team but develop the score by themselves. Others have an established ESG team that develops the score based on bought or solely disclosed ESG information. While others do not have a specified ESG team, and the financial analysts use ESG information that is bought from data providers to be combined with financial information.

In summary, the presentation of whether a company is sustainable or not deviates and also the information sources, the research team that develops the ESG model, the scores, and the compositions. The presentation of the ESG scores is not necessarily prepared nor seen by financial analysts. Although the research reports contain at least some sustainability-related information, it remains unclear whether financial analysts consider ESG information beyond the presentation of ESG scores. Theoretically, the intermediation task would require the analyst to include sustainability information in the analyses beyond the presentation of the ESG scores if they are value relevant (see *CHAPTER 8.2.2.1*).

### 8.2.2.3 Sustainability Reports and ESG Reporting Information

The former explications highlight that financial analysts perceive a growing amount of corporate ESG disclosures, increasing investor demand for sustainability information, and bank houses' answer to this by offering ESG scores to (potential) investors. Still not considered is the handling of corporate disclosures on ESG matters and their impact on financial analysts' proceedings that may impact daily doings. The explanations on ESG scores' development show that financial analysts are partially involved in their development and determination. However, it does not relate to the daily routines of financial analysts.

The question arises whether financial analysts consult disclosed ESG reporting information, irrespective of its format, in a separate sustainability report or compiled in other reports.

One analyst states that the frequency he has opened an ESG report is “going towards zero” (I19, #00:10:30#). Another analyst has not “read the sustainability reports decisively” (I15, #00:09:55#). In addition, one analyst justifies not reading ESG disclosures with the time constraints of his job:

*“If one had the time to read it, but I do not have much time to read it. The others will feel the same way. We do not have much time for all these things anyway. That is a little bit due to this job description, in general, and that is why most*

*people will not read it. I do not know any colleague who reads sustainability reports” (I14, #00:26:33#).*

Nonetheless, others admit the relevance of ESG disclosures. Although due to time constraints, they do not entirely read such reports:

*“I have not yet read an entire ESG report. You put it on your drive because it is important. You should read it because it is certainly full of exciting insights. But you do not get around to it. I must remove the illusion” (I18, #00:23:47#).*

In contrast, others do not consider the ESG disclosures as relevant enough to read:

*“I do not think we must read [the sustainability report]. That is why it is a bit of ‘recreational fun’. (...) Sustainability report: At some point, I get an e-mail from a company saying, ‘we have published one’. I think very few people click on it. So, it is not a mandatory condition; it is at most a secondary condition” (I13, #00:46:47#).*

Moreover, the reasons for not studying the ESG disclosures in detail deviate:

*“I have never really read the sustainability report. I think I have cross-read it once. But I have to admit that [I do not like] the way every company writes about the measures it has taken, and obviously only about the good ones” (I7, #00:17:48#).*

As one analyst had to consult an ESG report for another study, which he usually does not look at, he figured:

*“it was more like a highly polished digital glossy brochure. I believe there has been another significant change in the last two to three years. That was really very clumsy, too. Well done, well-intentioned, but not necessarily a good start” (I12, #00:11:41#).*

The disclosed ESG information is not always considered authentic and reliable, which is the reason some analysts prefer other communication channels, as the report may be viewed as *“more of a marketing tool or a necessary evil” (I19, #00:10:17#):*

*“I just want to say that these advertising brochures, which these sustainability reports are, if I am really interested in it, I always find a conversation more resilient because you know – that it feels like – this part has written the PR department” (I7, #00:19:39#).*

Moreover, analysts do not necessarily read the report because they expect the information to be already disclosed in the annual report:

*“The company has to disclose almost everything that is relevant and important or threatens its existence. This is already revealed in the risk report. I am having a bit of a hard time figuring out what kind of things would be in there, but I would not know exactly what I could get out of it now. As I said, a handful of indicators are really important for the company, and these sustainability indicators are not among them” (I14, #00:28:09#).*

In contrast, other bank houses and their analysts realize the added value that ESG information may have and follow a different approach. They regard sustainability as a competitive advantage:

*“Ignoring the topic is the wrong approach in our view. And we believe that if we are among the first here, and we are (...), it is also a competitive advantage for us. (...) Of course, in part, I can imagine more exciting things than reading two hundred pages of a sustainability report, but that is part of it” (I11, #00:51:36#).*

Still, the statement points out that not all ESG information seems to be relevant to financial analysts. Nevertheless, the explications indicate that it may be a matter of the information source, that the analysts do not necessarily read ESG reports but rather prefer direct communication, or they consider the ESG information as relevant as they consult other information sources:

*“So where it strikes me the most is – not necessarily in the sustainability reports – but in the case that companies are becoming much more sustainable and addressing this more prominently in their capital market communications. In other words, they address targets such as a CO<sub>2</sub> reduction of 40/50/100 percent in 2030/2040/2050 more prominently in their capital market communications and address them repetitively. In other words, they also announce progress. I believe that it is not just in capital market communications but also in the entire strategy. This is now much more important as a strategy component than in the sustainability report”(I12, #00:13:31#).*

Topics concerning social aspects, such as young potentials, working conditions, and others, are relevant to financial analysts, but the information is obtained differently. The analysts also examine facial expressions, which justifies the interest in personal communication to obtain a comprehensive impression of certain statements (FN1, p. 15; I7, #00:18:52#). The reasons for talking directly to the management may be grounded in the expectation that the unpleasant topics are not written in the report:

*“[O]f course you never find such topics in the sustainability report, because, at the end of the day, it is a marketing tool, where in the end they try to hide potentially critical topics as far as possible. Because a company naturally has the*

*incentive to present itself as positively as possible and to emphasize less the things that could be a risk” (I19, #00:18:16#).*

Risks or the reputation that is affected by ESG issues also impact financial analyzing procedures, even though the analysts do not directly obtain the information by reading ESG reports:

*“I am responsible for the sporting goods companies and [a retailer], for whom it is important, especially if you have a young target group, that you are not perceived as an environmental offender. That means it plays a role in that form” (I6, #00:16:36#).*

Moreover, the information assigned to ESG has partly been a topic for financial analysts in the past. However, it has not been named under this acronym:

*“Indirectly, it has always played a major role in the past because when you think about what capital costs I assume for a company, it is not only the macroeconomic environment and the sector environment that are relevant but things that are now classified under ESG. What does the shareholder structure look like? Is there a dominant shareholder who perhaps does not have the best track record regarding how he treats small shareholders? Or do I have a hundred percent free float company with an appropriately intensified management that really makes decisions that align with the other stakeholders? These things have already been looked at without being dedicatedly assigned to the pillar of E[nvironment] or S[ocial]. (...) The negative news will appear in the press, and perhaps the products will no longer be bought. So the issue of E[nvironment] and S[ocial] has already been raised indirectly in the past. Now it has become more transparent” (I11, #00:10:20#).*

Letting the financial analysts provide examples of information they consider relevant, they realize that ESG matters have been of interest to them but did not specifically search for or read the information in sustainability reports:

*“So that is the story with a lot of topics; you just implicitly took them into account without actually having a report explicitly” (I15, #00:22:37#).*

Therefore, financial analysts realize that ESG disclosures are more profound than the disclosures in the annual report used to be. Hence, they perceive an interest in such information if they read it:

*“What I find interesting is the social reporting. Or the point of view of retaining specialists and managers, I think in many industries, it is an issue, especially in Germany. I notice that, for example, the project developers are desperately looking for project engineers, and the people are incredibly expensive. And I can use social reporting – besides the classic five sentences (...). I can read about how*



*they manage this internally because it has to be disclosed there. And it is much more detailed than in the traditional annual report” (I13, #00:14:43#).*

#### 8.2.2.4 Sustainability and its Financial Implications

Analysts expose their interests but to varying extents by comparing the three major topics – environment, social, and governance. Governance is always important, although the analysts try to investigate implications that result from the topics and find that they differ:

*“Governance is ultimately the least important or prominent factor for us as financial analysts or me as a financial analyst. A certain degree of governance has to be given. (...) In the end, that is fine if you can check it off. If there are bigger issues, you look at them in detail. But that is actually done beforehand because it is a lot about shareholder analysis. Who is the dominant or driving force in the background? That has the least derivable impact on financial performance” (I13, #00:24:54#).*

Thus, financial analysts consider governance issues and attempt to classify the situation by comparing it to peers. Accordingly, not every governance issue has a tremendous impact depending on the circumstances. Still, financial analysts pay attention to such matters:

*“In governance, we pay very close attention to coherence. (...) Suppose you have a family-owned company (...). You simply have to accept that issues such as cool-off periods for the management and supervisory board do not happen. That is why we always have to say quite clearly that it is not good from a governance point of view. However, on the other hand, we have to say that if [one] want[s] to be an investor in a family business, then [one] ha[s] to live with the fact that there is a family that has a major influence (...). You observe it, you look at it. But then you have to put it in relation to how the company is positioned in the industry or what the shareholder base looks like” (I15, #00:21:39#).*

Environmental matters contrast governance aspects, as their relevance appears to be greater because it is viewed to have *“the highest derivable financial impact”* (I13, #00:24:54#). The consequences may not always relate to the same year, but analysts notice long-term implications:

*“Based on this long-term view, a company sets the course today that may not yet be visible in year one or year zero, but it will lead to a significant change in year five, six, or seven. We would start to take this into account today (...). If you simply say that you have a company that says, ‘we are investing in our own wind turbines to produce our own green electricity in the future’. Then that is already an issue, which is promptly included in the estimate. Even though it may take ten*

*or twenty years to actually map the entire production in a CO<sub>2</sub>-neutral way” (I15, #00:16:57#).*

The reduction of carbon dioxide is omnipresent and affects companies’ production but also their maintenance. Furthermore, the changing climate affects infrastructure, resulting in required adaptations and financial implications. Financial analysts are aware of these influences:

*„During low water on the Rhine, they had to charter new shallower ships. Now, they have to ensure that the ships can sail on the Rhine. This has an impact (...) Expanding shipping lanes has a financial impact” (I17, #00:46:34#).*

Consequently, financial analysts may have the impression that the relevance of “*E[nvironment]* is clearly the highest. *S[ocial]* is the middle” (I13, #00:24:54#), and governance is accordingly the least relevant. However, others believe that Germany “*always take[s] a leading position*” in social matters which justifies analysts’ little consideration of social issues (I17, #00:29:07#) and attributing the least relevance to them. Nevertheless, the analysts admit relevance to ESG information irrespective of their order of importance, which may depend on the sector and their region.

It becomes apparent that the transition that is taking place impacts the economy. Even if sustainability may not explicitly be a subject to financial analysts, the changing business environment that is due to sustainability is. Therefore, these changes may determine strategic or financial aspects that financial analysts consider:

*“We are looking at all these industries that are subject to transition. These are sustainability issues. (...) My philosophy is anyway sustainability is the new normal. It is no longer the niche product, but the main product, and it is rather the unsustainable things that are the new niche” (I20, #00:18:24#).*

As fundamental analysts, financial analysts investigate a diverse set of information. However, not all available information is integrated into their forecasting and valuation procedures. The following illustrates the relevance of environmental, social, and governance matters to financial analysts. It explicates whether and how financial analysts integrate any of the information in their analyzing procedures, consisting of forecasting and valuation, and which challenges they face.

Sustainability is a ubiquitous topic, which is why analysts do not ignore it. However, it also does not imply that all analysts read ESG disclosures. Albeit, once they do, they find interesting information. Still, they question the benefit of the information for short-term work:

*“I have only skimmed through the sustainability report this summer, if at all. Now that you have addressed me, I have looked at it again. It is exactly as I thought it would be, and I do not find any information of value in it. (...) The added value is low for me as an analyst and for my job. On the other hand, of course, what the companies write is interesting. I think it will play a role in the long term, the working conditions, especially with the shortage of skilled workers, now the topic of working remotely, all these things explained in the reports. I think it has very good information content. But you do not have time to deal with it in the short term. For my horizon, it plays a relatively minor role” (I14, #00:21:43#).*

Generally, the analysts perceive ESG information, and some consider sustainability “a qualitative factor”, which they already address in their SWOT analysis (I14, 00:38:38#). Some analysts view the information and the questions they address to the companies related to sustainability with “a very different target orientation, which is not cash flow” (I1, #00:18:57#). Others explicate that the discussions with companies related to this topic address the “issue of future viability and what that means for the strategy” (I12, #00:37:15#) of a company:

*“It is all about topics like employee management, employee training, and employee participation. You can develop a certain feeling about what happens to personnel costs, to the other expenses. I find sustainability reports interesting from a strategic point of view” (I13, #00:11:50#).*

Some analysts only understand ESG information as a risk value (I16, #00:20:54#). Others view the identification of risks as more important than opportunities, although in the long term, they are crucial:

*“The most urgent thing is the risks. (...) If I only see them, I have a problem. Because if such a risk materializes, the share loses ten or twenty percent. (...) That is the urgent and extremely important thing that from an ESG point of view I can get all the risks out of the way. What is more interesting in the long term are the opportunities. Where are there new business opportunities? Where is growth? Where is the trend towards more sustainability?” (I23, #00:38:14#).*

Based on the relevance of such information, analysts extend the view because they know that strategic matters influence financial aspects:

*“We think about strategic issues. So as I said: market topics, and strategic topics, of course, they also have an impact on the complete P&L forecasting. So that means sales development, as it is a lot about competition, market shares, pricing power and that is de facto sales and margin” (I13, #00:22:59#).*

Therefore, the analysts try to include ESG information in their proceedings if “it has an impact on strategic decisions, (...) an impact on profit, cash flow or balance sheet items or the

structure” (I15, #00:12:18#). The financial impact may not be visible all the time, but as soon as it becomes identifiable, the focus is on the information and its influence:

*“But at that moment, when I suddenly see this becoming a financial issue, especially through CO<sub>2</sub> pricing, which will be a massive financial issue for some companies, it will suddenly become interesting to look at” (I13, #00:14:43#).*

Especially if the market offers products that are either sustainable or non-sustainable, it matters to financial analysts. However, they compare the products from their financial point of view and not from the sustainability point of view:

*“In the end, it is a question of which product sells better. I do not look at it under certain sustainability aspects, but rather what does the product balance look like?” (I15, #00:38:45#).*

If a financial impact results from an ESG topic, the analyst aims to integrate the financial impact within the valuation model (I18, #00:31:05#). The financial impact elicited by sustainability matters, thus, can be considered in different figures, but in the broadest sense, it impacts the earnings:

*“We have a focus on what is financially material. So we are looking at all the factors that have an impact on the earnings or the return on equity” (I22, #00:28:22#).*

The estimates take ESG information into consideration:

*“There is some kind of legal dispute, there is an environmental lawsuit or some kind of environmental problem, or something has to be compensated because it is poorly made from an environmental point of view. In that case, it is directly considered (...) as a figure, i.e., as an estimate” (I18, #00:31:05#).*

The analysts mainly focus on cash flows and question the sustainability matters’ impact on the earnings (I13, #00:29:53#). When analyzing a corporate presentation that addresses investments aiming for carbon dioxide reductions, analysts find numbers that they have to consider in their model:

*“That is hidden somewhere in this presentation: how many billions they will invest in sustainability, i.e., CO<sub>2</sub> reduction by 2030, and then again by 2050. And then you have to include that in your model. These are the concrete figures. And I have to evaluate them with an ROI. And that is how we move from sustainability in quality to quantity” (I17, #00:24:10#).*

Direct cost implications must be identified to incorporate a valuation impact (I7, #00:28:06#).

The analysts question the ESG information:

*“Does this have an impact? For example, because they cannot get any more young potentials. Can that be a shortage? Is that an obstacle to growth? If so, it has a financial impact again. But as long as that does not affect cash flows, some-time between now and infinity, no” (I7, #00:25:35#).*

If the analysts identify implications for the cash flows, the ESG information is identified as financially material. Moreover, other figures, such as the capital costs, may also be influenced:

*“Basically, we know that companies that have better ESG scores have lower cost of capital, and the inverse” (I22, #00:22:22#).*

Nevertheless, this consideration is not yet completely realized:

*“Ultimately, this has to be reflected in the cost of capital. Companies with higher risks from an operational and ESG perspective should have higher capital costs than those with low risks. In part, this is already reflected in the models and costs of capital, in part perhaps not yet” (I11, #00:14:58#).*

Beyond adapting estimates that incorporate ESG matters, the information is also considered in the valuation procedures:

*“We do not leave these issues out of our evaluation because we naturally take them into account in our risk assessment” (I11, #00:36:42#).*

Even though it is challenging to make the risk quantifiable (I19, #00:17:09#), different options exist to account for the risk. Issues related to sustainability can be incorporated as risk-based markdowns on enterprise values (I18, #00:32:50#):

*“You now have an issue with good governance or poor governance. Accordingly, you make a markup or markdown of five percent, for example, on the enterprise value because there are so many issues at G[overnance]. (...) That is why it is usually representable via discounts if they are so vague. So, I make a markdown of fifteen percent on the enterprise value because of poor corporate governance” (I18, #00:31:05#).*

ESG-related discounts could be applied to an enterprise value that is either multiple-based or based on a DCF model. Within a DCF model, however, the analyst can incorporate ESG information more granular than in multiples valuation:

*“I have a discount or several discounts, and accordingly, this controls my company value quite transparently. That is probably the fairest based on the current state of knowledge. Therefore, it is possible in the short term as well as in the long term. However, in principle, all these change topics, all these strategic topics, structural winners or losers, can probably be better discussed in DCF than in multiple valuations. Because you can say that if ESG is only the basic strategic*

*topic, there is so much day-to-day business, newsflow, competitor actions, trading flows, and whatever else influences share prices that this also overlaps. That [ESG aspect] is then one of the multiple aspects” (I18, #00:54:10#).*

Consequently, applying DCF models allows a more significant consideration of ESG matters than multiples valuation. The analyst “*would use the sustainability information to adjust his numerator or denominator in the DCF model” (I24, #00:43:10#).* The estimates may incorporate ESG information, but also the discount rate of the DCF model may consider it:

*“So if it is a diffuse risk, which may arise at some point, I would probably pick it up in an enhanced beta” (I19, #00:19:17#).*

In the discount rate, the beta considers the risks related to the ESG issues:

*“A company has a higher risk if it has a management that always misses the forecast. Or the company has a higher risk if unpleasant things have happened in the past. These are things that I take into account in the discount factor. (...) Some people certainly do not have that. They say, ‘no, I will forecast it with the cash flow’. These are always the known costs, i.e., the known capital costs” (I14, #00:39:24#).*

If a company determines the beta, the quantification of the ESG issue is still challenging:

*“On the subject of beta as to how we deal with it, we are back to the rule of thumbs<sup>324</sup>, or gut feeling, or wealth of experience” (I12, #00:24:52#).*

As different compositions of betas exist, ESG matters can be taken into account in different places, which the different bank houses are partially still developing:

*“We use qualitative betas. We do not use market betas, i.e., no price-relative betas, but qualitative betas by estimating the market risk. (...) We use financial strength: how clean is the balance sheet, how high are the impairment risks or others? Then liquidity, which is about tradeability. Cyclicalities is ultimately what you would understand by market beta. In other words, how cyclical is the company in the overall market, or is it dependent on the overall economic situation? Transparency can be seen in two directions: on the one hand, how transparent is the reporting, and on the other hand, how transparent are future cash flows? In other words, how well can they be forecasted, and others? That is actually always one in my case. You can take this if you want to use a certain adjustment sequence. This then results in a beta smaller or larger than one. Of course, you can think about the issue of transparency in the future, whether ESG factors should be weighted or taken into account, or whether this qualitative beta should simply be expanded to include ESG” (I13, #00:29:53#).*

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<sup>324</sup> The German expression is “*Pi-mal-Daumen*”.

Sustainability and its consideration are, thus, diverse and still evolving, not least because the bank houses and their financial analysts face various challenges that limit their analyzing procedures. The disclosure of ESG information has increased in the past but is still subject to change as the regulation of sustainability information is about to be implemented. The future development of ESG issues and their disclosures is going to change, which challenges the correct estimation of sustainability's impact on companies and their actions:

*“If you make the projection of cash flow, the question is how good is the projection on cash flows ten years from now on sustainability? That is a complicated question. In principle, you can answer questions like, are they having structural problems, or are they structural winners from a sustainability point of view? And if so, where? That is a matter of evaluating, which you probably will not get in a projection in terms of estimates” (I18, #00:54:10#).*

Furthermore, specific topics are dynamic, and their relevance, as well as the requirements, may change depending on certain circumstances:

*“The [ESG] factors are quite dynamic. Of course, there are a few industry-specific focal points. Container shipping and airlines are, of course, very heavily dependent on fuel as far as the environment is concerned. But nevertheless, I believe that the factors can be dynamic to a certain extent, which can be important. They will fluctuate over time” (I12, #00:26:53#).*

If sustainability aspects change in their relevance or their requirements change, it is difficult for analysts to estimate as realistically as possible.

Moreover, various companies have a business model that is not sustainable by nature. It is difficult for financial analysts to determine whether a non-ecological-friendly sector, for instance, is performing well if they improve, even though they remain non-ecological. That is why it is a legitimate question which point of view an analyst shall adopt:

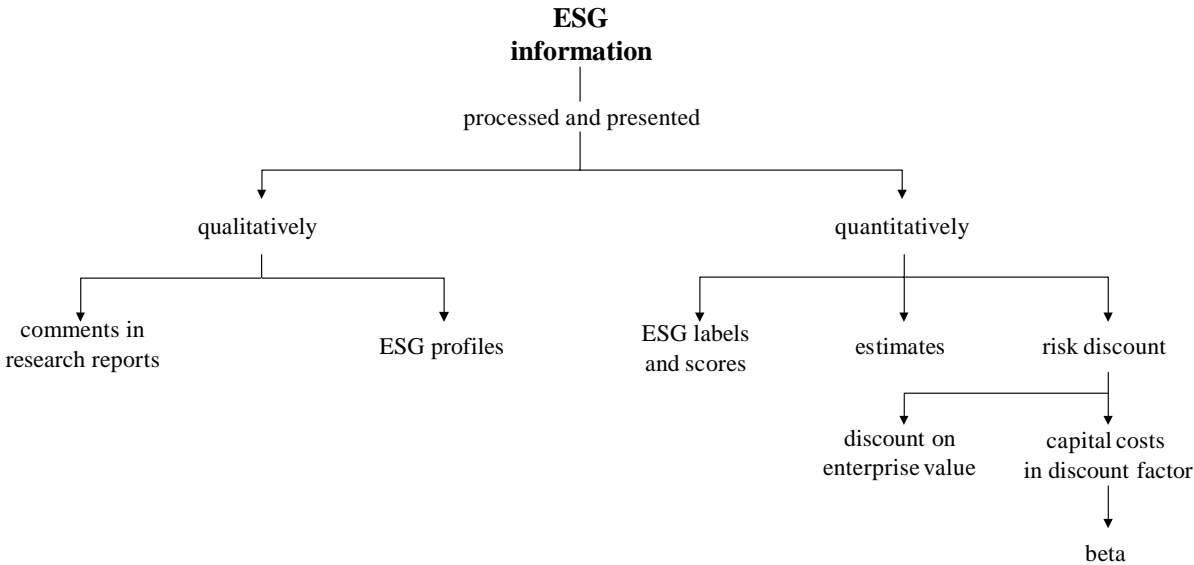
*“And you should not underestimate the whole topic with weapons, but also automotive partly. They have, of course, perfect ESG figures. Yes, why? Because they are trying to create a good atmosphere. And the whole issue of ESG figures, ratios, assessments, and ratings is somehow to give themselves a green coat. That is a huge topic or a huge problem. On the one hand, of course, you want to honor what they do. On the other hand, you have to go back and say, well, at the end of the day, you are building tanks. Then, of course, you can discuss whether a tank is actually bad or good. You need a tank for security; therefore, you can see it positively from some aspects” (I18, #00:44:41#).*

Not only do the different points of view challenge analysts in determining the sustainability’s impact on a company, but also the vague soft factors that are hardly quantifiable and diverge depending on different views:

*“I find it difficult to say that I see a specific risk but that I adjust my estimate or risk factor because of a more soft factor, like ESG. It might apply to the one investor that I match a hundred percent, who agrees. The other investor says, ‘I do not care at all. I see a risk in a different place, or I may not see any risks at all in that place.’ (...) My basic assumptions in the risk assessment then totally diverge. That is why it is always difficult to consider such issues as potential risk factors unless they are sufficiently concrete. [For instance] because I know there is major environmental damage and what effect it can have. To that extent, I think you always have to remain a bit of a generalist. (...) [T]hat always comes primarily through the investor side, and that is mostly a discussion about possible exclusion criteria: Is the company investable for me or not” (I19, #00:38:50#).*

Especially the interests of investors can diverge. It makes information that is difficult to quantify less relevant to one investor and more relevant to the other. Financial analysts may include ESG information that is not integrable into their estimation and their valuation in a comment if they still view it as a relevant ESG topic (I15, #00:17:06#).

**FIGURE 15:**  
*ESG Information in Financial Analysis*



**Notes:** Financial analysts process and present condensed ESG Information in different formats. Either they point out their results of analysis qualitatively in the form of texts or quantitatively based on numerics and calculations. The quantitative consideration of ESG information refers to rating, forecasting, and valuation procedures.



Therefore, if financial analysts regard sustainability information as relevant for investors, they either quantitatively or qualitatively address it (see *FIGURE 15*). They present condensed ESG information in different formats. They depict their results qualitatively in the form of texts or quantitatively based on numerics and calculations. The quantitative consideration refers to rating, forecasting, and valuation procedures, in which the analysts focus on identifying financial topics. The results underline that some financial analysts are involved in setting up ESG scores and ESG profiles; however, this is not solely their individual task. Considering the forecasting and valuation processes, ESG information is taken into account in different ways.

The financial analysts incorporate ESG information in their forecasts, i.e., they can adjust diverse estimated figures based on the information. When adapting estimates, ESG information may be understood as an indicator of performance. In contrast, when considering ESG information as a risk indicator, the analysts either adjust an enterprise value by a risk discount or reflect the risk in the capital costs. They have to adapt the beta to adjust the capital costs based on risks resulting from ESG information. The latter adjustment is only feasible for DCF valuation, whereas the risk discount on enterprise values is also applicable for multiples valuation.

Furthermore, suppose the analysts view ESG information as relevant but too vague. In that case, they can still comment on the ESG information in the research report without including the topic in their estimates or valuation.

### 8.3 Collaboration with Other Information Intermediaries

The previous findings indicate that ESG scores from ESG analysts extend the research reports of financial analysts. The ESG analysts are specialists focusing on and processing corporate sustainability information for investors. Besides this cooperation, research literature indicates that buy-side analysts use sell-side analysts' research reports since they consider the processed information valuable (Schipper, 1991, p. 106; Fogarty and Rogers, 2005, p. 332). Both types of financial analysts function as financial intermediaries, specifically information intermediaries (see *CHAPTER 4.1*). Whether sell-side analysts also benefit from collaborations with other information intermediaries, such as ESG analysts, is questionable.

First, the interaction between buy-side and sell-side analysts is shortly pointed out to illustrate the advantage for buy-side analysts due to a collaboration with sell-side analysts. The interaction between these two analyst types inspires to examine the collaboration between ESG and sell-side analysts, on which the focus is set.

Second, the interaction between ESG and sell-side research is analyzed to understand the role of sustainability in financial analysis, which seems to be the intersection of the two research fields based on the previously presented findings of this study.

#### 8.3.1 Buy-Side and Sell-Side Analysts

*CHAPTER 4.4* already addresses the buy-side analysts' benefit of using sell-side analysts' research reports. The relation between the two financial analyst types, both being financial intermediaries, illustrates how one intermediary group uses the work of another intermediary group. The collaboration appears to be unilateral because buy-side analysts benefit from sell-side research reports. However, the dissertation does not analyze this cooperation two-sided and cannot provide detailed insights.

A buy-side analyst describes himself as a “*very knowledgeable reader of sell-side research*” (I23, #00:09:16#) because compared to a sell-side analyst, he performs fewer financial analyses:

*“When it comes to financial analysis, I do rather little as a buy-side analyst. It is much more a qualitative analysis than actually having models. To be fair, I have to say, in the little time I have, I do not have to create a twenty-fourth valuation model that was created by the twenty-three clearly more experienced [sell-side] analysts with much more time. That is not where I think that would add value. That is the general approach. We have to deliver good value; otherwise, I do not*

*have to do it. (...) It can only result from aggregating all the data. This is how [one] understand[s] buy-side analysis” (I23, #00:09:16#).*

Due to time constraints and the expertise of sell-side analysts, buy-side analysts make use of their research:

*“[Y]ou cannot go in as detailed as a sell-side analyst. This means that we depend on the help of sell-side analysts who follow the company very closely. (...) But the analysis of the core segment is only a few values, and they are very deep in it. They have very detailed models, which you cannot afford on the buy side. And that is why you must rely on the sell side’s information. I often talk to sell-side analysts, but then I only pick out specific aspects where I either recheck my position or where I want to drill deeper. CO<sub>2</sub> emissions, for example. (...) They take drones and look at the utilization of parking spaces in China or in wherever to conclude retail sales. They do that; we do not do that. For those specific things, we go back to the [sell-side] analysts” (I24, #00:49:27#).*

Overall, buy-side analysts use sell-side analysts’ expertise, while both function as financial intermediaries. Still, one intermediary uses the condensed information that another intermediary processes.

Nonetheless, a buy-side analyst perceives by reading many different sell-side research reports that sustainability is not yet well established in sell-side financial analyses:

*“[S]ome [sell-side analysts’ reports] have a score or a label, yes. And, of course, the companies where it is obvious, i.e., if their business model is (...) making wind turbines, there is ESG conviction on there somewhere. That is also addressed. But it is not integrated for the massive, overwhelming majority of analysts. And also, if someone has included a [ESG-related] key figure in his research, this is automatically included but is not addressed, neither in the presentation, in the pitch, when someone has a great idea, nor in the daily updates, in the monthly or quarterly updates. No, it exists, and it can be seen, and it will come at some point, but in the mindset of the analysts, the sell-side analysts, it is not there; [ESG is] largely irrelevant” (I23, #00:33:25#).*

The interviewed buy-side analysts, nonetheless, admit the relevance of sustainability and aim to use the ESG “data to make [their] judgment more accurate and, thus, generate added value for the customer from a long-term perspective” (I24, #00:23:20#). However, a different picture might emerge when talking to other buy-side analysts, especially those with a stronger focus on sustainable finance products.

The previous remarks question the necessity of an intensified collaboration between sell-side analysts and ESG analysts to meet the growing interest in sustainability. The buy-side

research benefits from the processed information when using the sell-side research. Likewise, ESG research and sell-side research could take advantage if they cooperate.

### 8.3.2 ESG and Sell-Side Analysts

The previous explications of the development of ESG scores already illustrate that some bank houses have separate ESG research teams with so-called ESG analysts, and few treat the topic internally within sell-side research (see *CHAPTER 8.2.2.2* and *TABLE 3*).

The classification of financial analysts as financial intermediaries, specifically information intermediaries, is carried out in *CHAPTER 4.1*, where ESG analysts are not classified. The insights presented beforehand expose that ESG research teams, correspondingly specialists named ESG analysts, mirror different professions. Some ESG analysts were previously financial analysts, others were not, and neither have a financial background.

ESG analysts process sustainability information for investors, which is why they can be classified as information intermediaries in the broader sense. Moreover, they act on financial markets aiming to reduce information asymmetries that result from the unregulated and increasing amount of ESG disclosures. Following these arguments, ESG analysts can be financial intermediaries and information intermediaries in the narrow sense (see *FIGURE 5* and *CHAPTER 3.3*).

#### 8.3.2.1 Perspective from ESG Analysts

Accordingly, ESG and sell-side analysts may present different professions with divergent focuses but pursue the same objective. Both professionals aid investors in assessing potential investments by adopting a specific perspective (see *CHAPTER 4.2*). On this account, the collaborations between the analysts from ESG research teams and from equity research teams are investigated. The overall consideration of financial analysis nowadays could be split into two parts, albeit this is not yet necessarily the norm:

*“[Y]ou first look at the fundamentals and then you overlay. So your ESG analysis should be the extension of your DCF” (I22, #00:18:15#).*

Although the valuation does not necessarily consist of a DCF, the statement emphasizes the necessity of financial analysis and the intertwined relation between ESG and financial analysis. The interviews with the ESG analysts underline the collaboration between the two teams:

*“The ESG research team is in daily contact with the [financial] analysts. It is hand-in-hand work. And accordingly, everyone is always informed in all directions. There are joint meetings where a traditional analyst<sup>325</sup> and a sustainability specialist talk to the relevant companies and exchange information. All sources are actually informed at all times. And it is the case that traditional analysts have access to the sustainability database at all times and can look at the data accordingly. There is always a dialogue. Suppose we have to clarify things where we do not know exactly which direction the analysis will take, or perhaps we need to clarify something with the relevant issuer. In that case, we have a joint meeting with the issuer. This is hand-in-hand work” (I20, #00:23:23#).*

Even though the ESG team claims daily collaboration, one ESG analyst admits that they do not provide the scores or lists with ESG scores to the financial analysts separately:

*“We[, the ESG analysts,] at least pay attention to [the scores of the companies] that we cover and where changes have occurred. But we do not send a list around to the [financial] analysts” (I16, #00:26:17#).*

This workflow allows ESG analysts to be informed about changes in ESG scores and corporate ESG activities but emphasizes a lack of communication between the ESG team and the financial analysts. If the sell-side analysts do not explicitly look at the ESG scores, or in particular at changes, they will not be informed about it.

However, developing ESG scores or profiles underline the cooperative work between ESG analysts and financial analysts. In one case, the ESG team and the financial analysts jointly defined criteria and key performance indicators to assess the different ESG aspects of a company (I11, #00:18:11#). Although they work together, some tasks are primarily conducted by financial analysts:

*“[C]ompany level analysis is very much done nowadays [and] much more by the financial analysts themselves with [the ESG analysts’] support as a kind of secondary input” (I21, #00:23:31#).*

The ESG analysts provide the framework to analyze companies’ sustainability activities. They are reliant on the financial analysts’ answers. The ESG analysts provide “a list of key factors which [they] want [the financial] analysts to comment” on (I21, #00:23:31#). For each of the three ESG components, “twelve major areas” are questioned on which the “analyst has to score out five, how well he thinks the company is doing” (I21, #00:23:31#). The answers of the financial analysts to the ESG framework provided by the ESG specialists construct the ESG

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<sup>325</sup> The interviewee refers to a “traditional analyst” when he talks about *financial analysts*.

profiles of the various companies (I21, #00:23:31#). Hence, ESG analysts depend on the input of financial analysts.

Additionally, the financial analysts decide on the weighting of the ESG factors, while the ESG analysts assist:

*“The financial analyst makes the ultimate decision for the E and S on that weighting. They make the final decision, but as the ESG team, we will kind of give them an insight as to why we think it should be higher or lower. But the final decision is his” (I21, #00:55:18#).*

The ESG research team does not only provide condensed sustainability information to financial analysts, but they also make use of the financial analysis and its condensed information to enrich their analysis:

*“The ESG team is using the outputs of the [financial] analysts. (...) We would look at the CSR report for the historical data on greenhouse gas emissions. However, we used the CapEx estimates from our financial analysts to add another quantitative factor which was forward-looking as an input to our overall ranking model on that topic for that sector” (I21, #00:31:56#).*

### 8.3.2.2 Perspective from Sell-Side Analysts

In contrast to the descriptions the ESG analysts provide, the study’s findings from the perspective of sell-side analysts depict contradictory insights that underline weaker collaboration between the two intermediary types. The interviews with financial analysts demonstrate that some financial analysts are not well-informed about integrating ESG matters in their research reports, nor do they communicate with the ESG research team. One analyst did not even know whether the ESG score was already incorporated into the research report. It is generally inserted from the in-house database, and the analyst is not in charge. Thus, it is added after he writes his report or comment:

*“I think there is even a[n ESG] label. I do not even know whether the label will still be added or whether it is already on [the report] (...) It will come automatically from the database” (I17, #00:46:39#).*

Another analyst highlights that the ESG score is externally added and not consulted by the financial analysts because they are supposed to be informative for the investors:

*“[The ESG score] is pulled externally from the database, calculated and printed. This is not actually further discussed in my comment. This is simply additional information for the investor” (I12, #00:37:15#).*

Moreover, as the ESG analysts do not forward the scores or lists to the financial analysts, the sell-side analyst would have to recognize the disappearance of an ESG label himself since the ESG team does not inform the financial analysts:

*“I would have to notice it myself. I do not know if that has ever happened in my companies. But we do not have a system that says, ‘Attention, the sustainability label has been dropped’. That is quite interesting. I would have to see that for myself; otherwise, I would not even notice it. It is not like someone would tell me, or a warning system would pop up. It would be interesting because if that were to go away, you would have to question why that was the case” (I14, #00:46:30#).*

The statement underlines that the two teams have not discussed the proceedings and the relevance of a changing label or score. At least, not every financial analyst is informed about it. If some analysts do not look at ESG scores because they do not know whether they are printed on research reports, they will assumingly not realize if an ESG label is dropped or an ESG score has changed. Hence, the statement expounds the low relevance of the ESG score or label to financial analysts.

### 8.3.2.3 Future Collaboration

The findings point out that the processes do not ensure that financial analysts look at ESG scores, especially not at ESG databases. Consequently, financial analysts do not necessarily identify changes in ESG scores or labels. One financial analyst admits that the teams collaborate but that an improvement is needed:

*“We do have an ESG team (...), the interlocking was always there. But they cooked their own soup<sup>326</sup>, which was certainly good. In the future, the interlocking has to become much more” (I18, #00:25:47#).*

Similarly, another analyst agrees that the collaboration must improve, but he believes that it certainly will happen automatically:

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<sup>326</sup> This is a German expression (“*ihr eigenes Süppchen gekocht*”) underlining that they worked independently.

*“The interaction between sustainability analysts and fundamental analysts will become closer, and probably every fundamental analyst will soon take sustainability into account” (I16, #00:44:27#).*

The sell-side analysts can imagine asking ESG analysts for advice if questions concerning sustainability matters arise in the future:

*“If it becomes too specific, I would ask a colleague. (...) So that has not happened yet, that would only be theoretical, but it could be that a customer does have specific sustainability questions. (...) But that does not usually happen” (I17, #00:31:02#).*

Although both groups assume that the collaboration will improve in the future, some admit that the collaboration between the two research teams was greater a few years ago than nowadays.

*“We used to write studies together. It used to be mixed with equity analysis. Sustainability studies were a mixture of the sustainability criteria and the companies. (...) But now, it is a separate topic area we have worked on for years. (...) Today, they do their own thing and give us the [ESG] label. In the past, it was more of a co-production, which is no longer the case” (I14, #00:30:49#).*

Still, this could be an individual case, but it could also be because ESG research teams had grown in recent years and previously relied more heavily on external analysts when the ESG teams had fewer staff. At the same time, however, another analyst states the opposite:

*“[T]his has actually been a problem in the past. Many houses separated these analyses very strictly, and then there was a sustainability team and a classic team. In the end, they both knew nothing about each other, and that resulted in countervailing views” (I20, #00:24:46#).*

The opposing views underline the different perceptions of collaboration between the two teams and question the future, whether the two teams used to work more closely together but will intensify their collaboration again, or whether it further moves apart.

Other bank houses underline the need for greater interaction, although they admit they already collaborated and developed the ESG scores together. Still, they think their work has to be intensified in the future:

*“But perhaps this separation will no longer be as strong as it is now, with us, on the one hand, analyzing the financial development of a company and, on the other hand, ESG, but with both that the two merge or overlap. It is actually already happening to some extent” (I11, #00:40:03#).*



The collaboration is viewed as indispensable, as the ESG research teams understand themselves as the support to financial analysts that is necessary to address the extensive topic of sustainability and its issues:

*“From the ESG side, we really only act as a support for the financial analysts. We would not do any of that DCF, sum-of-the-parts, or multiples ourselves. That is something very much that the financial analyst is doing. (I21, #00:30:25#) (...) It is really up to us, as an ESG team, to support the analysts to help them to get data and to approach those big questions in a more specific way for that sector and that company, but that is standardized” (I21, #00:36:52#).*

Moreover, an analysis that includes the financial and sustainability view is requested as the demand for sustainable investments requires this combination that consists of the short and long-term view of investments:

*“We always say sustainability is an investment topic. Someone who invests sustainably also wants to achieve a return. We have to know here that in addition to this classic economic return, the short-term return that we are familiar with, there is an ecological and a social return. But these are the long-term returns. Of course, someone who invests sustainably also wants to do something good, but he also wants to earn money. We have to be completely honest about that; it is not just the topic of wanting to improve the world. That is why it is called investment. And therefore, there is this real requirement of a dynamic analysis” (I20, #00:28:37#).*

In summary, buy-side analysts benefit from sell-side research reports (at least) unilaterally. The insights from ESG and sell-side analysts concede bilateral advantages. Nevertheless, ESG and sell-side analysts agree upon the need to improve their cooperation. Even though both groups admit some interaction, the sell-side analysts’ explications suggest more improvement potential.

## 8.4 Research Findings and Discussion

The formerly presented findings highlight the use and relevance of financial and sustainability information in financial analysis. They simultaneously emphasize the role of sustainability in financial analysis nowadays, alongside the essential financial information, and point to its increasing relevance. It is necessary to place the use of sustainability information within the general financial analysis procedures to discuss its role in detail. The formerly developed research questions aid in understanding the usefulness and relevance of financial and sustainability information in financial analysis proceedings. The results shed light on the change that is taking place due to the reformation of sustainability reporting, and they indicate the future role of sustainability in financial analysis.

Financial analysts, in this case, equity analysts from the sell side, fulfill the task of intermediating between capital borrowers and capital lenders as financial intermediaries. They process available corporate information to provide stock recommendations for buying, holding, or selling (see *CHAPTER 4.4*). Any information that can impact the stock recommendation, which is based on a company valuation and forecasts about the company's future viability, is of value to the analyst (see *CHAPTER 4.5*). In theory, irrespective of its financial or sustainability nature, corporate information is valuable to the intermediary if it may impact the stock recommendation (see *CHAPTER 2.3*).

### 8.4.1 Organizational Workflows in Financial Analysis

The first research question (*RQ 1*) addressed the organizational workflows and in-house regulations impacting analyzing procedures. The previously quantitative-dominated research literature (see *CHAPTER 6.1*) is expanded with this qualitative case study. The findings related to the first research question illustrate financial analysts' daily routines in case of an event and even emphasize the differences to an initiation research. Furthermore, the study expands the previous literature's insights on the distribution of research reports.

Depending on the standardization or flexibility of the workflows of financial analysts, to some information, more or less attention and value may be assigned. Hence, the findings highlight the different workflows to understand how financial analysts investigate their covered companies. Comparing the different data from the various bank houses and analysts allows concluding that the market and its interests mainly determine the analysts' workflows.

Although the analysts work individually and are given a certain amount of latitude, some bank houses prescribe the valuation models they developed internally. Nonetheless, some bank houses offer flexibility to the analysts to decide on the choice of valuation, e.g., in the absence of peers. The research reports are predefined, so the analysts only have to insert their comments, whereas the report structure is predetermined, and the estimates and models are updated.

While Arnold and Moizer (1984) and Demirakos *et al.* (2004) state that DCF models are rarely applied, this study stresses the relevance of DCF models to financial analysts. Hence, the results agree with the findings from Imam *et al.* (2008) that DCF models seem to be more relevant than previously assumed. Demirakos *et al.* (2004) point out the application of different valuation models, which this study also presents as analysts choose between DCF and multiples valuation and partially apply sum-of-the-parts valuations.

Similar to Cascino *et al.* (2014), the findings demonstrate the variety of information sources that financial analysts can rely on. Although Vergoossen (1993) places the balance sheet second in determining the importance of annual reports' components, this study departs from that. Like Drake *et al.* (2019), the results highlight that profit and loss statements as well as cash flow statements are more crucial to financial analysts than balance sheet numbers. In addition to the essential corporate reporting information, the study's findings also agree with Soltes (2014) and Brown *et al.* (2015) on the relevance of personal communication with a company's management. Although this study is not able to provide an order of the most relevant information sources, it additionally provides insights into the use of external databases and media reporting.

#### 8.4.2 Use of Corporate Reporting Information

##### 8.4.2.1 Use of Financial Information

Based on the second research question (*RQ 2a*), the use and integration of financial reporting information into financial analysis were studied. The results suggest that reporting information is indispensable despite not all available financial information is being read.

An exception is the initiation of a company; otherwise, the financial reporting disclosures, not the figures, are consulted if a specific topic arises. The financial figures – even the non-GAAP measures that generally adjust financial figures following GAAP by special effects – are crucial to the analysts and their proceedings. Beyond disclosed financial disclosures, the dialogue and debate with corporate management about financial information are given great

relevance. That is why not all disclosures – although they might be relevant – are read but still obtained through other information sources than reading corporate financial disclosures.

Imam *et al.* (2008) present that analysts base their valuation models on clients' demand, thereby stressing the market's interest and its relevance to analysts. Similarly, this study reveals that since the market considers non-GAAP measures, analysts view an added value in the companies' provision of information about one-time effects. Despite debates about the suitability of non-GAAP measures, analysts also construct their own measures after adjusting for one-time effects if the companies do not provide similar suitable measures.

The findings stress the necessity of financial statement figures to enter into forecasting and valuation models. Analysts are not interested in every position of the balance sheet, income statement, or cash flow statement, even if they enter them into their models so that the sums add up. Still, equity analysts spend more time analyzing deviations between their estimates and disclosed figures or between companies' expected and actual numbers. Balance sheet positions, such as goodwill, are not ignored by analysts, but they are more interested in what the market thinks about an acquisition than in its book value itself.

Drake *et al.* (2019) state that the balance sheet is crucial to evaluate credit risk, which this study confirms, as the importance of balance sheet positions seems much higher in debt analysis than in equity analysis. This study expands the previous findings because a distinction between debt and equity analysis provides additional insights. A debt analysis is less time-sensitive as it is not event-driven. Hence, the analyzing procedures deviate, and analysts examine individual positions in more detail. In contrast to equity analysts, they study separate and sub-group financial statements as well. However, at the same time, they are not reading all report components. Instead, for liability reasons, banks set up covenants to contractually ensure compliance with certain topics.

Vergoossen (1993) already addresses the little time that financial analysts spend on investigating a single report. The results of this dissertation also emphasize that time constraints determine equity analysts' actions. This results in equity analysts not reading all corporate disclosures that companies publish and letting the analysts focus only on essential information. This study expands the insights on the factors and challenges impacting the analyzing procedures. Albeit the standardization of the analysis, the intermediaries determine their stock recommendations based on their valuation, expertise, and gut feeling. They decide how to quantify certain risks or opportunities and choose which information sources they use and read. Fülbier

*et al.* (2021) state that analysts examine gestures or facial expressions while they are attempting to “read between the lines”. This study’s findings strengthen the approach considering gut feeling and working experience as subjective factors that impact a stock recommendation. Analysts focus on word choices in reports, communication with the management, and the management’s behavior and external appearance. Brown *et al.* (2015) already delineate determinants of earnings forecasts and describe private communication as a vital information source for analysts. Although this study cannot expound on the frequency of private communication, the necessity to derive impressions from this communication channel is accentuated. Besides the time constraints that declare some of the analysts’ practices, a lack of some corporate disclosures on specific matters, missing comparability of certain topics, and the increasing complexity of corporate disclosures challenge the analysts’ work.

In contrast to the previous research literature presented in *CHAPTER 6.1*, this study does not provide rankings on the relevance of financial statement components or how much time analysts spend on examining reports. However, the dissertation’s findings provide more detailed insights into how financial analysts use financial information and depict some reasons why financial analysts act in certain manners.

#### 8.4.2.2 Use of Sustainability Information

The following research question (*RQ 2b*) addressed the use of sustainability information and whether financial analysts acting as financial intermediaries process all available information to determine their stock recommendations, including sustainability information. The results allude that nowadays, analysts consider and incorporate ESG matters if they are financially material. Yet, this was also the case even before the topic was named ESG. Admittedly, sustainability disclosures have grown in recent years (see *CHAPTER 5.4.2*), and analysts seldom read ESG disclosures.

Thus, the use of sustainability reporting information in financial analysis contrasts with the use of financial reporting information. Although Bucaro *et al.* (2020) find that investors more intensively consider sustainability measures if they are reported separately from financial information, the interviews’ findings point out that equity analysts do not read much of sustainability disclosures – irrespective of their format.

Moreover, their information handling is not standardized. The different bank houses developed different ESG scores to satisfy investors’ demand for such information. Like Larcker and

Watts (2020), the study's interviews underline that analysts perceive that some investors are willing to waive financial benefits if investments are sustainable, though not all investors behave that way. The bank houses interviewed all provide ESG scores or labels in addition to the stock recommendation in order to answer investors' demand for sustainability. As Chatterji *et al.* (2016), Berg *et al.* (2021), Berg *et al.* (2020), and Christensen *et al.* (2022) reveal, ESG ratings from different providers deviate in their recommendations and further in its measurement, scope, and weighting. This study's findings underline that the bank houses deal differently with the procurement of sustainability information, followed by deviating compositions and provisions of condensed ESG information to the investors.

Nevertheless, the consideration of sustainability disclosures in general financial analysis procedures rarely happens. Amel-Zadeh and Serafeim (2018) state that most of their respondents consider ESG information for investment decisions, and a third of the respondents fully incorporate sustainability matters in valuation models. This study contrasts the findings. The interviews emphasize equity analysts' uncertainty about integrating sustainability into valuation models. Although the interviewed equity analysts perceive an increasing relevance of sustainability and can imagine integrating certain matters within their valuation, the impact hitherto appears to be relatively small. As Amel-Zadeh and Serafeim (2018) justify the consideration of ESG in valuation by its financial implications, similarly, the dissertation's results base the integration of sustainability in valuation on financial implications.

Stock analysts must individually determine the relevance of ESG information and its financial impact for their forecasting and valuation procedures. However, since time constraints determine the analysts' workflow, sustainability is not the focus of financial analysts.

As equity analysts do not read the complete annual report, ESG reports might neither have to be read if the information is not financially material. Following the financial intermediation theory, the intermediaries process the information and decide on the condensed information they forward. A financial analyst should determine whether the ESG information is crucial, i.e., financially material, for his analysis. The findings point out that financial analysts can incorporate sustainability information differently. Irrespective of the processing resulting in a comment, forecasting estimates, or valuation procedures, most interviewees stress the rarity of considering sustainability matters.

Eccles *et al.* (2011) underline that equity investors are more interested in environmental measures than other ESG metrics. This study's results also indicate that if analysts perceive

financial implications from ESG matters, many topics can be traced back to the environmental pillar.

However, Berg *et al.* (2020) find that stock prices do not tend to incorporate ESG performance. The interviews' insights similarly imply that sustainability may be integrated into financial analysis procedures, but it does not represent the analysts' main work hitherto. In addition, the research reports illustrate the low importance of ESG information. If sustainability is addressed in research reports, ESG scores or labels are presented. Still, financial analysts concede the significance of the topic by explicating the different possibilities to include sustainability within their estimates, valuation models, or textual comments. Indeed, the interviews emphasize the hypothetical actions, but their actual handling of ESG matters is rather negated and not mirrored in the research reports. In practice, sustainability encounters financial analysts as a topic of increasing relevance but which does not yet intensively impact their daily workflow.

One must note that the findings relate to interviews, a workshop, and research reports from 2020 and 2021. Meanwhile, dealing with sustainability might have changed, especially after the publication of the proposal for a CSRD in 2021 and the final CSRD in 2022. Especially the findings from 2020 compared to the findings in 2021 already indicate a change in the perception of sustainability by the interviewed financial analysts. Therefore, once the companies implement the new requirements, another change in dealing with sustainability in financial analysis can be expected.

#### 8.4.3 Collaboration with Information Intermediaries

The last research question (*RQ 3*) shall provide answers to how sell-side analysts collaborate with other information intermediaries. As the previous findings underline, stock analysts do not focus on sustainability matters but rather intensively on financial information. In contrast, ESG analysts mainly process sustainability information. Similarly, they process information for investors, focusing on ESG matters and not a company's financial performance. As previous literature has not yet examined the collaboration between equity analysts and ESG analysts, this dissertation expands this literature strand.

The results of the study show that ESG analysts and financial analysts collaborate, even though this has mainly been based on the development of ESG scores or labels. While ESG analysts confirm the intensive collaboration with financial analysts, the interviewed financial

analysts provide an opposing picture. They are rarely in contact with the ESG research teams and are little informed about the in-house ESG model resulting in ESG scores or labels.

Buy-side analysts benefit from sell-side analysts and their processed information provided in the form of research reports. This procedure is established and leads to advantages for buy-side analysts. The collaboration between ESG analysts and sell-side analysts is less established. However, the established collaboration between buy-side and sell-side analysts could serve as a role model.

Accordingly, sell-side analysts perceive the increasing relevance of sustainability to investors. Considering the financial intermediation task of financial analysts, they intermediate between companies that disclose sustainability information and (potential) investors who might be interested in the topic of sustainability (see *CHAPTER 4.1*). Assuming that investors are not interested in ESG matters and that the information would not impact companies, the financial analysts fulfilling their intermediation task would not need to consider the information. However, if the intermediaries expect either an impact on a company or the information is valuable to an investor, they would have to process the information. Otherwise, they would not fulfill their intermediation task properly. Only if the financial analysts know that the investors obtain the processed information from other processing sources, such as ESG experts, and only if it does not provide any added value to the companies' evaluation, the financial intermediaries could focus on information without considering sustainability.

Certainly, financial analysts perceive the investors' interest in ESG information, albeit not all investors care about sustainability. Moreover, some financial analysts view sustainability information as valuable. Thus, following the intermediation theory, it is to be expected that financial analysts consider ESG information. It is conceivable that financial analysts combine their processed information with other findings processed by ESG experts to answer the investors' demand for the information.

Following the financial intermediation theory and focusing on reducing information asymmetries in the case of information intermediaries, like sell-side and ESG analysts, the collaboration could grant to further reduce information asymmetries that increasingly arise due to the growing amount of ESG disclosures.

As the transition is currently taking place, it may lead to a development that intensifies the collaboration between sell-side and ESG analysts. In the future, sell-side analysts may use the condensed sustainability information that ESG research provides, while ESG analysts require



the sell-side analysts' expertise to place sustainability matters in a financial and investment context.

Even if it is still in its infancy, the cooperation between ESG and sell-side analysts can grant an advantage to both groups. Sell-side analysts might have to process less information because ESG analysts undertake it. Thereafter, sell-side analysts can determine the financial materiality and whether to incorporate the already processed information into their analyses. Concurrently, ESG analysts can benefit from the sell-side analysts' assessment of sustainability information and its placement in a strategic and financial context. They can jointly and more extensively aid investors in assessing potential investments.

#### 8.4.4 Sustainability's Role in Financial Analysis

Considering the dissertation's objective to examine the role of sustainability in financial analysis, the findings highlight that sustainability is causing a transition that is affecting society and the business world. Still, this does not necessarily mean that all ESG issues must be thoroughly examined. Similar to the development and impact of digitalization, sustainability will affect society, the business world, and its markets. Nonetheless, financial analysts neither have to understand every technical detail that is improved through the digitalization of machines for instance, nor must they comprehend each sustainability matter if specialists exist.

Whether financial analysts must examine sustainability matters in detail is debatable. Buy-side analysts use sell-side analysts' research reports to spare themselves the construction of a proper valuation model. Like buy-side analysts, sell-side analysts could use ESG analysis to derive financial implications for their valuations and recommendations without intensively analyzing all available ESG data. Combining the two research fields allows for answering the investors' demand to process and incorporate sustainability in investment recommendations.

Therefore, sell-side analysts could use the expertise of ESG analysts. So far, the focus is on creating ESG scores besides financial analysis. Sustainability matters that financial analysts have considered up-to-date mirror financial material information that was obvious to consider and not difficult to obtain. All detailed information that goes beyond and might be disclosed in sustainability reports or will be disclosed in future reports that meet the upcoming reporting requirements could be processed and provided in a condensed format by a specialist, an ESG analyst.

Still, this more intensified collaboration between the two analyst groups queries the future role of sustainability in financial analysis. The former-mentioned explications assume an integration due to financially material ESG information. The parallel continuation of research reports only containing the results of an ESG model in the form of an ESG score could also be conceivable. Nevertheless, this would also imply that analysts cannot derive financial implications from the disclosed ESG information (which will increase further and become more comparable due to the upcoming regulatory requirements). Additionally, companies' capital market communication could also include all value-relevant ESG information that a financial analyst should consider leading to the analysts not having to read the ESG reports. This was one of the arguments why the analysts addressed the notes or the management report only under certain circumstances and could apply to sustainability matters in the future as well.

In summary, the task of a financial analyst as a financial intermediary is to process all available information to result in a stock recommendation. If the transition that is currently taking place increases the relevance and appearance of ESG matters – not only in society but also in the business world – sustainability takes a growing role in financial analysis. The transition leads to changes that have financial implications and can be traced back to sustainability. These are the cases in which its information certainly impacts financial analysts. It remains to be seen in what form the financial analysts will address sustainability in their research reports.

Eventually, the development toward a more sustainable future, likewise impacts the financial analysis. Hitherto, only financial material sustainability information is relevant to financial analysts because that is what the profession defines. However, they already have an impact on their actions:

*“The basis is financial because the sector is so materially affected by the transition and by the changing nature of their markets” (I21, #00:25:36#).*

In the future, the role of ESG in financial analysis will certainly further change as an increasing amount of sustainability reporting information will be published. Due to the growing amount and complexity of sustainability disclosures, it seems suitable that financial analysts intensify their collaboration with ESG specialists.

## 8.5 Limitations of this Study and Implications for Future Research

Despite the formerly highlighted contributions, this study is not without its limitations. First, the study focuses on the German capital market, which is why financial analysts covering German public firms were interviewed. The ESG analysts that were interviewed work in the UK as the bank houses' heads of ESG research are located in the UK. Thus, the sample only focuses on the German capital market, even though sustainability has become an important topic across countries, which is also underlined by the heads of ESG research locations. Nonetheless, data triangulation has been assured (see *CHAPTER 7.2.1*), and financial analysts are an elusive group, so the sample comprises different sizes of bank houses and various financial analysts covering different sectors.

Second, the sample consists of analysts of high hierarchical levels, which is why the interview time was limited and restrained questioning in further detail. The short interview time allowed an overall understanding of the analyzing procedures and provided an overview of the usage and relevance of specific information. In addition, researcher triangulation could not be ensured due to this dissertation's monography format. Further detailed questions could have been asked if more time had been left during the interviews. However, the interviewees were limited in time due to their high hierarchical levels. Additionally, the experienced interviewees possibly mainly focused on financial instead of sustainability information, as access to financial information has coined their past working experience.

Third, the subject of sustainability is currently in the process of change. Sustainability matters increasingly impact society as well as the business world. Therefore, the findings only describe a section of this ongoing transition. Comparing the interviews and documents from the bank house, which was interviewed in 2020 as well as in 2021, highlights that changes occurred within a year. They have implemented an ESG score within this year and agreed on the increasing relevance during this time that has been visible when comparing the data from the two years. Despite data triangulation being also partly assured by the two periods, this topic is lively, and the study's findings addressing the procedures within the bank houses might have already been adapted following this study's data collection. Most interviews took place after the proposal for a CSRD was published, leading to an increased awareness of sustainability reporting and of the upcoming regulatory changes. Still, the interviewees explicated the daily procedures that took place prior to this announcement that might have a lasting effect on the analysts' perception of the topic. Thus, today's perception and the usage of sustainability information in financial analysis could already be opposing.

Fourth, this is a qualitative empirical analysis, which is why quality criteria were considered (see *Chapter 7.4*). Even though this case study allows in-depth insights, it is not statistically generalizable for the German capital market or international settings. It is analytically generalizable (see *CHAPTER 7.1*), as the theoretical implications of the financial intermediation theory suggest financial intermediaries to process all relevant information. The findings underline that financial material sustainability information also matters to financial analysts. The former existing theoretical implications for corporate financial information in financial intermediation can be transferred to sustainability information that is financially material. A quantitative research approach would have to be conducted to obtain statistically generalizable findings.

Based on the previously described limitations and this study's focus and results, implications for future research can be derived. Expanding the sample to more bank houses, analysts, and an international setting can generate further insights. Likewise, a deeper analysis with a single bank house or few financial analysts but with longer interview times could presumably grant additional interesting findings. An investigation of the upcoming implementation of the new sustainability reporting requirements would be likewise interesting to examine.

This dissertation only focuses on a single user group of corporate reporting information, the financial analysts. As earlier literature has asked for further research on different user groups of financial reporting information (see *CHAPTER 6.1*), insights on the use of sustainability reporting disclosures by other user groups are of interest as well. Investors' relevance and use of corporate reporting information, in particular, could generate further insights. It would likewise be suitable to examine this qualitatively.

As sustainability reporting is presently reformed, and the first requirements for companies to report on sustainability must be implemented in 2022 (see *CHAPTER 5.4.2.3*), it is not only interesting to investigate the use of such information by different user groups. However, it is also interesting to observe the development of the processing of ESG information in the investment sector. It is questionable whether the bank houses will introduce a more standardized analysis of ESG information, how the collaboration between ESG and financial analyses, as information intermediaries, will evolve, and how the research results will be presented – whether side-by-side or integrated.

## 9 Summary and Concluding Remarks

The dissertation's objective was to examine the role of sustainability in financial analysis while shedding light on the use and relevance of financial and ESG disclosures. By conducting a qualitative case study approach, insights on organizational workflows in equity analysis, the use of specific financial and sustainability information as well as the collaboration between equity analysts from the sell side and other information intermediaries allowed comprehensive insights into financial analysis proceedings. Furthermore, implications for the future role of sustainability reporting in financial analysis are derived due to the newly introduced reporting requirements.

The main findings emphasize that organizational workflows of sell-side analysts vary depending on the covered sectors and the bank houses. Some analysts obtain more or less latitude in their procedures, but all are dependent on their expertise and gut feeling to make their stock recommendations. Financial statements are indispensable for setting up estimates and valuation models, even though not every single position is examined by equity analysts. Generally, equity analysts are interested in cash-generating positions and their impacting factors. They focus on what the market is interested in and on deviations that may arise between analysts' estimates and companies' disclosed figures or between corporate planned and actual figures.

The choice of a valuation model can vary depending on the in-house requirements, but usually, the most suitable model is applied. Besides quantitative research, qualitative research is also essential to equity analysts, although time constraints steadily accompany their actions. These restrictions also justify the consideration of not all corporate disclosures. Financial figures are essential for the analysts' estimates and valuation proceedings, while the written text is only partially consulted.

Moreover, some information does not provide any added value to equity analysts, so they only consider it once for initiation research. Besides the disclosed corporate reporting information, financial analysts also rely on private communication with companies' management to obtain a holistic view. Behavior, expressions, and gestures might impact the classification of a situation based on an analyst's gut feeling and working expertise. Furthermore, external databases are consulted to obtain industry- or product-specific information, and media reporting can be crucial depending on the industry or current events and circumstances.

The time constraints and the relevance of figures to ensure comparability among companies determine the relevance of sustainability disclosures nowadays. Financial analysts rarely read

sustainability disclosures, although they admit their increasing relevance to investors. Most present are ESG scores, even though financial analysts are usually not in charge of their establishment but aid ESG analysts in their compositions.

Hitherto, financial analysts rely on the presentation of ESG scores and the work of ESG analysts. Yet, analysts rarely examine sustainability information, only if they regard it as valuable. However, this is usually the case for information that they always paid attention to due to financial implications, which were not named under the ESG acronym in earlier years.

Financial implications from sustainability information can be derived and considered qualitatively in text format within research reports or in separate ESG profiles. Quantitatively, equity analysts take sustainability into account by illustrating ESG scores in research reports, adapting their estimates due to performance or risk indicators, and in valuation risk discounts can be applied. Either a discount is made on an enterprise value – irrespective of its valuation model – or within a DCF model, the discount factor, with its capital costs, is adjusted in its beta.

Although sustainability reporting development has taken a long way, as pointed out in *CHAPTER 5.4.2*, the topic is experiencing a dynamic change nowadays. The perceptions of the interviewees on sustainability already stress the increasing awareness and relevance of this topic; still, their daily workflows do not (yet) mirror this development. Since the sustainability reporting requirements enter into force during the next years, the analysts expect an increasing relevance and can imagine an increasing consideration of ESG information in their actions.

The dissertation contributes by providing findings based on a case study analysis that enhances the qualitative literature on financial analysts' information processing. Therefore, the study makes a methodological contribution that occurs less frequently in financial analysis literature and for which Cascino *et al.* (2014) called. Furthermore, as Bradshaw (2011, p. 2) states, practitioners, as well as academics, benefit from research on financial analysts' activities. Hence, this study offers academic insights into a current topic with a practical orientation. The results of this dissertation highlight the uncertainty among financial analysts on how to process sustainability information whilst knowing the importance of its integration due to the investors' growing interest.

Based on financial intermediation theory, the study derives the theoretical necessity of incorporating ESG information if it is relevant to the intermediary and its condensed information distribution. Owing to the investors' increasing interest in sustainability, financial analysts are theoretically in charge of answering the demand – irrespective of their own consideration of

whether sustainability is valuable or not – if it is valuable to the investor. Combining the financial analysts' task as information intermediaries and their focus on financial performance with ESG analysts' task as information intermediaries focusing on sustainability may allow answering the investors' demand.

The upcoming regulatory changes in sustainability reporting will stabilize the development of financial analysis and the future role of sustainability within it – even if it remains to be seen in which format.

Albeit the relevance of corporate sustainability reporting information to financial analysts nowadays is still restrained, analysts perceive that sustainability is “*here to stay*” (I22, #00:31:48#) and to work with in the future. This makes the case of information processing of financial analysts and the investment sector, in general, even more interesting to research in the future.





**Appendix**

**APPENDIX I:** United Nations Sustainable Development Goals ..... 229

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## **APPENDIX I: United Nations Sustainable Development Goals<sup>327</sup>**

- Goal 1: End poverty in all its forms everywhere.
- Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
- Goal 3: Ensure healthy lives and promote well-being for all at all ages.
- Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
- Goal 5: Achieve gender equality and empower all women and girls.
- Goal 6: Ensure availability and sustainable management of water and sanitation for all.
- Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all.
- Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
- Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
- Goal 10: Reduce inequality within and among countries.
- Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable.
- Goal 12: Ensure sustainable consumption and production patterns.
- Goal 13: Take urgent action to combat climate change and its impacts.<sup>328</sup>
- Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
- Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

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<sup>327</sup> See UN (2015b, p. 14).

<sup>328</sup> Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

- Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
- Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

**APPENDIX II: TCFD Recommendations<sup>329</sup>**

**Governance**  
 Disclose the organization's governance around climate-related risks and opportunities

**Recommended Disclosures**

- a) Describe the board's oversight of climate-related risks and opportunities.
- b) Describe management's role in assessing and managing climate-related risks and opportunities.

**Risk Management**  
 Disclose how the organization identifies, assesses, and manages climate-related risks.

**Recommended Disclosures**

- a) Describe the organization's processes for identifying and assessing climate-related risks.
- b) Describe the organization's processes for managing climate-related risks.
- c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.

**Strategy**  
 Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.

**Recommended Disclosures**

- a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.
- b) Describe the impact of climate-related risks and opportunities on the organization's business, strategy, and financial planning.
- c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

**Metrics and Targets**  
 Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.

**Recommended Disclosures**

- a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
- b) Disclose Scope 1, Scope 2, and if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
- c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

<sup>329</sup> See TCFD (2022b, pp. 14–15).

## **APPENDIX III: Interview Guideline**

### **Information phase:**

1. The interviewer introduces oneself.
2. The interviewer provides a short overview of the interview.
3. The interviewer addresses the declaration of consent and the privacy statement.

### **Warm-up:**

The interviewer asks the interviewee to introduce himself.

Q1: What have you studied?

Q2: Which work experience do you have?

Q3: Which position do you currently hold, and what are your tasks?

Q4: Which industry and which companies do you cover?

### **Main stage:**

**A. Sell-Side Analysts** (see pp. 233)

**B. ESG Analysts** (see pp. 235)

**C. Buy-Side Analysts** (see pp. 237)

### **Phase-Out:**

Q1: Do you have any remarks to add or any questions?

Q2: Do you have any reports or frameworks that I could include in my analysis that you are allowed to forward? I am interested in documents that you either distribute to your clients or that show how you process information.

Q3: Do you know any other analyst that could be insightful for me to additionally talk to because he covers another industry or works for another bank house, for instance?

The interviewer describes the further proceedings and thanks for the interviewees' efforts.

## **A. Sell-Side Analysts**

### **Main stage:**

#### **Lead Question 1: What does your day-to-day work look like?**

- Q1: Can you please explain your daily routines?
- Q2: How do you process an event or news announcement?
- Q3: What information do you distribute to investors, and what does it look like?
- Q4: Who do you talk to and why?

#### **Lead Question 2: Which information sources do you use for your analyses?**

- Q1: Which information sources do you consider and for which workflow?
- Q2: Which financial information do you look at and why?
- Q3: Are balance sheets, income statements, or cash flow statements relevant, and why?
- Q4: Which items are particularly of interest and why?
- Q5: Do you read notes, management reports, or footnotes? Which information do you read, and how do you integrate it into your workflow?
- Q6: Which role does the financial press play in your workflows?
- Q7: Are numerical or non-numerical information more or less relevant to you, and why?
- Q8: Which role does communication with the management play?
- Q9: Which role does communication with other specialists, such as ESG or buy-side analysts play?

#### **Lead Question 3: How does your corporate valuation work?**

- Q1: Which valuation model do you use?
- Q2: Can you please explain how you come up with your valuation model? Do you follow certain corporate guidelines?
- Q3: What are the reasons for applying a particular model? Are you free of choice?

Q4: How do you come up with your estimates?

Q5: Is your focus rather long or short-term oriented?

**Lead Question 4: How do you consider sustainability information?**

Q1: Have you ever read sustainability statements or reports?

Q2: Which added value does sustainability information provide to you?

Q3: How can sustainability impact your workflows?

Q4: Do you consider it as a long or short-term benefit?

Q5: Which ESG information is more relevant to your work and why? E, S, or G?

Q6: Does ESG information impact your estimates?

Q7: Does ESG information impact your valuation? How do you consider it within your valuation model? Or how would you consider it?



## **B. ESG Analysts**

### **Main stage:**

#### **Lead Question 1: What does your day-to-day work look like?**

- Q1: Can you please explain your daily routines?
- Q2: For whom do you process information?
- Q3: What does the condensed information look like that you distribute?

#### **Lead Question 2: Which information sources do you use for your analyses?**

- Q1: Which information sources do you consider and for which workflow?
- Q2: Do you gather ESG information individually or buy data from a data provider?
- Q3: Do you read ESG reports? Which items are particularly of interest and why?
- Q4: Do you consider financial information? If so, why?
- Q5: Which role does the (financial) press play in your workflows?
- Q6: Are you rather interested in numerical or non-numerical information? If so, why?

#### **Lead Question 3: How do you process ESG information?**

- Q1: Do you construct an ESG score? Or do you buy a rating?
- Q2: How do you determine relevant ESG information?
- Q3: Does the relevance of different ESG matters differ?
- Q4: Do you only provide a numeric score or additional qualitative information?
- Q5: Which added value does sustainability information provide to you?
- Q6: Do you consider ESG as a performance or risk indicator, and why?

#### **Lead Question 4: How do you collaborate with financial analysts?**

- Q1: Do you combine sustainability with financial information?
- Q2: Do you derive financial implications from your condensed ESG information?
- Q3: Do you collaborate with financial analysts? Can you please describe it?

Q4: Are your ESG information relevant to the valuation model of the financial analyst?

Q5: Do you have a specific focus on long or short-term information?

## **C. Buy-Side Analysts**

### **Main stage:**

#### **Lead Question 1: What does your day-to-day work look like?**

Q1: Can you please explain your daily routines?

#### **Lead Question 2: Which information sources do you use for your analyses?**

Q1: Which information sources do you consider and for which workflow?

Q2: Which financial information do you look at and why?

Q3: Are balance sheets, income statements, or cash flow statements relevant, and why?

Q4: Which items are particularly of interest and why?

Q5: Do you read notes, management reports, or footnotes? Which information do you read, and how do you integrate it into your workflow?

Q6: Which role does (financial) press play in your workflows?

Q7: Which role does communication with the management play?

Q8: Which role does communication with sell-side analysts play? Do you read their reports?

#### **Lead Question 3: How does your corporate valuation work?**

Q1: Do you construct your own valuation model? Or how do you evaluate a company?

Q2: Do you follow certain corporate guidelines? Are you free of choice?

Q3: Is your focus rather long or short-term oriented?

#### **Lead Question 4: How do you consider sustainability information?**

Q1: Have you ever read sustainability statements or reports?

Q2: Which added value does sustainability information provide to you?

Q3: How can sustainability impact your workflows?

Q4: Do you consider it as a long or short-term benefit or risk?

Q5: Which ESG information is more relevant to your work and why? E, S, or G?

**Lead Question 5: How do you collaborate with sell-side analysts?**

Q1: Do you talk to sell-side analysts? In which cases and why?

Q2: Do you read sell-side analysts' reports? Which information is beneficial to you and why?

Q3: Do you share information with sell-side analysts?

Q4: Can sell-side analysts benefit from your information?

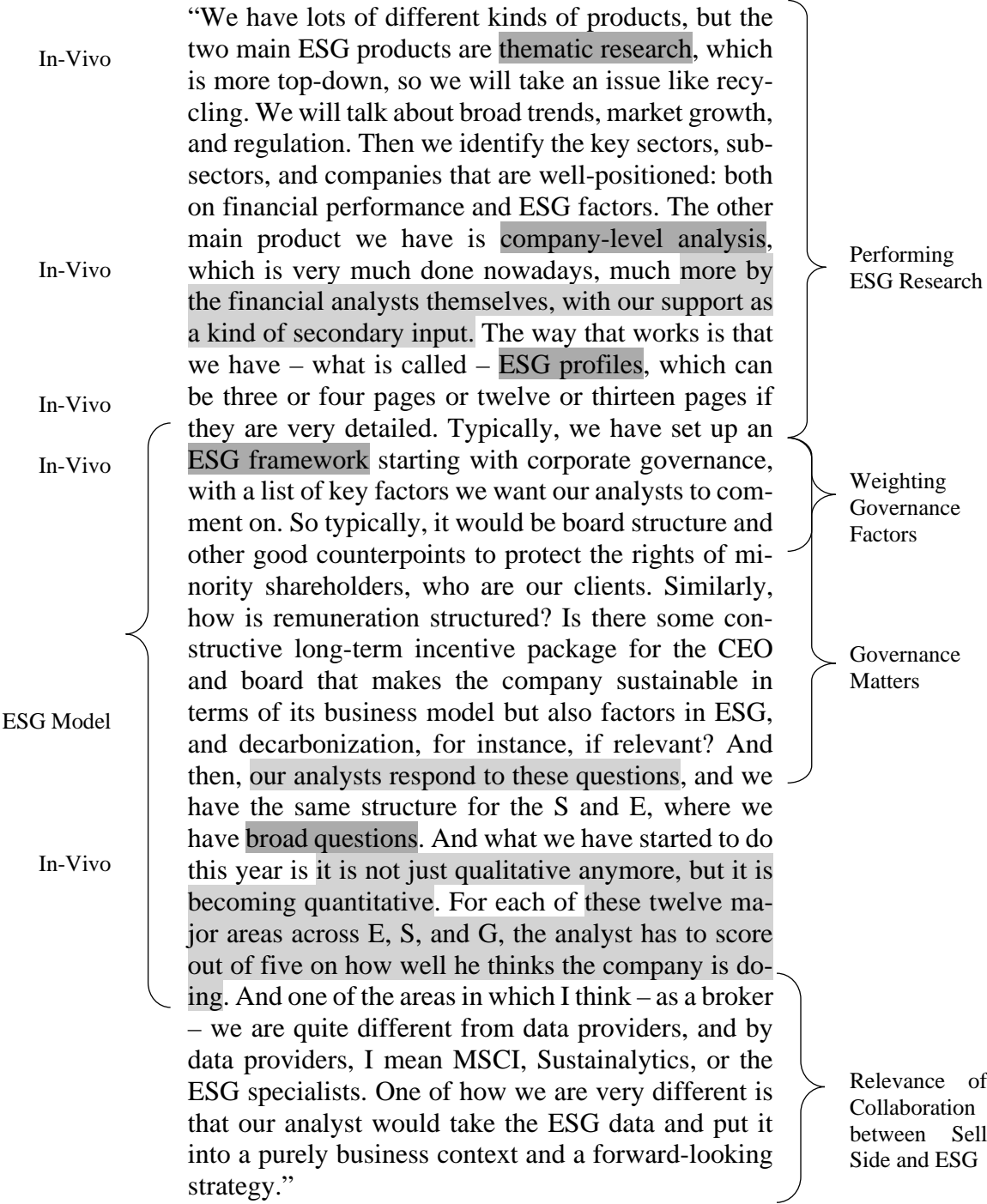
## **APPENDIX IV: Transcription Guideline<sup>330</sup>**

1. Each word is transcribed.
2. Dialects are adjusted to the written language.
3. Duplicate words, word sequences, or stuttering is ignored and only written down once.
4. Half-sentences that are not finished or breaking off sentences, are marked with a slash (/).
5. Filling words are not transcribed.
6. To favor readability, interpunctuation is smoothed out. Sentences are aimed to be shorter in order to be easy to understand. Hence, interpunctuation preferably considers a period, not a comma.
7. Non-linguistic actions, such as volume, speed rate, stressing of words, or pauses are not noted.
8. Only long pauses that are longer than three seconds are indicated with this character sequence: (...).
9. Initials are used to mark the interviewer and interviewee.
10. Each change of speaker is followed by a time marker and a new paragraph.

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<sup>330</sup> The transcription guideline follows Dresing and Pehl (2018).

**APPENDIX V: Coding Example**



**Notes:** The text marked in light grey is highlighted during coding due to its relevance. The words marked in dark grey are in-vivo codes. The other text is coded with the different codes written at the sides of this exemplary text.

**Source:** I21, #00:23:31#.

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