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**Cognitive bias in the judgment of business valuations and valuers :
how systematic patterns of irrationality affect entrepreneurs, legal
professionals and business valuers**

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Citation

Broekema, M. J. R. (2020, April 1). *Cognitive bias in the judgment of business valuations and valuers : how systematic patterns of irrationality affect entrepreneurs, legal professionals and business valuers*. Meijers-reeks. Retrieved from <https://hdl.handle.net/1887/87192>

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Cover Page



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Author: Broekema, M.J.R.

Title: Cognitive bias in the judgment of business valuations and valutors : how systematic patterns of irrationality affect entrepreneurs, legal professionals and business valutors

Issue Date: 2020-04-01

Cognitive Bias in the Judgment of
Business Valuations and Valuators

*How Systematic Patterns of Irrationality Affect
Entrepreneurs, Legal Professionals and Business Valuators*

Cognitive Bias in the Judgment of Business Valuations and Valuators

*How Systematic Patterns of Irrationality Affect
Entrepreneurs, Legal Professionals and
Business Valuators*

PROEFSCHRIFT

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus prof. mr. C.J.J.M. Stolker,
volgens besluit van het College voor Promoties
te verdedigen op woensdag 1 april 2020
klokke 16.15 uur

door

Marc Jacques Robert Broekema

geboren te Leiden

in 1971

Promotor: prof. dr. J.I. van der Rest

Copromotor: dr. P.W. van der Zwan

Promotiecommissie: prof. dr. R.J. Blomme (Nyenrode Business Universiteit)
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prof. dr. F.A. de Roon (Tilburg University)
prof. mr. R.D. Vriesendorp

Lay-out: AlphaZet prepress, Bodegraven
Printwerk: Ipskamp Printing

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Preface

I submit this dissertation for the degree of Doctor of Philosophy at Leiden University. My interest in the field covered in this doctoral study stems from my passion for business valuation in practice, particularly in conflict situations. For decades, I have been fascinated by the way in which the value of a company is determined. In 1999, I sold my first company to an international corporation. My fellow shareholders and I, as well as the buyer, were advised by corporate finance advisors. I recall that we were informed through multiple valuation models about how the our company's value was determined. I vividly remember having a very different value perception of our company than the buyer, and so did they. That transaction almost failed as a result of the diverging value perceptions. Since then, in my role as an entrepreneur, I have experienced many similar situations involving differences in value perceptions. In some cases, these differences led to, often unnecessary, conflicts. With today's knowledge, and years of business valuation experience, I feel that preconceptions and biases play an important role in the way the values are discussed and judged, both by myself and by others.

Many years later, still driven by the concept of business valuation, I decided to make a career switch and become a valuation expert. Determined to use my previous experience as an entrepreneur, I started to advise others in the field of business valuation in the context of shareholder and commercial disputes.

After years of training in the field of business valuation, I have been involved in hundreds of valuations, predominately in the context of opposing interests and disputes. As a party expert as well as an expert witness, I have acted for clients ranging from large international companies to mid-sized companies, and from law firms to courts of law. In my work I have frequently observed that the parties involved, as well as their representatives, judge the quality of a valuation or a valuator on other grounds than the correct application of valuation theory and the soundness of the valuation. Entrepreneurs and corporate leaders often appear to have divergent perceptions of the value of their company or interest therein, and both they and their legal advisors regularly take a firm stance with regard to a valuation (outcome) or the valuator, often without having any substantive valuation expertise. Moreover, I have also observed that valuers, including myself, are often affected by contextual factors during the execution of their work.

Over time, I therefore have started to question whether differences of opinion with regard to a valuation simply arise as a result of the valuation method used and its (in)correct application, or as a result of, unconscious, systematic irrational patterns (i.e., cognitive biases) that may influence our perceptions, just as these occur in many other areas of our daily lives.

Encouraged by anecdotal evidence, I searched for theoretical and practical evidence that biases play a role in both the valuation process, and in the perception and judgment of a valuation. However, there is very little empirical evidence to support these observations. Therefore, I decided to enroll as an external PhD candidate at Leiden Law School under the supervision of Prof. Van der Rest.

This dissertation is, therefore, not only of interest to scholars of business valuation and business valuers themselves, but also to legal professionals such as lawyers, judges and trustees, as well as corporate decision makers and, last but not least, entrepreneurs who deal with valuation issues in the real world.

My doctoral journey has been both a magnificent and a challenging experience in which I have had the opportunity to study the connection and interaction between two fields of research: business valuation and social psychology. However, at times, the journey was hard and difficult, but the many real-life situations I have experienced in recent years have inspired me to continue. It was a great journey, and hopefully this dissertation will inspire others to study the wonderful topic of human behavior in business valuation, a research topic that intersects a wide range of different research interests.

Acknowledgment

Completing a doctoral dissertation is something you do yourself, but you cannot do it alone. There are many people I would like to thank sincerely for their contribution to completing my voyage to curiosity, ending in this dissertation. They certainly know who they are. Thank you for inspiring, encouraging, supporting and ignoring the boundaries of my comfort zone.

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1 Introduction

If business schools could offer just one course, it would not be on stock trading, the efficient market hypothesis, or modern portfolio theory. Rather, B-schools should be encouraging students to learn the boring, but critically important, discipline of business valuation.

– Warren Buffett –

1.1 BACKGROUND AND SCOPE OF THE RESEARCH

Translating the theoretical framework of business valuation into practice is one of the most complex and challenging disciplines in corporate finance (Pratt & Niculita, 2008). This is specifically true when the widely-accepted Discounted Cash Flow (DCF) method is used which, despite its preciseness, can swing a valuation outcome, as the predictive nature of the method requires numerous assumptions to be made. Due to this complexity, there is a wide range of research on this subject, varying from quantitative aspects of business valuations (e.g., Abrams, 2001; Hitchner, 2011) to studies on the more behavioral aspects (e.g., Fedotova, Pleskachevskiy, Rutgaizer, & Buditskiy, 2009; Scott, Stumpp, & Xu, 1999). In the words of Professor Aswath Damodaran, the renowned finance and valuation expert at the Stern School of Business at New York University: “Valuation lies at the heart of much of what we do in finance, whether it is the study of market efficiency and questions about corporate governance or the comparison of different investment decision rules in capital budgeting.” (Damodaran, 2006b, p. 2)

Business valuations are conducted for a variety of purposes, such as investment decisions (Damodaran, 2012b), buy-sell decisions in the context of mergers and acquisitions (e.g., Mellen & Evans, 2010; Weaver, Harris, Bielinski, & MacKenzie, 1991), turnarounds, financial distress, restructurings and bankruptcy (Calandro Jr, 2011; Damodaran, 2009b; Ratner, Stein, & Weitnauer, 2009), tax issues in the context of an estate, gift or corporate taxation (Beatty, Riffe, & Thompson, 1999; Brennan & Schwartz, 1978; Englebrecht, Anderson, & Martinson, 2011; Fross, 1996; Jackson, Pippin, & Wong, 2013; Laro & Pratt, 2011), financing (e.g., Inselbag & Kaufold, 1997; Ruland & Zhou, 2005), and differences of opinion between business owners (Joyce Jr. & Holt, 2002; Schwartz & Bryan, 2012). Whereas on many occasions these valuations are carried out in harmony, not infrequently are both

parties' interests diametrically opposed, and a dispute imminent.¹ In these disputes, valuations often play a central role as they provide the opportunity to quantify and express stakeholders' business interests in monetary terms. They may also magnify an existing dispute, or even cause a new dispute due to business valuations' often significantly varying outcomes as a result of diverging presumptions (e.g., Risius, 2019). Strengthened by a global increase in the number of transactions between companies and their respective shareholders and, for example, the growing use of appraisal rights by companies' (minority) shareholders (Korsmo & Myers, 2018), the need for business valuations is eminent and ever-increasing (Dukes, 2001).

The finance literature broadly recognizes three conceptual valuation approaches to determine the so-called 'fair value' of a company, its equity, or an asset: the asset approach, the market approach, and the income approach (e.g., Hitchner, 2011).² In different types of disputes, where valuation plays a role, the so-called Discounted Cash Flow (DCF) method, a key method of the income approach, is regularly used. This method, which has several variants, consists of three key elements: 1) future income expressed in cash flows, 2) the time value of money, and 3) the discount rate.³ In practice, many disputes concerning a business valuation find their origin in one or more of these three elements. Discussions in the academic literature stem from debates about the different standpoints and approaches concerning these elements (e.g., Bodenhorn, 1964; Cassia & Vismara, 2009; Fama, 1977; Fama & French, 2006; Fernández, 2007; Krüger, Landier, & Thesmar, 2015; Luehrman, 1997; Miles & Ezzell, 1980; Penman & Sougiannis, 1998; Ruback, 2002; Sabal, 2008).

Although the literature lacks consensus regarding whether one valuation approach is superior to another (Plenborg, 2002), most of the approaches considered conceptually correct are based on cash flow discounting (Fernández, 2007). Indeed, as can be observed in the literature, "This approach gets the most play in academia and comes with the best

-
- 1 Consider for example the situation in which one of two shareholders would like to buy out the other, as a result of an interpersonal conflict, and both cannot agree on the price of the shares, or a dispute between parties' business interests that ensue from a tort. In these real-life situations, stakeholders aim to protect their business interest, often they each have a valuation conducted, and they frequently find their way to court (e.g., Coil, 2014).
 - 2 The asset approach refers to the valuation of a company on the basis of the fair market value of a company's assets and liabilities as presented in the balance sheet. In the market approach values are based on the market prices of comparable companies. The income approach utilizes the present value of future income to value a company.
 - 3 In essence, the economic value of an object (e.g., a company) is based on the notion that future income expressed in cash flows generated by that same object is worth less than the same income today, because money available now can be invested to produce additional income in the future. Therefore, the DCF-method entails that projections of future income (cash flows) are discounted to a single present value (PV) by a discount rate that reflects the required rate of return or an opportunity cost that would compensate for the time value of money (Dulman, 1989). In other words: "value today always equals future cash flows discounted at the opportunity cost of capital" (Brealey, Myers, & Allen, 2014, p. 93).

theoretical credentials.” (Damodaran, 2006b, p. 4). Among finance scholars it is generally considered the preferred approach for valuing both publicly-held and closely-held companies (Fernández, 2007; Mukherjee, Kiymaz, & Baker, 2004). In practice, however, valuations are often performed by applying a combination of the three broad valuation approaches (i.e., asset approach, market approach, income approach).

Interestingly, the current DCF-method has a multifaceted origin. In an overview article on its history, Parker (1968) notes, first of all, that DCF is conceptually and partly based on the compound interest theory that goes back to the Old Babylonian period (c. 1800-1600 B.C.) in Mesopotamia, but that it also has roots in the fields of actuarial science, engineering, and the theory of capital. Second, the first application of the DCF-method was predominately related to loans and life insurance due to their predictable characteristics. However, it was only in the middle of the nineteenth century that its application was extended to investments in fixed assets (Parker, 1968). This extension to investments in fixed assets was mainly due to two reasons. First, engineers in the US and Europe embraced new techniques and developments, and therefore needed to project the returns of large investments, like for example investments in railway constructions in the US (Parker, 1968) or projects having a public purpose in France (Pezet, 1997). Second, a number of economists started a discussion on theories of capital like discounting, capitalizing, and compound interest. Driven by the positive economic circumstances of the time, more capital-intensive projects arose where significant cash outflows came before cash inflows, and alternative valuation methods were needed to value these projects (Dulman, 1989; Parker, 1968; Pezet, 1997; Rutterford, 2004). Nevertheless, it took until the twentieth century, also through seminal articles on discounting dividends (e.g., Gordon, 1959), before the DCF-method gained widespread theoretical acceptance for capital investment decisions (Edwards & Warman, 1981), first in the United States, and later on in Europe. Following the strong rise of promising technology companies in the late twentieth century, the DCF-method also became popular amongst practitioners, as there were increasing numbers of fast-growing technology companies with negative earnings but promising outlooks that could not be valued using traditional methods, such as price-earnings ratios (Rutterford, 2004).

Despite today’s acceptance and widespread application, academics and practitioners acknowledge that the DCF-method is sensitive to variations in the many input variables the method requires, including the way these variables are estimated (Bancel & Mittoo, 2014). This input-sensitivity, for example, relates to the assumptions made with respect to important DCF-elements such as future cash flows and related growth rates (e.g., Danielson, 1998), the length of the forecast horizon (e.g., Cassia & Vismara, 2009; Ohlson & Zhang, 1999), the estimation of the cost of capital / discount rate (e.g., Brotherson, Eades, Harris, & Higgins, 2013; Bruner, Eades, Harris, & Higgins, 1998), the rate of (re)investments (e.g., Beidleman, 1984; Dudley & Jr., 1972), assumptions towards the tax shield and tax rate (e.g., Arzac

& Glosten, 2005; Dempsey, 2013; Fernández, 2004; Lahmann, Arnold, & Gmehling, 2017), and the terminal value (e.g., Damodaran, n.d.-b; Jenn-ergren, 2013; Levin & Olsson, 2000; Lütolf-Carroll, Pirnes, & Withers LLP, 2009; Meitner, 2009; Reis & Augusto, 2013). Practice shows that even small deviations in these input variables can have a significant impact on a valuation outcome. This sensitivity is at the heart of the criticism of the DCF-method. Other often-heard criticisms of the method involve the fact that conventional DCF-valuations fail when future cash flows in projects must be conditioned on future decisions (Kulatilaka & Marcus, 1992), the impreciseness of the DCF-method when valuing early stage firms (Kim & Ritter, 1999), the importance of cash flow estimation (e.g., Kumar, 2016; Pohlman, Santiago, & Markel, 1988), and the little attention paid to how these future cash flows must be estimated (Damodaran, 2005). Other critics note the risk business valuers face of being affected by the lack of guidance on how to estimate valuation parameters, on the estimation method itself, and the lack of consistency in the valuation process (Bancel & Mittoo, 2014; Dukes, 2001). Finally, and not unimportantly, applying simplified assumptions in a DCF-based valuation can significantly impact the valuation outcome and may also introduce cognitive bias in valuation outcomes (Plenborg, 2002). Obviously, all these elements are a source of potential conflict, not infrequently resulting in a dispute.

To date, valuation disputes tend to focus on the technical, mostly arithmetical, aspects of business valuation, and many valuation disputes, therefore, concentrate on valuation input variables and their corresponding values. A striking example is the Dell case (*Memorandum Opinion: In re Appraisal of Dell Inc.*, 2016).⁴ In 2016, the Delaware Court of Chancery published its opinion in the Dell Inc. statutory appraisal action which arose out of the 2013 management buyout (MBO) led by the company's founder and CEO, Michael Dell. As Business Valuation Resources (BVR, 2016) summarized, the Delaware court concluded that the transaction price negotiated between parties for this MBO did not reflect the fair value of Dell, an IT-hardware manufacturer. In short, in 2012, Michael Dell considered an MBO and approached several co-investors to discuss a possible transaction. Earlier, at the beginning of 2011, Michael Dell and Dell's management valued the company between USD 22.49 and USD 27.05 per share, while the market traded Dell's stock at around USD 14 per share. In 2013, Michael Dell and investment firm Silver Lake ultimately acquired Dell for USD 13.96 per share (including a special cash dividend of USD 0.13 per share and a third quarter dividend of USD 0.08 per share). The majority of the holders of outstanding shares voted in favor of the MBO, which was technically structured as a merger. Some shareholders, however, did not agree with the defined price and started an appraisal proceeding. In court, both parties conducted a DCF-valuation to determine the company's fair value.

4 In re Appraisal of Dell Inc., No. 9322-VCL, 2016 WL 3186538, at *1-114 (Del. Ch. May 31, 2016).

The petitioners' expert, Professor Bradford Cornell, concluded that Dell represented a fair value of USD 28.61 per share on the closing date, while the respondents' expert, Professor Glenn Hubbard, concluded on a fair value of USD 12.68 per share on the closing date. Two highly distinguished valuation experts generated opinions that differed by 126%, or approximately USD 28 billion, primarily due to strong differences in critical inputs. The court observed that, despite applying similar valuation principles, such large differences are a 'recurring problem'. In the case at hand, according to the court, the difference in the experts' DCF-valuations was primarily driven by the projected cash flows the experts used. As the court considered that neither of the analyses was credible enough, they performed their own DCF-analysis. This analysis resulted in a fair value of USD 17.62 per share. Simply put, according to the court, Mr. Dell undersold the company by about USD 7 billion (to himself, among others).

This Dell case is illustrative of the many valuation disputes worldwide, whether concerning large or small companies, publicly-held or closely-held companies, or large or small business interests, where technical aspects of a valuation and its input values to a large degree catalyze the nature and scope of the dispute.

Interestingly, in 2017, the court's opinion was reversed by the Delaware Supreme Court⁵, yet the manner in which it was reversed has been hotly debated. For example, in 2018, two law school professors – Charles Korsmo and Minor Myers⁶ – criticized the Supreme Court's decision on the Dell case on a few key points. A major point of their criticism concerned the role of human judgment during the valuation exercise, or literally: "[the Delaware Supreme Court is] downplaying the essential role of human judgment" (Korsmo & Myers, 2018, p. 1). In a similar vein, they noted: "(...) the court approached valuation as a mechanical arithmetic exercise, attempting to evade the unavoidable need for human judgment." (Korsmo & Myers, 2018, p. 6) and, "(...) the court attempted to strip the judicial valuation exercise of human judgment, relying instead on mechanical, arithmetical calculations." (Korsmo & Myers, 2018, p. 69).

Underestimating the importance of human judgment in valuation exercises is a key limitation of the current body of knowledge on business valuation. As such, an emphasis on human judgments warrants a thorough exploration of the potential influence of cognitive biases. These biases and their effects have not been paid much research attention in business valuation, but form a central theme within the research field of social psychology, and are also well addressed in other scientific fields like for example law, medicine, and behavioral economics. The psychological literature indicates that when people are faced with highly complex and uncertain situations or

5 Dell, Inc. v. Magnetar Global Event Driven Master Fund Ltd., et al., No. 565, 2016, (Del. Dec. 14, 2017).

6 Korsmo is Professor of Law at Case Western Reserve University School of Law, and Myers is Professor of Law at Brooklyn Law School.

have to make judgments on these, they tend to rely on heuristics (Tversky & Kahneman, 1974). When heuristics are used, cognitive biases can occur. These can be explained as systematic patterns of irrationality (i.e., thinking errors) which human cognition reliably produces compared to rational thinking (Haselton, Nettle, & Andrews, 2015).

Thus far, little research attention has been devoted to the evaluation process of those who have to form an opinion on a business valuation (i.e., a judgment), whether these are people with few skills or who lack the knowledge to do so, or are valuers who frequently have to form a professional opinion about a valuation (outcome) conducted by another valuation expert.⁷ The psychological literature indicates that when people are faced with highly complex and uncertain situations, such as valuations, they tend to rely on heuristics (Tversky & Kahneman, 1974). When heuristics are used, cognitive biases in people's judgments can occur. Whereas the impact of cognitive biases on financial decision-making has received ample research attention in the finance literature (e.g., Bikas, Jurevičienė, Dubinskas, & Novickytė, 2013; Daniel, Hirshleifer, & Subrahmanyam, 1998; De Bondt & Thaler, 1995; Shefrin & Statman, 1985; Shiller, 2003; Slovic, 1972), scant research efforts have been devoted to its influence on business valuations, with the exception of some references to its alleged existence in diverse valuation issues (e.g., Adebambo & Yan, 2018; Baker, Ruback, & Wurgler, 2007; Ben-David, Graham, & Harvey, 2007; Heaton, 2002; Nikolic & Yan, 2014). Research devoted to cognitive biases in the context of business valuation focuses predominantly on the (input) biases that occur during the valuation process, with Professor Damodaran (Damodaran, n.d.-c, 2006a, 2009a, 2012a, 2015, 2017) as one of the key protagonists forwarding some anecdotal evidence.

Building on this initial evidence about the influence of cognitive biases in the process of conducting a valuation, there is a need for research on the role of cognitive biases when key stakeholders evaluate and judge a business valuation outcome and its responsible valuator. Ultimately, valuation practice is better served with a broader understanding of the cognitive biases that exist in disputes where business valuations are a part of, and, in particular, *why sound valuations can be perceived as poor, and poor valuations can be perceived as sound*. In other words, by enhancing our understanding of the effects of systematic patterns of irrationality on the judgment of valuations and valuers a path to reducing (unnecessary) disputes in practice may be found.

7 For example, consider the situation in which a court appointed expert witness has carried out a business valuation, and where both parties and their lawyers disagree on the valuation outcome. Or, when shareholders who want to part ways and engage a single business valuator to determine the value of a shareholder's interest and those involved, find out that they are diametrically opposed with regard to the valuation outcome. Think also of a financial restructuring situation, in which a bank considers accepting a haircut on the outstanding loan but wants to know what the company's post-restructuring value will be, yet the bank and client disagree on the valuation outcome.

1.2 AIM AND OBJECTIVES

To provide direction for the research, the following overall purpose statement was formulated:

This thesis aims to enhance our understanding of valuation disputes by exploring the role of cognitive biases in the judgment of business valuation outcomes and business valuers.

A *valuation dispute* is a difference of opinion about a business valuation outcome between two or more stakeholders who have an interest in the outcome of that business valuation. In most cases, entrepreneurs, investors, legal professionals, bankers, or valuers will be the key stakeholders in these disputes. *Business valuation outcome* refers to the numerical outcome that flows from the methodical approach used to measure the economic value of a company, a company's equity, an ownership interest therein, or an (intangible) asset. *Business valuers* (also *valuers*) are professionals (hereafter also referred to as valuation experts or valuation specialists) who have the expertise to conduct a business valuation. They are often associated with an accredited professional (valuation) body. *Cognitive biases* are defined as systematic patterns of irrationality, that is, as the notion that humans can be affected in their judgments and decisions by factors that should, if they were to behave fully rationally, not have any bearing on these judgments and decisions (Tversky & Kahneman, 1974).

To achieve and clarify the research aim, we have formulated three objectives which will contribute to the scientific body of knowledge of valuation and valuation practice:

1. To examine how cognitive biases affect entrepreneurs, legal professionals, and business valuers when they evaluate and judge valuation outcomes and valuers.
2. To explore whether the effect of cognitive biases on the evaluation and judgment of a business valuation outcome is recognized by valuation experts in practice.
3. To develop a Statement of Principles for business valuers that seek to reduce valuation disputes following from judgments that are affected by cognitive biases.

1.3 OUTLINE OF THE METHODOLOGY

We employed an Experimental Vignette Methodology (EVM) using cross-sectional data. Cross-sectional data means we draw subsets (samples) from several larger populations (i.e., entrepreneurs, legal professionals, business valuers). A study using EVM is similar to randomized controlled trials

(RCTs), often considered the gold standard of evidence (Meldrum, 2000). In such designs, research participants are randomly assigned to one of the experimental conditions to test for the effectiveness of a treatment condition relative to a control condition (in RCTs), or as in the present case to test for differences between two or more conditions (i.e., different versions of a vignette) (Bryman, 2016). The key benefit of experimental study designs in general is that they allow for causal inferences to be drawn. For example, Aguinis and Bradley (2014, p. 352) state that “understanding causal relationships requires the use of experimental or quasi-experimental designs” (see also Flannelly & Jankowski, 2014; Imai, Tingley, & Yamamoto, 2012). This means that the observed effects, assuming sufficient statistical power and statistically significant effects, can most likely be explained by the factors that are varied across conditions, meaning that the variables have a causal influence on the phenomena being investigated.⁸ Being able to draw causal influences is a substantial benefit over most alternative methodologies such as observational, correlational, or qualitative methods in general, for which it is harder to make any strong claims regarding causality.

We considered the experimental vignette methodology as being particularly appropriate for two reasons. First, as we are interested in the potential biasing effect of certain pieces of irrelevant information, this can best be studied by exposing a particular sample to such information and comparing people’s judgments with those of a sample that did not have access to the irrelevant information. If differences in judgments are observed, it is likely that these differences can be explained by differences in information they were exposed to. Hence, using this method allows for investigating the potential biasing effect of certain information used in making judgments. Second, given the suitability of this method for investigating the effects of cognitive biases, its widespread application in the literature confirms the appropriateness of using it to study biases (e.g., Aguinis & Bradley, 2014; Baron & Hershey, 1988; Epley & Gilovich, 2006; Fischhoff, 2003; Morewedge & Giblin, 2015; Tversky & Kahneman, 1974).

For the purpose of the research, three distinct key stakeholders in valuation disputes have been identified: (1) entrepreneurs as they make investment decisions based on a valuation outcome; (2) legal professionals as they are involved as professional users of a business valuation; and (3) business valuers as they conduct valuations themselves or judge other valuers’ work. Considering the differences between these different stakeholders and the different biases by which they might be affected, three experimental studies were conducted investigating different (but somewhat overlapping) biases.

8 There is of course always the possibility of incorrectly rejecting the null hypothesis (i.e., concluding there is an effect, when in fact there is an effect of the treatment condition in the population (i.e., type I error).

In Study 1, a sample of 298 entrepreneurs examined the effects of anchoring bias and buyer-seller effects on their perceptions of a business valuation. In Study 2, we investigated the potential existence of similarity, outcome, and gender bias among a sample of 272 legal professionals in their evaluations of business valuations and valuers. For this particular study, correlational data was used to investigate a potential indirect effect (i.e., mediation) between several variables of interest. In Study 3, a total of 363 valuation experts were surveyed to investigate to what extent cognitive biases (anchoring and so-called engagement bias) explain differences in value perceptions of the same company.

To complement the experimental studies, 30 leading valuation experts from firms across the world were surveyed. In the first part of the survey, the valuation experts were asked whether they recognized and acknowledged the research findings of Studies 1-3 (Chapter 2-4). In a second part, open interview questions were used to further probe their professional perspectives, also in relation to a proposed draft set of principles.

The quantitative data were analyzed using the statistical software package SPSS (version 23, release 23.0.0.3). As is appropriate for data acquired using EVM, (multivariate) analyses of variance (ANOVA) were used. For the mediation analyses in 0 and the moderation analyses in Chapter 2, the data were analyzed using Hayes' PROCESS macro for SPSS (Hayes, 2018). A significant advantage of Hayes' approach to, for example, Baron and Kenny's stepwise approach (Baron & Kenny, 1986) is that (1) it limits the number of analyses that need to be conducted to protect against type I errors (i.e., concluding there is an effect when in reality there is none), and that (2) it generates a single coefficient for the indirect effect (i.e., mediation effect) rather than having to derive the indirect effect from the reduction in the direct effect following the inclusion of the mediator variable in the model. For an elaborate discussion on the differences between the traditional approach to mediation analyses and alternative methods, see for example Hayes (2009).

1.4 DELIMITATIONS

The main objective of this dissertation is to gain an understanding, in the context of disputes, of the impact of cognitive biases when judging valuations and valuers by key stakeholders of a valuation such as entrepreneurs and legal professionals, and how cognitive biases affect valuers when judging another valuation on behalf of their client. Judging from the literature in social psychology, it can be established that there are numerous types of biases that may affect the way a valuation or a valuator is judged. It is, however, beyond the scope of this dissertation to investigate all types of cognitive biases that potentially might affect a stakeholder's judgment of a valuation or the valuator (i.e., first delimitation). Therefore, this dissertation focuses on specific cognitive biases in the three experimental studies

(i.e., Chapter 2., Chapter 3., Chapter 4.) which were chosen based on expert insights in the business valuation literature (e.g., Damodaran, 2019) on the one hand, and the omnipresence of investigated biases in the psychological literature on the other hand (e.g., Baron & Hershey, 1988; Firth, Lin, Liu, & Xuan, 2013; Furnham & Boo, 2011; Gardner, Titcomb, Cramer, Stroud, & Bate, 2013; Harley, 2007; Hastorf & Cantril, 1954; Hodgson & Pryor, 1984; Tversky & Kahneman, 1974).

In the context of business valuation, it is likely that biases related to the valuation input variables might influence the way stakeholders perceive and judge the valuation and the valuator. This is because of the numerous assumptions a valuator can make in the arithmetic exercise of the valuation that will ultimately result in the valuation outcome. The fact that most stakeholders often have limited technical valuation knowledge, however, suggests that cognitive biases in judging valuations and valuators probably do not stem from evaluating these valuation input variables. That said, the dissertation does not investigate possible biases amongst stakeholders that stem from biased valuation input variables (i.e., second delimitation).

Moreover, the dissertation does not aim to develop a comprehensive Statement of Principles (i.e., third delimitation). Rather, the proposed Statement of Principles in this dissertation is designed to serve as a first step towards a necessary discussion on biases in international valuation practice, and how to deal with bias to mitigate valuation disputes. Ideally, the proposed principles will serve as inspiration for professional bodies around the globe to develop their own specific principles that best serve local needs and challenges.

1.5 PRACTICAL SIGNIFICANCE

Business practice shows that business valuations are frequently part of, or result in, lengthy disputes and costly legal procedures, typically following on from widely diverging value perceptions. For example, expert insights suggest that discussions around the value and price of a company are often difficult to solve, most of the time taking many years of litigation, sometimes even up to decades (Van Solinge, 2019). With that, time, energy and money is lost at the expense of the stakeholders involved. Moreover, reputations are at stake, especially those of the business valuators. This dissertation aims to enhance our understanding of valuation disputes by exploring the role of cognitive biases when judging valuations and valuators. The current findings on the psychological factors may help increase our general understanding of conflicting value perceptions.

Additionally, a deeper understanding of the effects of cognitive biases when judging valuations and valuators by stakeholders will be advantageous for business valuators. If they are more aware that they themselves might be affected by biases, as well as their (indirect) clients when judging their work, valuators can better anticipate on biased judgments at an early

stage and subsequently limit the risk of unsatisfied clients, legal procedures and, in the most serious case, liability. Moreover, by means of the introduction of a Statement of Principles, this dissertation aims to help practice to mitigate the unwanted effects of systematic patterns of irrationality when judging valuations and valuers.

1.6 STRUCTURE OF THE DISSERTATION

The overall structure of the research is presented in six chapters, including this introductory chapter.⁹ Figure 1 shows the organization and structure of the dissertation. The first empirical study presented in Chapter 2. was conducted among a sample of entrepreneurs, a stakeholder group that can be considered as the ultimate end-user of a valuation due to the impact of a valuation outcome on their investment decision. Practice shows that entrepreneurs are assumed to have strong opinions on valuation outcomes and frequently evaluate both the valuation and the valuator. Participants of the study were asked to put themselves in the shoes of one of the two shareholders of a company who together decided to separate as their interpersonal conflict jeopardized their business's existence. In the case, an independent valuator determined the value of the shares and the participants were asked to provide their perspective on the valuation outcome. This study shows that the participants are indeed affected by biases, *inter alia*, their position (i.e., being a buyer or a seller), as well as an anchor (i.e., the valuation outcome provided).

9 Note: Study 1-3 are reported in Chapter 2-4 as stand-alone papers.

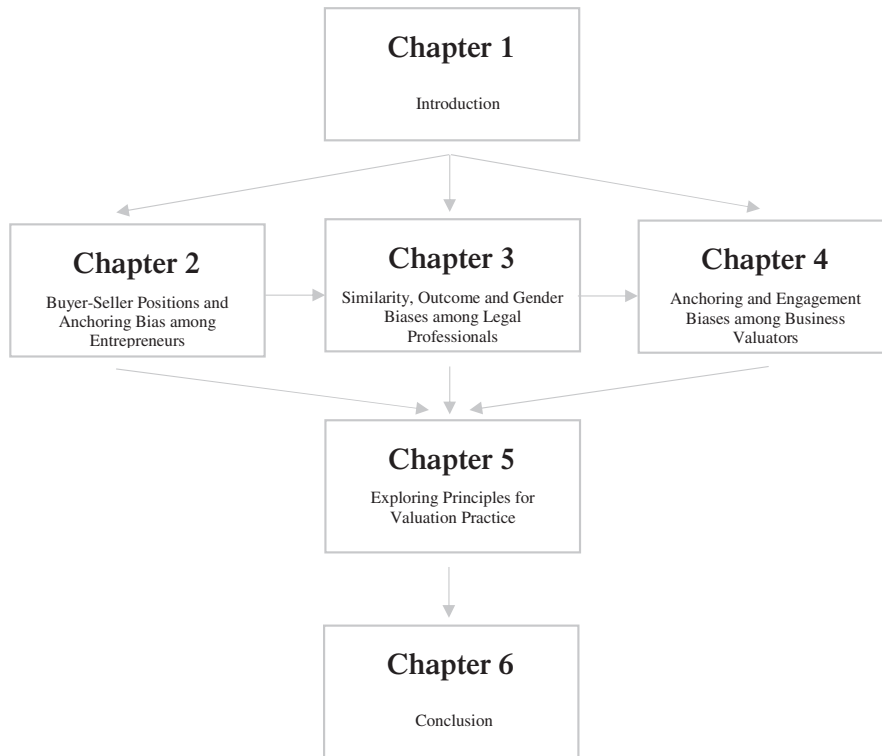


Figure 1. Structure of the dissertation.

Chapter 3. presents the second study conducted with an international sample of legal professionals, as practice shows that this stakeholder group is frequently confronted with (complex) valuation issues, for example in the context of supporting entrepreneurs in their business endeavors. Despite the fact that legal professionals are not specifically trained to assess a valuation on its arithmetical and methodological soundness, it could be assumed that they solely judge valuations on the basis of the valuator's advice about the (correct) application of the selected valuation method. However, the study shows that legal professionals' judgments of valuations and valuations are affected by the degree of perceived similarity with the valuator (i.e., similarity bias), the outcome of a deal (i.e., outcome bias), and the valuator's gender (i.e., gender bias).

Chapter 4. includes a study in which we look for explanations for conflicting views of valuations on a valuation by investigating the role of cognitive biases among a sample of business valuers from leading valuation firms. Practice shows that both inside and outside the court, valuations of the same company conducted by different valuers often vary to a high degree (see for instance the Dell case in section 1.1). This study shows that valuers are affected by, amongst others, anchoring bias (i.e., the tendency to use and adjust too little from an initial piece of largely irrelevant infor-

mation), and engagement bias (i.e., the tendency to unconsciously take a client's interests into account when forming objective judgments). Subsequently, we conducted a post-hoc study aiming to replicate these findings and to rule out the influence of valuator-dependence. This follow-up study provided further evidence for the robustness of the observed effects.

Chapter 5. reports on a consultation among a group of high profile valuers affiliated to top-tier firms around the globe. The aim of the consultation was threefold. First, the study sought to find out to what extent valuation experts recognize and acknowledge the findings of the experimental studies (as discussed in Chapter 2-4) in their own work as well as in the work of their peers. Second, it strived to perform a 'sanity check' on the studies' findings, to gain a fresh perspective on the interpretation of our own findings. Third, it served as a first exploration of whether the investigated biases can be mitigated by introducing certain 'debiasing principles' to be incorporated into the valuers' working methods.

With respect to the first two aims, the results of the consultation show that the majority of the experts recognize the findings of the three studies, with gender bias being the exception. Interestingly, of those who did not recognize biases within themselves, the majority did believe these biases could influence their peers. Regarding the study's third aim, despite some critical remarks, the respondents were generally positive towards the principles put forward. The consultation round suggests that in general, valuers have no fundamental objections to principles per se, yet the feasibility, scope and practical usability are open to debate in some cases.

Entrepreneurs: Buyer-Seller Positions and Anchoring Bias

*Valuation is vague and arbitrary,
when there is no assurance that
it will be generally acquiesced in
by others.*

– Jean-Baptiste Say –

In this study, we investigate the role of cognitive biases in explaining how different parties can look at the same valuation object yet arrive at (widely) differing conclusions. First, based on psychological and economic theories, we examined whether merely being a seller or a buyer in a transaction biases people's perceptions regarding a business valuation. Second, we examined whether anchoring bias affects entrepreneurs in such a way that a company's value is perceived to be higher following a high anchor relative to a low anchor. In an online experimental study among Dutch entrepreneurs (N=298), in which participants were asked to give their opinion on the value of a company as described in a business case, we show that entrepreneurs are affected by both types of biases, i.e. buyer-seller position effects and anchoring bias. Our findings underline the importance of recognizing psychological influences that can affect entrepreneurs' assessment of a company's value.

2.1 INTRODUCTION

In each phase of the corporate life-cycle, i.e., a company's birth, growth, maturity or decline (Koh, Durand, Dai, & Chang, 2015), entrepreneurs – individuals who create or pursue opportunities regardless of the resources they currently control and who take decisions under uncertainty (Stevenson, 1999; Timmons & Spinneli, 1994) – are for various reasons involved in business transactions, such as investments, divestments, raising capital, mergers or acquisitions, and selling shares, etc. In these transactions, a business valuation is typically conducted (to determine the value of a business or a part thereof or an interest therein), and the outcome of this valuation often takes center stage in negotiations around a proposed transaction. Obviously, yet critically, valuations can have major financial consequences for the parties involved in a business transaction (e.g., Ayotte & Morrison, 2017; Eisenhofer & Reed, 1997; O'Rourke, 2005; Schwartz & Bryan, 2012).

Crucially, however, in many cases the parties involved do not pass the valuation hurdle in the sense that the presented valuation outcome in fact divides parties instead of bringing them closer to a (voluntary) transaction. Indeed, practice shows that entrepreneurs often believe that their company

or a share therein is worth significantly more than buyers in the market will bear. This divergence in value perceptions between parties is even more remarkable when these parties concern entrepreneurs who hold or represent shares in the same company. In fact, valuation disputes between shareholders are a frequent occurrence (e.g., Ayotte & Morrison, 2017; Sharfman, 2003).¹

Many litigations, arbitrations and mediations take place to settle disputes following on from diverging views on companies' values; these ultimately jeopardize the intended transactions. A major concern is that these disputes are extremely detrimental to a company's value, especially in the case of small and mid-sized companies that are highly dependent on their entrepreneurs, as they often play a frontrunner role in the company's management. Their focus might shift from managing the company to managing the dispute. Additionally, it would benefit entrepreneurs to minimize time and money-consuming disputes around valuation issues, as these can threaten potentially lucrative initiatives that might even be necessary to ensure a business's continuation. Hence, disputes concerning the value of a company should be minimized in order to reduce, and preferably avoid, value destruction.

In order to be able to reduce the number of conflicts and failing business transactions due to diverging views of a business's value, it is important to first understand the causes of these diverging views. What causes different stakeholders to look at the same business in the same environment while having access to the same relevant facts and other information, yet arriving at different conclusions regarding the company's value? In addition to benefiting entrepreneurs themselves, understanding the causes of diverging value perceptions among entrepreneurs can also benefit other stakeholders involved in business transactions and valuation disputes such as legal professionals and business valuers. That is, these professionals could possibly increase their added value by managing their clients so that valuation disputes are avoided, and business transactions are facilitated.

Unfortunately, despite the prevalence of valuation disputes among entrepreneurs and the negative consequences of these disputes, little research has been devoted to their causes. Although some have already suggested several solutions for resolving business valuation disputes (e.g.,

1 Consider for example two entrepreneurs (A and B) in their role as shareholders in the same company who decided to part ways and need to transfer shares from entrepreneur A to entrepreneur B. They appoint an independent business valuator to determine the value of the transferable shares in order to facilitate the separation. However, entrepreneur A believes the resulting valuation to be much too low and demands a larger amount before being willing to sell his/her shares. In such a situation, a business valuation often fails to facilitate a smooth transaction as the entrepreneurs remain divided on the value of the shares, possibly resulting in a lengthy dispute. Such conflicting perceptions are particularly peculiar when a company has been valued by an independent business valuator who supposedly has an unbiased view on the valuation object. Still, valuation disputes often arise even when an independent valuation has been conducted.

Sharfman, 2003), to our knowledge no research has yet tackled the issue of what actually causes diverging value perceptions among entrepreneurs. In this study, we aim to address this issue by examining the extent to which buyer-seller positions and anchoring effects account for observed differences in value perceptions towards the value of a company. Psychological research has long demonstrated that when people are faced with highly complex situations and uncertainty, they tend to rely on heuristics which can lead to biases in their judgments (Tversky & Kahneman, 1974). Given that valuing a business is an example of a complex endeavor with high degrees of uncertainty, we believe investigating the role of cognitive biases might provide fruitful ground for enhancing our understanding of diverging value perceptions among entrepreneurs.

We consider this approach to be of added value to the literature because relatively little research has been conducted on cognitive biases among entrepreneurs in general (Cossette, 2014). Although research attention has focused on differences between entrepreneurs and non-entrepreneurs in cognitive mechanisms as well as on cognitive factors and biases in venture formation and risk perceptions (Baron, 1998, 2007; Keh, Der Foo, & Lim, 2002; Simon, Houghton, & Aquino, 2000), overall the research on cognitive biases among entrepreneurs is limited, and it is non-existent in the context of business valuation.

In this study, we focus on the role of buyer-seller positions and anchoring bias for two reasons. First, disputes typically occur between opposing parties in a transaction (i.e., buyers and sellers) and these parties tend to disagree strongly regarding the value of a company. Even in successful business transactions, opposing parties tend to disagree regarding the value but nonetheless manage to successfully negotiate a deal. Given this phenomenon of persistently conflicting value perceptions between buyers and sellers, we deem it worthwhile investigating how an entrepreneur's position in a transaction might affect value perceptions. Second, practice shows that entrepreneurs are often exposed to other people's views on their company's value, such as indications from their advisors (e.g., business valuers, merger and acquisition (M&A) advisors) or from other entrepreneurs on the basis of their experiences (e.g., common earnings multiples, similar transactions). Given the prevalence with which entrepreneurs are exposed to such value indications (i.e., anchors), we deem it worthwhile investigating whether anchoring effects play a role in entrepreneurs' value perceptions.

In the remainder of this chapter, we first discuss what is meant with buyer-seller positions and how these might affect the perception of a company's value. We then discuss the literature on anchoring bias and elaborate on how this might affect value perceptions among entrepreneurs.

2.2 THEORY AND HYPOTHESES

2.2.1 Buyer-Seller Position Effects

In this study, we ask whether the position taken by someone in a transaction influences the perception of value with regard to a business or their interest in that business. That is, will an entrepreneur who is looking to buy shares in a company perceive the share value to be higher or lower than that of the seller, merely because they have a different position with regard to the transaction? We draw from several theories to argue that an entrepreneur's position in a transaction may affect value perceptions regarding a valuation object.

A theory to possibly explain diverging value perceptions between buyers and sellers towards the same object is derived from the so-called Austrian School. This economic school of thought originated in the 19th century, based on work by Carl Menger (1871). Menger and other important Austrian economists such as Eugen von Böhm-Bawerk, Friedrich von Wieser, Friedrich Hayek, and Ludwig von Mises developed the important proposition that the value of a specific object originates from what someone believes that object is worth to them, rather than from the long-established notion of value being based on the cost of production. Indeed, this school of thought suggests that the value of an object is largely determined by its subjective utility. Specifically, value is implicitly based on the subjective demand of consumers following the object's utility to them (e.g., Boettke & Coyne, 2003; Boettke & Leeson, 2003; Campagnolo & Vivel, 2014; Hayek, 1948; Kirzner, 1987; Menger, 1871; Wieser, 1891). For example, consider someone who is lost in a desert and suffers from dehydration and is given the choice between a large lump of gold and a bottle of water. In everyday life, one would not fail to recognize the higher value of the lump of gold, as gold is scarce and labor-intensive to mine, whereas water is typically plentiful and readily accessible. However, when facing dehydration in the middle of the desert, a lump of gold is of little use and it would therefore be logical to choose the bottle of water. Hence, according to advocates of the Austrian school, value exists primarily in the eyes of the beholder. For this reason, value is perceived as a subjective concept, arising from the idea that the behavior and need of the economic subject is decisive and not a characteristic of the economic object (e.g., Rapp, Olbrich, & Venitz, 2018).

In the context of a business valuation, the notion of subjective utility suggests that entrepreneurs might perceive the value of a business to be based on their respective position and related interest. Specifically, an entrepreneur who is in a position to buy a company should, in principle, assign a higher value to that company than the seller would. Indeed, the principles of the Austrian school would suggest that a transaction would only occur when the subjective utility differs between the buyer and the seller, such that the perceived value of an object is lower for the seller than for the buyer due to a lower subjective utility of the object for the seller (e.g., McKnight,

1994; Sweezy, 1934; Wieser, 1891). Based on this school of thought, it could be expected that despite having an independent valuation report at their disposal, shareholders of the same company should perceive the value of their interest in the company differently depending on the position they occupy. That is, a seller of shares might actually perceive the value of these shares to be lower than a potential buyer does, as a result of differences in the subjectivity utility these shares have for each party.

Interestingly, other than what Austrian economics suggests, practice shows that it is more typical for entrepreneurs who are in a selling position to assign a higher value to their company rather than a lower value. From a profit maximizing viewpoint, it would indeed make more sense that a seller would want to sell a company or their related interest for as much as possible, whereas a buyer would strive to pay as little as possible. Yet, it remains unclear to what extent the decision processes that are theorized by the scholarship of the Austrian School actually explain entrepreneurs' value perceptions, or whether they are affected by other cognitive processes, possibly operating in parallel.

We put forward two alternative theories that may explain the diverging value perceptions observed in practice between buyers and sellers in a business transaction. The first theory of these is the so-called endowment effect. This refers to the notion that people who own an object tend to value that object more than the prospective owner (Thaler, 1980). In a classic experiment of the endowment effect, a group of students were assigned to one of two groups. The first group was given a coffee mug and was subsequently offered to exchange their coffee mug for a chocolate bar. The second group received the opposite; they were given a chocolate bar and were offered to exchange their bar for a coffee mug. The results showed that both groups were endowed by their good in such a way that 89% of the first group chose the mug over the bar, and 90% of the second group chose the bar over the mug. Hence, the results showed that the loss of giving up their good weighed much heavier than the prospect of obtaining the other good (Knetsch, 1989). Another study illustrated the endowment effect in a laboratory study demonstrating that when people were endowed with either a lottery ticket or with an amount of USD 2.00 and were then offered to trade their ticket for USD 2.00 or vice versa, only a few people chose to switch (Knetsch & Sinden, 1984). In short, the endowment effect occurs when an object increases in value based on the ownership of that object (Knetsch et al., 1990).

The cause of the endowment effect is assumed to be in the idea that owning an object is part of people's current wealth, and that selling the object is perceived as a loss. Because sellers perceive a loss as being larger than a gain of the same magnitude, they experience the sale of their possession as more unpleasant than buyers experience the gain associated with the buy (Beggan, 1992; Knetsch, Thaler, & Kahneman, 1990; Kahneman, Knetsch, & Thaler, 1991). The endowment effect reflects the loss and gain perspective in such a way that a loss perception results in a higher

perceived value of a good in the selling perspective relative to the buying perspective where the good is gained (Ashby, Dickert, & Glockner, 2012; Dunning, Van Boven, & Loewenstein, 2000; Epley, Keysar, Van Boven, & Gilovich, 2004). Additionally, the endowment effect has been identified as a source of the observed gap between what someone is willing to pay for a certain good or service (willingness-to-pay) and what someone is willing to accept as a price for that good or service (willingness-to-accept) (Morrison, 1997). As a result of the endowment effect, anomalies in value perceptions arise between buyers and sellers (Morewedge, 2016; Morewedge & Giblin, 2015).

Importantly, the question remains open whether entrepreneurs' value perceptions are also susceptible to the endowment effect, as research to date has mainly focused on consumer behavior rather than judgments of entrepreneurs. Based on the research described above, it might be the case that entrepreneurs looking to buy shares are reluctant to spend their money and diminish the value of the shares they want to buy, whereas sellers are reluctant to sell the shares they own and boost the value of these shares. Hence, the endowment effect could explain why a seller of shares places a higher value on these shares than a buyer would.

A second theory that can possibly explain differences in value perceptions between buyers and sellers may be found in the literature on self-serving bias. This entails that people tend to interpret information in a self-serving manner and ignore or devalue information they consider to be in conflict with their own interests, instead of focusing on self-promoting information. For example, in a classic study, students of two universities saw a very hard fought football game between their university teams and were afterwards asked to reflect on the causes of the game's roughness. Those who supported team A blamed team B for the rough game, while supporters of team B blamed team A. Also, team A supporters counted twice as many rule infractions on behalf of team B than on behalf of their own team. Hence, the retellings of the same game differed completely for each group of supporters (Hastorf & Cantril, 1954). This difference in retellings is believed to be caused by the notion that people filter out information that contradicts their self-interest. In another demonstration of self-serving bias, students were assigned to either the role of plaintiff or defendant in a tort case that concerned the awarding of punitive damages for a motorcyclist who collided with a car. Both were asked to predict the damages that the judge awarded. A clear self-serving bias was observed as the plaintiffs' predictions of the judge's award was much higher than that of the defendants. These self-serving biases, being the discrepancy between plaintiffs' and defendants' expectations toward the judge's compensation award, subsequently caused negotiation impasses, ultimately resulting in non-settlements (Babcock & Loewenstein, 1997).

Perhaps more relevant for the current context, self-serving biases have also been observed in a financial context. For example, company managers tend to give explanations of corporate performance in their annual

accounts in a highly self-serving manner, particularly in times of crises (Keusch, Bollen, & Hassink, 2012). Moreover, auditors, who are supposed to make objective audit judgments, are suspected to be affected by self-serving biases, such that they favor their own and their client's interests (Bazerman, Morgan, & Loewenstein, 1997). Importantly, biased information in processing that results in self-serving judgments can often be observed in disputes, with both sides favoring their own arguments over those of the other party (Babcock, Loewenstein, Issacharoff, & Camerer, 2016). Even when parties are in the possession of identical information, biased processing of that information can take place. Furthermore, the smallest information asymmetry between parties can result in fairness perceptions that are skewed to benefit the stakeholder's own position (Babcock & Loewenstein, 1997).

The cognitive processes described above may also account for those observed in many valuation disputes. That is, parties with opposing interests (e.g., buyers and sellers) are frequently provided with exactly the same independent valuation report and underlying information, yet differ in their perceptions of fairness regarding the valuation outcome. The question can thus be raised whether these diverging value perceptions result from someone's position in a transaction (i.e., buyer or seller) and their accompanying interests. Based on the literature on self-serving biases, it stands to reason that a buyer in a transaction looks at a valuation report and interprets the presented information differently (i.e., in a self-serving manner) than the seller.

To summarize, both the endowment effect and self-serving biases suggest that a seller of a company's shares assigns a higher value to those shares than a potential buyer of those same shares. Austrian economic theory, however, provides a contrasting prediction. That is, whereas research on the endowment effect and self-serving biases would suggest that entrepreneurs acting as a seller in a transaction assign a higher value to the reference object (e.g., shares in a company) than a buyer, the Austrian school's subjective utility theory could suggest the contrary. Therefore, it remains uncertain what would happen if entrepreneurs at opposite ends in a transaction are presented with a valuation report and are asked to give their perspective on the valuation outcome as determined by an independent valuator.

It is important to note that the current research does not aim to identify which of the presented theories can account for differences in value perceptions. Rather, we merely aim to investigate whether entrepreneurs show conflicting value perceptions due to the mere fact they are at opposite ends of a transaction, irrespective of the specific direction. However, for two reasons, we assign more weight to predictions derived from research on cognitive biases (i.e., the endowment effect and self-serving biases) than to predictions that follow Austrian economics. First, whereas the Austrian school is more theoretical in nature (and which has received a fair amount of criticism; e.g., White, 2008), the effects of cognitive biases have been

studied extensively and have been shown to be highly robust and difficult to eradicate. Second, in practice it is more typical for a seller in a transaction to assign a higher value to an object than the buyer does, which is in line with predictions derived from the discussed cognitive biases. Combined, we consider it more convincing that entrepreneurs in a seller position would assign a higher value to a target company than entrepreneurs in a buying position. Consequently, we formulated the following hypothesis:

Hypothesis 1: Entrepreneurs in the buyer position perceive the value of a company to be lower than entrepreneurs in the seller position.

2.2.2 Anchoring Bias

In addition to the influence of buyer-seller positions on value perceptions, we also studied the extent to which entrepreneurs' value perceptions are affected by anchoring bias. This bias entails that when making (numerical) judgments, people rely to a large extent on an initial piece of (possibly irrelevant) information and subsequently adjust insufficiently from that anchor so their judgments may be heavily affected by the initial figure (e.g., Heywood-Smith, Welsh, & Begg, 2008; Russo & Schoemaker, 1992; Tversky & Kahneman, 1992; Tversky & Kahneman, 1974). In their classic paper, Tversky & Kahneman (1974) asked participants to estimate the number of African countries in the UN, and found that their answers were strongly affected by irrelevant numerical anchors generated by a wheel of fortune. They concluded that people find it difficult to ignore the initial anchor and, in arriving at their answer, adjust insufficiently away from the anchor.

In the context of value perceptions surrounding business transactions, having an anchor in mind, regardless of the source or legitimacy, can become problematic when two parties in a transaction enter a negotiation with widely differing value perceptions due to being exposed to different anchors. For example, an entrepreneur may have reviewed recent transactions in his/her market and therefore strongly believe the value of his/her company to be similar. Or, an entrepreneur's advisor recommends not to sell his/her company for less than amount X, even though X is not an accurate reflection of the company's 'true' value. Additionally, when entrepreneurs use common rules of thumb, such as certain earnings multipliers (e.g., 4-6x EBITDA) to preemptively estimate their company's value, this might also serve as an anchor that can frustrate future negotiations if this value is not aligned to a company's actual value as determined by an independent business valuator or the opposing party. Hence, business transactions can be jeopardized, and costly disputes can emerge when anchors cause divergent views between stakeholders regarding the value of the valuation object. However, to our knowledge no research has yet investigated whether entrepreneurs' value perceptions regarding their businesses can be affected by anchoring bias. We therefore address this issue in this study.

So far, little research has been conducted on anchoring bias among

entrepreneurs in general. Research to date has mainly focused on anchoring effects in risk perceptions and perceived chances of success and, as a result, the chance of starting a business (see for example Barbosa, Fayolle, & Smith, 2019). A rare example of a study on anchoring bias among entrepreneurs is one which demonstrated, in a series of experimental offline auctions, that farmers were susceptible to anchoring effects when auctioning agricultural goods as the anchor influenced the farmers' valuation of these goods (Holst, Hermann, & Musshoff, 2015). In the specific context of valuation, no research has been conducted on anchoring bias in business valuation except one in relation to real estate valuation. A study demonstrated the effects of the listing price of real estate on value judgments, both for experts and non-experts. The presented listing price served as an anchor, affecting the participants' judgments regarding the perceived appraisal value, fair purchase price and the lowest offer they would accept (Northcraft & Neale, 1987).

Notwithstanding the lack of research on anchoring bias in business valuation, based on the research discussed so far it is likely that entrepreneurs may also succumb to anchoring bias when judging the value of a company's shares. Therefore, we formulated the following hypothesis:

Hypothesis 2: Entrepreneurs perceive the value of a company to be higher following a relatively high anchor versus a relatively low anchor.

2.3 METHOD

2.3.1 Participants

We conducted a study among a Dutch sample of 298 entrepreneurs (253 males, 45 females). We define entrepreneurs as individuals who create or pursue opportunities regardless of the resources they currently control and who take decisions under uncertainty (Stevenson, 1999; Timmons & Spinneli, 1994). As such, following this definition, entrepreneurs are not in the strict sense limited to individuals who founded or own (a part of) a company (i.e., hold an economic interest in the form of shares or options). Hence, we recruited participants who either own a company or have an interest in that company, or who are in a position to create or pursue opportunities regardless of the resources they currently control and who take decisions under uncertainty (e.g., corporate executives). Recruitment of participants was done through two means. First, we used an online panel service whose database included entrepreneurs that fit our definition. Second, we recruited entrepreneurs through our primary and secondary network (i.e., contacts of our primary network).

The total sample consisted of 99 (33.2%) entrepreneurs with 1-10 employees, 57 (19.1%) entrepreneurs with no employees, 47 (15.8%) entrepreneurs with 10-50 employees, 43 (14.4%) entrepreneurs with 50+

employees, 19 (6.4%) directors, 10 (3.4%) managers, and 23 (7.7%) indicated 'other'. Participants who chose the latter option further specified their professional position, and answers included positions such as 'shareholder', 'partner of law firm', 'COO/CEO', 'investor', and 'former entrepreneur'. The average age was 50.4 ($SD = 10.9$) and the average years of work experience was 20.6 ($SD = 10.7$). We asked participants whether they had ever made a business decision in the past based on a business valuation, to which 223 participants (74.8%) responded positively.

2.3.2 Study Design

We studied the position effects and the anchoring bias using an online survey in which the participants were presented with a business case describing two entrepreneurs who are shareholders in the same company and who want to separate (i.e., entrepreneur A wants to sell his shares to entrepreneur B). The case included a summary of the valuation of the entrepreneurs' company (and thus of their shares). Specifically, we asked participants to either put themselves in the shoes of the entrepreneur who wants to sell his shares to the other entrepreneur, or in those of the entrepreneur who wants to buy these shares. Moreover, the outcome of the valuation was either relatively high or relatively low. Hence, we used a 2 x 2 between-subject factorial design, with the position of the entrepreneur (buyer vs. seller) and the anchor (low value vs. high value) as factors. Participants were randomly assigned to one of these four conditions (i.e., versions of the business case). The key variable of interest (i.e., dependent variable) was the participants' view of the company's valuation.

2.3.3 Procedure

When starting the online survey, participants first received general instructions regarding the survey procedure.² They then received instructions regarding the case (see Appendix A1), including a general overview of the case and instructions regarding the perspective they were asked to adopt (i.e., buyer vs. seller). After having read the case in which two majority shareholders of a company called 'Trend' decide to part ways, and where one needs to buy out the other, participants were asked several questions that aimed to capture the degree to which participants perceived the entrepreneur whose perspective they were asked to adopt as being similar to themselves. Measuring perceived similarity was done to control for the effect this variable might have on the relationship between the key variables under consideration (i.e., position effects and anchoring bias) and value

2 After the initial instructions, participants were presented with questions that measured their Locus of Strategic Control (10-item scale). This scale was incorporated for exploratory purposes as part of a separate study and results will not be discussed here, but can be provided upon request.

perceptions. That is, do position and anchoring effects have a different effect on value perceptions when participants closely identify with the entrepreneur whose perspective they were asked to adopt, versus when they do not perceive the entrepreneur as similar?

Participants were then asked three questions which served as an attention check to ensure they had thoroughly read the case and were aware of which perspective they were asked to adopt: (1) Which perspective are you asked to adopt? (2) What kind of business is Trend? (3) How many shareholders does Trend have? If participants answered one or more questions incorrectly, they were given the option to either end the survey or to read the case again. In case they opted for the latter, they were again presented with the case and subsequently with the same attention check. If all questions were answered correctly, they could proceed. If they answered one or more questions incorrectly, they had to discontinue the survey.

After the attention check, participants received instructions regarding their assignment, which reiterated that the participant should adopt the perspective of either the buyer or the seller, and that they were going to be asked to give their perspective on the valuation outcome (for full instructions, see Appendix A2 and A3). The valuation outcome (which was dependent on the anchor condition) as determined by the independent valuator was then presented, as well as a summary of the valuation report, the assumptions on which the valuation was based, and a brief explanation of the discounted cash flow method (DCF) used to calculate the company's value. Participants were given the option to open the valuation report as a PDF, so they had access to all the information throughout the rest of the survey (see Appendix A4 and A5).

Participants were then asked to give their opinion on the valuation outcome, which served as the key dependent variable. Finally, participants were asked whether they considered the case and materials to be realistic enough to properly answer the questions, which they answered on a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7) ($M = 5.13$ $SD = 1.24$).

2.3.4 Stimuli and Measurements

Business case. The case described a trading company ("Trend") specialized in accessories (e.g., covers, charges, headsets, speakers, etc.) for innovative high-tech products of other companies (e.g., Apple, Microsoft, Samsung) that was founded by two college friends, each owning 50% of the shares. The two friends differed in terms of their contributions to the business. One was the creative and visionary type (internal role), whereas the other focused on customer relations and closing deals (external role). These roles and names of the entrepreneurs in the case were counterbalanced across conditions, to control for the potential influence these might have. In recent years, the company had stagnated and even showed a slight drop in revenue. Shareholder A wanted to invest in the business and reach new

markets to facilitate future growth. In contrast, shareholder B was content with the current situation and did not consider further growth a necessity, considering further investment too risky. Apart from diverging views on the company's future, both shareholders were unsatisfied with the other's contribution to the business and each felt the management fee no longer represented a fair distribution based on input. Consequently, the shareholders decided to part ways as their conflict jeopardized their business's existence. Shareholder A indicated he wanted to buy Shareholder B's shares. The company's statutes dictated that in such a situation, an independent valuator must determine the value of the shares. A short description of the accredited valuator was provided in the case.

Dependent Variables. The key variable of interest was the participants' opinion on the valuation outcome; this was measured in four different ways. First, participants were asked to indicate on a 7-point Likert scale to what extent they believed the valuation outcome should be adjusted upwards, downwards, or kept the same. The scale ranged from "Adjust heavily downwards" (1) to "Adjust heavily upwards" (7), with the midpoint (4) labeled as "Remain as it is". Next, participants were asked to indicate a range within which they believed the value of the company laid. Participants used two sliders to indicate what they believed the minimum value should be (slider 1) and what the maximum valuation should be (slider 2). Both sliders had a maximum range of EUR 0-10M (i.e., M = million) and were presented on the same screen. The lower bound of the range (i.e., the minimum value) and the upper bound of the range (i.e., the maximum value) each served as a separate dependent variable. Finally, participants were asked whether they, as either buyer or seller of the company's shares, would do the transaction at the initial value as determined by the independent valuator, measured using a 7-point Likert scale ranging from "definitely not" (1) to "definitely yes" (7). This variable served as the fourth dependent variable.

Independent variables. We used a 2 x 2 between-subjects factorial design, with the participants' perspective (buyer position vs. seller position) and the anchor (low value vs. high value) as factors.

To explore the robustness of the findings, we carried out additional analyses to investigate whether any findings of position effects or anchoring bias are dependent on (1) the participants' level of professional experience, or (2) the degree to which the participants can identify with the entrepreneur whose perspective they were asked to adopt. In the following section, we explain the relevance of including these two additional independent variables.

Professional experience. We tested whether all entrepreneurs are affected by position effects and anchoring bias to the same extent, or whether some are more affected than others. It is conceivable that more seasoned entrepreneurs have more expertise with business valuation, and as a result have a larger knowledge-base to derive their judgments on a company's value, so that they would have less need to use an anchor as a point of information from which to adjust to arrive at a final judgment. In

contrast, nascent and early-career entrepreneurs might lack the expertise required to accurately assess a business's value and might therefore be more inclined to base their judgments on estimates from other sources, which might then serve as anchors.

To date, research on the role of expertise in anchoring effects has shown mixed results. Some research has shown that expertise can reduce the effects of anchoring bias (Chapman & Johnson, 1994; Wilson, Houston, Etling, & Brekke, 1996). For example, financial market professionals showed a smaller anchoring effect towards long-term stock returns than students did (Kaustia, Alho, & Puttonen, 2008). In contrast, other research did not show any expertise effect in anchoring bias (Englich & Soder, 2009; Mussweiler, Strack, & Pfeiffer, 2000). For example, judges who are highly experienced in criminal sentencing decisions appear to be just as susceptible to being biased by an irrelevant sentencing demand (i.e., the anchor) as inexperienced law students (Englich & Mussweiler, 2001). Considering these mixed results of expertise effects in anchoring bias, we did not formulate a specific hypothesis.

Perceived similarity. Research has shown that people's judgments can be affected by the degree of perceived similarity with an actor, such that these judgments tend to be more favorable towards those they perceive as similar and less favorable towards those perceived as dissimilar (e.g., Balliet, Wu, & De Dreu, 2014; Burger, Messian, Patel, del Prado, & Anderson, 2004; Byrne, 1971). Therefore, we set out to check whether participants in our study were affected in their value perceptions such that these were more favorable for the entrepreneur whose perspective they were asked to adopt in case of higher perceived similarity with the entrepreneur.

As some participants may have identified more with the creative visionary or with the externally focused rainmaker, we tested whether this affected the subsequent evaluation of the valuation outcome. If the participant identified more with the character whose perspective they were asked to adopt, this character match was coded as 1. In case of a mismatch between their own character and that of the entrepreneur, the character match was coded as 0. This variable is labeled as 'Identification' in the results section.

Additionally, as a second measure of perceived similarity with the entrepreneur, three questions were asked that, together, form a single measure of perceived similarity (Cronbach's $\alpha = .87$: "I believe I have a similar character as [name of entrepreneur], the [creative mind/rainmaker]", "I believe I have similar norms and values as [name of entrepreneur], the [creative mind/rainmaker]", and "I believe that, in general, I am very similar to [name of entrepreneur], the [creative mind/rainmaker]"). Participants were asked to indicate the extent to which they agreed with each statement on a 7-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (7).

2.4 RESULTS

As it was crucial that participants took sufficient time to read the case and the valuation report and to adopt the role of either the buyer or the seller, those who did not were excluded from further analyses. Those who spent less than 30 seconds on the case or less than 45 seconds reading the assignment and valuation report were also not included. We used lenient cut-off criteria to ensure that only those participants who rushed through the survey were excluded. This led to 49 participants being excluded from further analyses, leaving a final sample size of 249.

We conducted a Multivariate Analysis of Variance (MANOVA) in which the variables position (buyer vs. seller) and anchor (low vs. high value) were entered as independent variables, and the valuation adjustment, valuation range (lower bound and upper bound as separate variables), and the subjective deal probability as dependent variables. Results of the MANOVA showed significant effects for position, anchor, and for the interaction between these two variables. Please see Table 1 for the descriptive statistics and inter-variable correlations, and Table 2 for the results of the MANOVA.

Table 1. Pearson correlations for the independent variables, dependent variables, and control variables.

	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Position (0 = Buyer, 1 = Seller)			-	-.004	.52**	.27**	.32**	.60*	.02	-.07	-.05
2. Anchor (0 = Low, 1 = High)				-	-.17**	.46**	.51**	.08	-.02	-.03	-.03
3. Valuation adjustment	3.19	1.46			-	.52**	.50**	.37**	.07	-.03	.04
4. Value lower bound	2.79	1.42				-	.84**	.23**	-.05	-.10	.09
5. Value upper bound	4.07	1.74					-	.25**	-.09	-.06	.02
6. Subjective deal probability	3.78	1.82						-	.06	-.04	.01
7. Professional experience	20.71	10.27							-	.05	.03
8. Identification (0 = No, 1 = Yes)										-	.61**
9. Perceived Similarity	4.22	1.14									-

Table 2. Results of the MANOVA.

Independent Variables	<i>F</i> (4, 242)	<i>p</i>	η_p^2
Position	55.80	<.001	.48
Anchor	75.66	<.001	.56
Position * Anchor	8.89	<.001	.13

Note: the dependent variables are the valuation adjustment, the valuation range (lower bound and upper bound as separate variables), as well as the subjective deal probability.

Subsequent univariate analyses (ANOVA) showed that the effect of position was significant for all dependent variables. Those in the buyer condition believed the valuation should be adjusted downwards to a greater extent

($M = 2.50$, $SD = 1.15$) than those in the seller condition ($M = 4.01$, $SD = 1.37$), $F(1, 245) = 91.65$, $p < .001$, $\eta_p^2 = .27$.³ Those in the buyer condition indicated a lower value for the lower bound of the valuation range ($M = 2.44$, $SD = 1.23$) than those in the seller condition ($M = 3.19$, $SD = 1.51$), $F(1, 245) = 24.60$, $p < .001$, $\eta_p^2 = .09$. We found the same pattern for the upper bound of the valuation range, as those in the buyer condition indicated a lower value ($M = 3.56$, $SD = 1.52$) than those in the seller condition ($M = 4.67$, $SD = 1.79$), $F(1, 245) = 40.24$, $p < .001$, $\eta_p^2 = .14$. Finally, for the subjective deal probability, the data showed that those in the buyer condition indicated a lower likelihood of doing the transaction at the initial valuation outcome ($M = 2.77$, $SD = 1.40$) than those in the seller condition ($M = 4.97$, $SD = 1.53$), $F(1, 245) = 153.42$, $p < .001$, $\eta_p^2 = .39$ (see Figure 2).

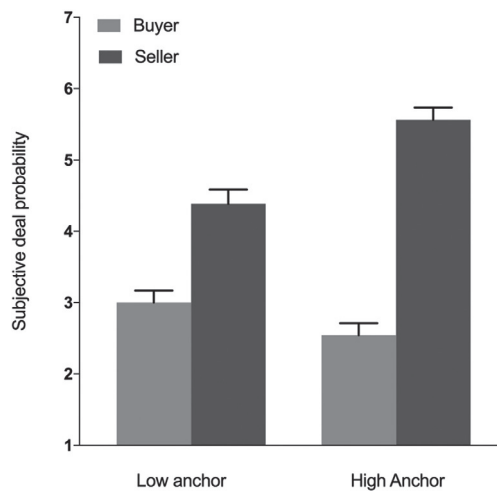


Figure 2. Average values of the subjective deal probability scores for each anchor, separated by position condition. Scores below the midpoint (4) indicate that the participants believed it to be unlikely they would go forward with the transaction, and scores above the midpoint indicate the participants believed it to be likely they would go forward with the deal.

The effect of anchor was also significant for all dependent variables. Those in the low value anchor condition believed the valuation should be adjusted downwards to a lesser extent ($M = 3.44$, $SD = 1.43$) than those in the high value anchor condition ($M = 2.94$, $SD = 1.46$), $F(1, 245) = 10.05$, $p = .002$, $\eta_p^2 = .04$ (see Figure 3).

3 We used eta-squared (or partial eta-squared when using multiple predictors) as a measure of effect size, which represents the proportion of variance in the dependent variable that can be explained by the independent variable, and this value thus ranges between 0 and 1.

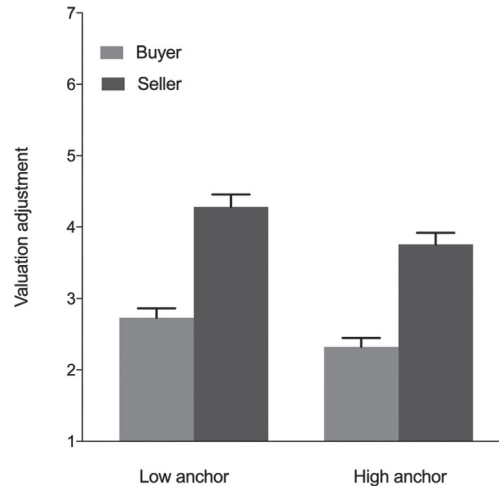


Figure 3. Average valuation adjustment for participants in the low value and high value anchor condition, separated by position (buyer vs. seller). Scores below to midpoint (4) indicate adjustments downwards and scores above the midpoint indicate adjustments upwards.

Similarly, those in the low value anchor condition indicated a lower value for the lower bound of the valuation range ($M = 2.13$, $SD = 0.90$) than those in the high value anchor condition ($M = 3.44$, $SD = 1.54$), $F(1, 245) = 77.02$, $p < .001$, $\eta_p^2 = .24$. The same pattern emerged for the upper bound of the valuation range, as those in the low value anchor condition indicated a lower value ($M = 3.17$, $SD = 1.37$) than those in the high value anchor condition ($M = 4.95$, $SD = 1.61$), $F(1, 245) = 102.39$, $p < .001$, $\eta_p^2 = .30$ (see Figure 4).

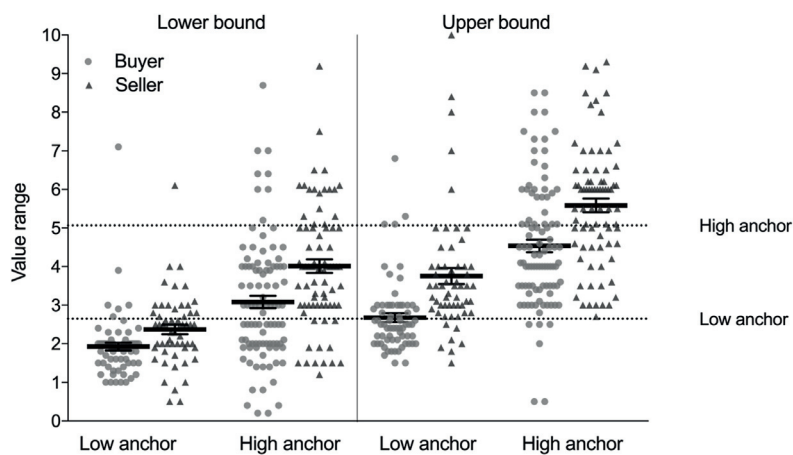


Figure 4. Individual data points for the dependent variables measuring the lower bound (left pane) and upper bound (right pane) of the indicated valuation range, for participants in the buyer condition (circles) and seller condition (triangles), separated by the value of the anchor (low value vs. high value). The two horizontal dotted lines represent the value of the high anchor (2.647M) and the low anchor (5.067M) as presented in the valuation report.

Finally, for the subjective deal probability, the data showed that those in the low value anchor condition indicated a slightly lower likelihood of doing the transaction at the initial valuation outcome ($M = 3.64$, $SD = 1.59$) than those in the high value anchor condition ($M = 3.92$, $SD = 2.02$), $F(1, 245) = 4.10$, $p = .044$, $\eta_p^2 = .02$ (see Figure 2).

The interaction effect between the position and anchor factors was significant only for the lower bound of the valuation range, $F(1, 245) = 4.17$, $p = .042$, $\eta_p^2 = .02$, and for the subjective deal probability, $F(1, 245) = 41.12$, $p < .001$, $\eta_p^2 = .08$ (all other F s < 1). Analyses decomposing these interaction effects show that the effect of position on the lower bound of the valuation range was significant for both the low value anchor, $F(1, 122) = 7.98$, $p = .006$, $\eta_p^2 = .06$, and for the high value anchor, $F(1, 123) = 16.80$, $p < .001$, $\eta_p^2 = .12$, but the effect size of the latter was twice as large as that of the former. For the subjective deal probability, the results show that the effect of position was significant for both the low value anchor, $F(1, 122) = 28.47$, $p < .001$, $\eta_p^2 = .19$, and for the high value anchor, $F(1, 123) = 154.38$, $p < .001$, $\eta_p^2 = .56$, but the effect size of the latter was roughly three times as large as that of the former.

Additional Analyses

We ran two analyses to test whether the above effects were dependent on the degree to which participants identified with the character of the shareholder. First, we ran the same MANOVA as above, but this time we included the variable that represented whether the participant identified with the shareholder (coded as 1) or not (coded as 0). None of the interaction effects (two-way interactions with anchor and position or three-way interaction with all three factors) were significant (F s < 1). This suggests that participants were affected by the anchor and the position of the entrepreneur irrespective of whether they identified with the entrepreneur whose position they adopted. Second, due to the continuous nature of the similarity variable, we ran moderation analyses for each dependent variable using Hayes' Process (10,000 bootstraps), with either the position or anchor as the predictor variable and perceived similarity as the moderator variable. The moderating role of perceived similarity (all p -values $> .32$) was not significant for any of the dependent variables, providing further support that perceived similarity with the entrepreneur does not affect the main findings.

Finally, we tested whether the observed effects of position and anchor were partly dependent on the degree of seniority of the respondents. That is, are more senior and experienced participants more or less affected by position effects and anchoring bias? We ran moderation analyses with either the position or the anchor as the predictor variable and the number of years of experience as the moderating variable. We found no significant interaction effect for any of the dependent variables (all p -values $> .67$) suggesting that the observed effects are independent of the participants' experience.

2.5 DISCUSSION

We set out to investigate whether buyer-seller positions and anchoring effects can explain why, in many business transactions, the parties involved diverge significantly regarding the perceived value of a company or an interest therein, even when these parties have access to the same independent business valuation. We found that entrepreneurs in a seller position tend to perceive the value of a company higher than the buyers. Additionally, entrepreneurs seem to be affected by anchors when judging the value of a company: a relatively high anchor results in a higher perceived value and a relatively low anchor results in a lower perceived value. Importantly, we showed that these effects were independent both of the degree of perceived similarity between the participants and the entrepreneur whose perspective they were asked to adopt, and of the participants' level of professional experience.

This study is to our knowledge the first to investigate whether cognitive biases can explain diverging value perceptions among entrepreneurs. We believe this approach provides a fruitful ground for increasing our understanding of valuation disputes as well as for alleviating the stressors frequently experienced by business valuers when conducting and presenting their valuations.

Theoretical and practical implications

Extensive research has been conducted on cognitive biases in human judgments in general. It is therefore somewhat surprising that relatively little research has focused on cognitive biases among entrepreneurs (Cossette, 2014), particularly because entrepreneurs and corporate executives make important business decisions on a regular basis that can have far reaching consequences for both internal and external stakeholders. The present results are therefore significant in at least two respects. First, this study is the first demonstration of buyer-seller effects in the context of business valuation. We explored several theories that may explain these buyer-seller effects, being the endowment effect, the influence of self-serving biases, and the notion of subjective utility following from the Austrian school. However, we did not aim to identify which of these theories could account for the observed findings. Rather, we aimed to provide a first demonstration of buyer-seller effects in valuation issues, while remaining ambivalent regarding the precise underlying mechanism. It is possible that the current findings can be explained by a combination of the described theories. For example, subjective utility processes may cause an entrepreneur in a seller position to perceive the value of his/her company to be lower than a potential buyer. Nonetheless, self-serving biases may, at the same time, result in a strategic increase in the perceived value to benefit commercial interests. Future research should disentangle such parallel processes.

Second, to our knowledge, no research has yet investigated whether entrepreneurs' value perceptions regarding their businesses can indeed be affected by anchoring bias. Most studies on anchoring bias have been conducted in unrelated contexts, ranging from pricing strategies of consumer goods to legal decisions on awarding damages. Our study shows that anchoring bias can also occur when entrepreneurs assess a company's value such that the value is perceived to be higher following a relatively high anchor versus a relatively low anchor.

Combined, these findings have important theoretical implications for valuation theory and its application. In a perfectly rational world, a business valuation reflects an objective assessment of a company's value, especially in situations when the valuation is conducted by an independent valuator. However, our study shows that no matter how good a valuator's valuation skills are and how well these skills are used when valuing a company, entrepreneurs' perceptions towards a presented valuation outcome can be affected by the position they take in a transaction (i.e., buyer or seller) and by previously presented anchors.

The current findings are all the more important for the different stakeholders in a business transaction (i.e., entrepreneurs, valutors, legal professionals), because in situations where entrepreneurs need to decide whether or not to buy or sell their shares, the results of our research show that their value perceptions can be affected by either the buyer-seller position or a presented anchor. The objectified valuation is implicitly and erroneously given less meaning, which is a threat to the successful completion of a transaction. Moreover, when lawyers are involved in situations in which the value of the company is questioned, or even when their professional opinion concerning a valuation is required, they should take into account that the perspective of the entrepreneur regarding the valuation can be influenced by cognitive biases and possibly less so by the soundness of the valuation.

Finally, the insights gained regarding how entrepreneurs assess a valuation is also relevant for business valutors. With the knowledge that entrepreneurs' value perceptions can be affected by the position they have (i.e., buyer or seller) and by potentially presented anchors, they can anticipate on this by, for example, discussing potentially conflicting value perceptions and their causes at an early stage in order to mitigate the risk that the failure of a transaction will be attributed to the valuator.

In sum, for all stakeholders involved it is relevant to understand what might cause the frequently observed differences in value perceptions between different parties in an intended transaction. Our findings therefore help increase the understanding of these conflicting perceptions. Ideally, if the causes and its effects are identified and discussed at an early stage, differences of opinion regarding a company's value will not end up in lengthy and money consuming conflicts that might ultimately, and most importantly very unnecessarily, cause business transactions to fail.

Limitations and Future Research

We note a number of challenges with respect to our study. First, the anchor used was a relevant anchor in the sense that it consisted of a figure representing the business's value as determined by a professional business valuator. The participants in this study may simply have assumed that the valuation outcome determined by the valuator was an extremely accurate reflection of the company's true value, and therefore they may have only adjusted slightly away from the anchor. Despite the fact that this aspect of the study may be a limitation, the findings following from the current set-up are interesting; it is common for parties in a transaction to hire their own business valuator and the valuation outcomes as determined by these separate valuers will likely serve as anchors for each respective party. If these valuation outcomes differ, which is common, conflicts could arise as the valuation outcomes anchored the parties' value perceptions. Nonetheless, it would be worthwhile to examine whether our findings can also be observed if the anchor stems from more irrelevant sources, such as rules of thumb (e.g., common multipliers) or informal advice from third parties.

Another possible limitation concerns the business case used. Specifically, the case presented to the participants involved two entrepreneurs who were both shareholders in the same company. The strong effects of buyer-seller positions we found in this specific context might be different in situations where the buyer is an outsider. Even though it would be interesting to test this, we see no clear reason for why different effects would be observed if a case is used in which the buyer and seller are unrelated parties, as is the case in for example mergers and acquisitions.

Finally, we addressed the question whether the degree of expertise influences the extent to which entrepreneurs are affected by the biases under investigation. However, our sample mainly included highly experienced senior entrepreneurs and corporate executives, and only a few juniors. The average years of experience was 20.71 with a standard deviation of 10.26, meaning the majority of respondents had over 10 years of professional experience. Therefore, our conclusions regarding the moderating role of expertise should be interpreted with caution.

We encourage future research to not only address the limitations discussed above, but also to explore ways to reduce the influence of cognitive biases on entrepreneurs' value perceptions in practice. We acknowledge the difficulty of debiasing such innate and automatic biases as the ones discussed in this study, but we nonetheless encourage exploring two specific avenues. First, the effects a single figure (e.g., valuation outcome) may have on an entrepreneur's value perception might be mitigated if the valuation assumptions and value drivers are first thoroughly discussed prior to disclosing the resulting valuation outcome. If an entrepreneur understands and ideally agrees with the input a valuator used to arrive at a company's value, that entrepreneur might then also be more likely to accept the ultimate valuation outcome, despite perhaps wishing the outcome was higher or lower (i.e., more in line with the entrepreneur's direct interests).

Hence, we consider it worthwhile exploring how the ways in which valuers present and discuss their findings affect the acceptance of their work, and subsequently reduce disputes around valuations.

Second, we consider it worthwhile exploring the effect that acquiring specific valuation expertise might have on entrepreneurs' susceptibility to outside information (e.g., anchors put forward by third parties). In this study, we only tested the potential effect of expertise in the entrepreneurs' own fields. We suggest investigating what the role of expertise in the valuation domain might have on susceptibility to anchoring bias. If an entrepreneur has a more thorough understanding of the inputs and assumptions of a business valuation, and thus of the complexity of valuations, he or she might be less affected by anchors following from simple rules of thumb such as a multiple of a company's EBITDA. Instead, an entrepreneur with sufficient valuation expertise might be able to judge a business valuation on its own merit, and therefore might simply accept the outcome, provided the valuation was conducted properly.

In short, there may be ways to reduce valuation disputes following conflicting value perceptions by addressing and changing the way entrepreneurs interact with valuers and their work. A better understanding of business valuation by entrepreneurs and a change in the way business valuers present and discuss their work may foster an increased understanding and consequently a higher acceptance of the valuation outcome.

In sum, our study shows that entrepreneurs, as ultimate stakeholders of a business valuation, can be affected by both their position (i.e., buyer-seller position effects) and anchoring bias when judging a business valuation. In many situations, these valuations are debated in a (latent) legal context in which they require counseling by legal professionals. Therefore, in Chapter 3, we examine the role of cognitive bias when judging business valuations and valuers by legal professionals.

Legal Professionals: Similarity, Outcome, and Gender Biases

What makes the bias particularly pernicious is that we all recognize this bias in others but not in ourselves.

– Richard H. Thaler –

Judges, trustees and others in the legal professions, are frequently confronted with divergent views on the outcome of a business valuation. In these situations, they have to form an opinion, and ideally judge the valuation on the basis of the valuator's advice including on the (correct) application of the selected valuation method. In this experimental study (N=272) we examine the relationship between three cognitive biases and legal professionals' opinions concerning valuations and valuations in the sale of an insolvent company. We find that legal professionals judge both valuations and valuations based on (1) the degree of perceived similarity with the valuator (i.e., similarity bias), in the sense that the higher the perceived similarity the more positive the valuator and the valuation are judged, (2) the outcome of the deal (i.e., outcome bias), in the sense that valuations were perceived more negatively after a bad deal, and (3) the valuator's gender (i.e., gender bias), in the sense that male legal professionals place more trust in the ability of a male valuator while female legal professionals did not show this gender bias. We discuss the implications for theory and legal practice.

3.1 INTRODUCTION

Non-aligned or competing interests are plentiful and omnipresent in disputes over the value of a business. Consider, for example, the transfer of shares following a shareholder dispute, where the parties disagree about the (loss of) share value, resulting from an unlawful act by a shareholder, where shareholders disagree about the amount of damage that has arisen. Likewise, tax authorities can disagree on the value of a specific company after shares have been transferred within a family circle, or creditors may disagree with company owners over the value of the distressed company when a debt-for-equity swap is proposed in an out-of-court workout deal.

Such disputes not infrequently follow on from divergent views on the fairness of the valuation and/or the quality of the valuator. Even when the value of the shares is determined by a valuator using industry-accepted methods, different stakeholders can still perceive the exact same valuation differently; one stakeholder can consider the valuation too high, another as it being too low. As Dukes (2001, p. 130) observed, "Without transactions between a willing buyer and a willing seller, there must be a way to satisfy

the requirement of fairness.” Since ‘fairness’ is a rather subjective concept, practice shows that we are still a long way from finding solutions to minimize disputes arising from a business valuation.

There have been numerous litigations involving business valuations, making them the subject of lengthy and costly legal proceedings. For example, in 2017, the Delaware Court of Chancery in the United States of America (i.e., a non-jury trial court specialized in settling disputes involving fairness decisions for different types of business entities) produced more than 230 opinions and orders, involving (among others) companies listed on the New York Stock Exchange and NASDAQ (“Opinions and Orders,” 2018). In Europe, where commercial courts settle complex, international, commercial disputes involving legal and financial experts, the number of civil cases brought to court has also been significant. For instance, in 2005, 17 Dutch courts appointed 205 financial expert witnesses in total; this figure did not even include experts appointed by the litigants (De Groot & Elbers, 2008). Disputes involving business valuations are numerous and often brought into the legal domain.

There is a tendency to solve domestic and cross-border disputes by using alternative methods instead of going to court. Methods such as arbitration, binding advice procedures, or business mediation are becoming more popular, possibly as a result of the speed at which a dispute can be solved, or the globalization of trade and investments requiring decisions independent from national justices. Nonetheless, in alternative dispute resolutions, many legal professionals (e.g., attorneys, trustees, tax lawyers) are involved. Hence, legal professionals are also frequently confronted with cases involving business valuations, in or out of the courtroom.

Although it is to be expected that differences of perception and opinion towards a business valuation predominately occur among individual stakeholders and their lawyers, in many cases legal professionals such as judges and trustees are also confronted with complex valuation issues. In these situations, legal professionals have to form an opinion on the business valuation and, ideally, they judge the valuations solely on the basis of the correct application of the selected valuation method. The tried and tested methods, such as the widely accepted Discounted Cash Flow (DCF), are however vulnerable to ‘errors’ in the associated inputs (Bancel & Mittoo, 2014), and sensitive to underlying (valuation) assumptions (e.g., Ben-David et al., 2007; Cassia, Plati, & Vismara, 2007; Damodaran, 2006b; Green, Hand, & Zhang, 2016; Oded & Michel, 2007; Steiger, 2008). This makes a business valuation a highly technical exercise requiring advanced quantitative and financial skills. The question arises whether legal professionals are really capable of judging a valuation on its own merit, as they are usually not formally trained or qualified in the field of business valuation. Still, legal professionals (have to) form opinions on valuations and valuers.

Given that judging a business valuation on its technical accuracy is a complex process, we investigated on which grounds – other than the actual quality of a valuation or valuator – legal professionals (either as a represen-

tative of a stakeholder, or as a representative of the court) evaluate valuers and their valuations. Specifically, we aimed to examine whether cognitive biases can influence the way in which both valuers and valuations are perceived by legal professionals. Importantly, we did not seek to investigate whether valuations (i.e., the valuation inputs) as such were affected by cognitive biases, but we investigated whether perceptions of business valuations and valuers could be affected. In this way, we sought to add to the existing literature on heuristics and biases in judicial proceedings by examining cognitive biases in a business valuation context. This specific legal context, which to our knowledge has thus far not received any research attention, is important as legal professionals frequently have to deal with complex financial and technical matters requiring specialized knowledge. Biased perceptions of a valuer or a valuation outcome may play a role in producing erroneous legal judgments and, consequently, bring considerable financial and/or emotional harm to the parties involved.

3.2 THEORY AND HYPOTHESES

The effects of heuristics and biases on decision making are widely recognized across a range of business contexts. For example, in financial markets, the behavior of the market is characterized by selling winning stocks too early and holding losers too long as people are reluctant to realize losses (i.e., the disposition effect; Shefrin & Statman, 1985). Moreover, security markets show under- and overreaction as a result of investor overconfidence and biased self-attribution, i.e., attributing successes to personal skills and failures to factors beyond their control (e.g., Daniel et al., 1998). In the context of a business valuation, overconfidence of investors typically results in overvaluing the value of a particular firm (e.g., Nikolic & Yan, 2014). Ample evidence thus exists to support the notion that humans are influenced by biases when making financial decisions.

While a great deal of research has been conducted on cognitive bias in legal decision making, such as in discrimination and equal employment opportunity (e.g., Krieger, 1995), tort law (e.g., Peters Jr., 2000; Robbennolt & Studebaker, 1999), and lawmaking (e.g., Eskridge & Ferejohn, 2002), little is known about how biases affect legal professionals in the context of disputes involving business valuations. Given the clear research interest for biases in the fields of both financial decision-making (e.g., Adebambo & Yan, 2018; Anderson, Lowe, & Reckers, 1993; Daniel & Hirshleifer, 2015; Daniel et al., 1998) and legal decision-making (Englich & Soder, 2009; Helm, Wistrich, & Rachlinski, 2016) we suspect that biases can affect the way in which legal professionals perceive and judge business valuations and valuers. As such, we focus on three well-known cognitive biases: similarity bias, outcome bias, and gender bias, of which the existence has been established in the legal decision-making literature (e.g., Gardner et al., 2013; Hodgson & Pryor, 1984; Oeberst & Goetzenjan, 2016).

3.2.1 Similarity Bias

Similarity bias is usually conceptualized as prejudices towards and a biased perception of another individual based on sharing certain traits with that individual (Vivian Chen, Lee, & Yvonne Yeh, 2008). Similarity bias is strongly associated with in-group bias: the phenomenon of evaluating and treating people in an own group more favorably than those outside the own group (Tajfel, 1970). Sometimes these two phenomena are treated as a single concept. Despite the overlap, a distinction can be made. Whereas similarity bias typically pertains more to similarity based on individual identities and/or characteristics, in-group bias focuses more on similarities based on collective identities (Brewer & Gardner, 1996; Triandis, 1989).¹

Similarity bias has been shown to affect perceptions and judgments across different contexts. For example, similarity between supervisors and subordinates has been shown to affect subordinates' job satisfaction, performance and pay ratings, such that these are more positive when the perceived similarity is stronger (Turban & Jones, 1988). Compliance with a request has also been shown to be affected by similarity bias. When undergraduates were asked to comply with a request to read an essay and provide feedback, those who had a similar birthday, a similar first name, or similarities in their fingerprint as the requester (i.e., a woman who served as experimenter), were more likely to comply with the request to provide feedback than participants who did not perceive an incidental similarity with the requester (Burger et al., 2004).

Similarity bias has been demonstrated in various settings, such as (1) hiring decisions (Vivian Chen et al., 2008), (2) cooperative behavior (Balliet et al., 2014), and (3) legal decision-making (Epstein, Parker, & Segal, 2018). Regarding the latter, it has been shown that minority participants showed positive in-group biases when evaluating the culpability of rape offenders, where perpetrators were judged to be guilty more often when the rape victim was of the same ethnicity as the participant (Rector & Bagby, 1997). Similarity in terms of religious background has also been shown to affect jury decision making. That is, jury members who saw themselves as similar to the defendant, were typically less certain of the defendant's culpability (Miller, Maskaly, Green, & Peoples, 2011). Also, mock jury members perceived an expert witness as more credible when they also perceived the expert witness to be more similar to themselves in terms of personality (Gardner et al., 2013). Importantly, these effects appear not only to be limited to lay people (i.e., jury members), they also affect legal professionals. Specifically, justices' votes in US Supreme Court freedom-of-expression cases reflected their personal preferences toward the speech's ideological grouping (i.e., conservative or liberal), concluding that US

1 We acknowledge the differences between in-group bias and similarity bias. For the sake of simplicity, we refer to biases resulting from perceived similarity (based on group membership or not) as similarity bias.

Supreme Court judges are affected by in-group biases (Epstein et al., 2018). In sum, similarity bias affects judgments and decisions in a wide range of contexts; legal decision-making is not exempt.

A central theme in the literature on similarity bias is the effect that perceived similarity has on the perceived trustworthiness of others. For example, the findings relating to hiring decisions, cooperative behavior, and legal decision-making, all seem to indicate that a heightened degree of perceived similarity is accompanied by a higher degree of trust. This is supported with evidence for the link between perceived similarity, trust, and perceived trustworthiness. For example, Cazier, Shao, & Louis, (2007) found that value congruence (i.e., perceived similarity of values between consumers and e-businesses) was positively associated with perceived trustworthiness. Racherla, Mandviwalla and Connolly (2012) presented evidence on the relationship between perceived consumer-reviewer similarity and trust in online product reviews. In the context of judging valuations we expect that trust plays an important role. For example, if a legal professional has a high degree of trust in the valuator due to a high degree of perceived similarity, this level of trust might subsequently translate to a high degree of trust in the valuator's work. However, whether similarity biases indeed affect legal professionals' trust in valutors and their valuation is open to question.

Importantly, within the context of financial decision making, very little is known about the potential influence of similarity bias. Nonetheless, research shows that venture capitalists (1) evaluate opportunities more favorably when these are represented by entrepreneurs who 'think' in ways similar to their own, and (2) they tend to favor teams that are similar to themselves in type of training and experience (Franke, Gruber, Harhoff, & Henkel, 2006; Murnieks, Haynie, Wiltbank, & Harting, 2011). Moreover, recent work has shown that when financial analysts perceive a CEO to be similar to themselves in terms of personality, they will issue more positive forecasts of the CEO's company than when they perceive the CEO to be dissimilar (Becker, Medjedovic, & Merkle, 2019). Notwithstanding the limited research in this specific area, the available evidence suggests that in financial decision-making, people can be susceptible to similarity bias. Therefore, it stands to reason that legal professionals' perceptions of valuations and of valutors can also be affected by similarity bias. Similarity bias is disadvantageous for valutors as they might run the risk of being unduly blamed for an unfavorable outcome or being excluded from future work despite the quality and soundness of their work. It may also ignite (unjustified/costly) legal battles.

Based on this reasoning, we expect the level of (perceived) similarity between valutors and legal professionals to affect the perceived trustworthiness of the valuator as well as trust in the valuation. More specifically, we expect that the higher the perceived similarity between a legal professional and a valuator, the more trustworthy the valuator will be perceived, and, consequently, the more trust the legal professional will have in the valua-

tor's valuation. Hence, we expect perceived trustworthiness of a valuator to mediate the relationship between perceived similarity and trust in the valuator's valuation. The notion that perceptions of trustworthiness can be affected by the degrees a person is perceived as similar by an observer has been established (e.g., Cazier et al., 2007; Lui, Ngo, & Hon, 2006; Racherla et al., 2012; Yildiz, 2014). For example, even when people only match in terms of facial features, this is sufficient to increase perceived trustworthiness among interaction partners (DeBruine, 2005; Farmer, McKay, & Tsakiris, 2014), as well as subsequent cooperation (DeBruine, 2002; Kret, Fischer, & De Dreu, 2015; Krupp, DeBruine, & Barclay, 2008). This leads to the following hypotheses:

Hypothesis 1a: There is a positive relationship between legal professionals' perceived similarity with a valuator and their trust in the valuation.

Hypothesis 1b: Perceived trustworthiness of the valuator mediates the positive relationship between perceived similarity and trust in the valuation.

3.2.2 Outcome Bias

Outcome bias is the tendency to take the outcome of a certain decision into account when evaluating that decision, in a way that is irrelevant to the true quality of the decision (Baron & Hershey, 1988). Outcome bias is seen as a largely subconscious cognitive distortion produced by the observer's knowledge of an (adverse) outcome (Hugh & Dekker, 2009).

In other words, people tend to judge the quality of an earlier decision for a large part on its outcome, rather than on evaluating the elements that led to the decision.²

A substantive body of literature describes the effects of outcome bias across a range of different contexts. For example, research shows that the worse the consequences of a particular accident are, the greater the tendency to assign higher levels of responsibility and blame to the initiator (Baron & Hershey, 1988; Walster, 1966).

2 Although outcome bias is often conflated with hindsight bias, which is the perceived likelihood or foreseeability of an event as perceived by a retrospective observer who knows how things turned out (Fischhoff, 2003; Hugh & Dekker, 2009), these are different types of biases. Whereas outcome bias entails being influenced in a broad sense by outcome information when evaluating a particular decision or action such that these are judged more negatively in case of an adverse outcome and more positively in case of a favorable outcome (Baron & Hershey, 1988), hindsight bias specifically concerns the perceived predictability of a certain outcome that is affected by outcome knowledge. Therefore, outcome information affecting judgments of decision quality does not constitute hindsight bias, as it does not concern likelihood or foreseeability judgments.

In a similar vein, Gino, Moore, & Bazerman (2009) demonstrate that people condemn unethical behavior more strongly and assign greater levels of blame when the (randomly generated) outcome of the behavior has detrimental consequences relative to when people are unaware of the behavior's consequences. Likewise, in a medical context, people perceived the same decision (e.g., a surgeon decides to operate on a patient) to be lower in quality if it leads to a bad outcome (the patient dies) rather than a good outcome (the patient survives), all else being equal (Sezer, Zhang, Gino, & Bazerman, 2016). In financial decision making, it has been demonstrated that when people judge the quality of an auditor after an adverse outcome (i.e., business failure), auditor negligence is rated higher when individuals are aware of the outcome compared to when these individuals remained ignorant of the outcome (Kadous, 2000; Peecher & Piercey, 2008). Also, when finance managers had to evaluate their agents' investment strategies and assign bonuses accordingly, they evaluated the same strategy more favorably when it resulted in a good payoff, even if they otherwise had a negative perception of the investment strategy (König-Kersting, Pollmann, Potters, & Trautmann, 2017). Hence, people may use outcome information when assigning blame and praise, rather than focusing on more critical factors such as detecting whether the individual actually caused and intended the outcome (Siegel, Crockett, & Dolan, 2017).

The observations discussed above conflict with rationality standards such as those described by rational decision theorists and those incorporated in some legal doctrines (Mazzocco, Alicke, & Davis, 2004). Nonetheless, outcome bias can be found in legal decision-making. For example, in evaluations of medical negligence, it appeared that these negligence evaluations were strongly influenced by knowledge of an adverse outcome where the same actions of a medical specialist were evaluated less harshly if there was ignorance of any adverse outcome (Hugh & Dekker, 2009). Outcome bias has, thus, been well established in legal decision making (e.g., Harley, 2007; Kamin & Rachlinski, 1995), even among professional judges (e.g., Anderson, Lowe, & Reckers, 1993; Kneer & Bourgeois-Gironde, 2017). Specifically, when judges were asked to judge whether a certain outcome was brought about intentionally, higher ratings of intentionality were given in case of an adverse outcome, and even more so in case of a severely adverse outcome, providing clear evidence for outcome bias among professional judges (Kneer & Bourgeois-Gironde, 2017). This is unsurprising, as overcoming outcome bias is difficult. Research shows that outcome bias is present at an early age and therefore is expected to be robust and persistent at mature ages (Berg-Cross, 1975; Wellman, Larkey, & Somerville, 1979). Indeed, so-called debiasing strategies appear to be ineffective due to the robustness of outcome bias (Hugh & Dekker, 2009).

Given the substantive evidence for outcome bias in a wide range of contexts, it stands to reason that valuers might also be judged on the basis of the outcome of a situation (e.g., a dispute or a deal) in which a valuator's valuation is involved. Specifically, we aimed to investigate whether

legal professionals are affected by information of the outcome of a deal that involves a valuation. Importantly, the influence of outcome bias can be disadvantageous for valuers as it may result in more negative perceptions of both the valuation and the valuator should the outcome of a deal be unfavorable. Hence, valuers might be exposed to the risk of being unduly blamed for an adverse outcome involving a valuation and be excluded from future work or even be held liable for the deal's outcome, despite the quality and soundness of their work. Based on the available evidence discussed above we formulated the following hypothesis:

Hypothesis 2: Valuers will be evaluated more negatively following an undesirable outcome of a deal, and more positively following a desirable outcome of a deal.

3.2.3 Gender Bias

Gender bias entails the automatic (conscious or unconscious and positive or negative) prejudice or preference towards a specific gender (Greenwald & Banaji, 1995; Rothchild, 2007). This bias has been studied in a range of different contexts, such as career success, corporate and female leadership, and within certain occupational groups such as teachers, scientists and lawyers. In corporate careers, the phenomenon of gender bias has been recognized by, among others, Kanter (1977) who studied the determinants of career success for both men and women. She argued that women experience poor career opportunities in an 'inhuman' workplace dominated by men where women are greatly disadvantaged, a situation which can also be destructive for the men. More recent research shows that female leaders can experience increased threat when in leadership positions in industries or organizations where women are rare, where gender stereotypes are made visible, and in organizational cultures that stimulate competition and success (Hoyt & Murphy, 2016). Importantly, a large part of the gender bias and discriminatory treatment that women receive in the workplace is based on gender stereotypes rather than on actual differences between the sexes (Heilman, 2001). Interestingly, it is not only men who are susceptible to gender bias; within the context of female leadership, a somewhat surprising type of gender bias has been identified, the 'Queen bee syndrome'. This occurs when highly successful women aim to defend their position in (male-dominated) organizations by actively disadvantaging other women in their rise to the top (Baumgartner & Schneider, 2010; Derks, Van Laar, & Ellemers, 2016; Mathison, 1986). The literature reports other examples of gender bias in a corporate context showing that both men and women place a higher trust in their superior when that superior has the same gender (D. Scott, 1983), and that men are often preferred to equally qualified women. Also worth noting is that less experienced managers demonstrate the most conspicuous gender bias (Marlowe, Schneider, & Nelson, 1996), as well as the dominant belief that

men are more competent and have greater status compared to women (Ridgeway, 2001). A consequence of gender bias in a corporate context is that women, in general, experience difficulties reaching the upper echelons of organizations, a phenomenon called the 'Glass ceiling effect'; the invisible barrier that prevents women achieving senior leadership roles (Cotter, Hermsen, Ovadia, & Vanneman, 2001). Yet, when women do manage to enter the boardroom, they are, more than men, often placed in delicate positions making it hard to be successful (Ryan, Alexander Haslam, & Postmes, 2007), possibly stimulating perceptions that women are less competent, thereby (further) strengthening negative attitudes towards the female gender.

Gender bias is also present outside the corporate domain. For instance, students rated teachers they perceived to be female lower than those they perceived to be male, regardless of teaching qualities or the actual gender of the teacher (Macnell, Driscoll, & Hunt, 2015). Furthermore, it was shown that gender bias occurs in federal courts in the US, demonstrated in situations such as courtroom interaction, jury instructions, judicial staffing, and attitudes towards female judges and lawyers (Resnik, 1993). Moreover, attorneys' credibility also seems to be affected by gender bias. Specifically, in a particular study female participants rated a female attorney significantly "less intelligent, less friendly, less pleasant, less capable, less expert, less trained, and less experienced than a male attorney" (Hodgson & Pryor, 1984, p. 483). Contrastingly, male participants did not demonstrate such a gender bias. Finally, in that same study, mock jurors indicated that male attorneys were more likely to be retained as their own personal council than female attorneys (Hodgson & Pryor, 1984). With respect to scientific evaluations, female physicians rated the abstract of a medical research design more positively when the authors were female compared to male authors, whereas male assessors did not show a bias (Johansson, Risberg, Hamberg, & Ran Westman, 2002). At the same time, research has shown that women are perceived (both by men and women) to be less similar to successful scientists regarding personality characteristics than men are (Carli, Alawa, Lee, Zhao, & Kim, 2015).

Interestingly, based on the foregoing, it appears that it is not only men who judge women more negatively; in some contexts women judge other women more negatively, whereas in other contexts they are perceived more positively. Indeed, gender bias is not consistently found among men and women, and differs in as much that people sometimes favor their own gender and at other times the other. Therefore, it is not completely clear how gender bias might affect perceptions on valuers and their valuations. Another reason to be unsure about the existence of gender bias in this context is the ambiguity of the intensity and persistence of gender bias. On the one hand, research shows there is evidence of changing attitudes towards, for example, both female and male leaders, while on the other, a significant proportion of men and women judging their leaders still prefer male to female leaders (Eagly & Karau, 2002; Elsesser & Lever, 2011).

Based on the above, we are unsure whether gender bias plays a prominent role in how legal professionals perceive a valuator, and consequently his/her valuations. Any influence of gender bias is probably disadvantageous for valuers as this may possibly affect perceived trustworthiness. Due to the existence of gender bias, valuers may be at risk of being perceived as incompetent or less capable based on their gender and even be excluded from future work despite the quality and soundness of their work. However, given the mixed findings of gender bias in the literature, and uncertainty regarding changes in attitudes towards men and women in present day society, we did not formulate a hypothesis for this bias, and consider our analyses pertaining to gender bias to be exploratory in nature.

3.3 METHOD

3.3.1 Participants

272 legal professionals in the field of business rescue and insolvency completed an online survey. Participants were members of INSOL International, a global federation of national associations of legal professionals who specialize in turnaround and insolvency.³ Of the participants, 125 reported working as insolvency lawyer (46.0%), 89 as insolvency practitioner (32.7%), 32 as accountant (11.8%), 21 as turnaround/restructuring consultant/manager (7.7%), 17 as trustee, (6.3%), 17 as legal scholar (6.3%), 13 as judge (4.8%), 6 as banker (2.2%), and 13 chose 'other' (4.8%).⁴ To ensure a relevant sample was obtained for our purposes, participants were asked whether they were confronted with decisions in their work that involve valuation outcomes; 83.5% confirmed this.⁵

Despite the fact that the INSOL International members are mainly male, to analyze the differences in gender bias between males and females, we ensured an even split between male and female participants, resulting in a distribution of 126 females (46.3%) and 146 males. The average age of the participants was 45.1 ($SD = 11.5$), and they had an average of 19.1 years ($SD = 11.2$) professional experience. Forty different countries are represented in the sample. The six most represented countries are: the United Kingdom (26.5%), Australia (16.2%), South Africa (9.2%), Canada (5.5%), the United States of America (4.8%), and the Netherlands (4.8%).⁶

3 Roughly 3.000 professionals were approached via e-mail to participate in the survey. Due to the fact that we cannot know for certain that the contact details we used were up to date, we cannot establish with certainty what the final response rate was. Assuming 10% of the details were incorrect, the final sample size amounts to a response rate of around 10%.

4 The sum of these figures equals 333, which is more than the total number of 272 participants due to the fact that participants were allowed to list more than one profession.

5 Results did not differ significantly when only this group was analyzed.

6 See Appendix B1 for a complete overview of the participants' nationalities.

3.3.2 Design and Procedure

We adopted a 2 (Similarity: low vs. high) \times 2 (Outcome: positive vs. negative) \times 2 (Firm: low profile vs. high profile)⁷ between-subjects factorial design. The key outcome variables of interest were (1) the participants' trust in the valuation (belonging to H_{1a} and H_{1b}) and (2) the participants' evaluation of the role the valuator played in bringing about the outcome of the deal (belonging to H₂).

When starting the survey, participants received a general introduction regarding the background of the study and were asked to answer several demographic questions regarding their gender, age, nationality, profession, experience in their profession, and whether their work involved making decisions based on valuation outcomes. Participants were then presented with the first part of a case concerning a business that recently went bankrupt, and for which a trustee was appointed to settle the estate. In the case, the trustee hired a valuator to determine the value of the company's assets prior to engaging in negotiations with potential buyers. Participants were asked to put themselves in the shoes of the appointed trustee, and to evaluate the valuation and role of the valuator from the perspective of the trustee handling the estate.

Following the first part of the case, participants were presented with three questions that aimed to measure the participants' perceived similarity with the valuator. This was followed by three questions to measure the valuator's perceived trustworthiness. In addition, participants were asked four questions that measured the participants' trust in the valuation itself.

Participants were then presented with the case outcome (i.e., the second part of the case), in which a deal was closed for all the company's assets to enable a relaunch of the company's activities. Half of the participants received an outcome in which the deal turned out to be very good and the other half was presented with an outcome describing a bad deal. Next, participants were asked questions to capture their perception of the valuator's role in bringing about the good or bad deal.

Finally, participants were asked whether English was their native language (yes = 68.0%), and if not to what extent they properly understood the case and subsequent questions. Participants answered on a 7-point Likert scale ($M = 6.52$, $SD = 0.68$) ranging from "Strongly disagree" (1) to "Strongly agree" (7).

7 For exploratory reasons this factor was incorporated to determine whether the biases under investigation only manifested in case the valuator worked for either a high profile or low profile firm. In section 3.3.3. this will be further explained.

Participants were then debriefed and given the opportunity to provide feedback and note their e-mail address so they could be informed of the study's results.⁸

3.3.3 Materials and Measurements

Part one of the case: similarity and profile manipulations (H_{1a} and H_{1b}). The fictitious case (based on a real-world case) described a fairly large company (GBP 100 million turnover, 350 employees) in the fashion industry that recently went bankrupt after the main financiers decided to end funding after years of trying to save the company from bankruptcy. As a result, the creditors were exposed to a deficit of roughly GBP 25 million and a trustee was appointed by the court to settle the estate and manage a possible relaunch (i.e., going-concern). The trustee aimed to sell the company's assets and activities for at least GBP 25 million to minimize any shortage of the estate and the creditors also believed that this result would be realistic. A private equity firm (PE-firm) was interested in buying the company's assets and, prior to starting negotiations with the PE-firm, the trustee hired a valuator to value the assets of the company (i.e., the company's enterprise value).

The case provided information about the background of the valuator, i.e., first factor, which was either designed to match (in the high similarity condition) or to mismatch (in the low similarity condition) with participants. Specifically, for those in the high similarity condition, the valuator had the same gender as the participant (i.e., Laura Matthews for female participants, and Andrew Matthews for male participants), and the same age (i.e., "in his/her thirties if the participant was between 30-39 years old, "in his/her forties" if the participant was between 40-49 years old, etc.). In the low similarity condition, the gender of the valuator was the opposite to the participant's and the valuator's age was as far away from the participant's age as possible. If the participant was younger than 45, the case stated that the valuator was "in his/her sixties", and if the participant was 45 years or older, the valuator was "in his late-twenties". The valuator's educational and professional background were kept consistent across the two conditions.

A second variable factor was the valuator's current employer, either a low-profile firm (i.e., a small, local valuation firm) or high-profile firm (i.e., an international Big Four firm). This factor was included for exploratory reasons to determine whether the biases under investigation only manifested in case the valuator worked for either a high-profile or low-profile firm.

8 We reported all manipulations, all data exclusions, and all measures in our study, so we note that two short sets of questions (10 in total) on free will and quality of sleep, and six general questions unrelated to the case on valuation practices in general, were excluded from the analyses. These questions were pilot questions for a parallel research project.

Finally, the case mentioned that the valuator determined the (enterprise) value of the company's assets using the DCF-method, and that the assets were valued at GBP 18.25 million, roughly GBP 7 million short of preventing the estate's deficit (total debt GBP 25 million). The full case can be found in Appendix B2.

Independent variable: Perceived similarity. In addition to manipulating similarity, we measured *perceived similarity* for two reasons. First, this allowed us to check whether the manipulation of similarity was successful, as this would mean that the perceived similarity would be significantly higher in the high similarity condition relative to the low similarity condition. Second, we wanted to examine the effect of both actual (i.e., manipulated) similarity and perceived similarity on trust in the valuation through its effects on perceived trustworthiness of the valuator. Previous research has shown that perceived similarity is typically a much stronger predictor of attitudes and behavior than actual similarity (e.g., Ferris & Judge, 1991; Strauss, Barrick, & Connerley, 2001; Tidwell, Eastwick, & Finkel, 2013; Turban & Jones, 1988). This is because in order for similarity biases to manifest, an observer must first actually consider another person to be similar (Byrne, 1971).

The perceived similarity scale (Cronbach's $\alpha = .84$) consisted of the following three items: "I believe I have a similar character as the valuation professional, [Laura/Andrew] Matthews", "I believe I have similar norms and values as the valuation professional, [Laura/Andrew] Matthews", and "I believe that, in general, I am very similar to the valuation professional, [Laura/Andrew] Matthews". Participants were asked to indicate the extent to which they agreed with each statement on a 7-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (7).

Mediator: Trustworthiness of valuator. The perceived trustworthiness of the valuator was measured using three items (Cronbach's $\alpha = .77$), each representing one of the three dimensions of trustworthiness, "ability", "benevolence", and "integrity", as put forward by Mayer, Davis and Schoorman (1995). The item measuring ability was: "I trust that the valuation professional, [Laura/Andrew] Matthews, is competent in the field of business valuation and is able to make a solid forecast for the purpose of this valuation". The item measuring benevolence was: "I trust that the valuation professional, [Laura/Andrew] Matthews, has an eye for the issues that are important in this case and that [she/he] will do [her/his] utmost best to meet me in my objectives". The item measuring integrity was: "I trust that the valuation professional, [Laura/Andrew] Matthews, is a person of integrity and will be fair to me in [her/his] considerations towards the value of the assets". Participants again responded on a 7-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (7).

Mayer and Davis (1999) created a scale of five or six items to measure each of the three trustworthiness components, however we had three reasons to limit the scale to a single item per component. First, based on a pilot study in which we included all 17 items from Mayer and Davis' (1999) trustworthiness scale, we learned that the participants considered it to be difficult, if not impossible, to answer so many questions about a person they

did not know, and for whom they had received little information. Second, we wanted to focus on those items relevant to the context of business valuation and, therefore, excluded the more generic items created by Mayer and Davis (1999). Third, given that the sample consisted of legal professionals with little time available to participate in our research, we aimed to keep the survey as short as possible to ensure sufficient completed surveys.

Dependent variable: Trust in the valuation. We measured participants' trust in the valuation outcome using four items (Cronbach's $\alpha = .67$). Considering the importance of risk taking in trusting behavior (e.g., Mayer & Davis, 1999) we aimed to measure participants' trust in the valuation outcome by including questions asking participants how likely they believed they would perform certain actions involving risk based on the valuation outcome. Specifically, we asked participants (1) "How likely do you consider it to be that you would accept the valuation outcome and start negotiating with the PE-firm based on [Laura/Andrew] Matthews's valuation of GBP 18 million?", and (2) "How likely is it that you would consult a second valuator to check the valuation outcome as determined by [Laura/Andrew] Matthews, realizing there are additional costs to a second opinion that will affect the estate?". Participants answered on a 7-point Likert scale ranging from "very unlikely" (1) to "very likely" (7). The other two items of the scale were (3) "I trust that the valuation outcome is representative of the market value of the assets", and (4) "To what extent do you believe it is justified to try to determine a higher valuation outcome by arguing the outcome with the valuator, [Laura/Andrew] Matthews?". Participants answered both items on a 7-point Likert scale with the first question ranging from "strongly disagree" (1) to "strongly agree" (7), and the second from "very justified" (1) to "very unjustified" (7).

Since the internal consistency of the scale was below the benchmark range of .70-.80 (Lance, Butts, & Michels, 2006) we conducted exploratory factor analysis (EFA) to see if the four items appeared to measure a single construct. The EFA identified one single factor and all four items loaded on the factor satisfactorily. Moreover, the observed Cronbach's alpha was considered sufficient for theory-testing purposes (Nunnally & Bernstein, 1994). Hence, based on the internal consistency in combination with the EFA we believe it is safe to assume the four-item scale is a valid measure of participants' trust in the valuation outcome.

Part two of the case: outcome manipulation (H_2). After the questions concerning perceived similarity, trustworthiness of the valuator, and trust in the valuation, participants were presented with the outcome of the case (either a positive or a negative deal), i.e., the third factor in the $2 \times 2 \times 2$ between-subjects factorial design.

The positive outcome described a situation in which the negotiations with the PE-firm were slow and difficult, and that other parties refrained from making a bid when they learned the company's total assets were valued at GBP 18 million. However, in the end, the deal was closed at GBP 18 million, and the creditors felt satisfied believing this deal was probably the best they could have gotten out of the situation.

In the negative outcome scenario, it was described that the PE-firm accepted the GBP 18 million offer instantly, and the trustee was later approached by other parties who indicated they were willing to pay GBP 25 million and above for the company's assets. Because of this, the creditors reported feeling frustrated as they believed a good enough deal to cover the entire deficit of the estate would have been feasible.

Hence, the difference between the two outcome scenarios was the ease with which the deal was closed, and the creditors' and major stakeholders' reactions to the deal (i.e., either happy or frustrated).⁹

Dependent variable: Evaluation of the valuator's role. We aimed to investigate the effect of outcome bias on the evaluation of the role the valuator played in bringing about the outcome of the case. That is, are valuers judged more negatively after a suboptimal outcome (i.e., bad deal) and more favorably after a fortunate outcome (i.e., good deal)? We used three separate measures (i.e., not a single scale). First, participants were asked: "To what extent do you consider the valuation professional, [Laura/Andrew] Matthews, to be blameworthy or praiseworthy for the end result of the case (i.e., closing the deal at GBP 18 million)?" , answered on a 7-point Likert scale ranging from "very blameworthy" (1) to "very praiseworthy" (7). Second, participants were asked to indicate to what extent they agreed or disagreed with the following statement: "I believe that the valuation professional, [Laura/Andrew] Matthews, did [her/his] utmost best to determine a value according to the best of [her/his] knowledge and belief". Third, participants were presented with the statement: "Considering the outcome of the deal, I believe I would hire the valuation professional, [Laura/Andrew] Matthews, next time again".

These last two statements were answered on a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7).¹⁰

3.4 RESULTS

Data Preparation

Considering the importance of reading the case and the details regarding the valuator properly, we determined *a-priori* the exclusion criterion spending at least 60 seconds reading the case. Even though this is a relatively arbitrarily, we considered it a lenient cut-off criterion given it would require a reading speed of 16.8 standard deviations (1 *SD* = 30 words/minute) above the average reading speed ($M = 228$ words/minute) in the

⁹ Both the positive and negative outcome scenario can be found in Appendix B3.

¹⁰ A fourth item was presented, but in hindsight we realized that this item was phrased sub-optimally. Participants may have had difficulties interpreting this question. Therefore, the item was excluded from the analysis. The item was: "I believe that the end result of the case (i.e., closing the deal at GBP 18 million) is due to the work of the valuation professional, [Laura/Andrew] Matthews".

English language (Trauzettel-Klosinski & Dietz, 2012) to complete the case of 733 words within 60 seconds. Eleven participants (4.0%) were excluded from the analyses, resulting in a final sample of 261 participants. Importantly, this did not affect the findings as similar effect sizes and significance p -values were found when the entire sample was analyzed.

Similarity Bias

We tested the hypothesis that trust in a valuation can be explained by the perceived similarity between the valuator and the legal professional judging the valuation (H_{1a}), and that this relationship is mediated by the perceived trustworthiness of the valuator (H_{1b}). We first conducted a manipulation check to see whether the similarity manipulation affected the perceived similarity of the valuation professional. An independent samples t -test indicated that those in the High Similarity condition indeed perceived the valuator to be more similar to themselves ($M = 4.07$, $SD = 1.05$) than those in the Low Similarity condition ($M = 3.56$, $SD = 1.07$), $t(259) = -3.84$, $p < .001$, Cohen's $d = .48$, suggesting the manipulation of similarity was successful.

Next, we used PROCESS (Hayes, 2018) with 10,000 bootstrap samples to investigate whether similarity (manipulated and perceived) predicted the participants' trust in the valuation, and whether this relationship was mediated by the valuator's perceived trustworthiness. When using manipulated similarity as the predictor variable (again using Hayes' Process for a mediation analysis), no significant total effect was found on the participants' trust in the valuation, $b = 0.11$, $SE = .13$, $p = .39$, 95% CI [-0.15, 0.37]. When perceived similarity was used as the predictor variable, however, perceived similarity was found to predict trust in the valuation. The total effect for the relationship between perceived similarity and trust in the valuation was $b = 0.24$, $SE = 0.06$, $p < .001$, 95% CI [0.13, 0.36], thus supporting hypothesis 1a. This latter relationship was mediated by the perceived trustworthiness of the valuator, as indicated by a significant indirect effect of 0.12, $SE = 0.03$, 95% CI [0.06, 0.18], supporting hypothesis 1b. Table 3 shows the model coefficients for the presumed trustworthiness influence.

Table 3. Unstandardized regression coefficients (b) of a linear regression, standard errors (SE) and p -values for the proposed mediation model with perceived trustworthiness of the valuator (M) as the mediator of the relationship between perceived similarity (X) and trust in the valuation outcome (Y).

	M (Trustworthiness)			Y (Trust in valuation)		
	b	SE	p	b	SE	p
X (Perceived similarity)	0.25	0.05	< .001	0.13	0.06	.026
M (Trustworthiness)	-	-	-	0.48	0.07	< .001
Constant	4.14	0.20	< .001	0.88	0.35	.013
	$R^2 = .089$			$R^2 = .214$		
	$F(1, 259) = 25.32$, $p < .001$			$F(2, 258) = 35.06$, $p < .001$		

We conducted a second mediation analysis in which the valuator's firm profile (high profile vs. low profile) was included as a moderator variable for each of the mediation model's paths, in order to explore whether the relationships between perceived similarity, perceived trustworthiness, and trust in the valuation were dependent on the valuator's firm profile. Analysis showed that none of the moderation effects were significant (all p -values $> .46$).

Outcome Bias

We tested the hypothesis that participants' evaluation of the valuator's role in bringing about the deal's outcome was affected by the desirability of the deal, and whether this effect was dependent on the reputation of the valuator's firm. First, a Multivariate Analysis of Variance (MANOVA) was conducted with the deal outcome condition (positive vs. negative) and the valuator's firm profile (low profile vs. high profile) as independent variables (including the interaction term), and the three separate items measuring the evaluation of the valuation professional's role in bringing about the deal outcome as dependent variables. The MANOVA returned a significant effect for the deal outcome condition, $F(3,255) = 35.51, p < .001, \eta_p^2 = .30$, but not for the valuator's firm profile nor for the interaction between these two factors ($F_s < 1$). That is, the effect of the deal outcome on the evaluation of the valuator's role in the outcome was independent of the profile of the valuator's firm.

Subsequent univariate analyses (ANOVA) revealed significant effects of the deal outcome condition for all three dependent variables (Table 4). For all variables, a higher score represents a more positive evaluation and a lower score a more negative evaluation. In case of a negative deal outcome, participants believed the valuator deserved blame for the outcome of the deal as indicated by a score below the midpoint ($M = 3.64$), whereas a positive deal outcome showed that the participants believed the valuator deserved praise ($M = 4.49$). Likewise, in case of a positive outcome, participants believed more strongly that the valuator did her/his utmost best to determine a value according to the best of her/his knowledge and belief ($M = 5.35$), than when the case ended negatively ($M = 4.81$). Results also showed that participants believed they would rehire the valuator in case of a positive deal outcome as indicated by a mean score above the midpoint ($M = 4.49$), whereas they believed they would not rehire the valuator in case of a negative outcome ($M = 3.50$). Hence, the results indicate that participants are affected by the outcome of the deal when evaluating whether the valuator should be praised or blamed, whether the valuator did her/his best, and whether they would rehire the valuator in the future. Hypothesis 2 is thus supported.

Table 4. Descriptive statistics and significance tests for the univariate analyses (ANOVA) for the effects of deal outcome on the three dependent variables.

Dependent Variables	Negative outcome (N=129)		Positive outcome (N=132)		F(1, 259)	p	η^2
	M	(SD)	M	(SD)			
Blame/Praise	3.64	(0.79)	4.49	(0.85)	69.76	< .001	.212
Effort	4.81	(1.15)	5.35	(1.00)	16.56	< .001	.060
Rehire	3.50	(1.34)	4.94	(1.14)	87.61	< .001	.253

Additional analysis

Interestingly, in addition to the effect of the deal outcome, the perceived similarity with the valuator also affected the participants' evaluation of the valuator. As Table 5 shows, multiple linear regression analyses indicate that when the outcome condition and perceived similarity are included as predictor variables in a stepwise approach, the model with both predictor variables explained significantly more variance (for Blame/Praise, Effort, Rehire) than the model in which only the deal outcome was included.

Table 5. Unstandardized regression coefficients (b), standard errors (SE), and p-values of the multiple regression models with Deal Outcome condition and Perceived Similarity as predictor variables of the dependent variables Blame/Praise, Effort, and Rehire.

	Model 1			Model 2		
	b	SE	p	b	SE	p
Blame/Praise (DV)						
Deal outcome condition (negative = 0, positive = 1)	.85	0.10	<.001	.85	0.10	<.001
Perceived Similarity	-	-	-	.11	0.05	.019
	$R^2 = .212$ $F(1, 259) = 69.76, p < .001$			$\Delta R^2 = .017$ $F(2, 258) = 5.59, p = .019$		
Effort (DV)						
Deal outcome condition (negative = 0, positive = 1)	.54	0.13	<.001	.54	0.13	<.001
Perceived Similarity	-	-	-	.26	0.06	<.001
	$R^2 = .060$ $F(1, 259) = 16.56, p < .001$			$\Delta R^2 = .063$ $F(2, 258) = 18.46, p < .001$		
Rehire (DV)						
Deal outcome condition (negative = 0, positive = 1)	1.44	0.15	<.001	1.44	0.15	<.001
Perceived Similarity	-	-	-	.31	0.07	<.001
	$R^2 = .253$ $F(1, 259) = 87.61, p < .001$			$\Delta R^2 = .055$ $F(2, 258) = 20.61, p < .001$		

Hence, it appears that not only did the participants have more trust in the valuation due to higher perceptions of trustworthiness of the valuator if the valuator was perceived as more similar to themselves, this perceived similarity with the valuator also predicted participants' judgments regarding whether the valuator deserved blame or praise, whether the valuator did her/his best and whether they would rehire the valuator.

Gender Bias

With our analyses, we aimed to investigate whether the perceived trustworthiness of the valuator described in the case was dependent on that valuator's gender. Moreover, we explored whether a gender bias was present for both the male and female participants in our study. We used an ANOVA with the perceived trustworthiness of the valuator as the dependent variable, and the gender of the valuator described in the case and that of the participant as independent variables. However, this did not return a significant interaction effect between these two variables, $F(1,257) = 2.43, p = .12, \eta_p^2 = .01$, nor any main effects. This suggests that no gender bias exists in perceived trustworthiness, for either male or female participants.

However, further exploratory analyses revealed that when we focused on the separate components of trustworthiness (i.e., ability, benevolence, integrity), a gender bias was present. The three items corresponding to the three dimensions of trustworthiness were subjected to a MANOVA with both the gender of the valuator and the participant (and their interaction) as independent variables. The results showed a significant effect for the interaction between these gender variables, $F(3,255) = 2.70, p = .046, \eta_p^2 = .03$, but not for the main effects. When further probing this interaction effect, subsequent univariate analyses indicated that a significant interaction effect was only present for the item measuring trust in the valuator's ability, $F(1,257) = 6.53, p = .011, \eta_p^2 = .03$. Simple main effect analyses showed that male participants had more trust in the valuator's ability when the valuator was also male ($M = 5.30, SD = 1.05$) than when the valuator was female ($M = 4.77, SD = 1.10$), $F(1,138) = 8.52, p = .004, \eta_p^2 = .06$. Contrastingly, female participants showed no difference in their judgments of the valuator's ability based on the valuator's gender, as their perception of the male valuator's ability ($M = 5.13, SD = 1.22$) was not statistically different ($F < 1$) from their perception of the female valuator's ability ($M = 5.31, SD = 1.13$).

Based on these findings, using a moderated mediation analysis, we further explored (see Figure 5) whether the gender bias affected trust in the valuation through its effect on trust in the valuator's ability.

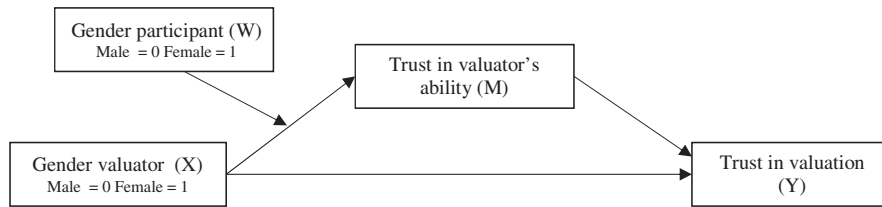


Figure 5. Moderated mediation model of the relationship between the gender of the valuator (X) and trust in the valuation (Y) as mediated by trust in the valuator's ability (M), moderated by the gender of the participant (W).

Table 6. Unstandardized regression coefficients (b), standard errors (SE) and significance levels (p) for the proposed moderated mediation model with Trust in the valuator's ability as the mediator (M) of the relationship between the Valuator's gender (X) and Trust in the valuation outcome (Y), with the Participant's gender as the moderator (W).

Antecedent	Trust in valuator's ability (M)			Trust in valuation (Y)		
	b	SE	p	b	SE	p
Gender valuator (X)	-0.53	0.19	< .01	-0.08	0.12	.50
Trust in ability (M)	-	-	-	0.40	0.05	< .001
Gender participant (W)	-0.18	0.20	.37			
X*W	0.71	0.28	.01			
Constant	5.30	0.14	< .001	1.77	0.27	< .001
	$R^2 = .039$ $F(3, 257) = 3.48, p = .017$			$R^2 = .187$ $F(2, 258) = 29.73, p < .001$		
Antecedent	Trust in valuator's ability (M)					
	b	SE	p			
Male participants (W) N=140						
Gender valuator (X)	0.53	0.19	< .01			
Female participants (W) N=121						
Gender valuator (X)	0.18	0.20	.37			

Table 6 shows heightened trust in the valuator's ability when both the participant and valuator were male. This mediated the relationship between the gender of the valuator and the participant's trust in the valuation, as indicated by a significant moderated mediation effect, Index = .29, 95% CI [.06, .54]. That is, the gender of the valuator predicted the participants' trust in the ability of the valuator (more trust in the male valuator), and this subsequently predicted the trust in the valuation, but only if the participant was male, as indicated by a significant indirect effect for this group of -0.21, SE = 0.08, 95% CI [-.37, -.06], and the fact that no significant indirect effect was found for female participants, 0.07, SE = 0.09, 95% CI [-.09, .25]. When the participant's gender was not included in the model as a moderator, the indirect effect of the valuator's gender on the trust in the valuation through

the perceived trust in the valuator's ability was not significant, -0.08 , $SE = 0.06$, 95% CI $[-0.19, 0.03]$.

3.5 DISCUSSION

We investigated the extent to which legal professionals are affected by outcome bias, similarity bias, and gender bias when evaluating the trustworthiness of valuers, their valuations, and the roles these valuers play in bringing about the outcome of a deal. We found that when legal professionals evaluate a valuator after using his/her valuation report for the sale of a bankrupt company's assets, the outcome of the deal affects the legal professional's opinion of the valuator. In the case of a good deal, the valuator is perceived in a more positive light, whereas the same valuator is perceived more negatively after a bad deal. This effect is independent of the profile of the valuator's firm. We also found that if a valuator was perceived by legal professionals as being more similar to themselves, they also perceived the valuator as more trustworthy, and in turn have more trust in his/her valuation. Perceived similarity thus indirectly influences the legal professional's trust in the valuation through its effect on the trustworthiness of the valuator. Interestingly, in the case of higher perceived similarity, legal professionals are also more positive about the valuator's role in the deal as they are more likely to rehire the valuator in the future, believe more strongly that the valuator deserves praise (or less blame in case of a bad deal), and believe more strongly that the valuator did her/his best in valuing the assets of the company. In addition, we found that male professionals had more trust in the ability of a valuator when the valuator was a male. This heightened trust in the valuator's ability also predicts trust in the valuation. Female professionals do not show gender bias in their perception of a valuator's ability.

Implications

Our research shows that legal professionals can be influenced by extra-legal factors when evaluating valuers and their valuations. This study thereby contributes to the literature on biases in legal decision making by demonstrating that similarity bias, outcome bias, and gender bias can be manifest in the context of a business valuation used in an insolvency proceeding.

We found empirical support for the notion that legal professionals can be susceptible to similarity bias when dealing with complex valuation matters, thereby building on previous research on similarity biases in legal decision-making (e.g., Epstein et al., 2018; Gardner et al., 2013; Miller et al., 2011; Rector & Bagby, 1997). Moreover, empirical support was found for the notion that when legal professionals have to evaluate valuers, they can be affected by outcome knowledge where a bad deal outcome causes them to perceive the valuator more negatively. This finding is in line with research on outcome bias in the legal context (e.g., Anderson et al., 1993;

Harley, 2007; Kamin & Rachlinski, 1995; Kneer & Bourgeois-Gironde, 2017). Specifically, we found empirical support for gender bias among legal professionals where male participants have more trust in the valuator's ability when the valuator was male compared to when the valuator was female. This is in line with studies demonstrating that males favor other males (e.g., Fay & Williams, 1993; Macnell et al., 2015; Marlowe et al., 1996; Moss-Racusin, Dovidio, Brescoll, Graham, & Handelsman, 2012), but in contrast with research showing that females are harsher when judging men (e.g., Johansson et al., 2002).

Equally important are the practical implications of our research. In business, the interests of stakeholders are frequently unaligned. Consequently, many disputes between stakeholders involve or even focus on a valuation. In their capacity as representative of the stakeholders' interests, or as independent experts representing the court, legal professionals are confronted with valuation reports and valuation issues, and they must form opinions about the valuation and the valuator. In an ideal world, the evaluation of valuers and valuations is solely based on the quality of the valuation, and the correctness of the applied valuation framework. Following our premise that it is unlikely that all legal professionals are able to judge valuations on their form and content, other factors are expected to influence legal professionals' perception towards valuations and valuers. As our study shows the effects of extra-legal influences such as the perceived similarity with the valuator, the outcome of the deal, and the gender of the valuator, our findings cast doubt on the idea that, in practice, business valuations are predominantly judged by the quality and robustness of the valuation.

An important implication of our findings is that, regardless of whether a valuation is demonstrably correct, complies to all (theory-based) valuation standards and requirements, and is free from valuation input biases, both the valuation and the valuator can be judged as inadequate, and vice versa (i.e., demonstrably incorrect valuations can be considered adequate due to cognitive biases). In this context it can be stated that "value is in the eye of the beholder": a good valuation and a competent valuator can be perceived as poor while a poor valuation and an incompetent valuator can be perceived as good.

Considering that personal traits, interests, and perceptions are more difficult to neutralize or eliminate in valuation discussions rather than discussions on valuation technics, our findings are highly undesirable for both stakeholders and valuers. Current debates, disputes and legal battles about or involving valuations may be conducted on improper grounds and even unnecessarily extended, which is not beneficial for any stakeholder. Moreover, valuers might be unduly judged and perceived as less competent or incompetent, and might even be alleged as less or not trustworthy. Importantly, worldwide valuation practice nor legal practice currently offer clear answers to counter this problem.

Although certainly most valuers spend great efforts when conducting professional valuations to enhance the acceptance of their valuations, we

suspect that these efforts alone neither mitigate biases nor the conflicting interests of parties in valuation disputes. Both valuation professionals and legal professionals must be more aware of the effects of biases as these can enlarge the magnitude of a dispute, and can ignite new disputes.

We therefore emphasize the importance of the development of new approaches and methods to reduce the impact of biases in perceptions on valuers and their valuations.

Limitations and Future Research

Our findings are based on an ecologically valid sample with realistic study materials that included a real-world business case as well as a summary of a valuation report. Taken together, these factors benefit the external validity and overall generalizability of the research. We nonetheless acknowledge certain limitations.

An arguable weakness of the study is the compressed manner in which the financial and valuation assumptions were presented. Although participants gave positive feedback on the presented case, we acknowledge that it is difficult to establish with certainty that our findings are fully generalizable. For practical reasons, the participants were presented with a brief description of the content of the valuation report and not with a complete valuation report. Hence, we cannot exclude the possibility that results would be different if detailed valuation report was presented. We consider this to be less likely as we suspect that many legal professionals are not suitably trained to be able to analyze and fully grasp a complete valuation report, or that they generally do not have the time to do so. Moreover, we presented a case that concerned an insolvent company of which the total assets and activities were sold to simulate a (fresh) 'going-concern' situation.¹¹ It remains an open question whether our findings can be generalized to different cases outside the context of restructuring and insolvency, which might be dealt with by legal professionals other than the restructuring and insolvency specialists in this study. Possibly, participants would be affected differently by the examined biases in case of a normal continuity of the company, as we cannot exclude the possibility that as a result of knowing the negative outcome (i.e., the company went bankrupt) participants were already pessimistic and pressured by their task to maximize sales proceeds. However, given that cognitive biases are largely universal, we suspect that legal professionals with a different legal focus will be similarly affected. Nonetheless, future research should investigate the generalizability of the current findings across legal contexts.

Another possible limitation concerns the probability that the gender of the valuator was confounded with the valuator's age. Specifically, if male participants were presented with a male valuator, this valuator was also in the same age category (i.e., thirties, forties, etc.) as the participants.

11 Meaning a situation in which the company as a whole is relaunching/continuing its activities, but is relieved of its debts.

Likewise, if the participant was male and the valuator female, the valuator's age was different from that of the participant. Hence, it could be that the observed findings can be explained by a bias that people might have that favors people of (roughly) the same age relative to people further removed in terms of their age. To our knowledge, no such bias exists that favors people of the same age. Nonetheless, it is possible that the combined similarity in terms of age and gender affected the trust in the valuator's ability, rather than the valuator's gender per se. Future research should further investigate the observed gender bias in a legal professional's trust in the valuator's ability, to test whether it is truly a bias based on a valuator's gender, or whether the valuator's gender and age combined signal a high or low level of similarity with the valuator.

A potential issue concerns the observation that in the current research only perceived similarity predicted the perceived trustworthiness of the valuator and trust in the valuation outcome. For the manipulated similarity (based on the participants' gender and age) no such effects were found. A possible explanation for this finding is that the manipulation of similarity was insufficiently strong to produce any effects on the variables of interest. The manipulation check did show that participants in the 'similar' condition perceived the valuator to be more similar to themselves than participants in the dissimilar condition, but even participants in the similar condition scored approximately on the midpoint of the scale, suggesting they did not perceive the valuator to be very similar. Previous research has shown that perceived similarity is generally a stronger predictor of behavior than actual similarity manipulated by the experimenters (e.g., Ferris & Judge, 1991; Strauss et al., 2001; Tidwell et al., 2013; Turban & Jones, 1988). This is thought to be because in order for similarity biases to manifest, an observer must first actually consider another person to be similar (Byrne, 1971). Hence, despite the difference in perceived similarity based on the assigned condition, measuring perceived similarity could be a better way to capture the similarity between participants and (in this case) valutors, and that it can thus better predict behavior, attitudes, or other variables of interest.

Our research paves the way for future research to explore the effects of the same biases when presenting a more extensive valuation report to the sample, when using a context of business continuity instead of insolvency. Moreover, we advise researchers to explore the effect of gender bias when considering the valuator's gender in isolation rather than in combination with age. We also raise the question of what should and could be done to limit or even avoid biases when judging valutors and valuations in practice. We propose developing new evaluation techniques and methods, as well as actively training legal experts to recognize biases when judging both valutors and valuations; this should result in a better understanding of valuations in a legal context.

In this chapter, we explored the role of cognitive biases among legal professionals when judging business valuations and valutors. Legal professionals are important advisors to entrepreneurs on events and deci-

sions when their interests are at stake. We show that legal professionals can be affected by similarity bias, outcome bias, and gender bias. Naturally, the next question would be, do biases also play a role in the judgment of business valuers themselves as they fulfil a pivotal role in the valuation exercise? Therefore, in Chapter 4, we examine the role of cognitive biases among business valuers.

Business Valuators: Anchoring and Engagement Biases

The direction and magnitude of the bias in a valuation is directly proportional to who pays the valuator and how much that valuator is paid.

– Aswath Damodaran –

Business valuations of the same company made by different valuers frequently diverge significantly, often resulting in capital destructing disputes. Previously, the valuation literature sought to explain and resolve diverging views predominantly in the valuation itself and in economic theories, or the valuator's skills. In contrast, our study shows the importance of recognizing the psychological aspects that affect value perceptions. With the goal of increasing valuation 'fairness' and minimizing disputes, we aimed to find an explanation for valuation disputes by investigating the role of cognitive biases in valuers' judgments of valuations. Across two studies (N=363), we found evidence for the notion that valuers are influenced by anchors (i.e., anchoring bias) and their clients' interest (i.e., engagement bias; being affected by a client's interests when forming judgments, or in this case, conducting valuations) when judging the value of a company. Specifically, both anchoring bias and engagement bias manifest themselves when judging valuations by valuers. Consequences of these biases in valuation practice can include suboptimal investment decisions and advice, possibly resulting in causing or extending discussions around valuation outcomes that ultimately can degenerate into lengthy and costly disputes. These findings cast doubt on the notion of fair value in business valuations.

4.1 INTRODUCTION

People want to be informed on the value of a company or an equity interest therein for many reasons. Consider, for instance, a company that wants to acquire another company, sell a subsidiary, or one following a divestment strategy. In these situations, an informed investment decision has to be made, in most cases based on the (economic) value of the relevant company. Not only in situations of buying and selling companies is it important to be well-informed on a company's value, also in situations where shareholders have a dispute and want to separate, or when a company experiences financial distress and its shareholders are requested to provide additional equity, does valuation play a prominent role. Hence, valuations often take center stage in many business transactions. The widely respected investor Warren Buffett once said "If business schools could offer just one course, it would not be on stock trading, the efficient market hypothesis, or modern portfolio

theory. Rather, B-schools should be encouraging students to learn the boring, but critically important, discipline of business valuation.” (Buffet, 2012).

In most situations, value is derived from expectations regarding a company’s or asset’s future earnings, because the acquirer or investor will have to recoup his/her investment in the future. Therefore, valuation theory is predominantly based on the concept of interest, and on capitalizing or discounting future earnings (Edwards & Warman, 1981; Fisher, 1907, 1930; Parker, 1968; Rutterford, 2004). In sum, a dollar today has a higher value than a dollar received tomorrow. Not only corporate finance specialists such as business valuers embrace this valuation concept, also judicial authorities, such as the U.S. Supreme Court, state in many decisions that the value of a company depends on expected future earnings (Dukes, 2001). Although there are different valuation methods (e.g., Brealey, Myers, & Allen, 2014; Damodaran, 2006; Dukes, 2001; Fernández, 2007; Hitchner, 2011; Koller, Goedhart, & Wessels, 2015), a widely accepted and preferred valuation method that takes into account expected future earnings is Discounted Cash Flow (i.e., DCF; see for example Dittmann, Maug, & Kemper, 2004; Fernández, 2004, 2007; Mukherjee, Kiyamaz, & Baker, 2004; Pereiro, 2002). This concept gained momentum decades ago partly due to the development of capital budgeting in the US and in Europe (Dulman, 1989). The DCF-method has different variants¹ and consists of two main variables. The first variable concerns the company’s estimated future earnings, predominantly expressed in the free cash flows.² The second variable concerns the ‘discount rate’ that reflects the riskiness of the estimated free cash flows. When these two variables are known, the application of a relatively simple but profound equation calculates the present value of a company. A generally accepted definition of free cash flows is cash that is not required for operations or reinvestments (Brealey et al., 2014; Jensen, 1986) and therefore available (i.e., free) after funding the necessary investments required to generate the future free cash flows. These will then be discounted to their net present value at a discount rate that reflects the risk of the free cash flows and serves as a compensation for investing under conditions of uncertainty (Miller & Modigliani, 1961; Modigliani & Miller, 1958).

The DCF-valuation methodology is, at first sight, a simple and elegant solution to calculate the future value of a company discounted to its present value. However, practice shows that when two or more business valuers value the same company (assuming all things are equal), different valuation outcomes can emerge.³ Minor differences in valuation outcomes are

1 For example: WACC (Weighted Average Cost of Capital), APV (Adjusted Present Value), CFE (Cash Flows to Equity), or FCF (Free Cash Flows to the Firm).

2 For the purpose of this research we consider a company as a whole and not an individual asset or a group of assets.

3 The Dell case, as described in Chapter 1, is a good example of this (*Memorandum Opinion: In re Appraisal of Dell Inc.*, 2016). In *re Appraisal of Dell Inc.*, No. 9322-VCL, 2016 WL 3186538, at *1-114 (Del. Ch. May 31, 2016).

to some extent inevitable due to the application of different assumptions in the valuation framework and are generally accepted as an inherent consequence of using the DCF-method. Large differences, on the other hand, can be problematic and difficult to explain. Extensive disputes around valuation outcomes are frequently not beneficial to the financial performance of a valuation object and, ultimately, the object's value can be affected by the time and attention a dispute demands. Additionally, strong deviations in assumptions may result in an under or overvaluation of a company which influences the quality and soundness of investment decisions (e.g., buy or sell), as well as contributing to potential capital destruction. Hence, in an ideal world, differences in valuation outcomes are minimized. Therefore, in order to be able to mitigate large differences in valuation outcomes, the ultimate question is: what causes these differences in valuation outcomes? One cause that has been put forward is that when applying a DCF-method, valuers disagree on how to estimate the parameters and inputs (i.e., cash flows and the discount rate) of the valuation due to a lack of clear guidelines (Bancel & Mittoo, 2014). Additionally, there is a lack of consistency in the valuation process (Dukes, 2001). As a result, differences in estimations can arise both in the projected cash flows and in the individual elements of the discount rate, possibly resulting in an under or overestimation of a company's value, which is then disputed. However, it is unlikely that large differences in valuation outcomes (such as in the Dell case; Chapter 1.) can solely be accounted for by these issues, which is why we consider the further exploration of potential causes of large differences in valuation outcomes and subsequent disputes as something worthwhile.

The focus of this study is the potential influence of human biases. Considering the inherent complexity of valuations, the lack of clear guidelines, as well as the time-pressure under which valuations are usually conducted (conditions that allow for biases to emerge; Tversky & Kahneman, 1974), we expect that valuers are vulnerable to the influence of cognitive biases. Valuation experts have long argued that valuations are indeed inherently biased (e.g., Damodaran, 2009, 2017), primarily with respect to the valuation input variables. Surprisingly, however, despite the numerous studies that have been conducted investigating the role of heuristics and biases in judgment and decision making in a wide range of (financial) contexts, the valuation domain has (to our knowledge) not yet been subjected to this type of research.

4.2 THEORY AND HYPOTHESES

Heuristics and biases in finance

The notion that humans can be affected in their judgments and decisions by factors that should, if they were to behave fully rationally, not have any bearing on these judgments and decisions, has found ample empirical support. In the early seventies of the last century, Tversky & Kahneman

(1974) revealed the powerful effects of heuristics and biases on human judgments, particularly in situations characterized by high degrees of complexity and uncertainty. In such situations, biases can unconsciously influence perceptions of reality and expectations regarding the future.

The effects of heuristics and biases in financial decision making are well documented. For example, it has been established that financial decisions are plagued by overconfidence on behalf of decision makers (e.g., Ferris, Jayaraman, & Sabherwal, 2013; Ho, Huang, Lin, & Yen, 2016), that investment strategies are typically affected by over optimism (e.g., Wang, Sheng, & Yang, 2013), and that the similarity between start-up teams and venture capitalists can affect the latter's investment decisions so that teams that are perceived as more similar are more likely to receive funding (Franke et al., 2006; Murnieks et al., 2011), just to name a few. Studies such as these have contributed to the emergence of the behavioral finance research field. This subfield of behavioral economics focuses on investigating irrational behavior in financial markets and consumer finance resulting from systematic human errors (Baker & Wurgler, 2013; Barberis & Thaler, 2003; Shiller, 2003; Thaler, 2005). Hence, the idea that humans can act in a systematically irrational manner when dealing with complex financial matters is well established.

Biases in business valuation

To our knowledge no empirical research has been conducted investigating the influence of biases on business valuations. This gap is surprising considering (1) the large number of studies conducted on biases in other areas of financial decision making, and (2) the central role that the concept of economic value plays in corporate disputes, mergers and acquisitions, and other investment decisions. In our study, we investigate the potential influence of two biases. The first is the anchoring and adjustment bias, which entails the tendency to use an initial piece of information as an (possibly irrelevant) anchor and subsequently insufficiently adjusting away from that anchor. For example, in the context of business valuation, a valuator may start a valuation after the value for a certain valuation object has been determined by another party; this could be an entrepreneur who wants to sell his/her business for a certain amount, or even another valuator who has already conducted a valuation and requires a second opinion. In these situations, it is possible that the initial figure mentioned serves as an anchor, causing valutors to be biased and to value a company in line with that anchor.

The second bias under investigation in this study is a bias we call "engagement bias", which entails the possibility that valutors (or any professional for that matter) are affected in their judgments as a result of their clients' interests. For example, if a valuator is hired by an investor looking to acquire a company and the investor ideally wants to pay as little as possible, the valuator could then value the share price lower to meet the expectations of the valuator's client. Likewise, if a valuator is hired to value a company

by the owners who are looking to sell the company, and therefore have a clear interest in a high valuation, this could cause a valuator to increase the valuation in line with his/her clients' interests.

Anchoring and adjustment bias

The anchoring and adjustment bias, also called the anchoring effect or anchoring bias, is usually conceptualized as the intuitive tendency of humans to use an initial piece of predominately insufficient and irrelevant information when formulating their final judgment (Tversky & Kahneman, 1974). This bias consists of both an anchoring effect (i.e., a final estimate set against an anchor) and an adjustment effect (i.e., the adjustment to the initial value) (Epley & Gilovich, 2006). Once the anchor is presented, humans tend to adjust insufficiently away from the anchor, resulting in judgments that are closer to the anchor than in the absence of that anchor (Heywood-Smith, Welsh, & Begg, 2008; Russo & Schoemaker, 1992; Tversky & Kahneman, 1992).

In their seminal paper, Tversky and Kahneman (1974) asked participants in an experiment to estimate (among other things) the percentage of African countries in the United Nations (UN). By spinning a wheel of fortune, participants were first presented with a number between 0 and 100 and were asked to indicate whether or not the number determined by spinning the wheel was higher or lower than their estimate of the percentage of African countries in the UN. Next, the participants were requested to adjust the number generated by the wheel of fortune upwards or downwards to arrive at their estimate of the percentage of African countries in the UN. The results showed that the arbitrary numbers (from spinning the wheel) had an effect on the participants' estimates, such that if the wheel landed on 10 the average estimate was 25% while if the wheel landed on 60 the average was 45%. Hence, even with full awareness of the randomness and irrelevance of the numbers generated by the wheel of fortune, participants' estimates were still affected by these anchors.

Since their study, extensive research has been conducted on anchoring bias and the evidence across different contexts suggests it is one of the most robust biases (for a review, see Furnham & Boo, 2011). Importantly, the anchoring bias is not limited to generic, or lay-people's judgments. Rather, research has shown that professionals are also affected by anchoring bias when making judgments relevant to their respective fields. For example, a typical finding among legal professionals (e.g., judges or mock juries) is that when they have to decide on the sentencing of the accused, they are affected by the sentencing demands expressed by the prosecutor, resulting in higher sentences being given following a higher demand (all else being equal; Englich, 2006; Englich & Mussweiler, 2001). This anchoring effect in legal judgments was found even when the sentencing demands (i.e., the anchors) came from an irrelevant source or were randomly determined by the participating legal experts through rolling dice (Englich, Mussweiler, & Strack, 2006). Similar anchoring effects have been found with respect to

awarding punitive damages. That is, the higher the requested amount (i.e., the anchor), the higher the awarded damages (Hastie, Schkade, & Payne, 1999).

In addition to legal professionals, financial professionals have also been shown to succumb to the effects of anchoring bias. For example, when financial market professionals were asked to estimate long-term stock returns, their judgments were affected by the initial starting value which served as an anchor. This effect was independent of the level of expertise of the respective investor (Kaustia et al., 2008). Moreover, auditors have also been shown to be affected by anchoring bias when judging the reasonableness of book values resulting from unaudited book values of which accountants are typically aware and which can serve as an anchor (Kinney, Jr., & Uecker, 1982; for further evidence of anchoring bias among financial professionals, see Liao, Chou, & Chiu, 2013). Hence, it appears that both lay people and experts can be affected by anchoring bias.

Importantly, however, some research indicates that professionals in settings familiar to them rely less on anchors in their judgments. For example, Kaustia et al. (2008) found that financial professionals were less affected by the initial value of stocks (i.e., the anchor) when estimating long-term stock returns than were students. Likewise, Wilson, Houston, Etling, & Brekke (1996) found that people with more knowledge of a particular subject matter were less susceptible to anchoring bias. Thus, although the majority of research suggests being an expert in a certain field is insufficient to be protected from anchoring effects, there is some evidence for the contrary. Therefore, it is relevant to explore to what extent business valuers, as experts in their field, are affected by anchoring bias.

Business valuers (consciously or unconsciously) face an anchor in many different situations. For example, when a business valuator is hired by one of the parties in a shareholder's dispute and is informed on the valuation conducted by the counterparty against which the valuator's client objects, the valuation of the counterparty can serve as an anchor. Likewise, when a business valuator is requested to value a company that his/her client wants to acquire and informs the valuator about the maximum price he is willing to pay, the maximum price mentioned by the valuator's client can serve as an anchor. In another example, when a court requests a business valuator to determine the economic damage as a result of an unlawful act by one of the parties and the business valuator is informed about the amount the claimant had requested, that initial amount can serve as an anchor.

Hence, business valuers frequently operate under conditions in which they are confronted with an anchor, which may then affect their judgment. Notwithstanding the research pointing towards an expert effect that might offer some protection against anchoring effects, based on the robustness of the anchoring bias and its presence in a variety of domains, we suspect that valuers are affected in their judgments by the anchoring bias. Therefore, we formulated the following hypothesis:

Hypothesis 1: Valuers are affected by anchoring bias when judging the value of a company so that they determine a higher value following a high anchor and a lower value following a low anchor.

Engagement bias

Competition between professionals to attract and retain clients can be fierce. Consequently, in order to sustain good relationships with their clients, professionals' continuous pursuit to achieve their clients' satisfaction is not unusual. It is thus plausible that professionals' drive to satisfy clients jeopardizes professional autonomy and unconsciously affects supposedly unbiased and objective judgments. When business valuers (or any professionals) are consciously or unconsciously affected in their judgments to favor their clients' interests, we call this engagement bias.

Acknowledging the risk that valuers might be susceptible to engagement bias is important for the valuation practice, as the possibility exists that clients' interests are somehow factored into business valuations at the expense of focusing solely on valuation theories and the principles of the profession. Similar to other professionals in service industries, business valuers support a variety of clients for different purposes and are exposed to their demands, wishes, and desires. For example, a valuator who is engaged by a prominent client for the first time and is determined to demonstrate his/her capabilities, or a valuator who is promised a follow-up assignment by a client conditional on the success of the current engagement; in both situations their clients' interests might affect valuers' judgment.

Even though the empirical evidence for the existence of engagement bias is practically non-existent, there is reason to believe that professionals weigh their clients' interests at the expense of their professional judgment. For example, following from, among other things, the public debate about the dependence of auditors on their clients, auditors are currently more closely monitored by supervising bodies to prevent them from taking their clients' interests into account. This increased monitoring and the mandatory rotation of audit firms is a consequence of a sequence of auditing scandals where auditors were blamed for tarnishing their responsibilities and their role in society and business by weighing their clients' interests too much in audits. Such measures suggest there is a concern that professionals are biased in their judgments due to their focus on achieving customer satisfaction.

In addition to the indirect evidence for engagement bias among auditors, there is also more direct evidence for this in financial judgments. A recent study investigated whether business relations between mutual funds and brokerage firms influences sell-side analyst recommendations (Firth, Lin, Liu, & Xuan, 2013). The researchers found that brokerage firm analysts' stock recommendations are in fact higher if the stock is held by mutual fund clients of the brokerage firm. Interestingly, this phenomenon strengthened when the weight of the stock in the mutual fund clients' portfolio increased and also when the amount of trading commissions paid by the mutual fund

clients increased. In addition, analysts were less willing to issue a negative rating on a stock after a bad news event if these stocks were held by their firm's mutual fund clients. Importantly, however, this clear engagement bias was reduced when a particular stock was highly visible to other mutual fund investors, suggesting a conscious and strategic use of analyst recommendations. Indeed, analysts appear to be biased resulting from their mutual fund clients' interests, and therefore disclose above average optimistic ratings of their clients' stock portfolio. Thus, evidence suggests that financial professionals might be biased in their judgments resulting from the dependent relationships between them and their clients.

Whether this also holds true within the context of business valuation is a relevant question. Therefore, based on the above, we formulated the following hypothesis:

Hypothesis 2: Valuers are affected by engagement bias when judging the value of a company so that they value a valuation object in accordance with their clients' interests.

4.3 OVERVIEW OF THE STUDIES

We set out to investigate the extent to which business valuers are affected by anchoring bias and engagement bias. The hypotheses were tested in two studies. Study 1 tested the two hypotheses among an international sample of business valuers from leading valuation firms. An experimental study design was used in which participants were assigned to a particular condition that detailed a compressed valuation case. Specifically, participants were either assigned to the condition in which they represented the buyer or the seller in a transaction, and in which they were presented with either a high or low anchor. Hence, there were four different experimental conditions (i.e., buyer/low anchor, buyer/high anchor, seller/low anchor, seller/high anchor). All other aspects of the case were kept constant across the conditions. This experimental research design enables us to isolate the specific influence of the manipulated variables (i.e., client, anchor). In the case, participants were asked to provide a second opinion on an existing valuation report presented in a compressed manner. A compressed valuation report was chosen as it was unfeasible to ask participants to conduct a full valuation themselves, or to assess a full valuation report considering the time constraints imposed by limitations in participants' availability. Nonetheless, conducting second opinions is common practice in the valuation industry and often a first step to an in-depth valuation analysis. In Study 2, a post-hoc study, study 1 was replicated, but with a minor change – the valuation was conducted by an independent valuator – to ascertain that valuator-dependence did not influence the initial findings (i.e., examine the robustness of the observed effects in study 1).

4.4 STUDY 1

4.4.1 Methods

Participants

For this study, 203 business valuation specialists were recruited via e-mail. We targeted the world's leading valuation and corporate finance firms to ensure a sample of highly experienced business valuation experts. For 17 participants, no data was recorded as they failed to pass an attention check, leaving a final sample of 186 participants. Of the final sample, 165 were male (81.3%), the average age was 46.4 ($SD = 13.2$), and the average years of experience in their profession was 17.9 ($SD = 10.7$). Further, 85 (45.7%) had a post-master's degree in accounting, 160 (86.0%) were enrolled or had been enrolled in a specialized business valuation course, and 123 (66.1%) had a post-master's degree in business valuation. When asked about their primary focus in their work, 113 (60.8%) indicated that business valuation was the primary focus, 57 participants (30.6%) answered M&A, and 16 participants (8.6%) answered accounting; 175 participants (94.1%) indicated that they conduct or are involved in business valuations on a regular basis.

In total, 28 different nationalities are represented in the sample. The five countries with the most participants are the United States with 58 participants (31.4%), the Netherlands with 43 (23.3%), Canada with 23 (12.4%), Italy with 10 (5.4%), and South Africa with 8 participants (4.3%). A complete overview of the participants' nationalities can be found in Appendix C1. For 107 participants (52.7%), English was their native language. The non-native English speakers indicated on a 7-point Likert scale whether they understood the questions and experienced no difficulties in answering the questions, ranging from "Strongly disagree" (1) to "Strongly agree" (7). The average score was 6.32 ($SD = 0.97$).

Experimental Design and Variables of Interest

We used a 2 x 2 between-subjects factorial design, with Anchor (low value anchor vs. high value anchor) and Client (seller vs. buyer) as factors; the participants were randomly assigned to one of the four conditions. All participants were presented with the business case and summary of the corresponding valuation report. They were asked to give their opinion on the case and, most importantly, on the valuation outcome. In the low value anchor condition, the value of the company as determined by a DCF-analysis was presented as EUR 4.435 million and EUR 14.324 million in the high value anchor condition. Additionally, participants were assigned to either the role of the valuator representing the buyer in the transaction, or of the valuator representing the seller.

The dependent variables (i.e., the key variables of interest which are hypothesized to be affected by anchoring bias and engagement bias) were first and foremost the extent to which participants would adjust the

valuation upwards or downwards, expressed both qualitatively and quantitatively. Specifically, participants were asked to what extent they would adjust the valuation upwards or downwards (e.g., “heavily downwards” or “somewhat upwards”). In addition, they were asked to quantify the range within which they believed the true value of the company to be, as well as whether they perceived a decline of the business and to what extent they would recommend their client to go on with the transaction. In total, four dependent variables were thus used in the study (see Materials and Measurements).

In addition to these dependent variables measuring the adjustment of the valuation, two other dependent variables were included for exploratory reasons. First, we measured participants’ perceptions of the degree of decline that the business in the case was facing (i.e., “perceived decline”). This variable was incorporated to see whether a certain anchor or a client’s interests could affect a valuator’s perception of the state of a business. If a valuator’s client was aiming to buy shares and would therefore benefit from a low value of the shares, would a valuator then judge a business’s decline as more severe (i.e., resulting in a lower value of the shares) than when a valuator’s client was aiming to sell shares and would therefore benefit from a higher value of the shares? The second variable pertained to whether the participants would, given the initial valuation outcome stated in the report, recommend their client to go forward with the transaction. This variable examined whether the valuation outcome and the client’s interest were important drivers of their final recommendation.

Procedure

The procedure for the survey was the same for all participants. Participants were first presented with a brief introduction stating that the purpose of the survey was to investigate judgment and decision-making processes in the context of business valuation. Anonymity was emphasized as well as the fact that there were no right or wrong answers and that we were solely interested in the participant’s perspective on the case and valuation report. Next, participants were asked to answer questions aimed to measure their locus of strategic control, which is the extent to which participants believe the success of a company is a matter of luck or the result of factors beyond an entrepreneur’s control (i.e., external locus) or rather that success is a matter of careful strategic planning and that luck has nothing to do with it (i.e., internal locus). The locus of strategic control scale was incorporated because research has shown that this factor is correlated with perceived decline (Musteen, Liang, & Barker, 2011) and we wanted to control for this.

Participants were then presented with the business case followed by an attention check to make sure sufficient time was spent going through the case and the instructions. Before the attention check, it was stressed that participants could not move backwards to previous sections of the survey and that if they wanted to have access to the case later on they

could click on a link that would open the case as a PDF file in a separate window. If the attention check was completed successfully, participants were given the assignment as well as a summary of the valuation report. Before participants were asked about their opinion on the valuation report, they answered several questions to measure the perceived decline of the business. They were then asked to give their opinion on the valuation outcome and to indicate whether they would adjust the valuation upwards or downwards (measured on a 7-point Likert scale) and in which range they believed the true value of the company laid. These three variables (i.e., degree of adjustment, lower bound of the range, upper bound of the range) served as the key dependent variables.

The participants then could indicate which elements of the valuation report they believed needed to be adjusted. Underneath each valuation element, a text box was included in which participants were asked to motivate their decisions regarding their adjustment of the valuation outcome. Next, they were asked whether or not they would recommend their client to do the transaction at the value indicated in the valuation report. The final two questions regarding the case aimed to measure 'bias blind spot', i.e., the tendency to recognize and acknowledge biases affecting other people's judgments, while failing to recognize the potential influence of biases in their own judgments (Pronin, Lin, & Ross, 2002). The participants then indicated whether English was their native language and, if not, to what extent they understood the case and subsequent questions. Finally, participants were presented with several demographical questions as well as questions about their professional background.

Materials and Measurements

Business case. Participants were given a brief introduction to the case and their role in it. For all participants these were:

"You will be presented with a real-life case of a company in decline that requires new capital to perform a turnaround. A private equity firm (hereafter: 'PE firm') is interested in investing in this company, which should provide sufficient capital to perform a turnaround. The question now is: what is the value of the company?"

In the "seller" condition, the instructions then continued with:

"To determine the value of the Company, the PE firm hired a valuator. The management of the Company, however, believes the resulting valuation is way too low and suspects the PE firm wants to buy new shares cheap and is too skeptical about the Company's future as reflected in its forecast and underlying assumptions. Therefore, the Company wants to hire a valuator themselves for a quick, high level review. That valuator is you. Please try to really put yourself in the shoes of the valuator that is hired by the Company to have a critical look at the forecast and assumptions made by the PE Firm, as your client (the Company) believes the valuation is too low."

In the “buyer” condition, the instructions continued with:

“To determine the value of the Company, the management of the Company hired a valuator. The PE firm, however, believes the resulting valuation is way too high and suspects the management of the Company is too optimistic about the Company’s future as reflected in its forecast and underlying assumptions. Therefore, the PE firm wants to hire a valuator themselves for a quick, high level review. That valuator is you. Please try to really put yourself in the shoes of the valuator that is hired by the PE firm to have a critical look at the forecast and assumptions made by the Company, as your client (the PE firm) believes the valuation is too high.”

For all participants, the instruction ended with:

“The case is described in a somewhat concise manner and is aimed towards simulating a situation in which you are approached last minute for a quick, high level review and have limited time and information.”

Hence, after the instructions it should have been clear for the participants who their client was (i.e., the Company or the PE-firm), what their client’s opinion was regarding the valuation conducted by the other party (i.e., too high if their client was the PE-firm and too low if their client was the Company), and that they were going to be asked to provide a high-level review of the valuation report made by the other party.

The participants were then given the full case describing a Dutch advertising and marketing agency (“Flagship”) that created large scale marketing campaigns for reputable brands. The company was owned by two shareholders, managed by the CEO, and each shareholder delegated a supervisory board member. As a result of declining sales and increasing costs, both the operating result and net income of the company were negative. The company had struggled to make the transition towards online and technology driven product offerings, for a large part due to its outdated image. As a result, the company would soon face bankruptcy. It was evident the company required new capital to finance a turnaround, but both shareholders had already invested substantially in the past and no longer had access to funds. Therefore, alternative financing options were explored and through a reputable M&A advisor, a private equity firm expressed interest in investing in the company as a third shareholder. The company was reluctant to accept a significant dilution of their interest resulting from issuing new shares but was warned that the PE firm would want to acquire a significant percentage of shares. Regardless, both parties (i.e., the company and the PE firm) agreed that a strong turnaround plan needed to be developed. The CEO and his team defined a roadmap to profitability by increasing sales, reducing costs, efficient management of working capital, and making (catch-up) investments (i.e. operational expenditures).

Here, the first part of the case ended. The details of the turnaround plan as well as the full case can be found in Appendix C2.

Attention check. Considering the importance for the current study that participants knew exactly who their client was and what their client's opinion was regarding the valuation outcome, we incorporated an attention check. Three simple multiple-choice questions were posed: (1) Who is your client, (2) In what industry does the Company operate, and (3) What is your client's opinion regarding the valuation outcome? If the participant answered one or more questions incorrectly, they were offered a second chance to read the case. After the second reading, participants were again presented with the same three questions. If all three were answered correctly, participants could continue with the survey. If one or more of the questions was again answered incorrectly, participants were informed they could not continue.

Assignment. After having read the case and successfully completing the attention check, participants were presented with the second part of the case, which contained the assignment and the valuation report. For participants in the "seller" condition, the assignment read as follows:

"To evaluate the possible investment of GEP (i.e., the PE-firm) and to anticipate on a possible discussion of the share price, GEP hired a valuation firm to conduct a DCF-valuation of the Company, taking into account the effects of the turnaround plan. This valuation is not only of importance to the investment committee of GEP but anticipates as well on the percentage of shares they can receive as a result of a possible equity contribution to the Company. The valuation outcome is [low value anchor vs. high value anchor] and is being shared with the Company under disclosure. By clicking on this link (PDF file), a summary of the valuation report is accessible. In this case, the enterprise value is equal to the shareholder value.

On behalf of the shareholders of the Company, you are being asked to give a quick, high level review of GEP's valuation and their corresponding valuation assumptions. You are informed that the Company representatives, including the SB [Supervisory Board]-members by means of Hofmann and Van Buuren, disagree with the valuation outcome as they consider the outcome to be way too low, and as a representative of the Company's interests, your assignment is to perform a critical and professional review of the valuation. You are aware that the Company hopes that your assessment of the calculated value of the Company is more in line with their own expectations."

For participants in the "buyer" condition the assignment read as follows:

"To evaluate the possible entrance of GEP as a new shareholder and to anticipate a possible dilution discussion, the Company hired a valuation firm to conduct a DCF-valuation of the Company, taking into account the effects of the turnaround plan. This valuation is also the legitimacy for the shareholders of the Company to accept a certain level of dilution. The valuation outcome is [low value anchor vs. high value anchor] and is being shared with GEP under disclosure. By clicking on this link (PDF file), a summary of the valuation report is accessible. In this case, the enterprise value is equal to the shareholder value.

On behalf of the investment director of GEP, Jeffrey Hin, you are being asked to give a quick, high level review of the Company's own valuation and their corresponding valuation assumptions. You are informed that Jeffrey Hin disagrees with the valuation outcome as he considers the outcome to be way too high and as a representative of GEP's interests, your assignment is to perform a critical and professional review of the valuation. You are aware that GEP hopes that your assessment of the calculated value of the Company is more in line with their own expectations."

Valuation report. We chose to only include the key elements of the valuation rather than a full report, and to frame the assignment as a quick, high level review primarily due to the participants' time-constraints. That is, it would not have been feasible to ask participants to generate or assess a complete valuation report from scratch as this would require a large commitment. Nonetheless, the current set-up of a high-level review based on an existing valuation report represents a realistic scenario with which professional business valuers are frequently faced. The generalizability of the current context to a situation in which a valuator conducts a full valuation from scratch is addressed in the general discussion.

The valuation resulted in either EUR 4.435M (low value anchor condition) or EUR 14.324M (high value anchor condition). Each report included (1) a P&L statement, (2) an overview of net working capital, (3) and an overview of tangible fixed assets and investments. All three were done for the past four years (2014-2017) and forecast for the next seven years (2018-2024). Additionally, a balance sheet was included, an overview of the cost of capital, the main valuation assumptions, a graph depicting the net sales and EBITDA over the 2014-2024 period, and the final DCF analysis. The graph of the low value anchor report depicted a moderate increase in sales and EBITDA, whereas the graph for the high value anchor report showed a typical 'hockey stick' projection with steep increases in sales and EBITDA. The full valuation reports presented to the participants can be found in Appendix C3 (low value anchor) and Appendix C4 (high value anchor).

Dependent variables

Valuation adjustment. Participants were asked to indicate on a 7-point Likert scale to what extent they would adjust the valuation outcome upwards, downwards, or keep the outcome as is. The scale ranged from "Adjust heavily downwards" (1) to "Adjust heavily upwards" (7), with the midpoint (4) labeled as "Remain as it is".

Valuation range. Realizing it is difficult to provide a specific adjustment of the valuation, we asked participants to indicate a range within which they believed the enterprise value of the Company laid. Participants used two sliders to indicate what they believed the minimum value should be (slider 1) and what the maximum valuation should be (slider 2). Both sliders had a maximum range of EUR 0-20M and were presented on the same screen. The lower bound of the range (i.e., the minimum value) and the upper bound of the range (i.e., the maximum value) each served as a separate dependent variable.

Perceived decline. Seven questions (Appendix C5) aimed to capture the perceived decline of the business and included items such as “Despite the poor performance of the last few years, Flagship has the means to resolve the challenges presented by its environment” and “Flagship will likely fail any day and declare bankruptcy”. Participants answered on a 7-point Likert scale ranging from “Strongly disagree” (1) to “Strongly agree” (7). Items were recoded so that a higher score indicated the participants perceived the decline as more severe. The seven items were derived from the 18-item scale used by Musteen et al. (2011), which the authors largely based on the work of Jackson and Dutton (1988). The Cronbach’s alpha in the Musteen et al. (2011) study for all 18 items was .75. In our study, Cronbach’s alpha for the seven items was .74.

Recommendation. Participants were asked to what extent they would recommend their client to do the transaction at the value listed in the valuation report. Participants answered on a 7-point Likert scale ranging from “Definitely not” (1) to “Definitely yes” (7).

Control variables

Gender. Considering the unequal distribution of males and females in the sample (165 men, 21 females), gender was entered as a control variable to account for any differences.

Locus of strategic control. The locus of strategic control scale was incorporated as research has shown that this factor predicts perceived decline (Musteen et al., 2011). Similar to the Musteen et al. (2011) study, we based the locus of strategic control items on work by Hodgkinson (1992) who created and validated this scale (see also Ritchie, Anthony, & Rubens, 2004; Ritchie & Sherlock, 2009). However, instead of the 16 items used in these previous studies, we included 10 items in our scale, selected based on the fit with the current context, to reduce the time required to complete the scale. The scale included items such as “Market opportunities in an industry are largely determined by factors beyond a company’s control”, or “Many of the problems experienced by businesses can be avoided through careful planning and analysis” (Appendix C6). Participants answered on a 7-point Likert scale ranging from “Strongly disagree” (1) to “Strongly agree” (7). Items were recoded so that a higher score indicated a more external locus of strategic control.

Musteen et al. (2011) obtained a Cronbach’s alpha of .72, whereas our sample’s internal consistency was .51. An exploratory factor analysis identified three factors based on Eigenvalues above 1. Combined, these three factors explained 34% of the variance. However, the items belonging to the three factors did not clearly represent subcomponents of locus of strategic control, which is why we averaged all the items as a single scale. In previous research, all items were also used to represent a single scale. Still, given the low internal consistency it remains uncertain whether combined the items measured a single construct. Hence, results pertaining to this control variable should be interpreted with caution.

Maturity. Another variable associated with perceived decline is maturity; defined as a combination of age, experience and whether or not someone was pursuing an executive MBA (Musteen et al., 2011). We included both age and experience as separate control variables.

Variables used for additional analysis

Valuation components. Below the sliders used to indicate the valuation range, participants were presented with a list of eight components of the valuation report and were asked to indicate which elements they believed needed to be adjusted. Participants had to indicate at least one, but could choose more than one option. The eight elements were: (1) net sales, (2) EBITDA, (3) CAPEX, (4) net working capital, (5) cost of capital, (6) the length of the forecast period, (7) residual value, and (8) "other".

Bias blind spot. Participants were asked whether they believed the valuator hired by the opposing party was affected in his/her judgments because of their client's interests (0 = yes, 1 = no), and whether they believed they themselves were affected in their judgment because of these interests (0 = yes, 1 = no).

4.4.2 Results

Data Preparation

Considering the importance of reading the case thoroughly and having a good understanding of the business's current situation and future prospects, participants who spent less than 45 seconds reading the case were excluded from analyses. Reading the case consisting of 648 words within 45 seconds would require a reading speed of 21.2 standard deviations (1 $SD = 30$ words/minute) above the average reading speed ($M = 228$ words/minute) in the English language (Trauzettel-Klosinski & Dietz, 2012). As a result, 7 participants were excluded from further analyses, leaving a final sample of 179.

Anchoring and Engagement Bias

First, we conducted a Multivariate Analysis of Covariance (MANCOVA). The variables anchor (low vs. high value) and client (seller vs. buyer) were entered as independent variables, and gender, age, years of experience, and locus of strategic control as control variables. For the dependent variables we included the valuation adjustment, valuation range (lower bound and upper bound as separate variables), perceived decline, and the final recommendation.

Table 7. Pearson correlations for the independent variables, dependent variables, and control variables of Study 1 (N=179).⁴

	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Anchor (0 = Low, 1 = High)			-	-.01	-.07	.48**	.67**	.02	.04	.06	.00	-.04	.03
2. Client (0 = Buyer, 1 = Seller)				-	.50**	.30**	.31*	-.07	.75**	.17*	-.06	-.06	-.08
3. Adjustment	2.53	1.29			-	.50**	.49**	-.23**	.32**	.14	-.07	-.07	.04
4. Value lower bound	4.04	3.72				-	.78**	-.23**	.28**	.13	-.10	-.08	-.07
5. Value upper bound	6.92	4.65					-	-.16*	.28**	.13	-.09	-.11	.06
6. Perceived Decline	4.48	0.82						-	-.06	-.14	.12	.10	.08
7. Recommendation	3.62	2.09							-	.15*	-.10	-.07	-.06
8. Gender (0 = Male, 1 = Female)										-	-.13	-.11	-.07
9. Age	46.17	12.86									-	.84**	.03
10. Experience	18.09	10.65										-	-.00
11. Locus of Strategic Control	3.15	0.58											-

Results showed that there were significant main effects for anchor, $F(5, 167) = 72.30, p < .001, \eta_p^2 = .68$, and client, $F(5, 167) = 56.87, p < .001, \eta_p^2 = .63$, as well as an interaction effect between these two variables, $F(5, 167) = 2.97, p = .014, \eta_p^2 = .08$. Table 7 shows the Pearson correlations for the included variables, and Table 8 shows the results of the MANCOVA.

Table 8. Results of the MANCOVA of Study 1.

Independent Variables	$F(5, 167)$	p	η_p^2
Anchor	72.30	<.001	.68
Client	56.87	<.001	.63
Anchor * Client	2.97	.014	.08
Control variables			
Gender	0.61	.69	.02
Age	0.63	.67	.02
Experience	0.43	.83	.01
Locus of Strategic Control	1.73	.13	.05

Note: the dependent variables were perceived decline, valuation adjustment, valuation range (lower and upper bound as separate variables), and the final recommendation.

4 Values for age and experience (M and SD) differ from those reported under section 4.4.1. (Participants), as seven participants were excluded from the analyses.

Subsequent univariate analyses showed that the main effect for anchor was only significant for the variables measuring the lower bound of the value range, $F(1, 171) = 60.62, p < .001, \eta_p^2 = .26$, and the upper bound of the value range, $F(1, 171) = 181.19, p < .001, \eta_p^2 = .51$. Specifically, participants in the low value anchor condition gave a lower value for the lower bound of the value range ($M = 2.26, SD = 1.48$) than participants in the high value condition ($M = 5.83, SD = 4.40$). The same pattern emerged for the upper bound, as the average value for the upper bound indicated by participants in the low value anchor condition was lower ($M = 3.82, SD = 1.66$) than the value indicated by participants in the high value anchor condition. ($M = 10.06, SD = 4.59$). No such anchoring bias in valuator's judgments was found for perceived decline ($F < 1$), the variable measuring the valuation adjustment in qualitative terms ($F = 1.14$), or the final recommendation ($F < 1$).

The main effect for client was significant for the variables measuring the adjustment of the valuation qualitatively, $F(1, 171) = 53.74, p < .001, \eta_p^2 = .24$, the lower bound of the value range, $F(1, 171) = 20.85, p < .001, \eta_p^2 = .11$, the upper bound of the value range, $F(1, 171) = 37.71, p < .001, \eta_p^2 = .18$, and for the final recommendation, $F(1, 171) = 212.74, p < .001, \eta_p^2 = .55$. For the valuation adjustment, participants representing the buyer believed the valuation should be adjusted downwards more heavily ($M = 1.89, SD = 0.79$) than participants representing the seller (the Company) ($M = 3.17, SD = 1.38$), as shown in Figure 6.

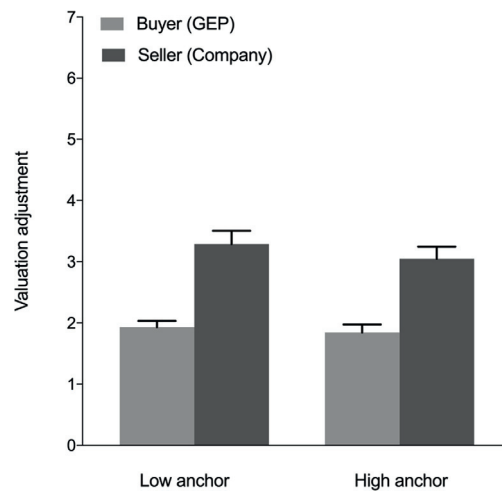


Figure 6. Average valuation adjustment for participants of Study 1 in the low value and high value anchor condition, separated by client (buyer vs. seller). Scores below to midpoint (4) indicate adjustments downwards and scores above the midpoint indicate adjustments upwards.

Likewise, those representing the buyer indicated a lower value for the lower bound of the valuation range ($M = 2.93, SD = 3.03$) than those representing the seller ($M = 5.16, SD = 4.03$). The same was true for the upper bound, where those representing the buyer gave a lower value for the upper bound ($M = 5.49, SD = 3.75$) than those representing the seller ($M = 8.36, SD = 4.59$).

The interaction effect between anchor and client was significant for the lower and upper bounds of the valuation range. Analyses decomposing these interaction effects showed that for the lower bound of the valuation range, the effect of client was significant both for the low value anchor, $F(1, 88) = 36.08, p < .001, \eta_p^2 = .29$, and for the high value anchor, $F(1, 87) = 10.84, p = .001, \eta_p^2 = .11$, and that the effect was significantly larger for the former (although both effect sizes can be considered large; Cohen, 1988). For the upper bound of the valuation range, the same pattern emerged. That is, the effect of client was significant both for the low value anchor, $F(1, 88) = 37.82, p < .001, \eta_p^2 = .30$, and for the high value anchor, $F(1, 87) = 20.84, p < .001, \eta_p^2 = .19$, and again the effect was more pronounced for the former.

The observation that the effect size was larger for the low value anchor in both the lower bound and upper bound was largely driven by the smaller amount of variance in the low value anchor relative to the high value anchor; the mean differences were actually larger for the high value anchors (2.90 lower bound; 4.02 upper bound) than for the low value anchors (1.59 lower bound; 1.81 upper bound). Figure 7 depicts the average values for both the upper and lower bound, and for both levels of the anchor and client variable.

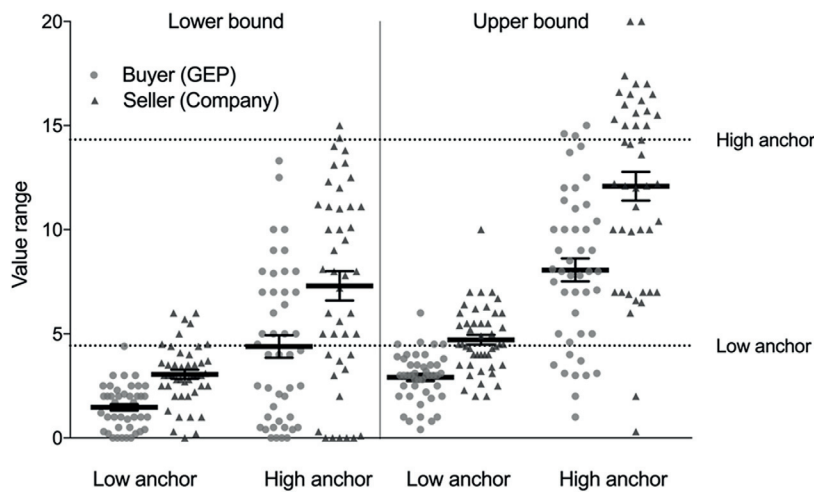


Figure 7. Individual data points of Study 1 for the dependent variables measuring the lower bound (left pane) and upper bound (right pane) of the indicated valuation range, for participants in the buyer condition (circles) and seller condition (triangles), separated by the value of the anchor (low value vs. high value). The two horizontal dotted lines represent the value of the high anchor (14.324M) and the low anchor (4.435M) as presented in the valuation report.

Notably, no effects of anchor or client were found for perceived decline. Rather, it appears that all participants converged with respect to the perceived decline of the business (see Figure 8). This is noteworthy as it suggests that the observed biases exist despite the fact that participants across the conditions similarly viewed the company's economic state.

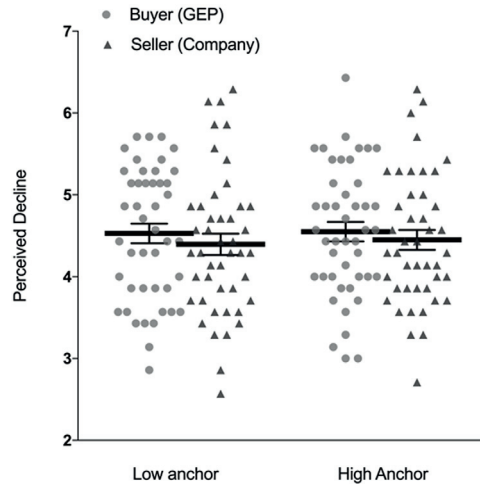


Figure 8. Individual data points of perceived decline for participants representing the buyer (circles) or seller (triangles) with the averages and error bars per anchor and condition indicated by the horizontal black lines.

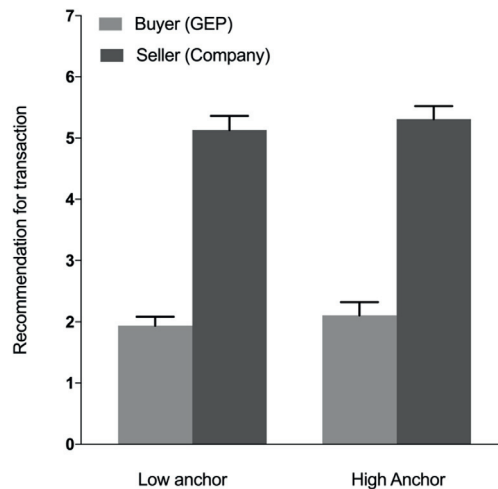


Figure 9. Average recommendations scores in Study 1 for each anchor, separated by client condition. Scores below the midpoint (4) indicate the participants would not recommend their client to go forward with the transaction, and scores above the midpoint indicate the participants would recommend their client to do the deal.

With respect to the final recommendation (Figure 9), the data show that participants representing the buyer generally recommended their client not to go forward with the transaction as indicated by an average score below the midpoint of the scale ($M = 2.02$, $SD = 1.25$). Participants representing the seller, however, generally recommended their client to do the deal at the initial value (i.e., the anchor) ($M = 5.22$, $SD = 1.50$). The level of the anchor (i.e., low vs. high value) did not interact with the client variable ($F < 1$),

suggesting that irrespective of the value presented in the valuation report, participants believed the deal was attractive for the seller but much less so for the buyer, as reflected by the differences in recommendation scores.

Additional Analyses

Valuation components. Interestingly, when participants were asked which components they believed needed to be adjusted, those representing the selling party (i.e., the Company) believed that fewer elements of the valuation report required adjustment than those representing the buyer (see Figure 10). These findings are line with the other results, suggesting that when a valuator represents a buyer in a transaction, the valuator believes the value of the company determined by another valuator should be adjusted downwards more heavily compared to when a valuator represents a seller's interests. Hence, valutors seem to be affected by their client's interests.

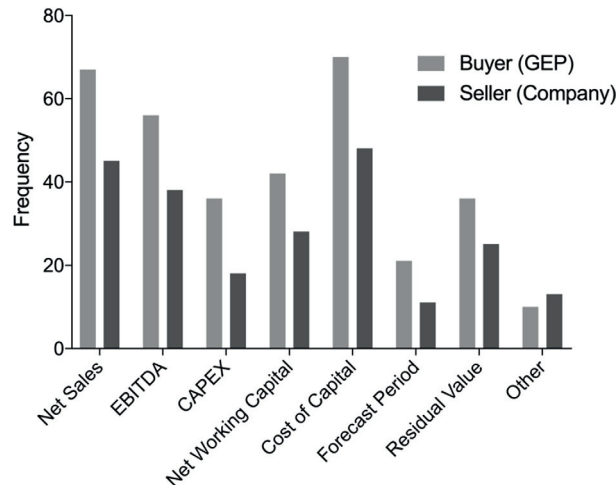


Figure 10. Frequency with which elements were selected to indicate they required adjustment according to the participants representing either the buyer (left bars) or the seller (right bars).

Bias Blind Spot. When participants were first asked whether they believed the valuator hired by the opposing party was affected in his/her judgment by the client's interests, and subsequently whether they believed they themselves were affected in their judgments because of their client's interests, an interesting pattern emerged. Whereas 58.7% believed the valuator representing the opposing party was biased, only 25.1% believed they themselves were biased.

Interestingly, when breaking down these figures based on who the valutors represented, 78.9% of the participants representing the buyer (i.e., GEP, the PE-firm) believed the valuator hired by the seller (the Company) was biased, whereas 'only' 38.2% of the participants representing the seller believed the valuator hired by the buyer was biased. When reflecting on their own potential biases, 32.2% of the participants representing the buyer

indicated they suspected they were affected by their client's interests, whereas only 18.0% of the participants representing the seller believed they were biased as a result of their client's interests. Hence, the data provide clear evidence for the existence of a bias blind spot, meaning participants recognized the potential biasing effect that representing the interests of a certain client might have on others, while generally failing to acknowledge the potential bias in their own judgments.

4.4.3 Discussion Study 1

Study 1 set out to examine whether valuers can be influenced by factors that should not have any bearing on their assessment of a company's value or of other valuations. We found clear evidence for the existence of both anchoring bias and engagement bias, thereby confirming hypothesis 1 and hypothesis 2. That is, when valuers are confronted with a valuation report and are asked to indicate in which range they believe the 'true' value of the company lies, they use the initial value as an anchor and indicate a higher range in case of a higher anchor, and a lower range in case of a lower anchor. Also, valuers appear to be affected by their clients' interests (i.e., engagement bias) i.e., they indicate that a valuation should be adjusted in accordance with their clients' interests. Specifically, when they represent a buyer and therefore have an incentive to lower the share value, they also indicate the valuation should be adjusted downwards more heavily and also indicate a lower value range for the true value of the company. The opposite is true when they represent the seller. Combined, these data show that participants did not so much disagree on the fact that the forecasts were too optimistic and that they needed to be adjusted downwards, but rather by *how much*. The question by how much the valuation needed to be adjusted downwards appeared to be largely determined by the anchor and the interests of the client that the valuator represented. These effects seem to be unrelated to the valuers' perceptions regarding the decline of the valuation object. Hence, despite converging views on the economic state of the valuation object, valuers still suggested adjusting the valuation in accordance with their client's interest and stayed relatively close to the initial value (i.e., the anchor).

Importantly however, an alternative explanation can be put forward for the observed engagement bias. Rather than being affected by their clients' interests, it is possible that the valuers in Study 1 distrusted the accuracy of the valuation report as they believed the valuator hired by the opposing party was biased as a result of their client's interest, and that they therefore adjusted the valuation accordingly to compensate for this fact. Such a process would be a bias in and of itself, called *reactive devaluation*. This entails that proposals or arguments (for example in negotiating settings) are devalued by a party due to the mere fact that they were put forward by an opposing party (Ross, 1995; Ross & Stillinger, 1991). This alternative explanation would be in line with the finding that the majority of the respon-

dents believed the valuator representing the opposing party was biased, particularly when this other valuator represented the company. Hence, it is important to investigate whether the findings of Study 1 hold true when the valuation report was created by an independent valuator, rather than by a valuator who represents the interests of the opposing party. If the same effects are found in this situation, this would rule out the possibility that the valuers in Study 1 were distrustful towards the valuation report due to the fact that it was made by someone representing the opposing party, thereby providing further evidence that engagement bias can account for the observed findings in Study 1. Study 2 (i.e., the post-hoc study) aimed to do exactly that, and had two specific goals: first, to replicate the findings of Study 1 to provide more robust evidence for the observed findings; second, to test whether the reactive devaluation hypothesis could account for the observed engagement bias found in Study 1, or whether participants were indeed affected by their clients' interests.

4.5 STUDY 2 (POST-HOC STUDY)

4.5.1 Methods

Participants

In total, 160 business valuation specialists, none of whom participated in Study 1, were recruited via e-mail. Of this group, 15 participants (9.4%) did not pass the attention check, resulting in a final sample of 145 participants. We again targeted the world's leading valuation and corporate finance firms to ensure a sample of highly experienced business valuation experts. Of the final sample, 119 were male (82.1%), the average age was 43.4 ($SD = 14.2$), and the average years of experience in their profession was 16.3 ($SD = 11.1$).

Sixty-one (42.1%) had a post-master's degree in accounting, 118 (81.4%) were enrolled or had been enrolled in a specialized business valuation course, 83 (57.2%) had a post-master's degree in business valuation, 98 (67.6%) indicated that business valuation was their primary focus in their work, for 40 participants (27.6%) this was M&A, and for 7 participants (4.8%) this was accounting; 125 participants (86.2%) indicated that they conduct or are involved in business valuations on a regular basis.

In total, 28 different nationalities are represented in the sample. The five countries with the most participants are the United States with 50 participants (34.5%), Canada with 22 (15.2%), Italy with 12 (8.3%), Germany with 8 (5.5%) and the United Kingdom with 6 participants (4.1%). A complete overview of participants' nationalities can be found in Appendix C7.

For 107 participants (62.8%), English was their native language. Those who were not native English speakers indicated on a 7-point Likert scale whether they understood the questions and experienced no difficulties in answering the questions, ranging from "Strongly disagree" (1) to "Strongly agree" (7). The average score was 6.20 ($SD = 1.22$).

Table 10. Results of the MANCOVA of Study 2.

Independent Variables	$F(5, 126)$	p	η_p^2
Anchor	59.01	<.001	.70
Client	28.97	<.001	.54
Anchor * Client	2.66	.025	.10
Control variables			
Gender	0.52	.761	.02
Age	3.42	.006	.12
Experience	4.62	.001	.16
Locus of Strategic Control	2.94	.015	.10

The main effect for anchor was significant for the variables measuring the valuation adjustment, $F(1, 130) = 15.41, p < .001, \eta_p^2 = .11$, the lower bound of the value range, $F(1, 130) = 30.05, p < .001, \eta_p^2 = .19$, the upper bound of the value range, $F(1, 130) = 118.51, p < .001, \eta_p^2 = .48$, and the perceived decline, $F(1, 130) = 4.00, p = .048, \eta_p^2 = .03$. Participants believed the valuation should be adjusted downwards more heavily in the high value anchor condition ($M = 2.30, SD = 1.22$) than in the low value anchor condition ($M = 3.02, SD = 1.17$); see Figure 11.

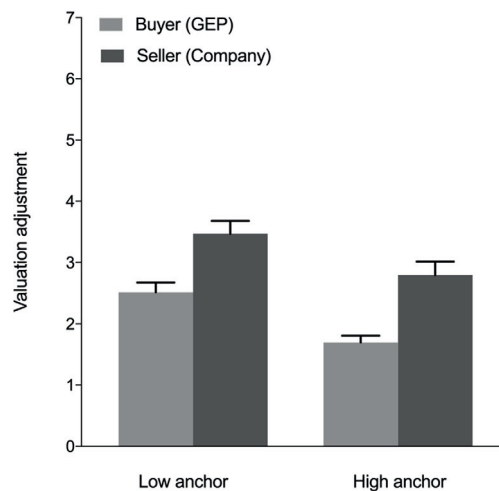


Figure 11. Average valuation adjustment for participants in the low value and high value anchor condition, separated by client (buyer vs. seller). Scores below to midpoint (4) indicate adjustments downwards and scores above the midpoint indicate adjustments upwards.

Replicating Study 1 results, participants in the low value anchor condition gave a lower value for the lower bound of the value range ($M = 2.54, SD = 1.21$) than participants in the high value anchor condition ($M = 5.50, SD = 4.42$). Also replicating Study 1, the average value for the upper bound indicated by participants in the low value anchor condition was lower ($M =$

4.53, $SD = 1.45$) than the value indicated by participants in the high value anchor condition. ($M = 10.48$, $SD = 4.45$). In contrast to Study 1, an effect of anchor was found for the perceived decline. Participants in the low value anchor condition perceived the decline as slightly less severe ($M = 4.12$, $SD = 0.85$) than participants in the high value anchor condition, ($M = 4.42$, $SD = 0.79$); see Figure 12. No effect for anchor was found for the final recommendation ($F < 1$).

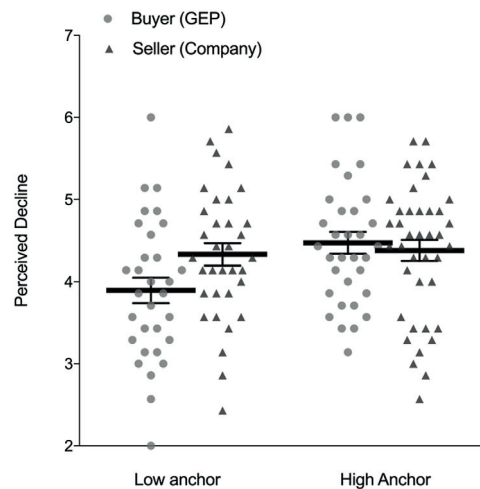


Figure 12. Individual data points of perceived decline for participants representing the buyer (circles) or seller (triangles) in Study 2, with the averages and error bars per anchor and condition indicated by the horizontal black lines.

Fully replicating Study 1, the main effect for the client was significant for the variables measuring the adjustment of the valuation qualitatively, $F(1, 130) = 30.23$, $p < .001$, $\eta_p^2 = .19$, the lower bound of the value range, $F(1, 130) = 6.44$, $p = .012$, $\eta_p^2 = .05$, the upper bound of the value range, $F(1, 130) = 12.48$, $p = .001$, $\eta_p^2 = .09$, and for the final recommendation, $F(1, 130) = 120.36$, $p < .001$, $\eta_p^2 = .48$. For the valuation adjustment, participants representing the buyer believed the valuation should be adjusted downwards more heavily ($M = 2.09$, $SD = 0.87$), than participants representing the seller ($M = 3.11$, $SD = 1.33$); see Figure 11.

Similarly, those representing the buyer indicated a lower value for the lower bound of the valuation range ($M = 3.23$, $SD = 2.30$) than those representing the seller ($M = 4.87$, $SD = 4.34$). For the upper bound, those representing the buyer gave a lower value for the upper bound ($M = 6.58$, $SD = 3.96$) than those representing the seller ($M = 8.63$, $SD = 4.75$). Similar to Study 1, participants representing the seller again recommended their client to go forward with the deal ($M = 4.78$, $SD = 1.47$), whereas those representing the buyer did not ($M = 2.30$, $SD = 1.09$). Hence, Study 2 provides further evidence for the existence of engagement bias among valuation specialists.

The interaction effect between anchor and client was significant only for the lower bound of the valuation range, $F(1, 130) = 6.37, p = .013, \eta_p^2 = .05$. Analyses decomposing this interaction effect showed that the effect of client was significant only for the high value anchor, $F(1, 71) = 7.46, p = .008, \eta_p^2 = .10$, but not for the low value anchor, $F(1, 63) = 0.87, p = .35, \eta_p^2 = .01$. Figure 13 presents the average values for both the upper and lower bound, and for both levels of the anchor and client variable.

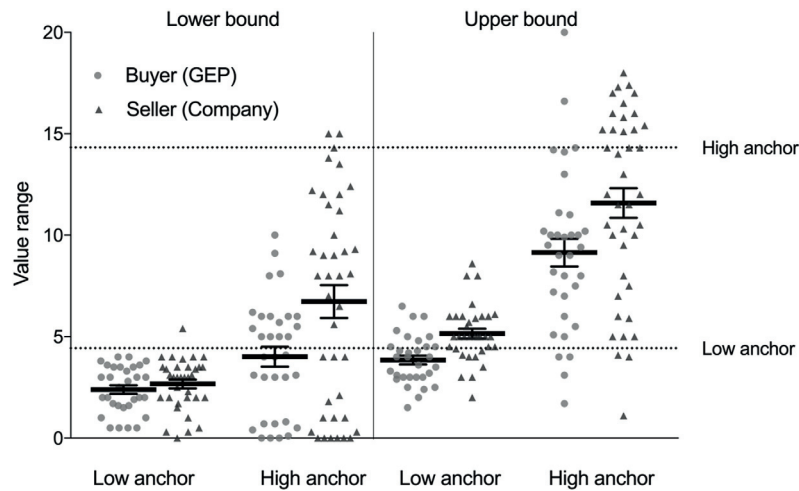


Figure 13. Individual data points for the dependent variables measuring the lower bound (left pane) and upper bound (right pane) of the indicated valuation range, for participants of Study 2 in the buyer condition (circles) and seller condition (triangles), separated by the value of the anchor (low value vs. high value). The two horizontal dotted lines represent the value of the high anchor (14.324M) and the low anchor (4.435M) as presented in the valuation report.

For the final recommendation, participants representing the buyer recommended their client to not go forward with the transaction as indicated by an average score below the midpoint of the scale ($M = 2.34, SD = 1.13$), whereas participants representing the seller recommended their client to do the deal ($M = 4.81, SD = 1.49$); see Figure 14.

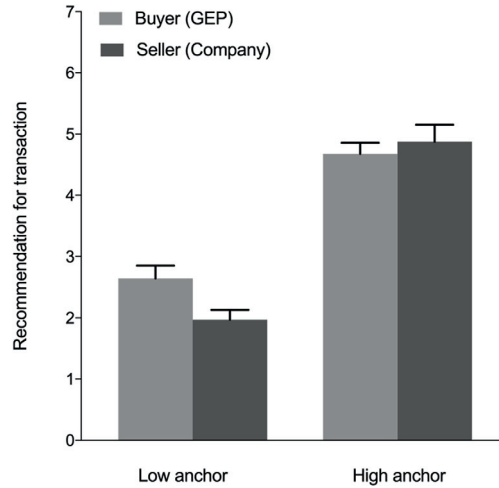


Figure 14. Average recommendation scores in Study 2 for each anchor, separated by client condition. Scores below the midpoint (4) indicate the participants would not recommend their client to go forward with the transaction, and scores above the midpoint indicate the participants would recommend their client to do the deal.

Additional Analyses

Valuation components. Regarding the components of the valuation that participants believed needed to be adjusted, a different pattern emerged than in Study 1. Whereas those representing the selling party (i.e., the Company) in Study 1 believed that fewer elements of the valuation report required adjustment than those representing the buyer’s interests, no clear difference based on the client condition were found in Study 2 (see Figure 15).

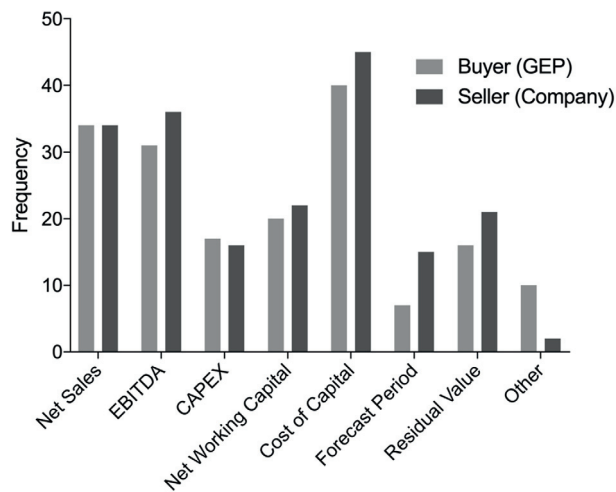


Figure 15. Frequency with which elements were selected to indicate they required adjustment according to the participants representing either the buyer (left bars) or the seller (right bars) in Study 2.

Bias Blind Spot. Similar to Study 1, participants believed the independent valuator was biased more often (42.0%) than they believed themselves to be biased (23.2%), again providing evidence for bias blind spot.

4.5.3 Discussion Study 2

Study 2 replicated the key findings of Study 1 providing evidence for the robustness of anchoring bias and engagement bias among valuation specialists, hence providing further support for hypothesis 1 and hypothesis 2. Importantly, Study 2 aimed to test the extent to which processes of reactive devaluation can account for the observed engagement bias in Study 1. Given that Study 2 again provided evidence for the existence of engagement bias while the valuation report under scrutiny was produced by an independent valuator (thereby nullifying potential reactive devaluation), it is unlikely that reactive devaluation processes can account for the observed effects. Rather, it is more likely that the participants were in fact biased in their judgments due to their clients' interests. When comparing the effect sizes of Study 1 and Study 2, the engagement bias in Study 1 appears to be larger than in Study 2, suggesting that reactive devaluation processes may account for at least some degree of the observed engagement bias in Study 1, but this difference is not statistically significant.⁵

4.6 GENERAL DISCUSSION

In this study, we aimed to find an explanation for valuation disputes stemming from conflicting value perceptions between valuers. We examined whether valuers are affected by anchoring bias and engagement bias and found robust evidence for both effects. Specifically, when valuers are presented with an anchor (e.g., a valuation report conducted by another valuator), their perceptions regarding the value of a particular company are affected by the anchor; relatively high anchors result in higher valuations compared to when a relatively low anchor is presented. Additionally, when valuers represent their client's interest, this relationship affects the valuator's judgments so that these are more in tune with their client's interest. If their client is looking to sell and would therefore benefit from a high valuation, the valuator values the object higher than when the valuator represents a buyer who would benefit from a lower valuation.

5 The datasets of the two studies were combined and the dependence of the valuator was added as a factor (0 = dependent, 1 = independent). When adding this factor to the multivariate model, no interaction effect with client, $F(5, 309) = 1.42, p = .216, \eta_p^2 = .02$, nor a main effect of dependence was found, $F(5, 309) = 2.01, p = .077, \eta_p^2 = .03$.

Interestingly, when participants were asked to motivate their answers regarding the adjustment of the valuation, none hinted even vaguely towards the potential influence of anchoring bias or engagement bias. Also, the majority of participants in both studies self-reported they believed themselves not to be biased due to their client's interest. Therefore, we assume that these biases operate largely in an unconscious fashion and that the participants rationalized their intuitions regarding the company's value post-hoc. However, we did not explicitly measure awareness of the biases' influence on the participants' judgments, so we cannot draw strong conclusions regarding the degree to which the observed biases operate unconsciously.

Although we acknowledge that differences in value perceptions and valuation outcomes can be partially explained by economic concepts like subjectivity and utility theory, and even that individual skills and experience of valuers might play a role in explaining such differences, we provide a first demonstration that biases can play a prominent role in explaining differences in valuation outcomes.

Theoretical and practical implications

Our study research adds to the literature in the following ways. First, we add to the literature on anchoring bias by demonstrating that business valuers are not immune to anchoring bias effects, further demonstrating bias robustness. The observation that valuers are affected by anchoring bias is alarming as valuations should ideally be constructed independent to any effects of initially presented values and guiding information. Nonetheless, in valuation practice, anchors are frequently provided in different ways; directly or indirectly, expressed in a figure, or by means of expressing a wish or direction with respect to a valuation. Without acknowledging the presence of anchoring effects in valuation engagements, discussions about value might start from an incorrect starting point, resulting in miscalculations, suboptimal investment decisions (i.e., buy or sell) and costly disputes.

Second, we explored engagement bias, that up to now has hardly received any empirical research attention. The notion that business valuers are affected in their judgments following from their clients' interests is a bias that we have called engagement bias. To our knowledge, the only empirical work to date that has investigated whether professional judgments are affected by professionals' clients' interests is work by Firth et al. (2013) who demonstrated that brokerage firm analysts' stock recommendations are affected by their mutual fund clients' interests. The optimal condition for a valuator is to have full professional autonomy when being involved in a valuation engagement. However, we show that due to engagement bias, professional judgments can be overshadowed by the urge to satisfy clients, ultimately leading to suboptimal valuations and possibly even liability claims for the valuator.

Following these findings, we encourage both academics and professionals in the field of business valuation to pay increased attention to the

psychological factors affecting their work. Despite the commonly heard catchphrase “valuation is a craft, not a science” (e.g., Damodaran, 2016), the extensive attention in the valuation literature on valuation techniques (i.e., valuation methods), inputs (i.e. valuation rationalities; e.g. growth rates, earnings, discount rates, and adjustments to income statements), and valuation related aspects such as minority discounts, control premiums, and marketability discounts, suggests valuation is typically treated more as a science than an art. However, our study emphasizes that business valuation consists of many more dimensions than just valuation techniques and inputs. Hence, we recommend an increased focus on the psychological factors that can influence perceptions regarding a valuation object and, ultimately, valuations. Although we acknowledge that cognitive biases are hard to minimize or regulate, we advocate for an increased awareness of the influence of biases in business valuations. Discussions regarding the causes of large differences in value perceptions and corresponding valuation outcomes can benefit from insights from behavioral sciences, including our research.

Limitations and Future Research

A potential limitation of our study is that participants were presented a compressed valuation report and asked to give a second opinion on a report from another valuator. The question can be raised whether the observed results would have been different if the participants were asked to reflect on a more comprehensive valuation report or even to conduct a complete valuation themselves. Nevertheless, practice shows that second opinions providing a quick analysis on a valuation outcome are commonplace, suggesting our findings can at least be generalized to these real-world situations. Moreover, it is possible that providing a comprehensive valuation report or conducting an own valuation would result in even stronger effects than those found in our study. That is, if the manipulation used (i.e., asking participants to adopt the perspective of the valuator hired by either the Company or the PE-firm) caused participants to be biased due to their client’s interest. It is not unreasonable to think that in the real world, where the pressure to successfully complete an engagement and satisfy clients is much more intensely felt, even larger effects might be observed.

Nonetheless, we would encourage future research to investigate these biases in real-world business valuations. Additionally, we encourage future research to develop measures that can mitigate the effects of biases affecting valuator judgments. A first direction could be to enhance awareness of this topic across valuers and stakeholders of valuations. Incorporating knowledge of the effects of both anchoring bias and engagement bias in valuation education and training is a first step in mitigating these effects in the long run. A second direction could be to find ways that would allow valuers to conduct valuations in a more isolated manner, free from the pressure inherent to dependent client relationships, the purpose of the valuation in relation to the outcome, and the client’s interest in the valuation. Finally,

it might be worthwhile exploring whether a protocol can be developed containing guidelines and principles geared towards reducing the effects of biases in valuations, ultimately contributing to the goal of creating more objective valuations and hence reducing large differences in valuation outcomes.

This chapter showed that business valuers can be affected by anchoring bias and engagement bias. In Chapter 5, we explore to what extent valuation professionals recognize and acknowledge the observations of Studies 1-3 in the course of their own work, as well as in the work of their peers. Additionally, we present a 'Statement of Principles for Valuation Practice' focused on mitigating the effects of biases in valuers' work.

5.1 INTRODUCTION

In recent decades, a plethora of cognitive biases have been identified that affect the way humans judge and make decisions. These biases follow on from heuristics that developed throughout evolution to simplify and speed up human cognition with the aim of ultimately facilitating survival and reproduction (e.g., Baron, 2007; Haselton et al., 2015). However, heuristics can also affect judgments and decisions and cause irrational behavior. Cognitive biases are omnipresent and influence everyday decision making, and they are also critical to judgments in fields such as law, economics and entrepreneurship.

In the social psychology literature, it is widely recognized that biases are typically highly robust and hard to eradicate. Research conducted on debiasing strategies indicates that debiasing training courses are helpful to mitigate the effects of biases (Morewedge, Yoon, Scopelliti, Symborski, Korris & Kassam, 2015). However, debiasing strategies vary in effectiveness. Rather than focusing on debiasing, some fields have therefore shifted their strategies to overcome (or at least mitigate) the unwanted influence of biases and are focused on implementing certain principles or protocols.¹ For example, in the field of forensic science research protocols have been developed (i.e., information management) to remove potentially biasing and irrelevant information to enhance examiners' objectivity in forensic casework (Mattijssen, Kerkhoff, Berger, Dror, & Stoel, 2016). Auditors and healthcare practitioners also apply protocols and principles to mitigate the effects of biases.

Given the results of the previous chapters, and keeping our central research question in mind, we decided to supplement the three experimental studies with a consultation on the main findings among a selected group of valuers affiliated to global top-tier firms. We set out to explore the possible usefulness of the practical principles approach developed on the basis of this dissertation's findings, to assess whether they might help mitigate the effects of biases in the context of business valuation. As such, the objectives for the consultation was threefold. First, we studied the extent to which valuation experts recognized and acknowledged our research

1 In colloquial Italian the term 'principio' (principle) is used as a synonym for 'beginning', and used as a synonym for a fundamental value, or as an element of a basic notion (e.g., the principles of ethics, of mathematics, of physics, etc.) (Alpa, 1994).

findings in their own work as well as in that of their peers. Second, we conducted a ‘sanity check’ on our findings, in particular with regard to the researched biases and the presented valuation contexts. Third, we sought to explore whether in the perception of valuation experts certain ‘debiasing principles’ might be useful in their own working methods.

The outcomes of the consultation were used to develop a set of principles, referred to as ‘Statement of Principles for Valuation Practice’ (in short: Statement of Principles). These proposed principles aim to:

1. Generate structural awareness and understanding of the potential effects of the studied types of cognitive biases among business valuers worldwide;
2. Offer best practice tools for valuers on how to anticipate on the potential effects of unconscious biased judgments; and
3. Offer practical guidance to reduce these biased judgments in valuation practice.

The consultation thus served as a starting point to explore the usefulness of principles to mitigate the effects of biases among valuers, in particular anchoring, adjustment, and engagement bias, as these were the biases observed among valuers.

5.2 PRINCIPLES TO MITIGATE COGNITIVE BIASES

Business valuation practice is generally relatively rule-free, especially as there is no legal (formal) basis for the profession² compared to, for example, the audit profession. We therefore considered the implementation of (informal or “soft”) principles as a good way to manage the consequences of biases among business valuers, predominantly because of principles’ relatively limited mandatory characteristics that in turn fits the nature of the valuation profession. In addition, we also note that many professional bodies worldwide – ranging from federations of corporate professionals (e.g., accountants, lawyers, valuers, brokers, bankers) to organized professionals (e.g., surgeons or archivists) currently apply soft principles or standards that serve as practical guidelines for (ethical) behavior, beliefs, intentions and/or evaluations of their members. The reason for this is that formal (“hard”) rules often are too rigid to promote *best practice behavior*.

Where some researchers have shown there is little evidence to what extent principles affect performance (Doig & Wilson, 1998), others have demonstrated that the need for principles for businesses is evident (Rezaee,

2 Literature defines a profession as ‘a group of people with a common set of interests, skills, education, and roles within society’ (Johnson, 1972).

Elmore, & Szendi, 2001). Moreover, where it concerns the private sector, the natural environment for business valuers, there is a large body of research showing that an effective implementation of principles is part of a learning process that requires inculcation, reinforcement and measurement (Doig & Wilson, 1998). An instant and complete compliance with new principles to mitigate biases in the context of business valuation is therefore unlikely, especially when taking into account professionals' autonomy. However, a code (e.g., of ethics) of the profession is a reflection of the perceived need to defend the private interest of the professional and to protect the public (Fisher, Gunz, & McCutcheon, 2001). Although we have not specifically studied to what extent the private interest of the profession of business valuers or the general public would value the implementation and enforcement of principles to address the impact of biases in the context of business valuation, the findings of our three studies could serve as a starting point.

5.3 METHOD

5.3.1 Sample

For the interview study, we selected a limited but highly experienced group of 92 valuation experts across the world working for "Big Four" firms and (top-tier) independent (international) valuation boutiques. Since we strived to gather perspectives of valuation experts from all over the world, we used a digital interview format for this global survey.

The selection of valuation experts was based on criteria including 1) the (prestige of the) firm the valuator is affiliated with, 2) having a strong focus and specialization with respect to business valuation, and 3) having ample experience in the field of business valuation, i.e. being a 'leading valuator' in the specific region. The selection process of valuation experts was obtained by either own knowledge, references, or desk research.

Of the 92 selected, 25 had already participated in our study among business valuers (see Chapter 4.). Initially, 23 valuation experts participated in the digital interview study. After sending a reminder to the remaining 69 valuation experts, 7 more respondents finalized the digital interview study, leading to a total of 30 participants from around the globe (response rate: 33%). On average, the time spent to complete the digital interview was 28 minutes.³

3 For determining the average time spent on the digital interview, we excluded one person who spent more than 55 hours on the digital interview (probably due to a technical issue).



Figure 16. Overview of the participants' countries of origin (in dark grey).

An overview of the leading valuation experts who indicated their names may be included in a list of consulted valuation experts can be found in Appendix D1.

5.3.2 Procedure

We approached the selected valuation experts, who had been selected based on the criteria as set out in section 5.3.1, by e-mail. Due to the expected practical limitation to approach the participants more than once, primarily because of the limited time that professionals can usually dedicate to research, we chose to present our draft principles to the sample within the same digital interview, however, only after they had reflected on the main findings of the three studies presented.⁴

Prior to informing them of the main findings of each study, we explained the valuation experts about the research background of each study, for example, that it is generally known and a widely observed phenomenon that both valuations and valuers are frequently subject to discussions that often result in disputes, with the consequence of unnecessary value destruction. We also informed them that, although there is some indication that elements other than the correct application of valuation theory can play an important role in the development of wrongful discussions and disputes concerning valuations, this does not seem to receive much attention, either in theory or in practice. In fact, the influence of cognitive biases may well be a major cause of such events.

4 For practical reasons, the order in which the findings of Study 1-3 were presented to the respondents differs from the order in which Study 1-3 are presented in this dissertation.

We then informed them about the three experimental studies we conducted among legal professionals, business valuers and entrepreneurs (three major stakeholders in the valuation landscape), to show that cognitive biases play an important role when judging valuations and valuers. At the end, a brief description was given of what each bias entails (i.e., outcome bias, similarity bias, gender bias, anchoring bias, engagement bias, and the buyer-seller position). Next we outlined the main findings of each study and asked to what extent participants recognized and acknowledged the findings in their own work and in the work of their peers (i.e., Findings: Part I, see section 5.4).

Finally, we presented the valuation experts a set of seven draft principles (i.e., Findings: Part II, see section 5.5) to explore the usefulness of specific principles to mitigate the effects of different types of biases in a valuation context. We asked the valuation experts 1) to what extent they considered each draft principle to be of added value for the valuation practice, 2) if they had any ideas or suggestions to improve each of the draft principles, and 3) whether they had any thoughts about other principles that might be relevant to adopt (see section 5.5.1). Based on the valuation experts' reflections, ideas and suggestions, we finalized the proposed Statement of Principles for Valuation Practice (see section 5.6).

In summary, the process of drawing up our proposed Statement of Principles can be presented as follows:

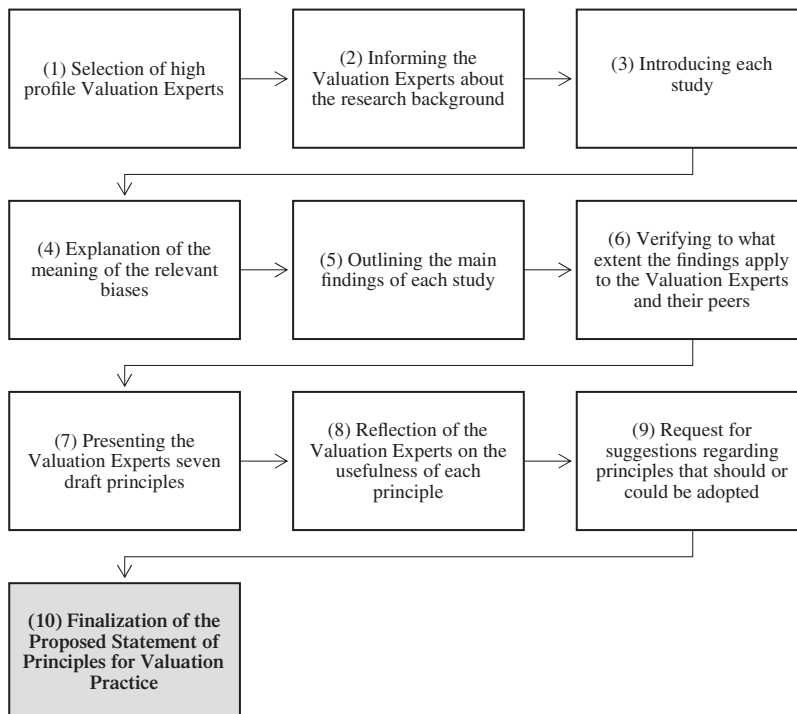


Figure 17. The process used to define the proposed Statement of Principles.

5.4 FINDINGS: PART I. EVALUATION OF RESEARCH FINDINGS

5.4.1 Study 1: Legal Professionals

The main findings of the study among legal professionals (Chapter 3.) indicates that, firstly, if a valuator is perceived by legal professionals to be more similar to themselves, they also perceive the valuator to be more trustworthy, and in turn have more trust in his/her valuation (i.e., similarity bias). Secondly, when legal professionals evaluate a valuator after they have used his/her valuation report for the sale of a company's assets, the outcome of the deal affects the legal professionals' opinion of the valuator (i.e., outcome bias). Thirdly, we found that male legal professionals have more trust in the ability of a valuator if the valuator is male, while female legal professionals do not show this gender bias in their perception of a valuator's ability (i.e., gender bias).

The occurrence of these biases among legal professionals when judging valuations and/or valuers is potentially harmful for valuers. After all, valuers and their work run the risk of being assessed by factors beyond their control. Moreover, this may lead to conflicts, disputes and litigations.

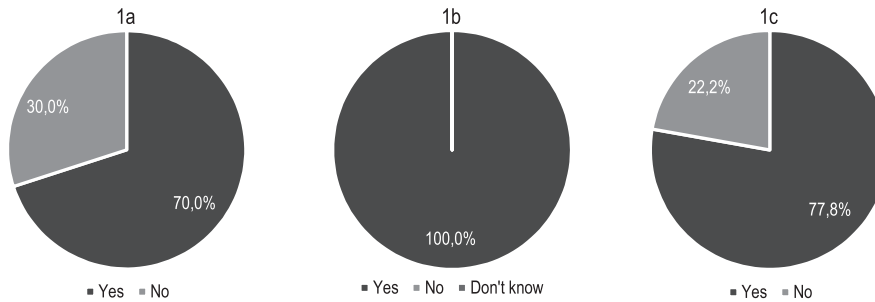
We aimed to explore the extent to which the findings of this study are recognized and acknowledged by the valuation experts. We asked them per type of bias to what extent they experienced each bias in their own work and in the work of their peers.

Study 1: Similarity bias (H₁)

Table 11. Q&A Similarity bias.

Finding: If a valuator is perceived by legal professionals as more similar to themselves, they also perceive the valuator as more trustworthy, and in turn have more trust in his/her valuation. Moreover, in the case of higher perceived similarity, legal professionals are also more positive about the valuator's role in the deal, as they are more likely to rehire the valuator in the future, believe more strongly that the valuator deserves praise (or less blame in case of a bad deal), and they believe more strongly that the valuator did her/his best in valuing (the assets of) the company.				
Question (1a): Did you ever feel that you were judged differently (either more positively or negatively) based on the degree of similarity (in the broadest sense) between you and a legal professional?				
Yes = 70.0%			No = 30.0%	
Question (1b): In addition to having experienced the effects of similarity bias yourself, do you believe that your peers (i.e., corporate finance experts, business valuers) have also experienced that similarity bias can influence legal professionals' judgments of valuations or valuers?			Question (1c): Despite not having experienced the effects of similarity bias yourself, do you believe that similarity bias can in fact influence legal professionals' judgments of valuations or valuers?	
Yes = 100%	No = 0%	Do not know = 0%	Yes = 77.8%	No = 22.2%

Table 11 findings presented graphically:



As Table 11 shows, the vast majority of valuation experts indicated having experienced the effects of similarity bias. Of this group, all believed that their peers also would experience the effects of similarity bias when being evaluated by legal professionals. Of those who did not experience the effects of similarity bias themselves, the majority believed that similarity bias can in fact influence legal professionals' judgments of valuations or valuator.

Study 1: Outcome bias (H₂)

Table 12. Q&A Outcome bias.

<p>Finding: If legal professionals evaluate a valuator after they have used her/his valuation report for the sale of a company's assets, the outcome of the deal affects the legal professionals' opinion of the valuator. In case of a good deal, the valuator is perceived in a more positive light whereas the same valuator is perceived more negatively after a bad deal. This effect is independent of the reputation of the valuator's firm.</p>				
<p>Question (2a): Did you ever feel that the outcome of a certain negotiation or transaction in which your valuation was used affected the way you were perceived (either more positively or negatively)?</p>				
<p>Yes = 80.0%</p>			<p>No = 20.0%</p>	
<p>Question (2b): In addition to having experienced the effects of outcome bias among your clients yourself, do you believe that your peers (i.e., corporate finance experts, business valuator) have also experienced that outcome bias can influence their clients' perceptions?</p>			<p>Question (2c): Despite not having experienced the effects of outcome bias yourself, do you believe that outcome bias can in fact influence legal professionals' judgments of valuations or valuator?</p>	
<p>Yes = 100%</p>	<p>No = 0%</p>	<p>Do not know = 0%</p>	<p>Yes = 100%</p>	<p>No = 0%</p>

Table 12 findings presented graphically:



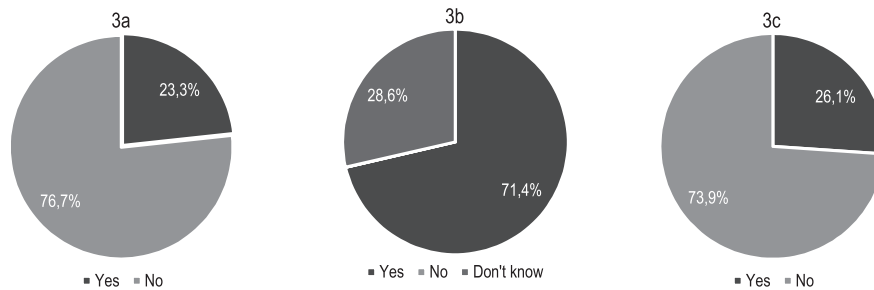
As Table 12 shows, the vast majority of valuation experts indicated having experienced the effects of outcome bias when their valuation was used in a negotiation/transaction. Of this group, all believed that their peers would also experience the effects of outcome bias so that their clients' (i.e., legal professionals) perceptions regarding their work and themselves were affected by the outcome of the negotiation/transaction. Of those who did not experience the effects of outcome bias themselves, all believed that outcome bias can influence legal professionals' perceptions of valuations and valutors.

Study 1: Gender bias (H₃)

Table 13. Q&A Gender bias.

Finding: Male legal professionals have more trust in the ability of a valuator when the valuator is a male as well. This heightened trust in the valuator's ability also predicts trust in the valuation. Female legal professionals do not show such gender bias in their perception of the ability of the valuator.			
Question (3a): Did you ever feel that you or your work was judged differently (either more positively or negatively) as a result of your gender?			
Yes = 23.3%		No = 76.7%	
Question (3b): In addition to having experienced the effects of gender bias yourself, do you believe that your peers (i.e., corporate finance experts, business valutors) have also experienced that gender bias can influence legal professionals' judgments of valuations or valutors?		Question (3c): Despite not having experienced the effects of gender bias yourself, do you believe that gender bias can in fact influence legal professionals' judgments of valuations or valutors?	
Yes = 71.4%	No = 0%	Don't know = 28.6%	No = 73.9%
		Yes = 26.1%	

Table 13 findings presented graphically:



As Table 13 shows, a minority of valuation experts indicated having experienced their work being evaluated differently based on gender. Of this group, the majority believed that their peers would also experience the effects of gender bias so that their clients' (i.e., legal professionals) perceptions regarding their work and themselves would be affected by their gender. Of those who did not experience the effects of outcome bias themselves, the majority also believed that gender bias does not affect legal professionals' perceptions of valuations or valuers. Whereas the valuation experts generally did recognize the effects of similarity and outcome bias, they were somewhat skeptical regarding the existence of gender bias (contrary to our research results). It is important to note, however, that the vast majority of the sample was male (i.e., only two females participated), as this may have affected the results.

5.4.2 Study 2: Valuers

In our study among valuers (Chapter 4.), we found that when valuers are confronted with a valuation report and are asked to indicate in what range they believe the true value of the company lies, they use the initial value (i.e., in this case a valuation report conducted by another valuer) as an anchor and indicate a higher range in case of a high anchor, and a lower range in case of a low anchor (i.e., anchoring bias). Moreover, we found that valuers appear to be affected by their clients' interests, so that when they represent a buyer and therefore have an incentive to lower the value of the shares, they also indicate that the valuation should be adjusted downwards more heavily and indicate a lower value range for the 'true' value of the company. The opposite is the case when they represented the seller (i.e., engagement bias).

The existence of these biases is potentially harmful for valuers, the valuation profession and valuers' clients. Indeed, valuers are affected by anchors in such a way that they incorporate irrelevant information into their work, or valuers are guided by the position of their client. In both cases, clients get biased valuation advice making it difficult to determine

whether this advice is based on correct assumptions. Moreover, this may lead to conflicts, disputes and litigations.

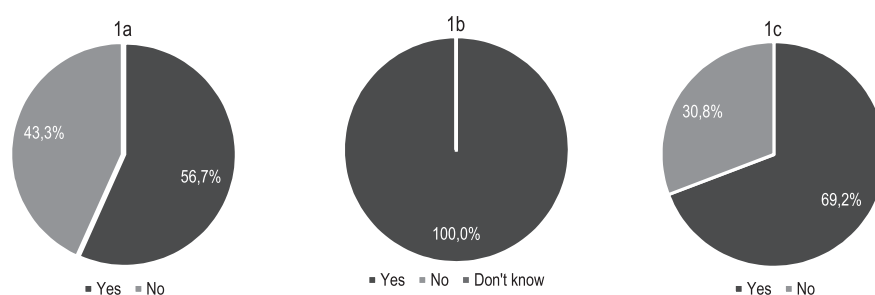
We set out to explore the extent to which the findings of this study are recognized and acknowledged by the valuation experts. We asked them, per type of bias, to what extent they experienced each bias in their own work and in the work of their peers.

Study 2: Anchoring bias (H_1)

Table 14. Q&A Anchoring bias.

Finding: When valuers are confronted with a valuation report and are asked to indicate in what range they believe the true value of the company lays, they use the initial value (i.e., in this case a valuation report conducted by another valuator) as an anchor and indicate a higher range in case of a high anchor, and a lower range in case of a low anchor. Specifically, their perceptions regarding the value of a particular company are affected by the anchor, such that relatively high anchors result in higher valuations compared to when a relatively low anchor is presented.				
Question (1a): Did you ever feel that in conducting a valuation or in evaluating others' valuations, you might have been affected by an anchor expressed in a numerical value, such as in the examples mentioned above?				
Yes = 56.7%			No = 43.3%	
Question (1b): In addition to having experienced the effects of anchoring bias yourself, do you believe that your peers (i.e., corporate finance experts, business valuers) have also experienced that anchoring bias can influence their judgments?			Question (1c): Despite not having experienced the effects of anchoring bias yourself, do you believe that anchoring bias can in fact influence valuers' judgments?	
Yes = 100%	No = 0%	Do not know = 0%	Yes = 69.2%	No = 30.8%

Table 14 findings presented graphically:



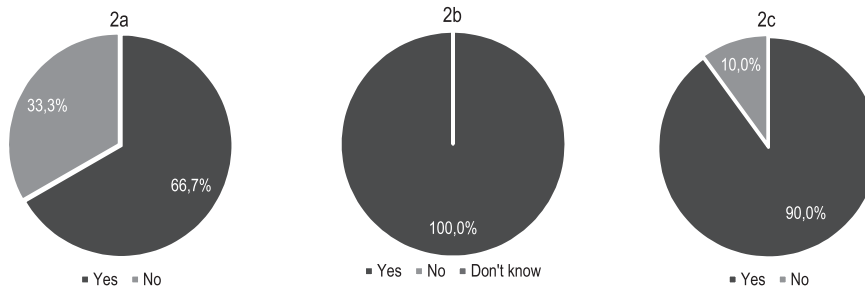
As Table 14 shows, a slight majority of the valuation experts indicated having experienced the effects of anchoring bias when conducting valuations. Of this group, all believed that their peers would also experience the effects of anchoring bias. Of those who did not experience the effects of anchoring bias themselves, the majority believed that their fellow valuers could be influenced by anchoring bias when conducting valuations.

Study 2: Engagement bias (H₂)

Table 15. Q&A Engagement bias.

<p>Finding: Valuers appear to be affected by their clients' interests, such that when they represent a buyer and therefore have an incentive to lower the value of the shares, they also indicate that the valuation should be adjusted downwards more heavily and also indicate a lower value range for the true value of the company. The opposite is the case when they represented the seller.</p>				
<p>Question (2a): Did you ever feel that in conducting a valuation or in evaluating others' valuations, you might have been affected by your clients' interests?</p>				
<p>Yes = 66.7%</p>			<p>No = 33.3%</p>	
<p>Question (2b): In addition to having experienced the effects of engagement bias yourself, do you believe that your peers (i.e., corporate finance experts, business valuers) have also experienced that engagement bias can influence their judgments?</p>			<p>Question (2c): Despite not having experienced the effects of engagement bias yourself, do you believe that engagement bias can in fact influence valuers' work?</p>	
<p>Yes = 100%</p>	<p>No = 0%</p>	<p>Do not know = 0%</p>	<p>Yes = 90.0%</p>	<p>No = 10.0%</p>

Table 15 findings presented graphically:



As Table 15 shows, the majority of the valuation experts indicated to having experienced the effects of engagement bias in such a way that their valuations were affected by their clients' interests. Of this group, all believed that engagement bias would also affect the work of their peers. Of those who did not experience the effects of engagement bias, the vast majority believed that their fellow valuers could be influenced by their clients' interests when conducting valuations.

5.4.3 Study 3: Entrepreneurs

In our study among entrepreneurs (Chapter 2.) we found that when entrepreneurs are confronted with an independent valuation report and are asked to indicate in what range they believe the true value of the company lies, they use the initial value (i.e., in this case a valuation report conducted by an independent valuator) as an anchor and indicate a higher range in case of a high anchor, and a lower range in case of a low anchor (i.e., anchoring bias). Moreover, we found that entrepreneurs appear to be affected by their position in a transaction in such a way that when they are the buyer, they indicate that the valuation should be adjusted downwards more heavily, and that they also indicate a lower value range for the true value of the company. The opposite is the case when they are the seller (i.e., buyer-seller position).

The presence of these biases is potentially harmful for entrepreneurs who often make important (investment) decisions based on valuations. Moreover, this may lead to conflict, disputes and litigation.

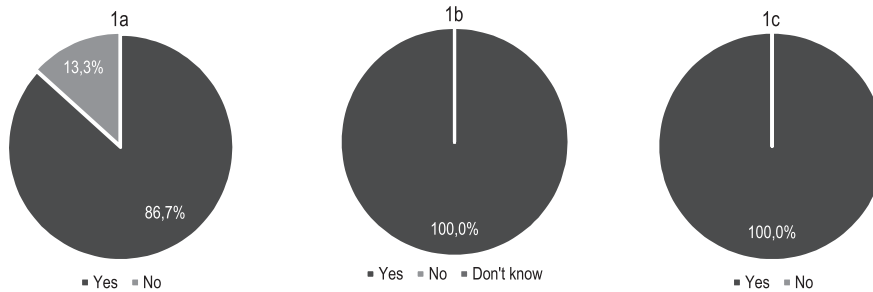
We explored the extent to which the findings of this study were recognized and acknowledged by the valuation experts. We asked them, per type of bias, to what extent they experienced each bias in their own work and in the work of their peers.

Study 3: Anchoring bias (H₁)

Table 16. Q&A Anchoring bias.

Finding: When entrepreneurs are confronted with an independent valuation report and are asked to indicate in what range they believe the true value of the company lays, they use the initial value (i.e., in this case a valuation report conducted by an independent valuator) as an anchor and indicate a higher range in case of a high anchor, and a lower range in case of a low anchor. Specifically, their perceptions regarding the value of their company are affected by the anchor, such that relatively high anchors result in a higher perceived value compared to when a relatively low anchor is presented.				
Question (1a): Did you ever feel that in an engagement, your client might have been affected by an anchor expressed in a numerical value, such as in the examples mentioned above?				
Yes = 86.7%			No = 13.3%	
Question (1b): In addition to having experienced the effects of anchoring bias among your clients yourself, do you believe that your peers (i.e., corporate finance experts, business valutors) have also experienced that that anchoring bias can influence their clients' perceptions?			Question (1c): Despite not having experienced the effects of anchoring bias among your clients yourself, do you believe that anchoring bias can in fact influence clients' perceptions?	
Yes = 100%	No = 0%	Do not know = 0%	Yes = 100%	No = 0%

Table 16 findings presented graphically:



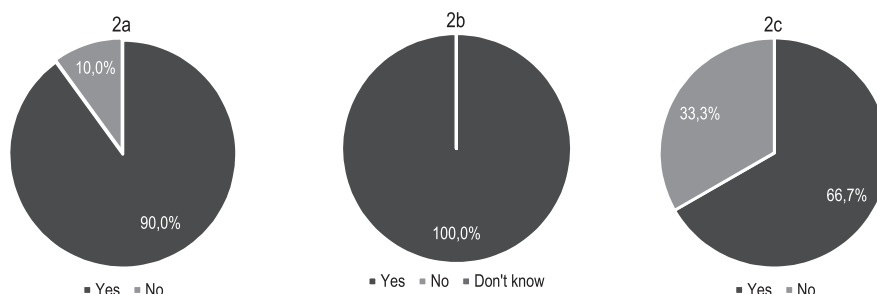
As Table 16 shows, the vast majority of the valuation experts indicated having experienced the effects of anchoring bias among their clients (i.e., entrepreneurs). Of this group, all believed that anchoring bias could also affect their peers' clients. Of those who did not experience the effects of anchoring bias among their clients, all believed that the clients of their fellow valuers could be influenced by anchoring bias.

Study 3: Buyer-Seller position (H₂)

Table 17. Q&A Buyer-Seller position.

Finding: Entrepreneurs appear to be affected by their position in a transaction, such that when they are the buyer, they indicate that the valuation should be adjusted downwards more heavily and also indicate a lower value range for the true value of the company. The opposite is the case when they are the seller.				
Question (2a): Did you ever feel that in an engagement, your client might have been affected by the position (buyer or seller) he/she had in a transaction when judging the value of the company?				
Yes = 90.0%			No = 10.0%	
Question (2b): In addition to having experienced the influence of position effects among your clients yourself, do you believe that your peers (i.e., corporate finance experts, business valuers) have also experienced that position effects can influence clients' perceptions regarding a company's value?			Question (2c): Despite not having experienced any position effects among your clients yourself, do you believe that position effects can in fact influence clients' perceptions regarding the company's value?	
Yes = 100%	No = 0%	Do not know = 0%	Yes = 66.7%	No = 33.3%

Table 17 findings presented graphically:



As Table 17 shows, the vast majority of the valuation experts indicated having experienced that their clients' perceptions of their companies' value were affected by the position they had in a transaction (i.e., being a buyer or a seller). Of this group, all believed that this position could also affect the peers' clients. Of the small group who did not believe their clients' perceptions were affected by position effects, the majority believed that clients' perceptions generally could be affected by these position effects.

5.4.4 Discussion Findings Part I

The main purpose of this part of the digital interview was to discover to what extent valuation experts recognized and acknowledged our observations in their own work and in the work of their peers. Additionally, their substantive reflection also served as a 'sanity check' for our findings and to protect ourselves against possible personal biases (e.g., confirmation bias). The consultation showed that the vast majority of experts recognize the influence biases can have on their work or on that of their peers, thus supporting the findings of the three studies.

Interestingly, of the participants who did not recognize the biases in themselves, the vast majority believed these biases could in fact influence others. This phenomenon is called 'bias blind spot', meaning that people believe others are affected by biases to a larger extent than they themselves are (Pronin et al., 2002).

5.5 FINDINGS: PART II. EVALUATION OF DRAFT PRINCIPLES

Following the outline of the three studies and our request for valuation experts to reflect on the findings, we presented seven draft principles for the international valuation practice to mitigate cognitive biases. We emphasized that the aim of defining a Statement of Principles is not to serve as a valuation standard, nor that it should include any requirements on how business valuations are to be conducted. The proposed Statement of Principles is solely intended as a prelude to a framework to facilitate business

valuators around the world to (1) (better) assess whether and to what extent biases might affect a specific valuation situation in which they are involved, (2) to raise awareness for biases in valuation practice, and (3) to serve as a practical guidance to mitigate biases. In addition, the proposed Statement of Principles is intended to be applicable in all jurisdictions, preferably but not necessarily adopted by national professional associations.

Some of the principles may seem counterintuitive, revolutionary or provocative and/or (too) far from mainstream thinking and practice. However, we expect that the high profile valuation experts around the world, considering their professional background and position, should be able to consider each principle professionally as well as be able to judge the principles on a more abstract level. The valuation experts' commentaries on the principles are intended to help with the further development, interpretation, clarification, and application in practice. Based on their commentaries, in some cases we adjusted the initial draft principles (section 5.6).

5.5.1 Draft Principles and Experts' Commentaries

Participants were asked to indicate on a scale from 0-100% to what extent they considered each principle to be of added value to the valuation practice. Additionally, participants were asked whether they had any suggestions or ideas to improve the respective principle. Finally, after the seven principles were presented, participants were asked whether they had any suggestions regarding additional principles that should or could be adopted to minimize the effects of cognitive biases in the valuation domain.

The draft principles are first presented in textboxes, then reflections of some participants are presented⁵, and finally we present our overall conclusion regarding the specific principle.

Principle 1: Valuation Biases Awareness Training

Part of a business valuator's education should be a mandatory biases training creating awareness around biases and de-biasing strategies. Such training allows business valuers to experience the (negative) effects of their own biases and how biases are formed by others. Participation in such a "valuation biases awareness training" should contribute to disturb unconscious decision-making processes in the context of business valuation.

The results for this principle are:



Figure 18. Results Principle 1.

⁵ The participants' comments were somewhat limited in terms of volume.

In all the figures in this section, the vertical line represents the average (M) score on the scale from 0-100% and the shaded area represents the scores within 1 standard deviation (SD) below (left of the line) and 1 standard deviation above (right of the line) the average score.

Figure 18 shows that participants generally leaned towards considering this principle to be of added value, as can be derived from the average score of 67.7%. However, the somewhat large standard deviation of 24.2% suggests there was quite some variation in the answers.

Some participants commented very positively on this principle, thus acknowledging that bias awareness training programs can be of added value for practice, as derived from the following illustrative quotes:

- *“An “unconscious” biases awareness training would be beneficial.”*
- *“In the audit practice, such awareness training is already common and will provide a basis for valuations. Specific adjustments will be needed however because a valuation is more about different interests than an annual report.”*

However, the following critical note was also made:

- *“What is needed is not mandatory training on biases ... What are needed is enforcement mechanisms when a valuation professional deliberately [sic] skews a valuation.”*

Conclusion Principle 1

We conclude that this principle is generally considered to be of added value. We also feel, based on the results and on our own observations, there is ‘momentum’ given the fact that bias awareness training programs are becoming increasingly commonplace in the corporate world. For example, the audit profession (see above) and CFA-education (i.e., Certified Financial Analyst education), as well as in the leadership domain (e.g., in strategic decision-making) these awareness training programs are becoming more popular and recognized as an effective means to reduce biases. Hence, we believe this principle could support valuation professionals to mitigate the effects of cognitive biases.

Principle 2: Debiasing Information Processing Protocol

Biases are the result of being exposed to irrelevant information. Therefore, the risk of bias is reduced when such information is withheld from the business valuator. To protect the executive business valuator from being exposed to potentially biasing information, a second person (when the nature of a business valuator’s firm allows the involvement of a second person) conducts the intake with the client whereas the executive business valuator receives only information through this second person relevant to the execution of the valuation work.

The results for this principle are:



Figure 19. Results Principle 2.

Figure 19 shows that participants were somewhat critical regarding this principle, as derived from the average score of 38.9%. However, the fairly large standard deviation of 30.9% suggests there was quite some variation in the answers, ranging from highly critical to very supportive.

Eleven participants commented negatively, generally considering a debiasing information processing protocol as proposed, to be of limited added value. Interestingly, this is mostly because they suspect bias could also occur due to the selection of information to be passed on. The following quotes highlight this concern:

- *“This process will add to bias as the question becomes who determines what is relevant!”*
- *“The use of an intermediary does not solve the underlying problem because he/she will be affected by the biased information. And so will the executive valuator, although maybe to a somewhat lesser extent. In my view it is simply a required skill of the valuator to be aware of this phenomenon and work around / with it.”*

In contrast, the following supporting note was made:

- *“This is a great idea, but I wonder how much time it could take to eliminate the executive valuator receiving only relevant information, given inconsistencies in how client firms store and share information.”*

Conclusion Principle 2

The respondents generally seem to be somewhat skeptical regarding this principle. They worry that the lead valuator who decides which information is irrelevant versus relevant might add bias. Hence, for this principle to be of added value, it would be worthwhile further specifying what can be considered as relevant and irrelevant information. Even though discussions may take place on the relevance of specific information, some information is evidently irrelevant for conducting a valuation. For example, a client’s gender, the similarity between the valuator and the client, and the client’s value perception should not affect a valuation. Therefore, we believe it can be beneficial for an executive valuator when a lead valuator (who collects information and conducts client interviews) filters this irrelevant information. Hence, despite the concerns raised by the respondents, we believe this principle could support valuation professionals to mitigate the effects of cognitive biases and is therefore worth exploring further.

Principle 3: Avoiding Knowledge of the Client's Value Perception

When a business valuator is requested to value a business or a business interest, (s)he should avoid having any knowledge about the client's value perception, either through the ultimate client or the client's representative, towards the valuation object.

The results for this principle are:



Figure 20. Results Principle 3.

Participants were ambivalent about this principle, with an average score around the midpoint (48.3%). Additionally, the standard deviation of 30% suggests there was quite some variation in the answers, ranging from highly critical to very supportive.

Eight participants commented on this principle. They were generally quite nuanced in their comments, acknowledging both the limitations and the potential upsides of this principle. The following quotes are illustrative:

- *“Although not knowing the client's value perception might make the valuation more objective, it might be harmful for the “impact” of the valuation work in certain settings (i.e. the ability to convince a client to actually follow the outcomes of the valuation work). Of course, the mentioned constraint is only applicable in settings where a client has an option to deviate from the outcomes.”*
- *“Clients are free to disclose their target values. Valuators should simply acknowledge the risk of such anchor.”*
- *“It is close to impossible to avoid the client's value perception, more often than not this is why valuators are hired in the first place. The only remedy is to confront the client with market-based data indicating counter evidence for his/her value perception. Or to explain based on these data what the underlying assumptions of the client's value perception actually are (e.g. growth, profitability, market share, peer group multiples, etc.).”*

Conclusion Principle 3

The participants' concerns mainly seem to focus on the practical feasibility of this principle, as clients' value perceptions are often voiced at an early stage and are sometimes even the starting point of an engagement. However, participants acknowledged the risk of bias due to a client's value perception and suggested that clients should substantiate their value perception. Although we agree that insights with respect to the company's value drivers are important discussion points with the client, the quantification of the client's value perception is irrelevant and should therefore be withheld from the valuator. Hence, it remains important for a valuator to limit exposure to a client's quantified value perception. With that, we still believe this principle could help valuation professionals mitigate the effects of cognitive biases, and is therefore worth exploring further.

Principle 4: Signaling Subjectivity and Performing a Debiasing Exercise

When a business valuator is engaged through a direct client or another professional such as a lawyer or an auditor to support their client's interests, (s)he should be aware of any subjective party-information received that might influence his/her perceptions on the case. During the intake the business valuator checks which elements according to him/her might affect the perception on the valuation case (through a practical "valuation biases checklist" including topics such as 'Who is your client?', 'Is your fee in line with market conditions?', 'Did your client express any numerical expectation?', 'Is this the first time you work for this client?', etc.). When finalizing the valuation work, the valuator compares his/her work with the initial listed elements, amends if necessary ("valuation de-biasing exercise") and attaches the checklist to his/her valuation file.

The results for this principle are:

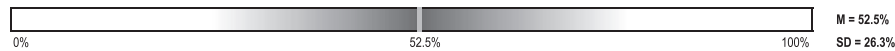


Figure 21. Results Principle 4.

The participants were ambivalent towards this principle, as can be derived from the average score around the midpoint (52.5%). Additionally, the standard deviation of 26.3% suggests there was quite some variation in the answers. Participants were, for instance, concerned with the principle's practical applicability. For example:

- "Usually we do not have time for this."

Others noted that the value of this principle depends on the context of the valuation, as demonstrated by the following quotes:

- "This may be helpfull [sic] for certain types of engagement where a valuator needs to be truly independent."
- "It might be beneficial to the business valutors who are not members of any VPOs [Valuation Professional Organizations] but not to the VPO members."
- "As a form of self-help the checklist could be effective, like having another look in the mirror. I doubt whether the valuator will actually be able to go back to the drawing table after completion of the exercise because he/she is already too much involved. As a more internal means of evaluation and case filing it may be a nice instrument."

Conclusion Principle 4

In general, participants seemed concerned about the required time investment and the valuator's ability to amend a valuation once it has been conducted. Therefore, for a bias-checklist to be effective, it should in our opinion be applied a-priori (i.e., prior to conducting a valuation) and should require little time. Additionally, the precise content of such checklist is open to further discussion. Topics such as "Is your client a highly reputable organization?" (as this might increase engagement bias), "Is your reward based

on a success-fee?" (as this might increase engagement bias), "Did your client express any numerical expectation?" (as this might cause anchoring bias) might be included in such a checklist. Hence, if conducted a-priori and in a time-efficient manner, a bias-checklist could prove to be a valuable instrument to mitigate the effects of biases in valuations. This principle also seems worth exploring further.

Principle 5: Criteria setting on quality of valuation to align mutual expectations

When a business valuator is requested to value a business or a business interest, (s)he requests beforehand the criteria on which the client will assess whether the valuation work performed by the business valuator has been carried out properly or poorly. In case of doubt regarding mutual expectations the business valuator takes the initiative to discuss this matter. In any case, the topic of "potential valuation biases" should be discussed with the client.

The results for this principle are:



Figure 22. Results Principle 5.

Participants were slightly unsupportive of this principle, as can be derived from the average score just below the midpoint (44.5%). However, the standard deviation of 30% suggests there was quite some variation in the answers. Participants were mainly concerned whether clients in general are in fact able to judge a valuation, considering they do not have the same expertise as a professional business valuator.

Some quotes regarding this principle highlight this concern:

- "Clients are not always familiar with the business valuation and are not interested in such discussion with the business valutors."
- "This question is not easy to answer because some clients do not have the competencies to judge the valuator's work. On the other hand, the valuator should apply a certain minimum amount of quality of his/her work, but in practice we see a lot of weakly supported valuation reports. I think a comprehensive and meticulous engagement letter provides the basis for criteria setting and quality standards."
- "If the client does not have valuation expertise, how will the client be able to assess if the valuation work has been carried out?"

Conclusion Principle 5

Participants' concerns are predominantly concentrated around the client's lack of 'technical' knowledge regarding valuations. As a result, they might not be able to discuss valuation quality criteria. We agree that a discussion with clients regarding the quality of a valuation should not focus on valuation technicalities; it would be more constructive to discuss the fundamen-

tals of the valuation. For example, it might prove valuable to discuss the criteria used to evaluate the valuation, other than the valuation outcome. This principle would thus serve to prevent valuers and valuations from being judged solely on the outcome of the transaction for which the valuation was used. This might particularly help avoid valuers and valuations being unjustly negatively judged when clients' objectives are not achieved, often the origin of many disputes and litigation. Despite its somewhat critical reception, we still consider a discussion with the client regarding the client's criteria at the start of an engagement to be of added value for preventing unjust post-hoc evaluations (i.e., outcome bias). Yet this principle also needs further exploration before being adopted in practice.

Principle 6: Four-Eyes Principle

Business valuers should through confidential conversation discuss their valuation assumptions and valuation outcomes with at least one colleague ("Four-Eyes Principle") or – preferably – with several peers before releasing the final valuation report. The topic of "potential valuation biases" should explicitly be discussed among the peers engaged and be documented.

The results for this principle are:

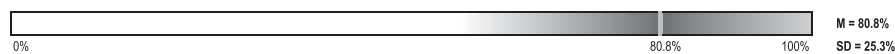


Figure 23. Results Principle 6.

Participants were very supportive regarding this principle, as can be derived from the average score of over 80%. Additionally, the standard deviation of 25.3% shows there was less variation in the answers than with the previous principles. Some of the supportive views include:

- *"This is a principle that is quite essential and that I have applied throughout my entire valuation career (I guess I am (therefore) biased as to this question ;-))."*
- *"Consult even more than you think you need to. And then do it again."*

However, there was some disagreement regarding the execution of this principle. Some believe a second look should come from someone from outside his/her own firm, whereas others believed this should be someone from inside the firm. The following quotes illustrate these opposing views:

- *"... it would be better if the reviewer were not from the same firm."*
- *"Four Eyes principle is good, but should be limited to colleagues only."*

Conclusion Principle 6

Considering the wide support for this principle, we strongly believe this principle should be adopted in a Statement of Principles. Having another

valuator review the valuator's work might help expose the potential impact of biases in the initial valuation, which then allows for a correction to be implemented. Who would be most suitable to conduct such a peer review remains open to debate.

Principle 7: Mirroring to assess the counterpart's perspective

Business valuers should always consider an alternative valuation scenario – next to their initial conducted valuation outcome – from the perspective, position and potential criticism of their client's counterpart. Following this exercise, the initial valuation outcome should be reconsidered and amended if necessary.

The results for this principle are:



Figure 24. Results Principle 7.

Participants were relatively in favor of this principle, as can be derived from the average score of 63.1%. Some expressed their strong support toward adopting the counterpart's perspective:

- "Apply this principle 24/7."
- "I think that a valuator should always face risks properly and, saying so, I mean that he should always consider better and worse scenarios to have a better range of results to analyse [sic]."

Others expressed a more nuanced view. To illustrate:

- "This question contains two sub-questions that can (and, in my case, have to) be answered differently. First part: consider alternative views – YES Second part: reconsidered and amended – NOT NECESSARILY (in situations where the valuator is working on behalf of one party)."

Conclusion Principle 7

Given the support for this principle, we believe it should be adopted in the Statement of Principles. However, some participants seemed to have interpreted this principle in such a way that a valuation should always be adjusted following the exercise; this is not the purpose. Rather, the principle merely aims to serve as a 'sanity check' of the assumptions used in a valuation. It is possible that, after adopting the perspective of the counterpart, a valuator would conclude that (s)he had been too steadfast in his/her assumptions. However, it is also possible that a valuator could conclude that the assumptions were sound.

Additional Principles

At the end of the digital interview, we asked the valuation experts if they had any suggestions regarding additional principles that should or could be adopted to minimize the effects of cognitive biases in the valuation domain in addition to the seven principles presented. The main reason for this question was, on the one hand, to use their experience and expertise to enrich the draft principles and, on the other hand, to avoid our own 'tunnel vision bias', i.e. we wanted to provide room for new insights and ideas regarding novel principles that might be as or more relevant or niftier than those we proposed and tested. We evaluated the additional ideas when drafting our final Statement of Principles.

Interestingly, one of the participants suggested that to avoid outcome bias, valuers should use a 'factual memorandum'; a valuation report without outcomes in order to agree on methodology and assumptions. Risks regarding any information not provided by the customer should then be secured by means of a so-called 'representation letter'.

Another participant proposed the introduction of an 'integrity principle' by means of a full file review by colleagues and the proper construction of a case file including all documentation. Interestingly, in line with the current debate in the audit profession, one participant also suggested a more far-reaching measure, namely 'third party contracting' to ensure valuers cannot be influenced by the original client who ultimately pays the fees. A signal to exercise caution around such principles came from another participant who warned that, despite the existence of potential bias, this should not result in the valuator being totally isolated from the original client.

5.5.2 Discussion Findings Part II

The aim of the digital interview study was, firstly, to explore whether the introduction of principles to mitigate the effects of biases might be a feasible approach in the opinion of business valuers. We investigated this by positing several statements that we felt were relevant on the basis of practical experience. On second, our aim was to have the draft principles evaluated by the valuation experts regarding their added value, and then to improve them based on their suggestions. Ultimately, by means of the use of principles, we aim to generate structural awareness and understanding of the potential effects of biases among business valuers, and to offer best practices on how to anticipate on the potential effects to reduce unconscious biased judgments.

Despite a number of critical remarks, respondents were generally fairly positive about the proposed principles. The research project suggests that valuers have no fundamental objections to principles per se, yet the feasibility, scope and practical usability are, in some cases, open to debate.

More generally, it needs to be discussed whether the valuation profession, i.e. the local professional bodies, should proactively embrace the

development of principles or wait until society requires it. We advise the profession to seriously consider doing this.

Currently, the way in which standards are implemented within professions depends, among others, on their social impact. For example, following international scandals involving the audit and banking profession, the public debate on their role in society led to stricter regulations being enforced by regulators rather than self-imposed by professional bodies. Freedom regarding the interpretation, practical application and regulation of themes like quality standards and professional behavior is no longer as obvious as it used to be. The lesson for auditors and bankers is that they should have taken control much earlier by being stricter on regulating their own profession. Now they are no longer in the driver's seat, as society (read: governments) have taken control by implementing stricter rules and guidelines.

Self-imposed regulation and the implementation of directive principles and/or rules obviously leads to objections. In principle, this can be perceived as a restriction on the professional field's autonomy, limiting their playing field. It is tempting to maintain the status quo, as long as nobody objects.

We should not forget however that although the profession is not yet legally embedded in most countries, major business decisions are taken based on valuation results and valuations therefore impact society as a whole. Furthermore, as per the starting point of this dissertation, many disputes and litigation result from (presumed) poor valuations. This observation also argues in favor of self-chosen, proactive measures that harmonize the execution of the profession. The introduction of our proposed Statement of Principles for Valuation Practice can contribute to this.

5.6 PROPOSED STATEMENT OF PRINCIPLES FOR VALUATION PRACTICE

Based on the feedback from the respondents and our critical review of the principles, we implemented a number of changes, resulting in the following proposed Statement of Principles that serves as a prelude to the development of additional principles.

A Statement of Principles for Valuation Practice to Mitigate Cognitive Biases

Principle 1: Valuation Biases Awareness Training

Part of a business valuers' education should be a mandatory biases training program creating awareness of biases and de-biasing strategies. This training program would allow business valuers to experience the (negative) effects of their own biases and how biases are formed by others. Participation in a "valuation biases awareness training program" will contribute to awareness about the unconscious decision-making processes in the context of business valuation.

Principle 2: Debiasing Information Processing Protocol

Biases can result from being exposed to irrelevant information. Therefore, the risk of bias is reduced if this information is withheld from a business valuator. To protect the executive business valuator from being exposed to potentially biasing information, a second person (i.e., the lead valuator) should conduct the intake with the client and filter the irrelevant information for the executive business valuator.

Principle 3: Avoiding Knowledge of the Client's Value Perception

If a business valuator is requested to value a business or a business interest, (s)he should avoid having any knowledge of the client's value perception towards the valuation object, either through the client him/herself or through the client's representative.

Principle 4: Signaling Subjectivity and Performing a Debiasing Exercise

If a business valuator is engaged through a client or another professional such as a lawyer or an auditor to support their client's interests, (s)he should be aware of any subjective party-information that might influence his/her perceptions regarding the valuation object. At the initial stages of the engagement, the business valuator should check which elements might affect the perception on the valuation case through a practical "valuation biases checklist". When finalizing the valuation work, the valuator should compare his/her work with the initial listed elements, and amends the valuation assumptions if deemed necessary.

Principle 5: Criteria setting on quality of valuation to align mutual expectations

If a business valuator is requested to conduct a valuation, the valuator should discuss the (non-technical) valuation criteria on which the client evaluates the valuation before conducting the valuation. In case of doubt regarding mutual expectations, the business valuator should take the initiative to discuss this. The topic of "potential valuation biases" must be discussed with the client in all situations.

Principle 6: Four-Eyes Principle

Business valuers should, in confidential conversations, discuss their valuation assumptions and valuation outcomes with at least one or preferably several colleagues/peers ("Four-Eyes Principle") before releasing the final valuation report. The topic of "potential valuation biases" should explicitly be discussed among the peers, and be documented.

Principle 7: Mirroring to assess the counterpart's perspective

Business valuers should always consider an alternative valuation scenario – in addition to their initially conducted valuation outcome – from the perspective, position and potential criticism of their client's counterpart. Following this exercise, the initial valuation outcome should be reconsidered and amended if necessary.

5.7 LIMITATIONS

We have developed a Statement of Principles based on commentaries from the consulted valuation experts. Ultimately, this proposed statement is neither exhaustive nor 'final'. It is meant to serve as a first step for a necessary discussion on biases in international valuation practice and, how to deal with these biases, and thus form an initial stage in the development of a comprehensive set of (localized) guidelines for dealing with biases in relation to specific business valuation circumstances. It is up to future researchers to determine how to make these principles manageable and implementable, bearing in mind existing regulations, code of conducts, professional standards and best practices, as well as the increasing demands of society.

The extent to which such principles should be implemented and in what way, may vary from country to country. Some local professional valuation bodies may already have paid attention to the bias problem, others may still be at the starting point. This may depend on the popularity and scale of business valuations in the country, as well as the sophistication of the local profession and corporate finance community in general. Whatever the situation, it is obvious that professional associations at a national level should be involved in a possible implementation, including the process of adjustments or extensions of specific principles.

6 Conclusion

6.1 GENERAL CONTRIBUTION

Business valuations frequently result in lengthy disputes and costly legal procedures, typically a result of widely diverging valuation outcomes. The valuation literature, thus far, has predominantly focused on the role of differences in valuation inputs (e.g., growth rates of net income and cash flows, cost of equity and debt, beta, the level of (re)investments and net working capital, terminal value, etc.) as a cause of these deviations (e.g., Bancel & Mittoo, 2014; Dukes, 2001; Szymański, 2012) and subsequent disputes. In this dissertation we set out to enhance our understanding of valuation disputes by exploring the role of cognitive biases in the judgment of business valuers and business valuation outcomes. To achieve this, we conducted three experimental studies, examining cognitive biases from the perspective of three key stakeholders: the entrepreneur, the legal professional, and the business valuator. The latter, in many cases, can be considered as the key stakeholder, particularly when supporting his/her clients in the assessment of a valuation conducted by another valuation expert. Following these experimental studies, we held a survey among an international group of leading business valuation professionals in order to obtain a critical and practical view on the findings of the three empirical studies. In this way, we were able to ask the professionals to reflect on a proposed set of valuation principles derived from the results of our three studies. Using these principles, valuation professionals may be able to mitigate cognitive bias in business valuation practice.

Collectively, the studies show that when the three stakeholders judge valuations and valuers, they can be affected by cognitive biases. This shines a new light on the question why valuations regularly lead to (or enlarge) disputes and legal procedures. The proposed set of valuation principles intends to help practicing professionals in a preventative way.

In Chapter 2., we show that entrepreneurs, in their role as the ultimate end-user of a valuation, perceive the value of an interest in their company (or a prospective interest they are looking to obtain) differently based on the buyer-seller position they hold. More specifically, entrepreneurs appear to be unconsciously affected by their position in a transaction so that if they are the buyer, they perceive the value of the object as being lower compared to when they are the seller of the object, and vice versa. We also find that entrepreneurs are affected by anchoring bias so that when they are confronted with an independent valuation report and are asked to indicate in what range they believe the true value of the company lies, they

use the initial value (calculated by the independent valuator) as an anchor, resulting in a higher valuation range in case of a high anchor, and a lower range in case of a low anchor. Hence, their perceptions regarding the value of the company are affected by the anchor: a relatively high anchor results in a higher perceived value compared to when a relatively low anchor is presented.

In Chapter 3., we investigated whether legal professionals were affected by similarity bias, outcome bias, and gender bias after they asked a business valuator to assess the value of an insolvent company. Our study reveals that the judgments of valuations and valuators by legal professionals are affected by (1) the degree of perceived similarity with the valuator, (2) the outcome of a deal in which the valuation was used, and (3) the valuator's gender. Specifically, if a valuator is perceived by legal professionals as being more similar to themselves, they also perceive the valuator as more trustworthy, and in turn have more trust in his/her valuation. Moreover, in the case of higher perceived similarity, legal professionals are also more positive about the valuator's role in the deal, are more likely to rehire the valuator in the future, believe more strongly that the valuator deserves praise (or less blame in case of a bad deal), and they believe more strongly that the valuator did his/her best in valuing (the assets of) the company. Furthermore, when legal professionals evaluate a valuator after they have used her/his valuation report for the sale of a company's assets, the outcome of the deal affects the legal professionals' opinion of the valuator. In case of a good deal, the valuator is perceived in a more positive light whereas the same valuator is perceived more negatively after a bad deal. Also, male legal professionals have more trust in the ability of a valuator when the valuator is also male. This heightened trust in the valuator's ability also predicts trust in the valuation. Contrastingly, female legal professionals do not show gender bias in their perception of the ability of the valuator.

In Chapter 4., we examined whether business valuers are affected by cognitive biases when giving a second opinion on a given business valuation of a company. We found that business valuers are unconsciously influenced by a client's interests as well as by numerical anchors. Valuers appear to be affected by their clients' interests, so that when they represent a buyer (and therefore might have an implied incentive to lower the company's valuation), they in fact indicate that the valuation should be adjusted downwards more heavily, and they also indicate a lower value range for the true value of the company. The opposite is the case when they represent the seller. Moreover, it appears that when valuers are confronted with a valuation report, and are asked to indicate in what range they believe the true value of the company lies, they use the initial value (in this case the outcome of a valuation report conducted by another valuator) as an anchor, resulting in a higher range in case of a high anchor, and a lower range in case of a low anchor. Specifically, their perceptions regarding the value of a company are affected by the numerical anchor, so that a relatively high anchor results in a higher valuation compared to when a relatively low anchor is presented.

In Chapter 5., the findings of these three empirical studies were evaluated by an international group of leading valuation professionals. The results indicate that the majority of participants recognized the influence of cognitive biases in their daily work and/or that of their peers. Participants who did not recognize the impact of biases among themselves, however, believed that these biases can in fact influence their peers.

Overall, the dissertation contributes to the body of knowledge within the valuation domain in a number of ways. First, the business valuation literature treats business valuation primarily as a mechanical and arithmetical exercise, largely ignoring behavioral aspects. The risk of biases is currently mainly addressed in connection with valuation input variables. In contrast, in this dissertation, we examined how cognitive biases impact the way key stakeholders (including business valuers themselves) perceive a valuation outcome and the valuator who created that outcome. We show – in addition to biases in input variables of a valuation – that cognitive biases also play an important role in the judgment of valuation outcomes and the resulting valuation disputes. In this way, we direct attention to a relatively unexplored area in business valuation that seeks to find explanations for the widespread existence of divergent business valuation judgments in practice. It thereby sheds light on the issue why sound valuations can be perceived as poor, and poor valuations as sound. Second, some studies suggest that financial professionals weigh their clients' interests at the expense of their professional judgment (Firth, Lin, Liu, & Xuan, 2013). The existence of this so-called engagement bias, however, is ill-addressed in the social psychology literature. We provide empirical evidence for the existence of engagement bias in a valuation context, thereby extending the current body of knowledge on engagement bias.¹ In addition, as a minor contribution, we provide support for earlier research on bias blind spot, the notion that people tend to acknowledge the existence and influence of cognitive and motivational biases much more in others than in themselves (Pronin, Lin, & Ross, 2002), by extending this phenomenon to the valuation domain. Our findings regarding the existence of bias blind spot among valuers is of practical importance as it draws attention to possible resistance to change in the valuation profession. Third, we addressed two important phenomena in valuation practice. On the one hand, we provided a new understanding of how valuation outcomes and valuers are judged. On the other hand, we applied scientific methods and theories to examine a well-known psychological phenomenon observed in practice that up until now has only been discussed anecdotally in the literature. As such, the findings of the empirical studies may serve as a first step in creating awareness that cognitive biases play a role in business valuation, and that they impact the way key stakeholders judge valuation outcomes and valuers.

1 *Note:* in practice, valuation professionals sometimes joke about which 'calculator' they will use to determine the value of a company, depending on whether they support the buyer or the seller.

In this dissertation, we present a first attempt to develop principles and procedures that may mitigate the effects of cognitive biases in the context of business valuation, ultimately reducing the extent of valuation disputes. With that, our findings are also important for legal theory and practice. The Statement of Principles presented in the dissertation serves as a first guideline to embed the awareness of cognitive biases in the context of business valuation. In this context, a noteworthy aspect of the dissertation is that in all the studies we use ecologically valid participants, including legal professionals, entrepreneurs and business valuers across the world. We thereby address criticism on the widespread use of so-called WEIRD-subjects (i.e., Western, Educated, Industrialized, Rich and Democratic students). These types of participants are commonly used in psychology and social sciences studies, but the usability of such studies is sometimes questioned as it is difficult to generalize findings to the real world based on studies conducted solely among a very narrow and specific sample of, typically, American and Western European university students (e.g., Henrich, Heine, & Norenzayan, 2010). Hence, the 'real people' samples used for the studies included in our dissertation enlarges the external validity of the findings, making it more likely that the investigated biases are manifest in practice.

6.2 LIMITATIONS OF THE RESEARCH

A review of earlier work indicated several limitations when evaluating the role of biases in the business valuation landscape. That is, the relatively limited number of studies related to biases in the context of business valuation focus mainly on bringing presumptions into valuations of those who analyze and value a company (e.g., analysts, valuers, and managers) so that valuation input variables are affected by biases, resulting in biased valuations (e.g., Damodaran, 2017; Ruback, 2011). In parallel, there is also some anecdotal and professional evidence that suggests cognitive biases might manifest themselves when conducting and perceiving valuations. We bring a new perspective on the role cognitive biases play when judging valuations and valuers in addition to what is already known in the areas of the effects of biases on valuation input variables. Moreover, the anecdotal and professional evidence of the existence of bias when conducting and perceiving valuations is extended by our four empirical studies that demonstrate this phenomenon among key valuation stakeholders.

However, our findings are subject to at least three limitations. The first relates to the valuation cases presented to the participants of the three empirical studies conducted among the identified key parties (i.e., legal professionals, business valuers, and entrepreneurs). These were compressed cases in the sense that the valuation assumptions and the outcomes were summarized and condensed. In addition, they were, from a valuation perspective, somewhat concise. However, in order to be able to include highly experienced participants in the research, we could not have asked them to spend

more time on it. Still, the question can be raised whether the findings of the studies could be even more convincing if the participants had been given more details (i.e., adding to the studies' realism).

Second, we used the experimental research methodology that is common in, among others, the behavioral sciences. Even though the cases were realistic and derived from real-life situations, from the perspective of the participants they might have been perceived as hypothetical. The participants were not observed in their own working environment, and they had to empathize with a situation in which they were not actually involved. In this sense, the question can be raised to what extent the observed biases play a role in the real world. However, there are reasons to believe that the findings following on from the experimental method are in fact generalizable to more real-life settings. First, this experimental method enabled us to draw conclusions regarding causal relationships, which is not possible with correlational data. Second, the participants are professionals in their respective fields and affiliated with respected firms. Third, the findings of the three empirical studies were presented to a selective, international sample of leading business valuers. The findings of the three studies were clearly recognized, either in themselves or in others. These are all additional reasons to believe that these biases play a role when judging valuations and valuers.

Finally, we proposed seven principles (our Statement of Principles) with the aim of mitigating the effects of cognitive biases in valuation practice. The Statement of Principles is meant to serve as a first step towards a necessary discussion on how to deal with biases in international valuation practice. Despite some criticism, the respondents were generally positive towards the principles put forward. This research project suggests that valuers have no fundamental objections to principles per se, yet the feasibility, scope and practical usability are in some cases, open to debate. Therefore, whether these principles will have the envisioned effect in practice and whether there is sufficient support for the implementation of such principles warrants further attention.

6.3 DIRECTIONS FOR FUTURE RESEARCH

This dissertation opens at least four interesting and novel areas for future research. The following research suggestions provide possible directions for this research in order to increase the body of knowledge on our understanding around disputes as a result of a valuation outcome.

1. Our research shows the existence of cognitive biases when judging valuations and valuers. The findings show that not only entrepreneurs and legal professionals appear to be susceptible to cognitive biases when judging valuations and valuers, business valuers themselves also appear not to be immune to biases when assessing a company's value.

Despite the existence of biases in the valuation landscape being frequently denied by valuation and finance professionals (Damodaran, 2015), there are indications that valuers are in fact affected by biases when determining the valuation input variables. However, little is known about how to overcome the influence of biases in this phase of a valuation. Indeed, composers of valuations are typically characterized as rational individuals who prefer to determine (financial) value through complex calculations. As a consequence, much time is spent on valuation inputs and hardly any attention is paid to the influence of biases when determining these inputs. According to Damodaran (2015), valuation practice will be better served if valuers at least discuss the presence of biases when composing valuations and determining the valuation inputs. A striking example of how biases can affect valuation input variables is the Dell Inc. statutory appraisal action which arose out of the 2013 management buyout led by the company's founder (BVR, 2016). As discussed in Chapter 1., one of the Delaware court's findings was that two highly distinguished valuation experts, applying similar valuation principles and methods, generated valuation opinions that differed by 126%, or approximately USD 28 billion. The court observed that this is a 'recurring problem', and in this case the difference in the experts' DCF-valuations was primarily driven by the projected cash flows used. As most stakeholders perceive business valuers as a relevant source for determining a company's value, both might benefit from valuers who pay more attention to the behavioral aspects that affect these valuation inputs. To overcome at least a proportion of the disputes following from valuations, it might be useful to further explore strategies that can mitigate the effects of bias, also in the composition of valuation inputs.

2. In our studies, we investigated an inconclusive number of biases (i.e., similarity bias, outcome bias, gender bias, anchoring bias, engagement bias and buyer-seller position effects). This was largely due to the robustness of some of these biases in other fields, or because of their expected effects based on anecdotal and professional evidence known by the researchers. The findings show that these biases affect the way entrepreneurs, legal professionals and business valuers judge valuations and valuers. However, the literature on biases is almost endless, and it is possible that other types of biases also contribute to the emergence of valuation disputes. For example, we show in the dissertation that relatively little research has been conducted on cognitive biases among entrepreneurs in general (Cossette, 2014) and, to our knowledge, no research had yet investigated the role of biases in diverging value perceptions among entrepreneurs specifically. This gap in the literature provides an opportunity for the further study of what other biases might also contribute to entrepreneurs' perception of a valuation. A similar gap in the literature exists regarding biases among business valuers.

Although these biases are recognized and discussed by leading valuation scientists like Professor Aswath Damodaran (Stern School of Business, NY), this topic has only received scant attention in the literature. In contrast to other fields where there is an extensive body of literature on the effects of biases on judgments and decision making, this type of research is almost nonexistent in the context of business valuation. We therefore believe this is a fruitful area for future research, including the search for possible other biases than those we found. Examples can be (but are not limited to) confirmation bias, optimism bias and the so-called illusion of validity. We also stress the societal importance of further research into gender bias, and how to eliminate this in practice.

3. The presence of cognitive biases among the stakeholders in our studies is believed not to be solely applicable to these groups. Although from a practical point of view these are considered to be relevant in the context of valuation disputes, other stakeholders may play a similar important role. For example, many disputes between shareholders are brought before court. Consequently, judges have to form opinions and in many cases valuation reports are part of the dispute, or the judge appoints a valuation expert and bases his/her judgment on the expert's report. Either way, judges have to evaluate the valuation and/or the valuator. It has been demonstrated in the literature that judges are also susceptible to cognitive biases (Anderson et al., 1993; English & Mussweiler, 2001; Epstein et al., 2018; Kneer & Bourgeois-Gironde, 2017; Resnik, 1993) which raises the question if, and to what extent, judges might be susceptible for cognitive biases when judging valuations and valutors.

Another important stakeholder group are financial institutions (e.g., bankers or other providers of capital). When banks in their role as provider of interest-bearing debt have to assess a provision of debt to a company, or need to consider a haircut (i.e., reduction) of the outstanding debt, they often base their decision for a large part on the valuation of the company. In these circumstances, bankers may also be affected by biases when judging the valuation outcomes and/or the valutors. To enhance the understanding of the causes of valuation disputes, it would be worthwhile investigating whether some of the findings related to entrepreneurs, legal professionals and business valutors are, to some degree, also applicable to for example, judges and bankers.

4. Several professional bodies across the world – ranging from federations of corporate professionals (e.g., accountants, lawyers, valutors, brokers, bankers) to organized professionals such as surgeons or archivists – currently apply “soft” principles or standards that serve as practical guides for (ethical) behavior, beliefs, intentions and/or evaluations of their members. To explore whether business valutors consider the introduction of specific principles that mitigate the effects of biases to be a feasible approach, we introduced a Statement of Principles. Some

research suggests there is little evidence that principles actually affect performance (Doig & Wilson, 1998), whereas others have claimed that the need for principles in business contexts is evident (Rezaee, Elmore, & Szendi, 2001). We aimed to serve as a first step in the development of a comprehensive set of (localized) guidelines for dealing with biases in relation to certain business valuation circumstances. The respondents were generally positive towards the principles put forward and, in general, had no fundamental objections to principles per se, yet the feasibility, scope and practical usability were debated in some cases. It is up to future research to investigate the effectiveness of specific principles in mitigating the effects of biases. Additionally, it is important to investigate how to gain support for principles within a profession characterized by a high degree of individuality and subjectivity. Finally, it may be worthwhile investigating other ways of mitigating the effects of cognitive biases when judging valuations and valuers, e.g. by the introduction of “hard” principles and standards, i.e. formal rules enacted by professional bodies and / or legislators.

6.4 IMPLICATIONS

Our findings have several practical implications and are therefore of interest to business valuers as well as to other stakeholders of valuations.

We have shown potential deficiencies and dangers when judging valuations and valuers because of the effects of cognitive biases. By means of a multi-stakeholder approach (i.e., three important parties of a valuation), the validation of our findings have been strengthened. Where previously only anecdotal and professional evidence existed for the presence of cognitive biases in the context of business valuation, we have now provided empirical evidence. However, we investigated a limited number of biases, as well as only a first selection of valuation stakeholders. Further research into other types of biases and among other stakeholders might indicate an even larger effect of cognitive biases among stakeholders when they judge valuations and valuers. Most importantly, and from a very practical perspective, our research shows that good and sound valuations can be perceived as poor, and poor valuations as sound. This is a real-world, everyday problem that unnecessarily fosters the emergence or extension of valuation disputes among the globe, based on false presumptions and beliefs.

Another practical implication is the finding about the so-called ‘bias blind spot’ among business valuers. Indeed, this dissertation showed that a majority of business valuers do not think they are affected by cognitive biases, while at the same time they do believe their peers are affected by biases. This type of blind spot may possibly obstruct changing the way valuers conduct their work, as a significant group with the worldwide profession may not consider themselves to be affected by biases.

In conclusion, to mitigate the effects of cognitive biases in the process of judging valuations and valuers, a first step would be to encourage the introduction of a strong focus on the awareness-raising process of these effects among valuers. Valuers are the ones who conduct valuations and are most likely those who should reveal the pitfalls of this problem to themselves, their peers and their clients. Moreover, we strongly believe that valuation professionals around the globe have the moral obligation to tackle biases. Simply for one reason: the interest of their clients.

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Summary

Valuation plays an important role in business and is used for investment decisions, mergers, acquisitions, restructurings, damages assessments, or when shareholder disputes occur. The scientific and practical field of business valuation constantly searches for answers to the challenges relating to the objects to be valued. Sophisticated arithmetic approaches like Discounted Cash Flow ('DCF') have been developed to counter practical issues, in order to objectify the valuation process as much as possible. However, conflicts arise daily due to differences of opinion regarding the outcome of a valuation and even the role of the valuator. This can lead to lengthy and costly litigation. The reasons for these conflicts are often sought in technical issues, for example relating to differences of opinion regarding input variables of the models and the valuation techniques applied. We, however, focus on the role of human behavior to gain an understanding of valuation disputes. More specifically, we investigated to what extent cognitive biases, i.e., systematic patterns of irrationality, play a role in the judgment process of valuation outcomes and valuers. Indeed, the influence of cognitive biases on human judgment forms a central theme within the research field of social psychology, and the topic is also well-addressed in other scientific fields. However, their possible effects on the field of business valuation have been largely ignored up till now.

Through experimental research among entrepreneurs, legal professionals and valuers themselves, we explored the role of cognitive biases among key-stakeholders of valuations. For this purpose, we conducted three empirical studies. The first experimental study, using a 2 x 2 between-subjects factorial design, investigated the presence of cognitive biases among entrepreneurs. By presenting respondents ($N=298$) with an impartial business valuation in the context of either buying or selling an entrepreneur's interest in a company, our study shows that entrepreneurs can be affected by thinking errors, more specifically, so-called buyer-seller position effects, and anchoring bias when judging a valuation outcome. The second experimental study examined the presence of cognitive biases among legal professionals ($N=272$) using both between subjects analyses of variance as well as mediation analyses based on correlational data. We show that, when judging valuations and valuers, legal professionals can be affected by similarity bias, outcome bias, and gender bias. The third experimental study, again using a 2 x 2 between-subjects factorial design, explores the role of biases among business valuers themselves ($N=363$) in judging a company's value when engaged by their clients. Specifically, the study

shows that valuers can be affected by anchoring bias and, interestingly, so-called engagement bias. The latter means that, despite being expected to make objective, independent judgments and calculations based on science-based valuation frameworks and professional standards, valuers have the tendency to, unconsciously, consider their client's economic interests.

Overall, we provide empirical evidence for the existence of cognitive biases in the context of business valuation, and make an applied contribution to the fields of business valuation and social psychology. The findings are also important for legal scholarship as by better understanding the effects of thinking errors among stakeholders in the judgment of valuations and valuers, a path to reducing unnecessary disputes may be found. Business valuers can be judged negatively or positively, purely based on preconceptions following on from cognitive biases. An adverse effect may also be that sound valuations are unconsciously judged as poor, and poor valuations as sound. In addition, valuers seem to be susceptible in practice to their client's interests without realizing this, despite societal expectations regarding their objectivity and independence. This endangers the profession.

A follow-up study was conducted in which an international group of high-profile valuers ($N=30$) were asked to explore whether they recognized the biases found in daily practice. Furthermore, respondents were asked to review a set of universal principles, developed using the outcomes of the first three studies, that aims to mitigate the influence of cognitive biases in the course of valuers' work. The results of this fourth study show that the vast majority of participants acknowledge the findings of the three experimental studies. Notwithstanding some critical remarks, they also reacted generally positive towards the proposed set of principles.

Our research has imperative practical implications for the understanding of disputes following on from or involving a business valuation. Specifically, the findings can and should be used to reduce the amount of lengthy and costly valuation-related legal procedures. By drawing attention to the influence of cognitive biases in the context of business valuation, our findings can assist, among others, entrepreneurs, legal professionals, and valuers in understanding and improving their judgments of valuations and valuers in cases when their interests are at stake. Moreover, based on our results, we advocate that worldwide, business valuers and their professional bodies should develop specific principles for valuation practice to mitigate the effects of cognitive biases, with the explicit aim of improving their own valuation work. The 'Statement of Principles for Valuation Practice to Mitigate Cognitive Biases', as presented in this dissertation, can be seen as a first step.

Samenvatting (Dutch Summary)

Bedrijfswaardering ('business valuation') speelt een belangrijke rol in het bedrijfsleven, en wordt gebruikt in de context van bijvoorbeeld investeringsbeslissingen, fusies, overnames, herstructureringen, schadeberekeningen, of bij aandeelhoudersgeschillen. Het wetenschappelijke en praktische vakgebied van business valuation probeert voortdurend antwoorden te vinden op vraagstukken met betrekking tot de te waarderen objecten. Geavanceerde rekenkundige benaderingen zoals Discounted Cash Flow ('DCF') zijn ontwikkeld om problemen in de praktijk tegen te gaan en het proces met betrekking tot bedrijfswaardering zo veel mogelijk te objectiveren. Toch ontstaan dagelijks conflicten als gevolg van meningsverschillen over de uitkomst van de waardering en zelfs over de rol van de waarderingsdeskundige. Dit leidt regelmatig tot langdurige en kostbare rechtszaken. Redenen voor dergelijke conflicten worden vaak gezocht in technische kwesties, zoals bijvoorbeeld meningsverschillen over inputvariabelen van gebruikte waarderingsmodellen en toegepaste waarderings technieken. Deze studie richt zich echter op de rol van menselijk gedrag. Meer specifiek wordt onderzocht in hoeverre denkfouten en vooringenomenheden een rol spelen in het beoordelingsproces van bedrijfswaarderingen en waarderingsdeskundigen. De invloed van dergelijke 'cognitieve biases', ofwel systematische patronen van irrationaliteit, op het menselijk oordeel vormt namelijk een centraal thema binnen het onderzoeksdomein van de sociale psychologie, en het wordt ook uitvoerig behandeld in andere vakgebieden. De mogelijke effecten hiervan op het gebied van business valuation zijn tot nu toe echter nauwelijks onderzocht.

Via experimenteel onderzoek onder belangrijke belanghebbenden als ondernemers, juristen en waarderingsdeskundigen, wordt in dit proefschrift de rol van cognitieve biases in de context van bedrijfswaardering verkend. Hiertoe zijn drie empirische studies uitgevoerd. De eerste experimentele studie, waarbij gebruik werd gemaakt van een 2 x 2 tussen proefpersonen factorial design, onderzocht de aanwezigheid van cognitieve biases bij ondernemers. Door respondenten ($N=298$) een onpartijdige bedrijfswaardering te presenteren in de context van het kopen of verkopen van een aandelenbelang in een onderneming, toont het onderzoek aan dat ondernemers inderdaad kunnen worden beïnvloed door denkfouten en vooringenomenheden als gevolg van zogenaamde koper-verkoper positie-effecten, alsmede als gevolg van 'anchoring bias' bij het beoordelen van een bedrijfswaardering. De tweede experimentele studie onderzocht de aanwezigheid van cognitieve biases onder juristen ($N=272$), waarbij gebruik werd gemaakt

van zowel variantieanalyses tussen proefpersonen als mediatieanalyses op basis van correlatiegegevens. De studie toont aan dat bij het beoordelen van zowel bedrijfswaarderingen als waarderingsdeskundigen, juristen kunnen worden beïnvloed door 'similarity bias', 'outcome bias' en 'gender bias'. De derde experimentele studie, wederom met een 2 x 2 tussen subjecten factorial design, verkent de rol van cognitieve biases onder waarderingsdeskundigen zelf ($N=363$) bij het beoordelen van de waarde van een bedrijf van hun cliënt. Concreet toont het onderzoek aan dat waarderingsdeskundigen kunnen worden beïnvloed door 'anchoring bias' en, interessant genoeg, zogenaamde 'engagement bias'. Dit laatste houdt in dat waarderingsdeskundigen, ondanks het feit dat van hen wordt verwacht dat zij objectief en onafhankelijke te werk gaan op basis van wetenschappelijk gefundeerde waarderingskaders en professionele standaarden, de neiging hebben om onbewust rekening te houden met de economische belangen van hun cliënt.

Dit proefschrift levert hiermee het eerste empirische bewijs voor het bestaan van cognitieve biases in de context van business valuation. Daarmee draagt het bij aan de theorievorming binnen zowel de sociale psychologie als het wetenschappelijke veld van business valuation. De bevindingen zijn ook belangrijk voor de juridische theorie en praktijk, daar door een beter begrip te hebben van denkfouten en vooringenomenheden bij belangrijke stakeholders van bedrijfswaarderingen mogelijk een weg is gevonden om onnodige geschillen te verminderen. Op dit moment worden waarderingsdeskundigen vaak negatief of positief beoordeeld, puur op basis van vooroordelen die voortvloeien uit dergelijke cognitieve biases. Een ander negatief effect hiervan kan zijn dat, onbewust, goede bedrijfswaarderingen worden beoordeeld als slecht, en slechte bedrijfswaarderingen als goed. Daarnaast lijken waarderingsdeskundigen in de praktijk vatbaar te zijn voor de economische belangen van hun cliënten, zonder dat zij zich daarvan bewust zijn, en ondanks maatschappelijke verwachtingen ten aanzien van hun objectiviteit en onafhankelijkheid. Dit is een gevaar voor de status van de beroepsgroep.

Op basis van de opgedane inzichten is een vervolgonderzoek uitgevoerd waarbij een internationale groep van vooraanstaande waarderingsdeskundigen ($N=30$) is bevraagd of zij de gevonden denkfouten en vooringenomenheden in hun dagelijkse praktijk herkennen. Verder is aan hen gevraagd om te reflecteren op een aantal universele principes, ontwikkeld op basis van de resultaten van de eerste drie studies, die als doel hebben om cognitieve biases in de valuation praktijk te mitigeren. De resultaten van dit vierde onderzoek tonen aan dat de overgrote meerderheid van deelnemers de bevindingen van de drie experimentele studies herkent. Ondanks enkele kritische kanttekeningen, reageerden zij over het algemeen ook positief op de voorgestelde principes.

Het in dit proefschrift besproken onderzoek heeft belangrijke implicaties voor de praktijk, in het bijzonder ten aanzien van het (beter) begrijpen van geschillen die voortvloeien uit of verband houden met een bedrijfswaardering. De bevindingen kunnen en moeten worden gebruikt

om het aantal langdurige en kostbare juridische procedures hieromtrent te verminderen. Op basis van de onderzoeksresultaten wordt dan ook gepleit voor het wereldwijd invoeren van specifieke principes of beroepsregels door waarderingsdeskundigen en hun beroepsverenigingen gericht op het mitigeren van cognitieve biases, en met het expliciete doel om het werk van valuatoren te verbeteren. Het 'Statement of Principles for Valuation Practice to Mitigate Cognitive Biases', zoals gepresenteerd in dit proefschrift, kan als een eerste aanzet hiertoe worden gezien.

Appendices

Appendix A1: Valuation Case

History

Trend is a Dutch trading company that focuses on buying and selling various, high-quality accessories around new or innovative products from, for example, A-brands like Apple, Samsung and Microsoft. Accessories that Trend purchases and sells include covers, connectors, cables, headsets, speakers and chargers. All Trend products are recognizable for their fashionable and sleek style. Approximately 70% of Trend's procurements are produced and in Asia from quality manufacturers, and the remaining 30% in Europe. The sale takes place exclusively to larger retail companies, both retail chains and online companies in the Netherlands and other Western European countries.

Trend was founded in 2005 by two college friends, called Remco Berends ('Berends'), the creative spirit, and Rogier Zomers ('Zomers'), the businessman. Trend now employs approximately twelve employees, varying from buyers, product managers, logistics staff to administrative staff. Berends and Zomers each own 50% of the share capital in Trend. Berends is known for his visionary view of constantly discovering trends. He was also the one who spotted the rise of the smartphone in 2005, and jumped on this development by coming up with accessories for it. He ensures that the company's culture is monitored, and takes care of the creation and innovation of the product offering. Zomers, on the other hand, is a real businessman. He knows where Trend can have the best products made and builds long-term relationships with customers, and knows how to capitalize on opportunities. He particularly enjoys working with customers and suppliers. Especially the first ten years after the company's incorporation, Trend grew rapidly and managed to build up a strong market position.

Current situation

For a few years now, both Trend's turnover and operating result have been stabilizing. The growth seems to be at an end and a decrease is even noticeable. Whereas Berends (the creative mind) is satisfied with the current size and performance of Trend, Zomers (the trader) has actual different ambitions. He wants to invest more in the company, and develop new markets and products. He believes that in recent years, many companies have emerged that do the same as Trend, resulting in constantly decreasing

margins. Berends sees enough potential in Trend's current form, and finds the ambitions of Zomers risky. After all, he believes that in this time you can easily lose your established position if you expand, and the company moves further away from its original product range.

Berends and Zomers not only have different visions of the future of Trend, they are also dissatisfied with each other's contribution and individual performance. They even feel that the *management fee* received by the other does not reflect the quality of the work performed. Zomers and Berends don't want to continue with each other anymore, and there is little or no trust in each other anymore. The situation that has arisen threatens the long-term continuity of the company, but also puts it in a difficult financial position in the short term, since the situation that has arisen means that both shareholders are no longer focused on the future of Trend, but merely on their own interests.

The future of Trend

Zomers and Berends both recognize that an irreconcilable shareholder dispute has arisen and that they want to break up their business. [Zomers] [Berends] has indicated to [buy] [sell] the shares [of] [to] the other. A possible agreement ultimately depends on the price of the shares. They therefore decide to consult Trend's accountant. It reminds them of Trend's articles of association which stipulate that, in the event of a dispute between the shareholders, an independent valuation specialist must first determine the value of the shares in Trend. Through the (Dutch) professional association for valuation specialists (NiRV), a valuation specialist unknown to both shareholders was selected and put forward by drawing lots. This specialist is experienced in valuing trading companies.

The valuation specialist

The valuation of Trend was conducted by Frank van Zetten, 42 years old, who has been working for several years as a valuation specialist for small and medium-sized enterprises, and he is particularly specialized in valuing trading companies. He is registered as a certified business valuator (Register Valuator; RV) and therefore well trained in valuing companies.

Appendix A2: Assignment/Instructions [Buyer Condition]

We ask you to put yourself in the position of [**Zomers, the merchant**] [**Berends, the creative mind**]. The most important thing when empathizing with the case is that as a 50% shareholder of Trend, weighing everything carefully, you have the desire to **buy** the shares of your fellow shareholder. You would like to continue the company.

The valuation specialist calculated the value of 100% of the shares in Trend as at 1 January 2018 at [**EUR 2.647 million**] [**EUR 5.067 million**]. For this, he has spoken to you and your co-shareholder, as well as Trend's key employees, and a number of trusted customers and suppliers.

Below is a brief (graphic) presentation of Trend's historical figures, the financial projections for the next five years and the main assumptions underlying the valuation outcome.

[Presented either Low Scenario (Appendix A4) or High Scenario (Appendix A5)]

Appendix A3: Assignment/Instructions [Seller Condition]

We ask you to put yourself in the position of [**Zomers, the merchant**] [**Berends, the creative mind**]. The most important thing when empathizing with the case is that as a 50% shareholder of Trend, weighing everything carefully, you have the desire to **sell** the shares of your fellow shareholder. You want to stop as a shareholder in the company.

The valuation specialist calculated the value of 100% of the shares in Trend as at 1 January 2018 at [EUR 2.647 million] [EUR 5.067 million]. For this, he has spoken to you and your co-shareholder, as well as Trend's key employees, and a number of trusted customers and suppliers.

Below is a brief (graphic) presentation of Trend's historical figures, the financial projections for the next five years and the main assumptions underlying the valuation outcome.

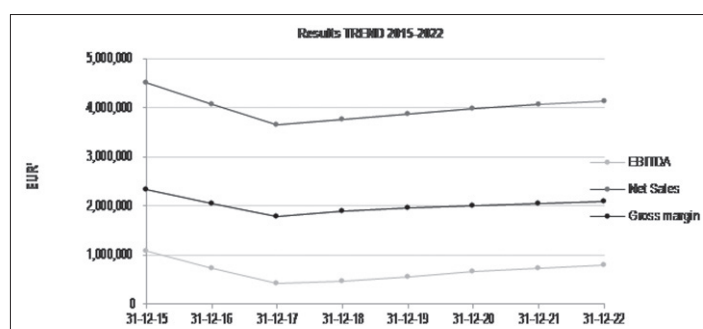
[Presented either Low Scenario (Appendix A4) or High Scenario (Appendix A5)]

Appendix A4: Valuation report (Low value anchor)

Results and valuation calculation of Trend (period 2015-2022):

EUR'	31-12-15	31-12-16	31-12-17	31-12-18	31-12-19	31-12-20	31-12-21	31-12-22
Net Sales	4,519,539	4,067,585	3,660,827	3,770,651	3,874,344	3,971,203	4,060,555	4,141,766
growth in %	6.20%	-10.00%	-10.00%	3.00%	2.75%	2.50%	2.25%	2.00%
Gross margin	2,322,952	2,054,099	1,777,341	1,904,382	1,956,753	2,005,672	2,050,799	2,091,815
gross margin in % of net sales	51.40%	50.50%	48.55%	50.51%	50.51%	50.51%	50.51%	50.51%
EBITDA	1,069,748	738,105	424,726	475,098	543,026	661,241	731,559	795,635
EBITDA in % of net sales	23.67%	18.15%	11.60%	12.60%	14.02%	16.65%	18.02%	19.21%
Result before taxes	971,200	641,602	335,695	400,098	468,026	586,241	656,559	720,635

Graphically, the financial history (2015-2017) and the financial forecast (2018-2022) of Trend can be presented as follows, presenting the turnover, gross margin and operating profit before depreciation, interest and tax (EBITDA).



The main principles underlying the valuation of Trend are as follows:

- After years of declining turnover and gross margin (2015 to 2017, but also before), the expectations are that net sales and gross margin in the period 2018 to 2022 will grow again to the level of 2016.
- Operating profit (EBITDA) is also assumed to rise in the period 2018 to 2022, to the level of 2016.

Based on the globally accepted and widely used Discounted Cash Flow (DCF) method, according to the valuation expert, the value of 100% of the shares in Trend amounts to **EUR 2.647 million** (rounded) as of 1 January 2018. This outcome follows, inter alia, from Trend’s financial forecast for the period 2018-2022 and thereafter (the residual period; the period after 2022).

The DCF method calculates the company’s (free) cash flows that are freely available (on an annual basis) to all providers of capital (i.e., shareholders and other providers of capital), and discounts these cash flows against a risk profile expressed as a percentage (i.e., the cost of capital; determined at 18.6% in this value calculation) which percentage reflects the risks associated with realizing these free cash flows. The DCF method is a valuation method based on economic principles instead of accounting principles. The value of the shares of Trend is equal to the value of the company, because Trend has no net debt per the valuation date.

Below you will find the value calculation of the valuation expert.

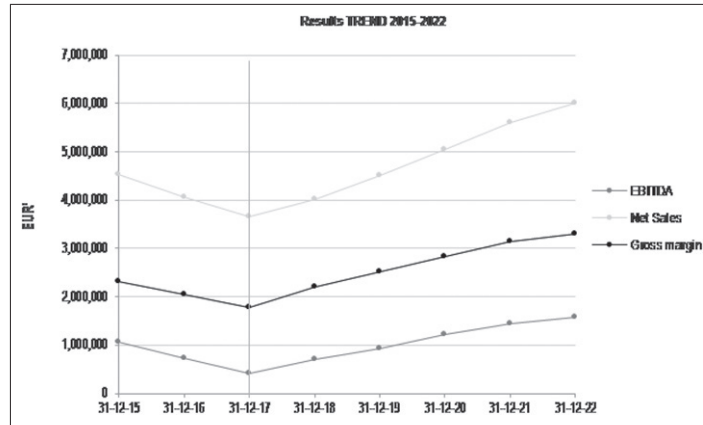
EUR'	31-12-18	31-12-19	31-12-20	31-12-21	31-12-22	RV
EBIT	400,098	468,026	586,241	656,559	720,635	
Taxes	(90,025)	(107,006)	(136,560)	(154,140)	(170,159)	
NOPLAT	310,074	361,019	449,681	502,419	550,476	
Plus: depreciation	75,000	75,000	75,000	75,000	75,000	
Minus: investments in fixed assets	(90,000)	(89,000)	(83,000)	(76,000)	(75,000)	
Plus/minus: change in net working capital	19,691	(14,549)	(13,552)	(12,458)	(11,273)	
Free Cash Flow	314,765	332,471	428,129	488,961	539,204	549,988
Residual Value						3,313,179
Growth rate						2.00%
Reu (Return on Equity Unlevered)	18.6%	18.6%	18.6%	18.6%	18.6%	18.6%
Time to cash flow	1.00	2.00	3.00	4.00	5.00	5.00
Discount rate: 18.6%	0.843	0.711	0.599	0.506	0.426	0.426
Present value Free Cash Flow	265,400	236,365	256,638	247,136	229,789	1,411,967
Present value forecast period	1,235,328					
Present value of the residual value	1,411,967					
Enterprise Value	2,647,285					
Plus: excess cash	-					
Minus: interest bearing debt	-					
Equity Value	2,647,285					

Appendix A5: Valuation report (High value anchor)

Results and valuation calculation Trend (period 2015-2022):

EUR*	31-12-15	31-12-16	31-12-17	31-12-18	31-12-19	31-12-20	31-12-21	31-12-22
Net Sales	4,519,539	4,067,585	3,660,827	4,026,909	4,510,138	5,051,355	5,607,004	5,999,494
growth in %	6.20%	-10.00%	-10.00%	10.00%	12.00%	12.00%	11.00%	7.00%
Gross margin	2,322,952	2,054,099	1,777,341	2,214,800	2,525,677	2,828,759	3,139,922	3,299,722
gross margin in % of net sales	51.40%	50.50%	48.55%	55.00%	56.00%	56.00%	56.00%	55.00%
EBITDA	1,069,748	738,105	424,726	712,241	938,065	1,215,806	1,455,490	1,585,226
EBITDA in % of net sales	23.67%	18.15%	11.60%	17.69%	20.80%	24.07%	25.96%	26.42%
Result before taxes	971,200	641,602	335,695	637,241	863,065	1,140,806	1,380,490	1,510,226

Graphically, the financial history (2015-2017) and the financial forecast (2018-2022) of Trend can be presented as follows, presenting the turnover, gross margin and operating profit before depreciation, interest and tax (EBITDA).



The main principles underlying the valuation of Trend are as follows:

- After years of declining sales and gross margin (2015 to 2017, but also before), net sales and gross margin in the period 2018 to 2022 are expected to grow above the level before 2015.
- Operating profit (EBITDA) is also assumed to rise in the period 2018 to 2022, to the pre-2015 level.

Based on the globally accepted and widely used Discounted Cash Flow (DCF) method, according to the valuation expert, the value of 100% of the shares in Trend amounts to **EUR 5.067 million** (rounded) as of 1 January 2018. This outcome follows, inter alia, from Trend’s financial forecast for the period 2018-2022 and thereafter (the residual period; the period after 2022).

The DCF method calculates the company’s (free) cash flows that are freely available (on an annual basis) to all providers of capital (i.e., shareholders and other providers of capital), and discounts these cash flows against a risk profile expressed as a percentage (i.e., the cost of capital; determined at 18.6% in this value calculation) which percentage reflects the

risks associated with realizing these free cash flows. The DCF method is a valuation method based on economic principles instead of accounting principles. The value of the shares of Trend is equal to the value of the company, because Trend has no net debt per the valuation date.

Below you will find the summary of the valuation expert's valuation calculation.

EUR'	31-12-18	31-12-19	31-12-20	31-12-21	31-12-22	RV
EBIT	637,241	863,065	1,140,806	1,380,490	1,510,226	
Taxes	(149,310)	(205,766)	(275,201)	(335,123)	(367,556)	
NOPLAT	487,931	657,299	865,604	1,045,368	1,142,669	
Plus: depreciation	75,000	75,000	75,000	75,000	75,000	
Minus: investments in fixed assets	(90,000)	(89,000)	(83,000)	(76,000)	(75,000)	
Plus/minus: change in net working capital	2,061	(62,237)	(74,585)	(76,577)	(60,381)	
Free Cash Flow	474,992	581,062	783,019	967,791	1,082,288	1,103,934
Residual Value						6,650,206
Growth rate						2.00%
Reu (Return on Equity Unlevered)	18.6%	18.6%	18.6%	18.6%	18.6%	18.6%
Time to cash flow	1.00	2.00	3.00	4.00	5.00	5.00
Discount rate: 18.6%	0.843	0.711	0.599	0.506	0.426	0.426
Present value Free Cash Flow	400,500	413,098	469,373	489,151	461,232	2,834,077
Present value forecast period	2,233,364					
Present value of the residual value	2,834,077					
Enterprise Value	5,067,430					
Plus: excess cash	-					
Minus: interest bearing debt	-					
Equity Value	5,067,430					

*Appendix B1: Nationalities of the Participants**Table 18. Overview of the participants' nationalities*

	<i>N</i>	<i>%</i>	<i>Cumulative %</i>		<i>N</i>	<i>%</i>	<i>Cumulative %</i>
United Kingdom	72	26.5	26.5	Italy	2	.7	91.9
Australia	44	16.2	42.6	Luxembourg	2	.7	92.6
South Africa	25	9.2	51.8	Portugal	2	.7	93.4
Canada	15	5.5	57.4	Singapore	2	.7	94.1
United States	13	4.8	62.1	Slovakia	2	.7	94.9
Netherlands	13	4.8	66.9	Belgium	1	.4	95.2
Nigeria	12	4.4	71.3	Bermuda	1	.4	95.6
Brazil	10	3.7	75.0	Brit.Virg. Isl.	1	.4	96.0
New Zealand	7	2.6	77.6	Cayman Islands	1	.4	96.3
Ireland	6	2.2	79.8	Colombia	1	.4	96.7
China	4	1.5	81.3	Ghana	1	.4	97.1
Finland	4	1.5	82.7	Hungary	1	.4	97.4
Russia	4	1.5	84.2	Jamaica	1	.4	97.8
Argentina	3	1.1	85.3	Peru	1	.4	98.2
Japan	3	1.1	86.4	Philippines	1	.4	98.5
Malaysia	3	1.1	87.5	Poland	1	.4	98.9
Bahamas	2	.7	88.2	Romania	1	.4	99.3
France	2	.7	89.0	Spain	1	.4	99.6
Guatemala	2	.7	89.7	Trinidad & Tob.	1	.4	100
India	2	.7	90.4	TOTAL	272	100	100
Indonesia	2	.7	91.2				

*Appendix B2: Valuation Case (Fashion Retail)**History*

Recently, one of UK's respectable fashion companies, 'International Women Clothing' ('the Company'), went bankrupt. Exceeding an annual turnover of GBP 100 million and having more than 350 people employed, the Company was unable to become profitable during the last years, partly due to a decline in consumer spending. After many years of different retrenchment programs and financial restructurings, no meaningful improvements became visible. In the last year the loss exceeded an amount of GBP 12 million. The banks and financiers of the Company decided to end the funding. A bankruptcy was inevitable after being in the market for more than twenty years.

Current situation

We would like you to put yourself in the shoes of the trustee who is appointed by the court and whose main task is to optimize the revenues in the interest of the creditors. There is a potential candidate to relaunch the Company (i.e., going-concern) and that offers a serious chance for continuation of the Company (i.e., by means of a transfer of all assets of the bankrupt Company including most of its personnel). The most important assets are tradenames, distribution rights, clients, inventory, software, and leases of prime properties.

The secured and unsecured creditors of the Company are exposed to a deficit of approx. GBP 25 million, including all costs to settle the estate. You strive to sell the assets of the bankrupt Company for at least this amount to minimize any shortage of the estate. By doing so, you may possibly satisfy all creditors. All Company's stakeholders are of the opinion that these sales proceeds of the assets are realistic to expect. Importantly, outsiders follow the results in this bankruptcy with great interest as the (former) statutory director and main shareholder of the Company is well introduced in high society.

The potential buyer of the assets of the Company is a well-known European private equity firm ('PE-firm') specialized in fashion retail through one of its funds, but above all experienced in turnarounds of distressed companies. To prepare the negotiations with this potential buyer, you need some advice on the estimated value of the assets. Indeed, private equity is known for its financial knowledge and you want to avoid selling the assets too low. To realize a quick deal, you start the negotiations with this potential buyer who you know has the required capital to buy the assets. You hire a valuation professional who provides support in this delicate matter. Although the available budget for this work is limited as it increases the costs of the estate, it may eventually support in maximizing the sales proceeds.

About the valuation professional and the valuation firm

You are introduced to a valuator called [Laura/Andrew]¹ Matthews. [Laura/Andrew] Matthews is in [her/his] [twenties/thirties/forties/fifties/sixties] and is a certified valuation analyst accredited by the Association of Certified Business Valuators in the UK. [Laura/Andrew] has a BA in economics with a specialization in business valuation and has worked in different capacities in finance. For quite some years now [she/he] is active as a professional business valuator. [Laura/Andrew] Matthews works for [a/an] [small, local valuation/international Big Four]² firm.

Valuation

[Laura/Andrew] Matthews performed the valuation and presents the report, explaining the applied valuation assumptions and corresponding calculations in detail. A Discounted Cash Flow method (DCF, i.e. an intrinsic valuation) was used to calculate the present value of the future cash flows, applying an appropriate discount rate. The content of the valuation report includes the following main topics:

- About the DCF-method
- Historical performance
- Return on capital, Reinvestment rate and Growth rate
- Cash flow (from assets) projection
- Discount rate
- DCF-value of the assets (reflecting cash flow, growth, risk)

Unfortunately, it appears that the assets are valued at (rounded) GBP 18 million, around GBP 7 million less than the creditors deficit. Although a potential sale of GBP 18 million would imply a (mean) recovery rate of around 72%, senior unsecured and senior subordinated bond holders will lose a lot of money, contrary to earlier expectations.

The conclusion of the valuator is that based on the assumptions described in the report, the value of the assets at valuation date is GBP 18.25 million. Based on this outcome, a sale of the assets will very likely result in a deficit of the estate. Moreover, in the negotiations with the potential buyer it will now become more difficult to achieve sales proceeds close to GBP 25 million as they will probably do their math as well.

1 NB either Laura or Andrew, resp. his or her, resp. twenties or thirties or forties or fifties or sixties, depending on the experimental condition.

2 NB either a small, local valuation firm, or an international Big Four firm, depending on the experimental condition.

*Appendix B3: Positive and negative outcome scenarios³**Positive deal:*

You moved forward with the PE-firm and started the negotiations based on the GBP 18 million valuation. The buyer probably made his own calculations as they were reluctant to accept the value of GBP 18 million. The Company's creditors and other stakeholders were surprised by how long the deal took to close, knowing that private equity normally is keen to jump on a good opportunity. During the negotiation process, you were approached by a few other interested parties who ended their interest after hearing the negotiation price was GBP 18 million. Nonetheless, in the end the deal was closed for GBP 18 million. The Company's creditors and other stakeholders felt that the deal was a good one and that a higher price for the assets was unattainable. They reported feeling satisfied, believing that a deal to cover the whole deficit of the estate was not feasible.

Negative deal:

You moved forward with the PE-firm and started the negotiations based on the GBP 18 million valuation. The buyer probably made his own calculations as they accepted the value of GBP 18 million instantly. The Company's creditors and other stakeholders were surprised by how fast the deal was closed, knowing that private equity normally takes the time to negotiate. Additionally, after closing this deal, you were approached by a few other interested parties who indicated a value of GBP 25 million and above. Based on these factors, the Company's creditors and other stakeholders felt that the deal was not a good one and that a higher price for the assets was attainable. They reported feeling frustrated, believing that a good enough deal to cover the whole deficit of the estate was feasible.

3 NB either positive deal, or negative deal, depending on the experimental condition.

Appendix C1: Nationalities of the participants Study 1.

	<i>N</i>	%	Cumulative %		<i>N</i>	%	Cumulative %
United States	58	31.4	31.4	Egypt	1	.5	93.0
The Netherlands	43	23.2	54.6	Armenia	1	.5	93.5
Canada	23	12.4	66.7	Albania	1	.5	94.1
Italy	10	5.4	72.0	Brazil	1	.5	94.6
South Africa	8	4.3	76.3	Japan	1	.5	95.2
Australia	6	3.2	79.6	Poland	1	.5	95.7
UK	5	2.7	82.3	New Zealand	1	.5	96.2
Germany	4	2.2	84.4	Nigeria	1	.5	96.8
Not specified	4	2.2	86.6	Pakistan	1	.5	97.3
Kenya	3	1.6	88.2	Mauritius	1	.5	97.8
Zimbabwe	2	1.1	89.2	Cayman Islands	1	.5	98.4
India	2	1.1	90.3	Mexico	1	.5	98.9
Switzerland	2	1.1	91.4	Ivory Coast	1	.5	99.5
Belgium	1	.5	91.9	Taiwan	1	.5	100
Uganda	1	.5	92.5	TOTAL	186	100	100

Appendix C2: Valuation Case (Case Flagship)

History

Flagship B.V. (the 'Company') is a Dutch advertisement and marketing agency that creates and implements large scale marketing campaigns for reputable brands. Today, Flagship serves corporate clients (representing 95% of net sales), predominately Dutch corporates and subsidiaries of international corporates in the Netherlands.

The Company is owned by two shareholders, neither of which is involved in day-to-day operations as the Company is managed by Mr Alfred de Boer ('De Boer'), the Company's charismatic CEO for more than ten years now. Both shareholders delegated a Supervisory Board Member (i.e. Roland Hofmann and Frederik van Buuren) to supervise, control and monitor the Company and the shareholders' interest.

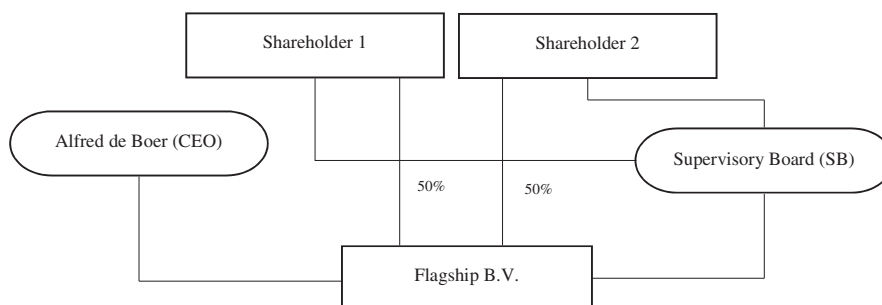


Figure 25. Organizational structure.

Since a few years, both the operating result and net income of the Company are negative due to declining sales and increasing costs. Furthermore, the Company struggles to make a solid transformation to today's customer needs that involve online and technology driven solutions.

As a response, the Company tried to make a shift to online advertisement and marketing campaigns. However, in addition to facing difficult economic circumstances, the Company suffered predominately from its outdated image and product offering. As a result, reductions in client spending continued, while the entrance of new players with technology driven product offerings caused a further decline.

According to both shareholders and the Supervisory Board ('SB'), the Company lacks a vision for the future. If in the short term a new strategy will not become successful, an insolvency scenario may arise.

Financial situation

The last few years, the shareholders contributed equity to the Company to cover past losses and provide working capital. It is evident that new capital is required to finance a necessary turnaround, but the financial resources of the shareholders have dried up. Bank loans are not achievable due to

the last years' poor performance. Hence, both De Boer and the SB are in a squeeze. On the one hand there is a viable turnaround plan available (details provided below), but on the other hand there is no funding to finance this turnaround plan. Therefore, alternative financing options have to be explored. During a meeting with the shareholders it is decided that a new shareholder must come on board to safeguard the Company's future.

Through a reputable M&A advisor, the Company is informed that a London based private equity firm called *Growth European Partners* (hereafter: 'GEP'), specialized in tech, media and entertainment, showed concrete interest. The Company is warned, however, that private equity firms will require a significant percentage of shares in these kinds of circumstances and generally consider these types of deals as 'take it or leave it'. Furthermore, private equity firms in general are not willing to acquire the existing shares of companies in distress, but require that new shares are issued. While the Company's shareholders do not seem to have many options, they are reluctant to accept a significant dilution of their interest, considering the amount of equity they contributed over the years.

Turnaround

Both the Company and GEP do agree that a turnaround, of which a new strategy is an important part, is essential to enhance the value of the Company after a period of poor organizational performance. De Boer and his team defined a roadmap to profitability by increasing sales, reducing costs, efficient management of working capital, and making (catch-up) investments (i.e. operational expenditures). This plan can be qualified as a 'Growth and Development' plan.

The main interventions to revitalize Flagship are:

Table 19. Overview turnaround and strategic interventions.

	Element	Turnaround action
1	Crisis stabilization, leadership, organizational change	<ul style="list-style-type: none"> – Cash management – Short-term financing – Direct cost reduction – Control on operational performance – Building commitment of people
2	Strategic focus	<ul style="list-style-type: none"> – Redefine core business – New client types (small and mid-market) and new industries – Technology driven (scalable) product offerings
3	Process improvements	<ul style="list-style-type: none"> – Improvement of sales and marketing management – Improvement of planning and control cycle – Technology and agility driven processes

Appendix C3: Valuation Report (Low Anchor)

Summary: Valuation of Flagship B.V. per 31 December 2017

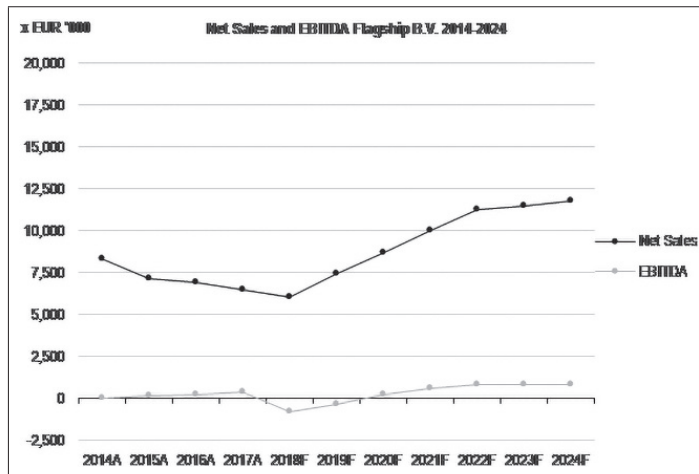
Profit and loss - Flagship B.V.											
EUR '000	2014A	2015A	2016A	2017A	2018F	2019F	2020F	2021F	2022F	2023F	2024F
Net Sales	8,316	7,177	6,966	6,509	6,045	7,487	8,715	10,040	11,304	11,530	11,761
% growth	12.6%	(13.7)%	(2.9)%	(6.6)%	(7.1)%	23.8%	16.4%	15.3%	12.5%	2.0%	2.0%
Operational EBITDA	4	150	243	426	(544)	(89)	244	610	610	835	851
% of net sales	0.0%	2.1%	3.5%	6.6%	(9.0)%	(1.2)%	2.8%	6.2%	7.2%	7.2%	7.2%
Non-recurring expenses	-	-	-	-	(250)	(250)	-	-	-	-	-
EBITDA	4	150	243	426	(794)	(339)	244	610	610	835	851
% of net sales	0.0%	2.1%	3.5%	6.6%	(13.1)%	(4.5)%	2.8%	6.2%	7.2%	7.2%	7.2%
Net working capital - Flagship B.V.											
EUR '000	2014A	2015A	2016A	2017A	2018F	2019F	2020F	2021F	2022F	2023F	2024F
Net Sales	8,316	7,177	6,966	6,509	6,045	7,487	8,715	10,040	11,304	11,530	11,761
Current Assets	1,604	1,633	1,556	1,341	710	879	1,024	1,100	1,326	1,354	1,382
% of net sales	19.3%	22.8%	22.3%	20.6%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%
Current Liabilities	1,391	1,290	1,288	1,096	1,290	1,579	1,815	2,119	2,374	2,418	2,472
% of net sales	16.7%	18.0%	18.5%	16.8%	21.3%	21.1%	20.8%	21.1%	21.0%	21.0%	21.0%
Working capital	213	343	268	245	(580)	(699)	(792)	(930)	(1,046)	(1,064)	(1,091)
% of net sales	2.6%	4.8%	3.8%	3.8%	(9.6)%	(9.3)%	(9.1)%	(9.3)%	(9.3)%	(9.2)%	(9.3)%
Investment in Working Capital	n/a	130	(75)	(23)	(825)	(119)	(82)	(147)	(188)	(18)	(27)
Tangible fixed assets - Flagship B.V.											
EUR '000	2014A	2015A	2016A	2017A	2018F	2019F	2020F	2021F	2022F	2023F	2024F
Net Sales	8,316	7,177	6,966	6,509	6,045	7,487	8,715	10,040	11,304	11,530	11,761
Tangible fixed assets											
Tangible fixed assets BoP	281	225	169	112	56	60	65	65	100	100	85
Tangible fixed assets EoP	225	169	112	56	80	65	65	100	100	85	70
% of net sales	2.7%	2.3%	1.6%	0.9%	1.0%	0.9%	0.7%	1.0%	0.9%	0.7%	0.6%
CAPEX in DCF	-	-	-	-	75	25	25	75	50	25	25
Depreciation in DCF	(56)	(56)	(56)	(56)	(71)	(20)	(25)	(40)	(50)	(40)	(40)

Balance sheet - Flagship B.V.		31-12
EUR '000		2017A
Tangible Assets		56
Current Assets		1,241
Current Liabilities		1,096
Working capital		245
Invested Capital		301
Equity		301
Net debt		-
Total funding		301

Cost of Capital	Valuation Date
Riskfree Rate (RF)	1.50%
Market Risk Premium (MRP)	6.00%
Equit Beta	1.20
Small Firm Premium (SFP)	3.50%
WACC	12.20%

Main valuation assumptions
Valuation Date: December 31, 2017
The majority of operational risk is incorporated in the free cash flows.
Loss that can be carry forward have not been taken into account.
Corporate taxes are assumed to be settled in the relevant year. (Losses > taxes to be returned, Profits > taxes to be paid)
In this case, Enterprise Value is equal to Shareholder Value.

DCF analysis - Flagship B.V.								
EUR '000	2018F	2019F	2020F	2021F	2022F	2023F	2024F	Res. Value
Net Sales	6,045	7,487	9,715	10,048	11,304	11,761	11,761	11,996
% growth	(7.1)%	23.8%	16.4%	15.3%	12.5%	2.0%	2.0%	2.0%
EBITDA	(794)	(339)	244	618	818	835	951	969
% of net sales	(13.1)%	(4.5)%	2.8%	6.2%	7.2%	7.1%	7.2%	7.2%
Depreciation	(71)	(20)	(25)	(40)	(50)	(40)	(40)	(25)
EBITA	(866)	(359)	219	578	768	795	911	944
% of net sales	(14.3)%	(4.8)%	2.5%	5.8%	6.8%	6.8%	6.9%	7.0%
Operational taxes: 25.0%	216	90	(55)	(145)	(192)	(199)	(203)	(211)
NOPLAT	(649)	(269)	164	434	576	596	609	633
Depreciation	71	20	25	40	50	40	40	25
Operational cash flow	(578)	(249)	189	474	626	636	649	658
Investments fixed assets	(75)	(25)	(25)	(75)	(50)	(25)	(25)	(25)
Investments in net working capital	825	119	92	147	108	18	27	27
Free cash flow	172	(155)	257	545	684	629	650	659
Partial adjustment factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.80
Time to cash flow	1.00	2.00	3.00	4.00	5.00	6.00	7.00	7.00
Discount rate: 12.20%	0.89	0.79	0.71	0.63	0.56	0.50	0.45	0.45
Present value operational free cash flow	153	(123)	182	344	385	315	291	2,888
Present value forecast period	1,547							
Present value of the residual value	2,888							
Enterprise Value (EV)	4,435							
Net debt	-							
Shareholder Value (SV)	4,435							



Appendix C4: Valuation Report (High Anchor)

Summary: Valuation of Flagship B.V. per 31 December 2017

Profit and loss - Flagship B.V.											
EUR '000	2014A	2015A	2016A	2017A	2018F	2019F	2020F	2021F	2022F	2023F	2024F
Net Sales	8,316	7,177	6,966	6,589	7,000	10,710	13,010	15,512	18,233	18,597	18,969
% growth	12.5%	(12.7)%	(2.9)%	(6.6)%	19.8%	37.3%	21.5%	19.2%	17.6%	2.0%	2.0%
Operational EBITDA	(1,883)	(662)	(762)	(699)	(625)	595	1,411	2,332	3,185	3,249	3,313
% of net sales	(13.0)%	(12.0)%	(10.9)%	(7.9)%	(6.7)%	5.6%	10.8%	16.0%	17.5%	17.5%	17.5%
Non-recurring expenses	-	-	-	-	(1,500)	(500)	-	-	-	-	-
EBITDA	(1,883)	(662)	(762)	(699)	(2,025)	95	1,411	2,332	3,185	3,249	3,313
% of net sales	(13.0)%	(12.0)%	(10.9)%	(7.9)%	(28.0)%	0.9%	10.8%	16.0%	17.5%	17.5%	17.5%

Net working capital - Flagship B.V.											
EUR '000	2014A	2015A	2016A	2017A	2018F	2019F	2020F	2021F	2022F	2023F	2024F
Net Sales	8,316	7,177	6,966	6,589	7,800	10,710	13,010	15,512	18,233	18,597	18,969
Current Assets	1,684	1,633	1,556	1,341	1,936	2,659	3,230	3,851	4,526	4,617	4,789
% of net sales	19.3%	22.8%	22.3%	20.6%	24.9%	24.8%	24.8%	24.8%	24.8%	24.8%	24.8%
Current Liabilities	1,391	1,290	1,288	1,096	1,664	2,258	2,710	3,271	3,829	3,960	3,987
% of net sales	16.7%	18.0%	18.5%	16.5%	21.3%	21.1%	20.6%	21.1%	21.0%	21.0%	21.0%
Working capital	213	343	268	245	272	400	520	580	697	716	722
% of net sales	2.6%	4.8%	3.8%	3.6%	3.6%	3.7%	4.0%	3.7%	3.8%	3.9%	3.8%
Investment in Working Capital	n/a	130	(75)	(23)	27	123	119	60	117	19	5

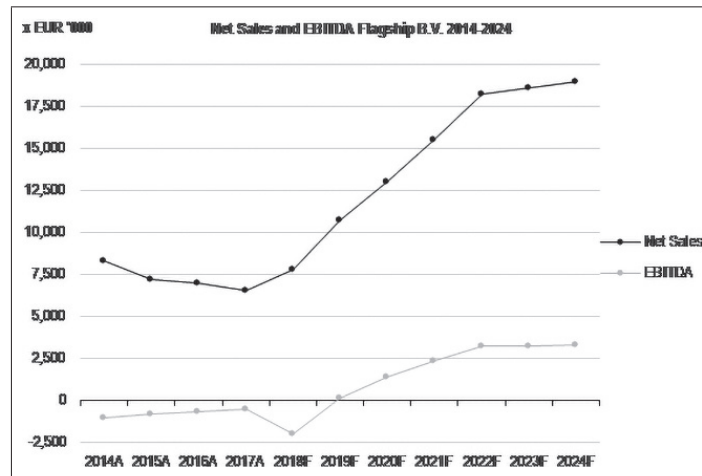
Tangible fixed assets - Flagship B.V.											
EUR '000	2014A	2015A	2016A	2017A	2018F	2019F	2020F	2021F	2022F	2023F	2024F
Net Sales	8,316	7,177	6,966	6,589	7,000	10,710	13,010	15,512	18,233	18,597	18,969
Tangible fixed assets											
Tangible fixed assets BoP	281	225	169	112	56	200	270	210	205	160	150
Tangible fixed assets EoP	225	169	112	56	200	270	210	205	160	150	151
% of net sales	2.7%	2.3%	1.6%	0.9%	2.6%	2.5%	1.6%	1.3%	0.9%	0.8%	0.8%
CAPEX in DCF	-	-	-	-	250	150	25	100	75	75	70
Depreciation in DCF	(56)	(56)	(56)	(56)	(106)	(89)	(85)	(105)	(120)	(85)	(89)

Balance sheet - Flagship B.V.		31-12
EUR '000		2017A
Tangible Assets		56
Current Assets		1,341
Current Liabilities		1,096
Working capital		245
Invested Capital		301
Equity		301
Net debt		-
Total funding		301

Cost of Capital	Valuation Date
Riskfree Rate (RF)	1,50%
Market Risk Premium (MRP)	6,00%
Equit Beta	1,20
Small Firm Premium (SFP)	3,50%
WACC	12,20%

Main valuation assumptions
Valuation Date: December 31, 2017
The majority of operational risk is incorporated in the free cash flows.
Loss that can be carry forward have not been taken into account.
Corporate taxes are assumed to be settled in the relevant year.
(Losses > taxes to be returned, Profits > taxes to be paid)
In this case, Enterprise Value is equal to Shareholder Value.

DCF analysis - Flagship B.V.								
EUR '000	2018F	2019F	2020F	2021F	2022F	2023F	2024F	Res. Value
Net Sales	7,800	10,710	13,010	15,512	18,233	18,969	18,969	19,349
% growth	19.6%	37.3%	21.5%	19.2%	17.5%	2.0%	2.0%	2.0%
EBITDA	(2,625)	95	1,411	2,332	3,105	3,249	3,313	3,308
% of net sales	(26.0)%	0.9%	10.8%	15.0%	17.5%	17.1%	17.5%	17.5%
Depreciation	(106)	(80)	(85)	(105)	(120)	(85)	(69)	(70)
EBITA	(2,131)	15	1,326	2,227	3,085	3,164	3,244	3,310
% of net sales	(27.3)%	0.1%	10.2%	14.4%	16.8%	16.7%	17.1%	17.1%
Operational taxes: 25.0%	533	(4)	(331)	(557)	(766)	(791)	(811)	(827)
NOPLAT	(1,599)	11	994	1,670	2,299	2,373	2,433	2,482
Depreciation	106	80	85	105	120	85	69	70
Operational cash flow	(1,492)	91	1,079	1,775	2,419	2,458	2,502	2,552
Investments fixed assets	(250)	(150)	(25)	(100)	(75)	(75)	(70)	(70)
Investments in net working capital	(27)	(128)	(119)	(60)	(117)	(19)	(5)	(5)
Free cash flow	(1,769)	(188)	935	1,615	2,226	2,363	2,427	2,477
Partial adjustment factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.80
Time to cash flow	1.00	2.00	3.00	4.00	5.00	6.00	7.00	7.00
Discount rate: 12.20%	0.89	0.79	0.71	0.63	0.56	0.50	0.45	0.45
Present value operational free cash f	(1,577)	(149)	662	1,019	1,252	1,185	1,084	10,848
Present value forecast period	3,476							
Present value of the residual value	10,848							
Enterprise Value (EV) (Rounded)	14,324							
Net debt	-							
Shareholder Value (SV)	14,324							



Appendix C5: Perceived Decline Scale

- The environment (i.e. market and economic circumstances) faced by Flagship presents challenges that will definitely be resolved by Flagship. (R)
- Despite the poor performance of the last few years, Flagship has the means to resolve the challenges presented by its environment. (R)
- The environment faced by Flagship offers many courses of action that are likely to lead to significant gains. (R)
- Flagship's managers have many turnaround options in response to Flagship's current situation. (R)
- Without additional funding by a private equity firm, Flagship still has enough resources to survive on the short term and to continue daily operations. (R)
- Flagship's managers have enough time left to execute a successful turnaround. (R)
- Flagship will likely fail any day and declare bankruptcy.

(R) = recoded

Appendix C6: Locus of Strategic Control scale

- Market opportunities in an industry are largely determined by factors beyond a company's control.
- Many of the problems experienced by businesses can be avoided through careful planning and analysis. (R)
- Most companies can have an influence in shaping the market. (R)
- Businesses that rarely experience strategic problems are just plain lucky.
- A company can pretty much accomplish what it sets out to achieve. (R)
- There is little point in engaging in detailed strategic analyses and planning because often events occur that a company cannot control.
- Usually companies fail because they have not taken advantage of their opportunities. (R)
- With respect to competing in the marketplace, most companies are victims of forces they cannot control.
- It is not always wise to make strategic plans far ahead because many things turn out to be a matter of good or bad fortune anyhow.
- Being a successful company is a matter of creating opportunities, luck has little or nothing to do with it. (R)

(R) = recoded

Appendix C7: Nationalities of the participants of Study 2.

	N	%	Cumulative %		N	%	Cumulative %
United States	50	34.5	34.5	Brazil	2	1.4	90.3
Canada	22	15.2	49.7	Kenya	2	1.4	91.7
Italy	12	8.3	57.9	Nigeria	2	1.4	93.1
Germany	8	5.5	63.4	Egypt	1	0.7	93.8
UK	6	4.1	67.6	Kazakhstan	1	0.7	94.5
South Africa	6	4.1	71.7	Korea	1	0.7	95.2
France	4	2.8	74.5	Mexico	1	0.7	95.9
China	3	2.1	76.6	Norway	1	0.7	96.6
India	3	2.1	78.6	Poland	1	0.7	97.2
Russia	3	2.1	80.7	Serbia	1	0.7	97.9
Tunisia	3	2.1	82.8	Slovenia	1	0.7	98.6
Other	3	2.1	84.8	Sweden	1	0.7	99.3
Albania	2	1.4	86.2	Zimbabwe	1	0.7	100
Australia	2	1.4	87.6	TOTAL	145	100	100
Belgium	2	1.4	89.0				

Appendix D1: Overview of participants

Name	Last name	Company*	Country	Referent
Mr. Kazuto	Adachi	Duff & Phelps	Japan	Yes
Mr. Sergio	Almeida	EY	Brazil	Yes
Mr. Andrea	Boasso	EY	Italy	Yes
Mr. Jinphil	Cho	EY	Canada	Yes
Mr. Viktor	Fredlund	EY	Sweden	Yes
Ms. Susana	Furquim Xavier Couto	Wulaia Consultants	Brazil	Yes
Mr. Richard	Ginsberg	Deloitte	Canada	Yes
Mr. Jean-Luc	Guitera	KPMG	France	Yes
Mr. Gerard	Holdrinet	BHP & Co	The Netherlands	Yes
Mr. Joris	Kersten	Kersten CF	The Netherlands	Yes
Mr. Doug	McPhee	KPMG	UK	Yes
Mr. Mathieu	Mulders	Monitoring Trustee Partners	The Netherlands	Yes
Mr. Richard	Peeters	BHP & Co	The Netherlands	Yes
Mr. Daniël	Peters	BHP & Co	The Netherlands	Yes
Mr. Guido	Rooijackers	Sman Business Value	The Netherlands	Yes
Ms. Nyla	Roopnarinesingh	Crowe Soberman	Canada	Yes
Mr. Gurpreet	Singh	EY	Kenya	Yes
Mr. Jan Jaap	Snel	Monitoring Trustee Partners	The Netherlands	Yes
Mr. Ahmed	Taieb	Deloitte	France	Yes
Mr. Jan Willem	van den Hof	Value Creation	The Netherlands	Yes
Mr. Pieter Christiaan	van Prooijen	Hermes Advisory	The Netherlands	Yes
Mr. Dr. Jeroen	Weimer	Value Insights	The Netherlands	Yes
			United States	No
			South Africa	No
			The Netherlands	No
			India	No
			Germany (2×)	No
			Spain	No
			Italy	No

* Company participant worked for at the time of completion of the digital interview.

Curriculum Vitae

Marc Jacques Robert Broekema was born on 16 April 1971 in Leiden, The Netherlands. After attending his secondary education, he obtained a bachelor's degree in economics and master's degrees in marketing management, economics (valuation), and law. Afterwards, he completed post-master education to accomplish an accreditation as certified business valuator (Register Valuator) and forensic (judicial) expert witness. In 2016, he enrolled as an external PhD candidate at Leiden Law School under the supervision of Prof. Van der Rest.

In 2016, he co-founded BFI, an independent boutique firm, based in Amsterdam, with an international focus specialized in valuations issues, (forensic) investigations, economic damages assessments, disputes, bankruptcy related financial analyses, and business reviews. He advises predominately shareholders, corporate executives, and legal professionals on complex valuation issues and economic damages within the context of corporate and commercial litigation. He is regularly appointed by Dutch courts as an independent valuation expert, as a party valuation expert to represent an individual interest, or he participates in (court appointed) expert committees where he acts in cases taking place in different jurisdictions and under different procedural rules.

Additionally, he is a member of the disciplinary council and council of appeal of the Dutch association of business valuers (NiRV) and lectures regularly on valuation issues. In 2018 and 2019 he was awarded by Finance Monthly (UK) as Valuation and Appraisal Adviser of the year for the Netherlands.

In the range of books published by the Meijers Research Institute and Graduate School of Leiden Law School, Leiden University, the following titles were published in 2019 and 2020:

- MI-316 R. Zandvliet, *Trade, Investment and Labour: Interactions in International Law*, (diss. Leiden), Amsterdam: Ipskamp Printing 2019
- MI-317 M. de Jong-de Kruijf, *Legitimiteit en rechtswaarborgen bij gesloten plaatsingen van kinderen. De externe rechtspositie van kinderen in gesloten jeugdhulp gezien vanuit kinder- en mensenrechten*, (diss. Leiden), Den Haag: Boom juridisch 2019, ISBN 978 94 6290 600 6
- MI-318 R.J.W. van Eijk, *Web Privacy Measurement in Real-Time Bidding Systems. A Graph-Based Approach to RTB system classification*, Amsterdam: Ipskamp Printing 2018, ISBN 978 94 028 1323 4
- MI-319 M.P. Sombroek-van Doorm, *Medisch beroepsgeheim en de zorgplicht van de arts bij kindermishandeling in de rechtsverhouding tussen arts, kind en ouders*, (diss. Leiden), Den Haag: Boom juridisch 2019, ISBN 978 94 6236 906 1
- MI-320 Y. Tan, *The Rome Statute as Evidence of Customary International Law*, (diss. Leiden), Amsterdam: Ipskamp Printing 2019
- MI-321 T. van der Linden, *Aanvullend Verrijktingsrecht*, (diss. Leiden), Den Haag: Boom juridisch 2019, ISBN 978 94 6290 678 5, e-ISBN 978 94 6274 544 5
- MI-322 L.B. Louwerse, *The EU's Conceptualisation of the Rule of Law in its External Relations. Case studies on development cooperation and enlargement*, (diss. Leiden), Amsterdam: Ipskamp Printing 2019
- MI-323 I. Antonaki, *Privatisations and golden shares. Bridging the gap between the State and the market in the area of free movement of capital in the EU*, (diss. Leiden), Amsterdam: Ipskamp Printing 2019
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