Why Fairness Opinions? Theoretical foundation and clinical study in Switzerland

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Summary: Fairness opinions are third-party opinions on the financial fairness of transactions for shareholders. They are primarily commissioned by management bodies of targets especially in the case of public takeover bids. The main objectives of this commissioning are said to be better information provision, independent certification, and documentation of the basis for management decisions and safeguarding. However, an empirical verification of these anecdotally mentioned objectives has not been performed so far. On the basis of a detailed, clinical study of 44 Swiss fairness opinions from the period 2010 to 2020, these objectives are reviewed. It is shown that many arguments speak against the hypotheses of information provision and certification, but that these are very much in line with the hypothesis of formal documentation and safeguarding of the boards of management.

Keywords: Mergers & Acquisitions; Fairness Opinions; Valuation; Investment Banking; Management control, Corporate Growth; New Institutionalism

Wozu Fairness Opinions? Theorien und eine Studie zur Verwendung in der Schweiz im Zeitraum 2010-2020

Zusammenfassung: Fairness Opinions sind Stellungnahmen sachkundiger Dritter zur finanziellen Angemessenheit von M&A-Transaktionen für Anteilseigner. Sie werden vor allem von Verwaltungsgremien von Targets bei öffentlichen Übernahmeangeboten in Auftrag gegeben. Als Ziele der Beauftragung werden vor allem eine bessere Informationsversorgung, die unabhängige Zertifizierung und eine Dokumentation der Entscheidungsgrundlage und Absicherung des Managements genannt. Eine empirische Überprüfung dieser kolportierten Ziele wurde bislang jedoch nicht geleistet. Anhand einer detaillierten Auswertung von 44 schweizerischen Fairness Opinions aus dem Zeitraum 2010 bis 2020 werden diese Ziele indizienhaft einer Überprüfung unterzogen. Hierbei zeigt sich, dass viele Argumente gegen die Hypothesen der Informationsversorgung und der Zertifizierung sprechen, diese jedoch sehr wohl im Einklang stehen mit der Hypothese der formalen Absicherung und Dokumentation der Entscheidungsträger.

Stichworte: Mergers & Acquisitions, Fairness Opinions, Unternehmensbewertung, Investment Banking, Corporate Governance, Wachstumsstrategien, Neuer Institutionalismus

1 Introduction

Fairness Opinions are almost ubiquitous in Mergers & Acquisitions (M&A), especially in public takeovers (Kisgen et al., 2009, p. 179). These opinions, commissioned by the

board of directors, are written by a third-party assessing the financial fairness of takeovers from the shareholders' point of view (Davidoff et al., 2011, pp. 483–487). Those third parties are usually auditors, investment banks or other service providers focused on the preparation of company valuations or, even more specified, on fairness opinions.

Parallel to the spread of fairness opinions, initially in the US and subsequently in other countries, criticism came-up (e.g. Bebchuk & Kahan, 1989; Davidoff, 2006). Nevertheless, fairness opinions are nowadays established as a standard in public takeovers and are commissioned in particular by target companies in M&A-transactions (Cain & Denis, 2010).

Davidoff, Makhija and Narayanan state, that the *question of why* fairness opinions have been able to establish themselves despite massive criticism, is insufficiently addressed (2011, pp. 491–492). While research in the use of fairness opinions (the "why") made progress in the last years (e.g. Shaked & Kempainen, 2009; Cain & Denis, 2010; Frye & Wang 2010, La Mura et al. 2011; Liu, 2020), we still find the following major shortcomings:

1. A *broader theoretcial underpining* is either missing at all or the studies are based only on the principal-agent-theory to explain boards commissioning fairness opinions (e.g. Carney 1992; Kisgen et al., 2009; Liu, 2020). The use of this theory often seems too narrow, so that certain problems of fairness opinions are not covered (cf. chapter 2).
2. The empirical research of fairness opinions is typically based on the US (e.g. Bowers and Latham, 2006; Kisgen et al., 2009; Frye & Wang, 2010). Since the institutional background matters (LaMura et al., 2011), the analysis of opinions embedded in *countries with different regulatory frameworks* should be intensified.
3. Many studies focus on buyside of M&A, i.e., the acquirer commissions fairness opinions (e.g. Wang & Tan 2006; Chen & Sami, 2007; Frye & Wang, 2010; La Mura et al., 2011). This is partly because acquirers' conflicts of interest lie at the heart of agency theory (e.g. Jensen 1986). The sellside, i.e. the *target*, still needs more attention, although research is growing in the last years (e.g. Liu, 2020; Schaffer, 2020)
4. Finally, most studies represent large-scale-research, based on databases such as the Securities Data Corporation (SDC) or SEC Edgar (e.g. Bowers & Latham, 2006; Matthews, 2012; Liu, 2020). In these, one can find regularly aggregated information based mainly on fairness opinion letters or additionally on valuation summaries,[1] which describe the opinion itself, briefly sketch key assumptions and possibly valuation ranges. The information given has mostly a length of two-to-eight-pages. *Detailed information* concerning the valuation itself and the information base etc. is part of the board book (Davidoff et al., 2011, p. 485) or valuation memorandum. Yet these comprehensive memoranda are regularly missing in the empirical papers. Therefore, the studies mostly identify "top-level" statistical correlations between the use or result ("fair" or "not fair") of fairness opinions and its outcome such as the deal premium paid, the probability of deal completion or abnormal returns (e.g. Kisgen et al., 2009; Liu, 2020). A *deeper view* on fairness opinons, including the in-depth-analysis of memoranda, is missing. An exception is the study of Cain and Denis (2010). Nevertheless, it

1 In the US, the fairness opinion letter and some remarks on valuation (valuation summary) are usually included in proxy statements (Cain & Denis, 2010, p. 6).

represents only one step toward a comprehensive *clinical analysis* (e.g. Dittmann et al., 2008).

With regard to the forementioned shortcomings, we pursue the following *interrelated goals* in this paper (cf. Fig. 1):

- The theoretical foundation of fairness opinions is *broadened*, explaining the use of fairness opinions, i.e., the objective of their use is theoretically based.
- The study tries to evaluate the empirical relevance of these explanations or objectives focusing on the *sellside*.
- An in-depth *clinical study* of fairness opinions including board book, hereafter shortly named fairness opinion, is carried out. The question is answered to what extent fairness opinions fit to the explanations, i.e., whether the instrument of fairness opinions is suitable for each theoretically based objective of use. If this is the case, the objective is positively validated here; otherwise, it is assumed that the objectives are of little or no relevance. Of course, there are several assumptions associated with this indirect approach. In particular, it is assumed that the third-party or appraiser anticipates the objectives actually pursued by the client in order to take them into account when preparing the fairness opinion.
- Since the institutional background matters, it was the objective to analyse fairness opinions in a country beyond the USA. Yet, there are hardly any countries that request the publication of comprehensive fairness opinions including board books. This is the case for targets in *Switzerland*.

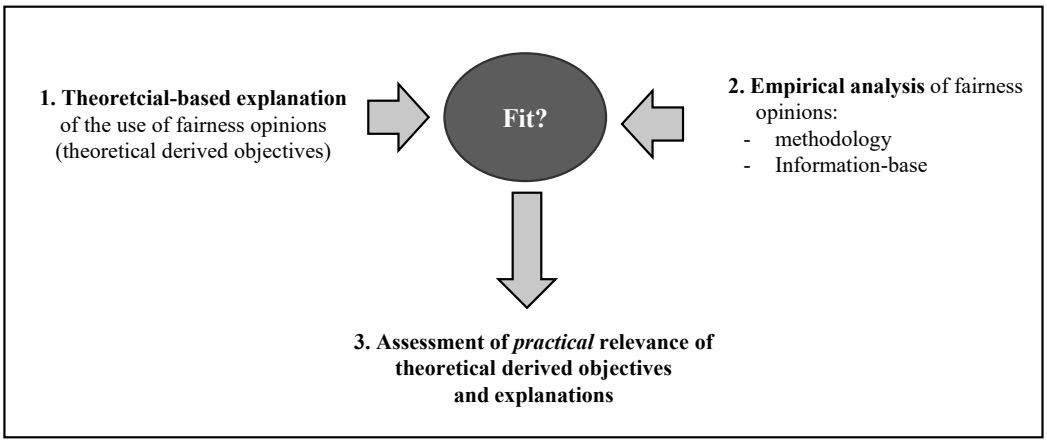

Fig. 1: Research Framework

Hence, fairness opinions of targets listed in Switzerland are studied here in detail. These opinions typically comprise at least thirty and up to seventy pages. Overall, this clinical study of fairness opinions *supplements the predominant large-number-studies focused on the US*.

The paper is structured as follows: The article starts in section 2 with the theoretical foundation of fairness opinions. Section 3 briefly describes the institutional background of fairness opinions in Switzerland and the applied data sources. Section 4 examines the valuation methods and valuation ranges used in the fairness opinions. Section 5 is

devoted to the information basis of the opinions. Section 6 deals with the core of fairness opinions: Here, parameters that are relevant for the income-based valuation methods (e.g. DCF-Methods) are examined. The paper ends with the conclusion in section 7.

2 Theoretical foundation of fairness opinions

Relevant empirical studies often lack the theoretical reasoning of the objectives of the use of fairness opinions: These objectives have more or less anecdotal character without theoretical justification, while in some studies agency theory is used to explain these (e.g. Carney 1992; Bowers & Latham, 2006; Liu 2020). Several theoretical explanations are provided below, focusing on three objectives.

- Following *New Institutional Economics*, especially information economics as one of its origins (Birchler & Bütler, 2007), fairness opinions are mandated because they help to reduce uncertainty in decisions. Frye and Wang (2010) analyse the relevance of uncertainty for the use of fairness opinions. The goal of getting additional information is widely echoed in the fairness opinion-literature (e.g. Bowers & Latham, 2006; Cain & Denis, 2010). Decisions must be made by both, the targets' boards of directors giving a recommendation on a public bid, and by individual shareholders, who decide individually whether to sell their shares. Cain and Denis (2010) find out that target-side fairness opinions are actually informative to capital markets. Yet, a target could also prepare and publish a fairness opinion *on its own* to compensate for information deficits among its shareholders. Therefore, it must be efficient for the target companies to hire a third party preparing a fairness opinion. The associated costs must be lower than doing the information- and valuation work on its own (*efficiency-oriented information supply hypothesis*). The fairness opinion should prevent the boards and shareholders from *unknowingly* (not: willingly) entering into a "bad deal". The targets' boards therefore expect to obtain relevant new information via fairness opinions to improve transaction decisions. If it would not contain relevant new information or this outsourcing would be inefficient, however, this objective would not be achievable with fairness opinions as management tool, and the objective would presumably be of minor relevance.
- The second explanation is based on the *gatekeeper model* (La Mura et al., 2011), that also rests on New Institutional Economics. While the efficiency-oriented information-supply hypothesis assumes that *lack* of information is the reason for the use of fairness opinions, here, both, the classical assumptions of information asymmetries *and conflicts of interests* are of high relevance. The management of the target ("agent") has private information and maximizes its own utility at the expense of shareholder-principals. Gatekeepers, as third parties, are hired to prevent consumption on the job of the target's management. In this sense, fairness opinion providers are gatekeepers who decide whether a transaction is beneficial to shareholders and thus grant or deny a certificate to the transaction accordingly (La Mura et al., 2011). Since management boards can be "biased" in transactions, they hire gatekeepers to certify the transaction for the shareholders and thereby ensuring *effectiveness* of decisions (*effectiveness-ensuring, neutral certification*). Gatekeepers, in turn, are also utility-maximizing, but – so the argument goes – they do not profit from the transaction, so that they could judge largely "free of interests". This neutrality of gatekeepers is justified with the argument that they largely dependent on their reputation. This reputation would suffer if the

appraisers of fairness opinions wrote "favorable opinions" in the sense of the targets' management boards. Future mandates of the appraisers would then deteriorate which is why they would pay attention to the neutrality of their opinions. The gatekeeper model goes substantially beyond the information supply-hypothesis and shifts the emphasis: The neutral certification is the reason for the hiring, and not the information supply itself. This way of thinking has also found its way into practice: For example, the Society of Investment Professionals in Germany[2] emphasizes in its principles for fairness opinions that the appraiser of fairness opinions ideally assumes a "gatekeeper function" to protect the less well-informed shareholders (DVFA, 2009, p. 3). The requirement is that the capital markets are able to reliably distinguish neutral fairness opinions from "favorable opinions" so that appraisers influenced by their clients actually lose their reputation and disappear as providers on the market for fairness opinions. Only if this mechanism works, the appraisers have a strong interest in an independent, neutral preparation of the appraisals. If this assumption of a well-functioning-market must be discarded, the Gatekeeper-model itself must also be strongly questioned.

- More or less anecdotal criticism states that fairness opinions provide merely *legal protection* against litigation for board members. Thus, these opinions are said to be nothing more than a "rubber stamp" for transactions (Bebchuk & Kahan 1989; Elson 1992) A theoretical foundation is nevertheless missing. This critical view can be substantiated by the *sociological new institutionalist approach* (e.g. DiMagio & Powell, 1983; Scott & Meyer, 1994), providing an extra-economic explanation. Companies do not commission opinions in order to increase efficiency or to ensure effectiveness of their internal decision-making processes, i.e. to close information gaps (hypothesis 1) or to prevent conflicts of interest (hypothesis 2). Rather, it is a matter of meeting socially institutionalized expectations to achieve legitimacy in the organization's environment. In the case of fairness opinions, these expectations are nourished from capital markets and can also become relevant in litigation. These expectations are promoted by interested parties such as the appraisers or their professional associations or chambers[3]. The appraisals are commissioned because requirements of the environment are met. A lack of fairness opinions could be viewed negatively by capital markets and be criticized in a legal review of the transaction. In this respect, fairness opinions serve to *formally* document careful decision-making processes and to protect management from litigation (*formal documentation and protection hypothesis*). Organizations comply with the social expectations of rationality to ensure their survival. Fairness opinions are primarily directed outward and have a formal character. In terms of content, the "certificate" does not bring any added value.[4] Only this "rationality façade" (Meyer & Rowan, 1977) opens the scope for the board of directors to covertly pursue its own interests in a transaction. Of course, this room for maneuver can only be preserved if appraisers have sufficient leeway to certify the result expected by their clients ("financially fair or not fair") in the fairness opinion, without being punished by capital markets, i.e., losing their reputation.

2 Deutsche Vereinigung für Finanzanalyse und Asset Management" (DVFA).
3 Expertsuisse in Switzerland, IDW and DVFA in Germany.
4 It is argued that fairness opinion providers have access to synergies, so that they are able to generate new information (Bruner, 2004; Cain & Denis, 2010). Yet, as shown in chapter 5, in the fairness opinions analysed synergies are not included in valuation.

In the following, these 3 explanations for the commissioning and use of fairness opinions are examined for their *practical significance* by analyzing published fairness opinions for evidence supporting each explanation. The sections 4 to 6 focus on the two decisive questions of whether transaction-relevant and new information is generated (hypothesis 1) and whether the scope of appraisers' decision-making is sufficiently small so that neutral appraisals can be separated from "favorable appraisals" (hypothesis 2), or if the scope is rather large (hypothesis 3).

3 Background and data

Due to the good publication situation of fairness opinions, targets listed in Switzerland are considered. Here, public takeover bids in the period from 2010 to 2020 and their fairness opinions are examined "*clinically*". The relevant documents on public takeovers, such as the offer prospectus and the comprehensive fairness opinions, are published via the online portal[5] of the Swiss Takeover Board STB ("Schweizerische Übernahmekommission"). For the period from 2010 to 2020 considered here, there are in total 57 public takeover bids. In 44 of these bids, comprehensive fairness opinions[6] are available, i.e., in 77 % of the takeover attempts. These 44 opinions represent the statistical population examined in this paper.[7] On this basis, it should first be noted that in 42 cases the experts certified the public offer as appropriate and fair. Only in 2 cases (Victoria-Jungfrau Collection AG, Schmolz + Bickenbach AG) is the offer considered unfair. The rarity of a review with "unfair" is a first, cautious indication regarding the information value of the Opinions.

Regarding the legal background, it can first be stated that Swiss takeover law and regulations on fairness opinions are united by the goal that all investors are treated equally and that public takeovers should be fair and transparent.[8] A special feature in Switzerland is that not every institution is allowed to prepare a fairness opinion, i.e. market access for providers is *regulated*. The STB determines whether a third party is particularly qualified to prepare fairness opinions in the context of public offers.[9] Furthermore, the *independence* of this third party is required in each individual case. The independence requirements distinguish Switzerland from Germany or the US, where dependencies need only to be disclosed, yet are no reason to be excluded.

In the event of a takeover bid for a company publicly traded in Switzerland ("target"), the target's board of directors is required to issue a report on how the bid affects the target company and its shareholders (cf. TOO, Article 30.1). This must contain a recommendation to accept or reject the takeover bid or, somewhat more cautiously, enumerate the advantages and disadvantages without recommendation. The board of directors is not obliged to commission an opinion. However, if the board of directors' recommendation is based on a fairness opinion, it has to be published. Consequently, fairness opinions for targets are regularly published, which contrasts with other important European countries

5 On this website www.takeover.ch one can find all fairness opinions analysed in this paper.
6 In addition, a fairness opinion letter only was published for SHL Telemedicine Ltd. in 2015, which, however, is not included in this analysis due to the brevity of such letters.
7 A study is available for the period 2003–2013, including 41 fairness opinions (Berndt et al., 2014).
8 Cf. Art. 1 Takeover Ordinance TOO: "The purpose of this Ordinance is to ensure that public takeover offers are fair and transparent, and that investors are treated equally", website www.takover.ch/legaltexts.
9 Cf. Art. 30, paragraph 6 Takeover Ordinance TOO on the website www.takover.ch/legaltexts. Other important legal frameworks and pronouncements can also be found here.

such as Germany. It is a binding requirement that the basis of valuation, the valuation method and the parameters applied must be disclosed (cf. TOO, Article 30.5). In the preparation of fairness opinions, however, the appraisers commissioned are not subject to any legal requirements. They therefore have discretionary powers in their respective valuations.

Of the aforementioned 44 bids with fairness opinions, 84 % of the offers were voluntary according to Swiss takeover law and 89 % were pure cash offers. In 39 % of the cases, the bidder already has access to more than 50 % of the shares in the target company and thus exercises absolute control.[10] In these cases, fairness opinions are of particular relevance.

Based on the 44 Opinions, the question arises as to who the appraisers are. 21 come from the auditing industry (Ernst & Young, KMPG, PwC, BDO, Deloitte), 14 from M&A-/Corporate Finance-Boutiques (N+1/Alantra, IFBC/Globalscope, Oaklins, ValueTrust, TCFG), and 9 from Banking / Investment Banking (J. Safra Sarasin, Lazard, Rotschild & Co., Sal. Oppenheim jr. & Cie., Bank Raiffeisen). With a total of 9, Ernst & Young produced the most fairness opinions, followed by N+1/Alantra with 6, IFBC /Globalscope with 5 and KPMG with 4 fairness opinions.

For a more detailed characterization, we look at the sectors of the targets: Industrial companies and "other service providers" dominate with 16 fairness opinions each. Thus, a total of 32 (73 %) opinions originating from these so-called "*normal sectors*" can be analysed regularly, i.e., without taking additional features into account. The 12 remaining opinions are prepared for "*specific sectors*": These are real estate companies (5 opinions or 11 %), banks (4 opinions or 9 %) and investment companies (3 opinions or 7 %), for which additional features in valuation as core of fairness opinions must be taken into account (e.g. Massari et al., 2014; Koller, et al., 2020). For this reason, these 12 appraisals of the "specific industries" are partially analysed separately.

4 Analysis of valuation methods and ranges

4.1 Frequency of the use of valuation methods

The valuation methods used include income-based-methods like standard Discounted Cash flow-WACC-method (DCF) and dividend discount model (DDM), net-asset- and cost-based-valuation methods (NAV), and finally market-based-approaches using multiples in form of the comparable listed company and comparable acquisition approach (e.g. Damodaran 2015; Koller et al., 2020; Matschke & Brösel, 2021). Moreover, historical and current share prices, share price targets of financial analysts, and takeover premia are used to assess the fairness of the offer. This section is similar to the paper by Matthews (2012), which examined fairness opinion valuation methods in the U.S, yet this paper offers some additional insights.

Looking first at the 44 fairness opinions *in total*, including the specific sectors, historical and current share prices and multiples based on the comparable company approach (Trading-Multiples) are predominant with a usage rate of over 90 % (cf. black bars in Fig. 2). This is followed by the DCF-approach and multiples based on comparable acquisitions (Transaction multiples), each with just under 80 % usage. In the midfield are analysts'

10 Thus, the opinions still are commissioned by the target, but the bidder already has influence over the target.

price targets (36 %) and takeover premia (32 %). The NAV and the DDM are used even less frequently.

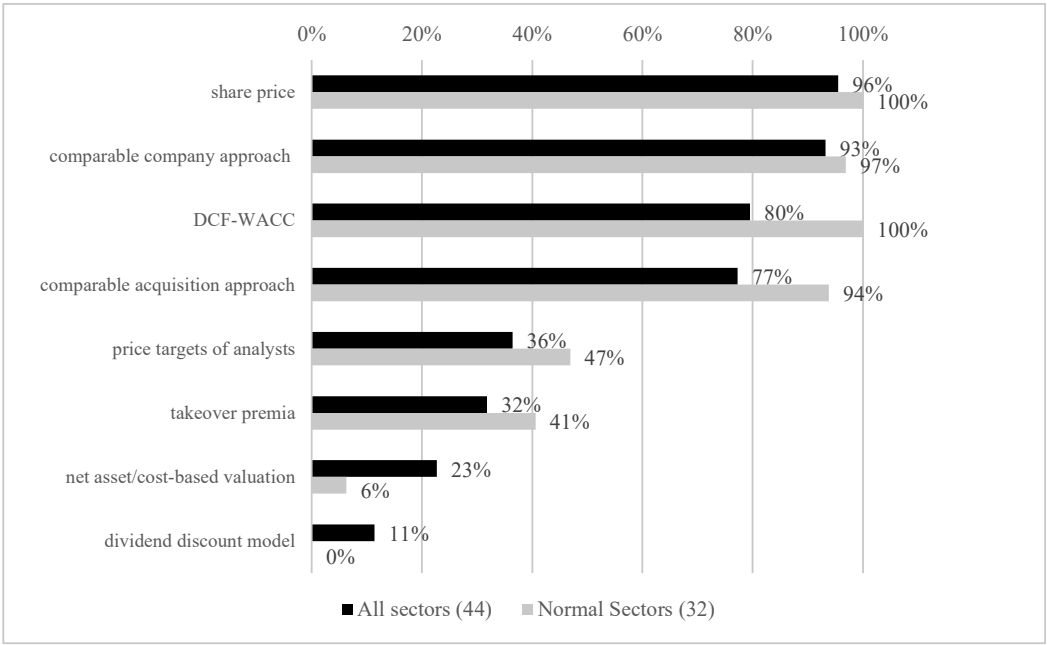

Fig. 2: Usage of valuation methods in %

The picture changes somewhat, if only the opinions of the "*normal sectors*" are analysed, i.e. without real estate, investment companies and banks (cf. grey bars in Fig. 2): All 32 opinions make use of share prices and the DCF-method in the WACC-version. Transaction multiples with around 94 % are used almost as frequently as trading multiples (97 %). Price targets and takeover premia are applied in around 47 % and 41 % of fairness opinions. As expected, the NAV and the DDM are used in the specific sectors of real estate and banks and are hardly used in the "normal sectors".

The valuation methods are generally not regarded as equivalent by the preparers of fairness opinions. Some methods are considered to be more accurate and of higher importance, while others serve mainly for plausibility purposes. Therefore, a distinction is made here between primary valuation methods and secondary methods, what in our opinion has not been considered so far in fairness opinion-literature.

In the following, initially the *primary valuation methods* are considered, which appraisers regard as the main valuation methods and which are usually prioritized in the determination of the final value range. A total of 52 primary valuation methods are used in the 44 fairness opinions, i.e. mostly only one primary method is applied. The DCF is used as the dominant primary method in almost 80 % of the fairness opinions (cf. black bar in Fig. 3). This is followed at a considerable distance by the NAV (14 %) and the DDM (9 %). Whenever alternative valuation methods, such as multiples, share prices or price targets are used as primary methods in rare cases, these are always flanked by income-based-approaches or NAV-methods. Without the specific sectors, the picture is even clearer: In the

32 fairness opinions considered, 35 primary valuation methods are applied, with the DCF used as the primary method in 100 % (cf. grey bars in Fig. 3). Trading multiples are only applied in 2 cases (6 %) as primary techniques and again accompanied by DCF. In one case, the NAV is used. It is integrated in a sum-of-the-parts valuation for a smaller, real estate-related business segment, where the DCF-method is used for the other segments (cf. opinion on Escor Casinos & Entertainment AG, 2011).

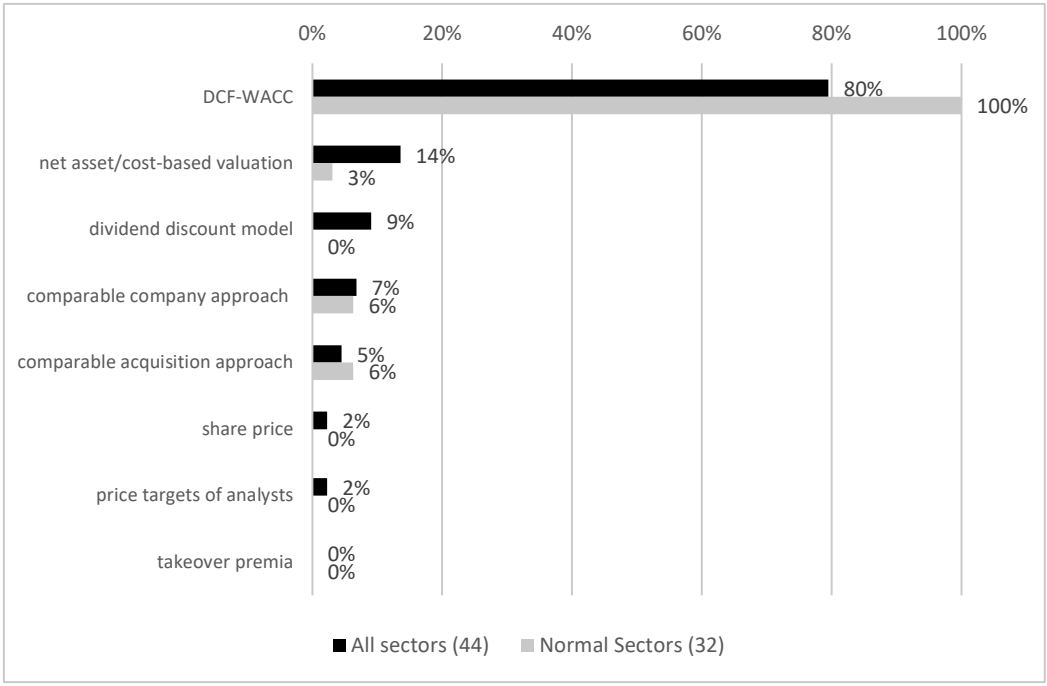

Fig. 3: Usage of valuation approaches as primary methods in %

When looking at the *secondary evaluation methods*, the situation is almost a mirror image. A total of 145 methods are used in the 44 opinions, i.e. an average of more than 3 secondary methods per opinion. The DCF is not used at all. At around 93 %, share prices of the target are dominant. The inclusion of the share price as a secondary valuation method is only waived in three cases: In one, the share price is used as primary method, in another case it is argued that the trading volume is too low, and in the third case (cf. opinion on Bank Sarasin, 2012) the share price is only implicitly used. To sum up, the share price is at least always included if the trading volume is sufficient for a meaningful market price to be formed (liquid stock). Other important secondary valuation methods are trading multiples (86 %) and transaction multiples (73 %). These are followed by analysts' price targets (34 %) and takeover premia (32 %). The latter are usually derived from peer groups and are mostly added to a historical share price of the target to include a control premium.[11] The limited use of takeover premia can be justified with illiquid

11 This control-premium therefore transfers some of the synergies of recent transactions to the target's valuation.

stocks in 19 cases, since it makes little sense to add a takeover premium to a price that is not based on a liquid market. However, there is one exception to this: The takeover premium was used for the opinion on Newave Energy, although trading in the share is illiquid according to regulatory rules.

Next, we look at the *number of valuation procedures* per opinion (cf. Fig. 4): It ranges from three to six, with a total of eight different methods (cf. methods in Fig. 2) differentiated in our study. In 8 of the 44 fairness opinions, six different valuation methods are used, thus including a wide variety. Across all opinions, there is only a weak positive correlation between offer price or market capitalization on the one hand and the number of valuation procedures included on the other: The correlation coefficient r is 0.33 and rises to 0.38 if the specific industries (cf. grey bars in Fig. 4) are excluded. If we look at the 13 transactions with a purchase price of more than 1 billion Swiss francs, an above-average number of valuation methods are used (4.9 methods). In this respect, a larger number of methods tends to be used for high transaction volumes.

Fig. 4: Number of valuation methods per fairness opinion

4.2 Analysis of valuation ranges

4.2.1 Methodological remarks

In the 44 fairness opinions examined, usually a valuation range is determined instead of just a single value. These ranges are mostly quite large, which is partly due to the fact that appraisers also use those valuation methods with a questionable data basis, presumably for documentary purposes. For example, prices of illiquid shares or transaction multiples based on very low transaction numbers are included. This is partially offset by the fact that appraisers do not fully incorporate these valuation results into their summary valuations or their final opinions, citing such shortcomings.

In the following analysis, therefore, only those results are considered that are also taken into account by the experts in their conclusion or summary evaluation, as only these results are justifiable from the experts' point of view. Above all, valuations based on illiquid shares are excluded. In a total of 19 of the 44 cases, the trading volume of the target company was considered illiquid, i.e., the trading volume was so low that the shares were considered illiquid in terms of the liquidity threshold of the Swiss Takeover Board.[12] The prices of these illiquid shares are consistently not included in the following evaluation – not even in the rare case when the prices are listed in the conclusion despite this shortcoming. Thus, only these restricted valuation ranges are considered here (*first capping*).

Furthermore, the appraisers often do not include the full range of results in their summarizing valuation range. The manner of this second limitation of the valuation range is often nontransparent and opens discretionary leeway for appraisers. In most cases, the full range of primary valuation methods is used. This range is extended by the usually larger spread of the secondary valuation results, but without using their full range (*second capping*). The appraisers seem to be cautious when including secondary valuation results.

As before, in analysing the valuation ranges a distinction is made between the results of primary and secondary valuation methods. Consequently, valuation results are only to be included in the respective rubric – e.g. in the group of "secondary method multiples" – if this method is actually also used as secondary method and not as primary method in the respective opinion. Furthermore, the results must also again appear in the summarizing valuation to be included in this analysis.

4.2.2 Data analysis

In 24 of the 44 fairness opinions examined, there is capping of the initial valuation results before these are included in the summarized valuation-range. Nevertheless, the remaining valuation intervals are often still very large. On average, the difference between the highest and the lowest result is around 38 %, the median is 19 %.[13] In 4 fairness opinions the valuation range is over 100 %: At the top are the opinions on Acino Holding and BFW Liegenschaften (cf. Fig. 5). In 11 opinions, the range used by the experts to justify their

12 Cf. the Swiss Takeover Board Circular No. 2: "A security not included in the SLI (SWISS Leader Index) shall be deemed liquid (…) if the monthly median of the daily volume of on-exchange transactions is equal to or greater than 0.04 % of the tradable portion of the relevant security (free float) in at least 10 of the 12 full months preceding the publication of the offer or the pre-announcement."

13 Calculation of the percentage difference: (Highest value – lowest value of valuation range) / lowest value of valuation range.

assessment is still above 50 %. The offer price[14] is also depicted via a single point in Fig. 5. In 42 cases, it lies within the respective valuation range. In those two cases in which the offer price is rated as unfair, it lies below the interval. It is worth noting that in 11 cases the bid price is above the valuation range. In another 21 opinions it is in the first two quartiles, in 8 cases in the third quartile and only in 2 cases in the 4th quartile of the valuation range. If we compare the valuation range and the offer price, it is obvious that the latter is mostly in the upper half or even above the valuation range (35 of 44 opinions).

14 Calculation of the offer price as percentage: (Offer price – lowest value of valuation range) / lowest value of valuation range.

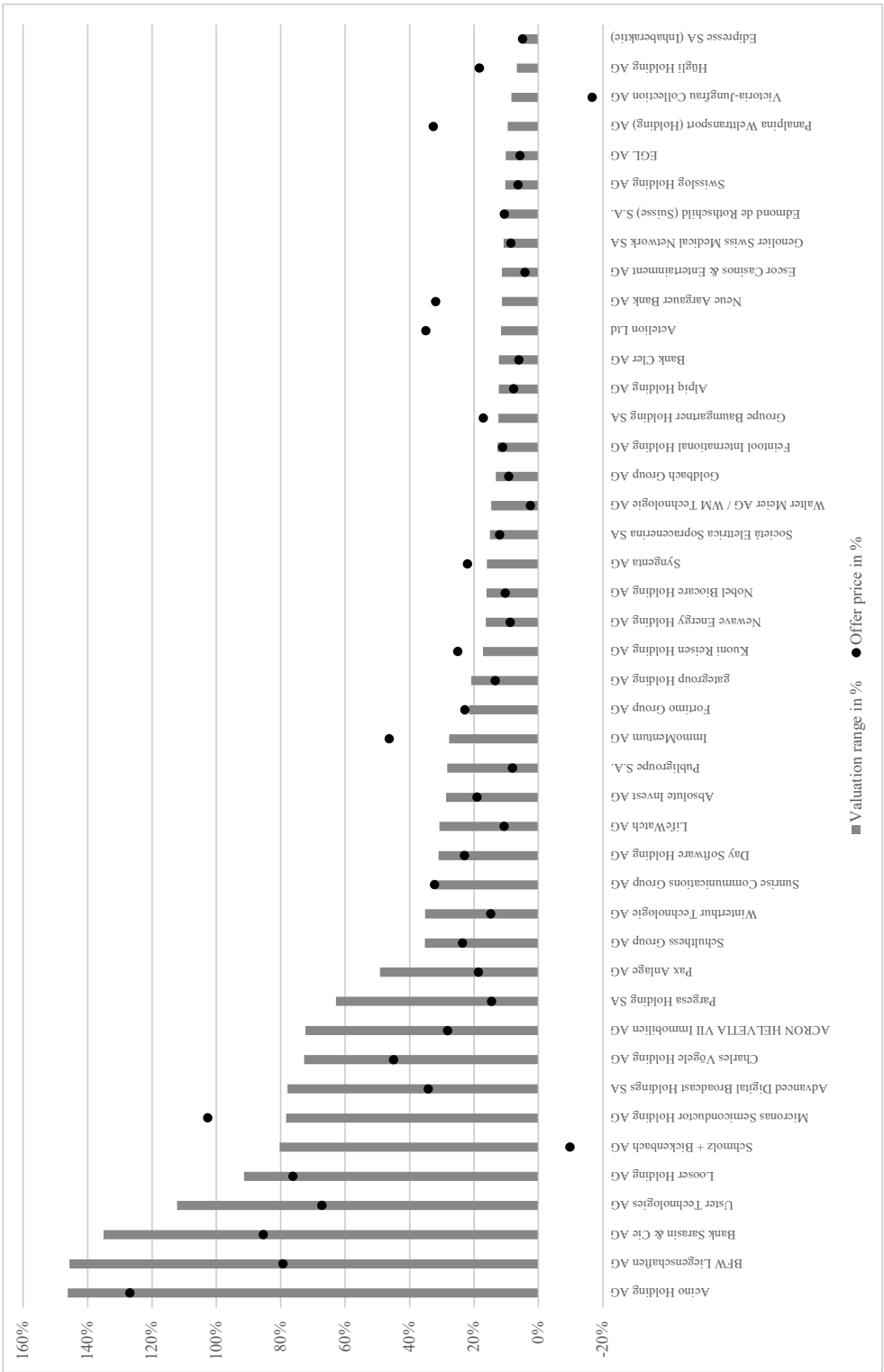

Fig. 5: Valuation range in % (highest minus lowest value)

With respect to *primary valuation*, the mean value of the ranges over all methods is just under 23 %, i.e. the highest value is on average almost a quarter larger than the lowest result. The median is around 16 %. In 5 opinions (cf. Fig. 6), the range is above 50 % and reaches a peak of 73 % in the case of Charles Vögele, in which a DCF-Method is used. In the opinion on Absolute Invest, a NAV-approach is used as primary method and a single point value is given instead of a valuation range.

Fig. 6: Ranges of primary valuation methods in %

The analysis of *secondary valuation methods* shows a significantly larger difference between the highest and lowest results. On average, this amounts to 85 %, with the median at around 65 % across all secondary methods.

There are various reasons, including methodological ones, for specifying valuation ranges instead of single point values (e.g. Damodaran 2015; Koller et al., 2020). First, the inclusion of different valuation methods usually leads to a variety of valuation results in practice, as can be seen here. Secondly, different scenarios can be used within the respective valuation method. However, it is not evident in any fairness opinion that scenarios are formed *independently*[15] for the explicit forecast phase. There is a lack of holistic best-case or worst-case considerations. In this respect, the valuation variants are explained by the variation of only a few parameters such as different growth factors in the terminal value phase or different costs of capital. As shown, the opinions often have large ranges in valuation, and probabilities of valuation results are regularly missing. This complicates the interpretation of the opinions for both the target companies and for their shareholders.

5 Analysis of Information basis

Following the GIGO-principle of "garbage in, garbage out", company valuations in fairness opinions also depend on the quality of the information included. In this respect, the main sources of information are examined for all 44 opinions. At an abstract level, a largely uniform picture emerges:

- All appraisers use *publicly available information*, which includes not only information on the homepages of clients (targets) and industry associations or offer documents, but also information from fee-based professional databases, for example to calculate multiples.
- All appraisers use *internal company information*, which primarily includes financial statements or financial forecasts or comprehensive business plans. In one opinion it is mentioned, forecasts were not available (cf. opinion on Groupe Baumgartner, 2019).
- *Q&A-sessions or meetings* with management are held in around 98 % of cases. Such discussions were not listed in one opinion (cf. opinion on Sunrise Communications Group, 2020, p. 7.).

In detail, however, differences can be observed regarding to both, the *specification* of information sources and the *variety* of these sources. For example, six reports, all prepared by global player EY, lack detailed information on the sources of information used. In the case of the remaining 38 reports, significantly more information is given. With regard to the variety, it is evident that, depending on the sector and company, additional sources are included supplementing the standard information: These include real estate valuation reports, risk and audit reports, monthly reports of targets, employee stock option plans, minutes of board meetings, strategy and project reports, other share purchase agreements relevant to the transaction, information on net financial debt or even, in one case, a strategy and structure analysis prepared by an external consultant (cf. opinion on Schmolz + Bickenbach, 2013, p. 5).

15 Scenarios were used in the Opinion on Sunrise Communications, but were not prepared independently (cf. chapter 5).

Despite these differences in detail, all appraisers state that they rely exclusively or essentially on the information they received from the client's management.[16] Rarely do the appraisers mention that information provided by the clients was subject to a plausibility check and that it was critically questioned in the Q&A-session. Almost never is it suggested that the business plans provided by management are adjusted for the valuation – except for the opinion on Bank Sarasin & Cie (2012, p. 2). On a positive note, two scenarios are included in the opinion on Sunrise Communications Group: A planning calculation by management and a planning based on the consensus estimate of analysts (cf. Sunrise Communications Group, 2020, p. 7).

Synergies are not included in the analysed fairness opinions, at least not in income-based-valuation methods. This contrasts with the argument that the fairness of an offer could be compared to a minimum value receivable in an auction process containing at least some synergies (Davidoff et al., 2011, p. 484), what is an argument for the informational value of fairness opinions (Schaffer, 2020).

All in all, it becomes obvious that appraisers – also for liability reasons – refer to the fact that the analyses are *essentially based on information provided by the client*. The client thus largely determines the "numerator variables" relevant to income-based-methods, such as cash flows. Clients have a decisive influence on the result of valuation and ultimately on fairness opinions. One gets the impression that the appraiser's task is merely one of arithmetic rather than of economics, although the clients could just as easily make such calculations themselves and of course frequently additionally do so. This allows them to easily determine ex ante what conclusion the appraiser will come to.

6 Selected parameters of the costs of capital

6.1 Overview

The discounting of cash flows or other income metrics is of outstanding importance in most fairness opinions and has a strong influence on valuation results. Two parameters of capital costs are analysed below, which best illustrate the discretionary scope of the appraisers in their valuations: The risk-free interest rate (6.2) and the size premia and illiquidity discounts (6.3).

The costs of capital are a central component of valuations in DCF-WACC approach, which is used in 35 opinions (80 %). Likewise, in the DDM, which is used in 5 cases (11 %), the costs of equity are relevant. This leaves 4 fairness opinions using the NAV in which a priori no discounting is required. In two of these cases, a portion of the cash flows is discounted over long periods of time, and costs of capital are also calculated (BfW Liegenschaften, 2019; Pax Anlage, 2017). Thus, in principle, *42 of the 44 fairness opinions can be analysed* here. However, the actual number of fairness opinions considered varies according to the individual parameter discussed.

16 Exemplary are the "disclaimers" in the fairness opinion of the appraiser EY on Fortimo Group AG, 2013, S. 3 and of the appraiser N+1 in the opinion on Gategroup Holding AG, 2016, p. 7.

6.2 Risk free rate

6.2.1 Methodological pproach

In the relevant 42 opinions, risk free rates are inputs for calculating the capital cost. Yet, this risk-free rate is not available in practice because there is no investment that is actually risk-free (e.g. Damodaran 2015). Thus, the question for any appraiser is how to approximate it. In practice, the risk-free interest rate is often determined via historical yields of government bonds or on the basis of a forward-looking yield curve of risk-free assets. In the latter, the risk-free interest rate is derived from an estimated yield curve of government zero-coupon bonds. Since zero-coupon bonds are often not available, theoretical spot interest rates are derived from interest-bearing bonds (Nelson-Siegel-Svensson method or NSS) (Nelson & Siegel, 1987, Svensson, 1994).

The differences in the determination of risk-free rates are also reflected in the costs of capital used for valuation. This opens discretionary scope for appraisers. To estimate the size of this discretionary scope, a uniform benchmark is helpful. Here, the risk-free rate used in the respective fairness opinions is compared with a benchmark based on the internationally recognized NSS-method (NSS-Benchmark). This benchmark does not claim to represent the only correct risk-free rate, but its use is widely applied and accepted (e.g. Ballwieser & Hachmeister, 2021, p. 102) and thus suitable to reveal discretionary scope of action for appraisers. In practical business valuations, a single, unified term-constant risk-free rate is regularly used, thereby reducing modeling complexity. This is also followed here. The necessary parameters were collected by the Swiss National Bank SNB on a daily basis and calculated for 1.000 years. For verification purposes and for other currencies, the professional database smart zebra was used.[17] The risk-free rate is determined for the valuation date. The spot rate of the 30th year is also used for the subsequent years (flat interest curve). For the calculation, a growth rate of 1 % was used in those cases where the interest rate in the 30th year was greater than this growth rate (cf. IDW 2017). As long as this condition held, change in growth had little effect (e.g. Ballwieser & Hachmeister, 2021, p. 107). If the interest rate was below 1 %, a growth rate of 0 % was applied.[18] The use of a 90-day average instead of the parameters of the valuation date resulted in only minor deviations.

When selecting the capital market for determining the NSS benchmark, it is important to establish risk equivalence between alternative investment options and the cash flows considered here. Two cases can be distinguished: First, if the sales are (almost) exclusively in one currency such as the Swiss francs, the calculation of the NSS benchmark is based exclusively on the respective risk-free-rate of this currency (approach 1). The data then mostly originate from the Swiss National Bank (SNB) or, in the case of a different currency, from the respective national bank or the professional database zebra. If relevant sales are generated in different currency areas, the determination of the NSS benchmark depends on the approach taken in the fairness opinions. If appraisers have converted different foreign currency cash flows into one currency using the respective *forward rates*, the cost of capital of this country only must be applied (approach 2a). For the translation

17 https://www.smart-zebra.de/.

18 A peculiarity arose in five cases where the interest rates of the yield curve were negative and remained negative in the 30th year. Here the procedure was as follows: The interest rate of the 30th year was used as an approximation for the unified risk-free rate.

of the individual planned cash flows, appraisers then had to determine forward rates for the complete valuation period. Yet, valuers rarely use this approach in the opinions examined here. Instead, the third case is much more common in the fairness opinions considered here: Cash flows of different currencies are converted into one currency – mostly the Swiss franc – using *spot rates*. Then, a sales-weighted risk-free-rate is formed to reflect the different inflation expectations. The cash flows are discounted using this blended risk-free rate (approach 2b). Ernst & Young uses this approach for example in its fairness opinions on Looser Holding AG and Charles Vögele Holding AG. The IFRS impairment test according to IAS 36 (cf. IAS 36.54) follows a quite similar procedure. The spot-rate or direct approach and the forward-rate- or indirect approach are discussed in Djukanov and Keuper (2017, pp. 1318–1319) and Ihlau et al. (2015, p. 1327).[19]

The NSS-Benchmark used here is based on the risk-free Swiss interest rate in 17 cases. In two cases, the risk-free interest rate is based only on one foreign currency, i.e. the USD in the case of LifeWatch and the EUR for Pargesa Holding, as sales are generated in these currencies.[20] Thus, in total, approach 1 is used in 19 cases. Approach 2a is used by KMPG in the case of Edipresse. KPMG converted all sales into Swiss francs using forward rates. The NSS-Benchmark used here is thus based on the risk-free interest rate of Switzerland. For the remaining 22 cases, a sales-weighted risk-free rate is used as the NSS-Benchmark. Care is taken to establish currency equivalence as far as possible to take into account the corresponding local inflation expectations. For pragmatic reasons, a maximum of four currencies is included in the sales-weighted risk-free rate. However, these usually cover approximately 90 % or more of the sales of the target. In some appraisals, sales are broken down into large economic areas (e.g. EMEA) instead of local currencies. In these cases, the best possible research was carried out to determine the most important currency for the respective area. In 4 opinions, the formation of the NSS-Benchmark was more difficult due to inaccurate information on the breakdown of sales by currencies, so that the determination of the benchmark is subject to greater uncertainty. This concerns the opinions on Gategroup Holding, Syngenta, Kuoni Reisen and Micronas Semiconductor. However, this problem seems to be of minor relevance since the difference between the calculated NSS-Benchmark and the actually used risk-free rate is for less than 0.5 %-points, except for Syngenta.

In fairness opinions with a sum-of-the-parts valuation, risk-free rates are only specified for each business area individually and a uniform risk-rate for the entire company is missing. In these cases, the risk-free rate is considered for only a single business unit that generates its sales mainly in Swiss Francs. Consequently, the corresponding NSS-Benchmark is then also formed only for this unit (Goldbach and Publigroupe, each with the Swiss division). An exception is made for the opinion on WM Technologie (2014); here the risk-free rate for the analysed business segment Condair is based on various currencies. The fairness opinion on Acino Holding cannot be included in the analysis, as it is impossible to allocate currencies to sales and therefore not possible to approximate a risk-free rate weighted by currencies. Thus, in 6.2.2 the risk-free rate is evaluated for 41 of the total 44 fairness opinions.

19 Cf. Pohl (2009) uses a similar approach in his calculation of equity costs for different markets.

20 The experts (Rothschild & Co. and Bank Raiffeisen) of the fairness opinion also used these currencies for the risk-free-rate.

6.2.2 Data analysis and findings

In the following analysis, the risk-free rate actually used by the appraisers is compared in each single case with the NSS-Benchmark, which is a risk-free rate on valuation date. The *interest rate differential* is determined by subtracting the NSS-Benchmark from the actual risk-free rate used in each opinion. Across the appraisals, we find both, positive and negative interest rate differentials:

- A positive difference means that the risk-free rate used by the appraisers is larger than the NSS-Benchmark, which ceteris paribus leads to lower valuation results. In total, 18[21] of the 41 fairness opinions considered show positive deviations (cf. Fig. 7), which amount to an average of 1.07 %. The high deviation in the fairness opinion on Bank Sarasin & Cie. (2012) of almost 2.9 % is particularly noteworthy. In 9 fairness opinions, the positive interest rate difference is substantial and above one percentage point.
- In the case of a negative interest rate deviation, the risk-free rate actually applied is set too low compared to the NSS-Benchmark. Ceteris paribus, the valuation results are therefore too high. In total, 22 expert opinions show negative interest rate differentials, with an average of 0.65 percentage points (cf. Fig 7). In 5 appraisals, the interest rate differential is above one percentage point, with Panalpina Welttransport and Syngenta showing the highest interest rate differential. For Syngenta, however, it should be noted that the replication of a sales-weighted NSS-Benchmark is impaired by the fact that sales cannot be clearly allocated.[22]

21 One Benchmark is identical to the risk-free rate used in the fairness opinion (Advanced Digital Broadcast Holdings, 2014).

22 In the opinion on Syngenta, a global sales-weighted 10-year government bond yield was formed. The exact countries and their weighting are not transparent.

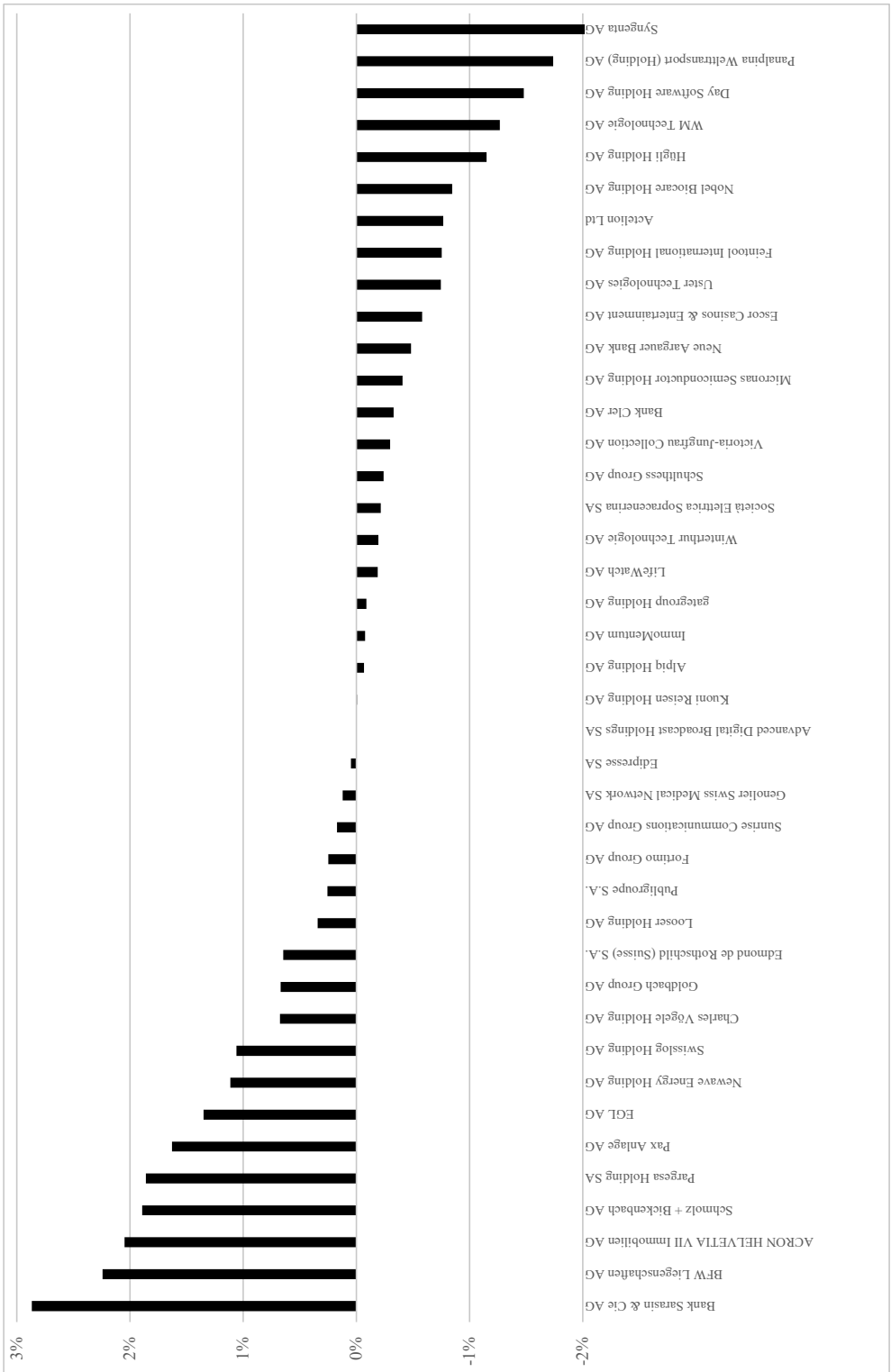

Fig. 7: Differentials between actually used risk-free rate and NSS-Benchmark in %-points

What are potential *causes of large interest rate differentials*? For this purpose, we take a more detailed look at the methods used by the appraisers to derive the rates. Table 1 depicts the procedures for those 14 expert opinions with an interest rate differential above one percentage point. There are four main reasons for these differentials, which are explained below:

1. One important reason is the *inclusion of longer time periods to determine the risk-free rates*. In one opinion, this period extends over 5 years (cf. opinion on Hügli, 2018), in some cases also over ten years, twenty years or even over almost a whole century with recourse to the Pictet-study (Pictet Wealth Management, 2020), which is traditionally used in Switzerland and includes returns of over 90 years. Thus, periods of relatively high yields are included in the determination of the risk-free rate. This approach is justified by appraisers with the historically low current risk-free rates, which is why the inclusion of historical risk-free rates would be necessary to reflect a "normalized interest rate environment" (e.g. opinion on Bank Sarazin, 2012, p. 21). This is questionable in that the costs of capital used to discount future incomes are intended to reflect, as best as possible, the return on the best alternative investment available in the future, not of historical investment opportunities (Dehmel & Hommel, 2017, p. 127). In some cases, the aforementioned historical yields of government bonds are supplemented by current yields based on valuation dates, yet the weighting of current and historical yields is usually not disclosed (cf. opinion on Schmolz & Bickenbach, 2013). Due to this lack of transparency, the comprehensibility of the determination of the risk-free interest rate and thus a replication of the valuation results is hardly possible.
2. *Different maturities of government bonds* are used in the opinions, which also explain the rate differentials. These vary from 10 years over 20 years and up to 30 years. Assuming normal yield curves, shorter maturities of e.g. 10 years result in lower risk-free rates than long-maturity-bonds. The requirement of maturity equivalence (Dehmel & Hommel, 2017) of investment and alternative opportunity is therefore violated in particular when considering a maturity of only 10 years, since in valuation regularly "going concern" and therefore an (almost) infinite lifetime of the company is usually assumed (e.g. Damodaran 2015).
3. In some cases, a questionable *minimum yield* is used instead of historical or current government bond yields: In fairness opinions by IFBC, it is assumed that Swiss bonds must have a sustainable real interest rate of 1 %. By adding a forecasted inflation rate of 1 % for Switzerland, this results in a nominal risk-free rate of 2 %. The assumption of a positive real interest rate (at exactly this level) is by no means economically compelling.
4. Occasionally, the risk-free rate of only a single currency is used, although the company generates significant sales in other currencies.[23] The principle of *currency equivalence* (Dehmel & Hommel, 2017) between the target to be valued and the investment alternative is violated. The opinion on Newave Energy (2011) is illustrative: According to the appraisers, Newave generates only 15 % of its sales in Switzerland. The remaining are generated in Western Europe (62 %) and Eastern Europe (7 %), Latin America (5 %), and the regions of Southeast Asia, Middle East and Asia-Pacific (11 %). Nev-

23 Unless other information is available, it is assumed that invoices are issued in the customer's local currency.

ertheless, the appraiser only uses Swiss Francs for the risk-free rate. For calculating our NSS-Benchmark, four regions (EU, Switzerland, China, Latin America) and their currencies (EUR, CHF, CHY, USD as trading currency) are included. In addition to the fairness opinion commissioned by the target, a valuation report by the buyer is also publicly available. In this report, the risk-free rate is based on three currency areas (EUR, CHF, USD) and the NSS-method was used. The risk-free rate in the report is almost identical with the NSS-benchmark calculated here.[24] The fairness opinion on Swisslog (2014), WM Technologie (2014), or Panalpina Welttransport (2019) are quite similar cases.

Fairness opinion on	Rate Differential	year	Information basis	Weighting of yields	Maturity of bonds	Appraiser
Bank Sarasin & Cie. AG	2,87 %	2012	government bonds of 20 years (1990–2010)	intransparent	20 yrs.	Lazard
BFW Liegenschaften AG	2,24 %	2019	1 % real interest rate and 1 % inflation (Switzerland)	not applicable	"long-term"	IFBC
ACRON HELVETIA VII Immobilien AG	2,05 %	2016	1 % real interest rate and 1 % inflation (Switzerland)	not applicable	"long-term"	IFBC
Schmolz + Bickenbach AG	1,89 %	2013	current and historical government bonds	intransparent	"long-term"	J. Safra Sarasin
Pargesa Holding SA	1,86 %	2020	government bonds of last 10 years	mean value	10 yrs.	Rotschild & Co.
Pax Anlage AG	1,63 %	2017	1 % real interest rate and 1 % inflation (Switzerland)	not applicable	"long-term"	IFBC
EGL AG	1,35 %	2011	government bonds 1989–1999 and current yields	intransparent	20 yrs.	J. Safra Sarasin
Newave Energy Holding AG	1,11 %	2011	government bonds 1926–2009 and current yields	intransparent	30 yrs.	J. Safra Sarasin
Swisslog Holding AG	1,06 %	2014	government bonds 1926–2013 and current yields	intransparent	30 yrs.	J. Safra Sarasin
Hügli Holding AG	-1,15 %	2018	government bonds of last 5 years	mean value	10 yrs.	EY
WM Technologie AG	-1,27 %	2014	current government bond yields	not applicable	20 yrs.	Deloitte
Day Software Holding AG	-1,48 %	2010	presumably current yields of government bonds	not applicable	20 yrs.	Sal. Oppenheim
Panalpina Welttransport (Holding) AG	-1,74 %	2019	yield curve	not applicable	different maturities	KPMG
Syngnta AG (complicated replikation)	-2,32 %	2016	government bonds of various countries	sales-weighted?	10 yrs.	N+1 Capital

Table 1: Fairness Opinions with large risk-free rate differentials

24 The KPMG (2011, p. 29) valuation report uses a risk-free rate of 2.90 %, while our NSS-Benchmark is 2.89 %.

Overall, it is obvious that in almost all of the 14 cases, the approaches used to determine risk-free rates deviate from the internationally recognized NSS-method. The applied alternative approaches are questionable in many cases and often appear opaque in their application. Even if this is ignored, decision-making scope for appraisers is revealed by the comparison with the NSS-Benchmark. The selected risk-free rate has a substantial impact on the valuation results, with corresponding consequences for the statements in the fairness opinions.[25] If, for example, a payment series whose positive cash flows grow at 1 % p.a. is discounted with either a WACC of 7 % or – due to a higher risk-free rate – with a WACC of 8 %, the latter results in a reduction in the enterprise value of more than 13 %.[26] The effect is amplified when WACCs fall.

6.3 Size Premia and illiquidity discounts

In valuation practice and literature, various premiums or discounts are discussed to adjust the costs of capital or the equity values directly. These adjustments are justified by e.g. the lack of size of the companies and the lower liquidity or fungibility of their shares (e.g. Roll, 1981; Torchio & Surana, 2014):

- *Size premia* in the form of a premium in the costs of capital are controversial and inconsistent with the assumptions of the CAPM-model (e.g. Fama & French, 2004). Empirically, they have been studied mainly for the capital markets in the U.S. (Banz, 1981; Fama & French, 1993), whereas the empirical evidence for Europe is less clear and depends, among other things, on the period and country analysed (Baetge & Schulz, 2009; Ballwieser, 2018, p. 69). Appraisers also view empirical confirmation as critical in some cases.[27]
- *Illiquidity discounts* are also dubious from a theoretical point of view when the CAPM is used, since the lack of possibility to transfer shares at any time contradicts the assumptions of the CAPM, in which a perfect capital market and a free transferability of shares are assumed (e.g. Comment, 2012).

Size premia and illiquidity discounts are not easy to separate strictly: Small company size and market capitalization can be listed precisely as a reason for the lack of mobility or liquidity of shares. Therefore, both factors are discussed here in one section, especially since this also allows to consider the problem of double counting effects.

According to the proponents of these adjustments, investors generally expect a higher return from smaller companies than from larger ones (Aussenegg & Grünbichler, 1999; Comment, 2012; Hüttiche & Schmid, 2020). There are various ways of taking these risks into account in income-based valuation methods: First, by reducing the income to be discounted in the numerator; second, by increasing the costs of equity in the denominator, or third, by reducing the calculated equity value via a percentage discount. In the case of

25 In three of the 13 fairness opinions, it could be argued that discounting only has a minor influence on the valuation, as the majority of the value is derived from NAV, and the interest rate only influences minor parts of the valuation (BfW Liegenschaften, PAX Anlage, Pargesa). In the case of Pargesa, however, in addition to the net NAV the DDM is used for verification, in which equity cost rates are relevant.

26 However, the WACC may not be affected by a change in the risk-free rate under certain, rather theoretical conditions. This applies if the beta factor is 1 and the cost of debt is not affected by the change of the risk-free rate, while other variables are constant.

27 Cf. opinion on Sunrise Communications, 2020, p. 42.

size premia, the (second) way is usual, i.e. an increase of cost of equity. In the case of illiquidity discounts, the third way is common, that is a discount of the equity value. In the 42 fairness opinions, size premia are used in 26[28] cases and illiquidity discounts in five cases.

It is important for the recipients of the fairness opinions that these adjustments are understandable and well justified in the various opinions. To verify this, one needs a benchmark. In the following analysis, company size is operationalized by two benchmarks: (a) the equity value, measured by the price of the public takeover bid for the target company, and alternatively (b) by the sales volume of the target.[29] Based on the two benchmarks, size premia are evaluated here in two ways:

- First, the *correlation* between size premia and company size is examined. For this analysis, the opinions on companies from specific industries are excluded, as it is often argued that no size premium may be used for these industries, so that their inclusion would distort statistical analysis (e.g. Koller et al., 2020). Thus, 32 expert opinions are considered for statistical evaluation.
- Second, all 42 fairness opinions are be examined *individually for outliers*. The specific industries are at first included and then analysed separately.

First, therefore, the question of whether there is a *statistical correlation* between the level of equity value or sales of the target on the one hand and the level of the size premium on the other is investigated. Based on a simple linear regression, the following results are obtained for the 32 expert opinions: For equity value as an explanatory variable, the correlation coefficient r is 0.386, which is significant at a 5 % level (p=0.029). The coefficient of determination is 0.149. For sales as explanatory variable, the correlation r is 0.444 (p=0.014). This is well below the significance level of 5 %, so that a significant correlation can be assumed. The coefficient of determination of 0.197 is somewhat higher than for the equity value. While there is a correlation between the size premium and firm size, the respective coefficient of determination shows that that the size premium can only be partially explained by the equity value and sales. This is likewise indicated in Figure 8, which considers companies with an equity value of up to CHF 5 billion.[30]

28 Of these, 23 Opinions are from normal sectors and 3 Opinions are from special sectors.

29 Market capitalization is ruled out because the shares of many companies are illiquid, thus the stock market price is precisely not the result of well-functioning markets.

30 Only Actelion (equity value of CHF 30 billion) and Syngenta (equity value of CHF 45 billion) are missing. Both do not have a size premium.

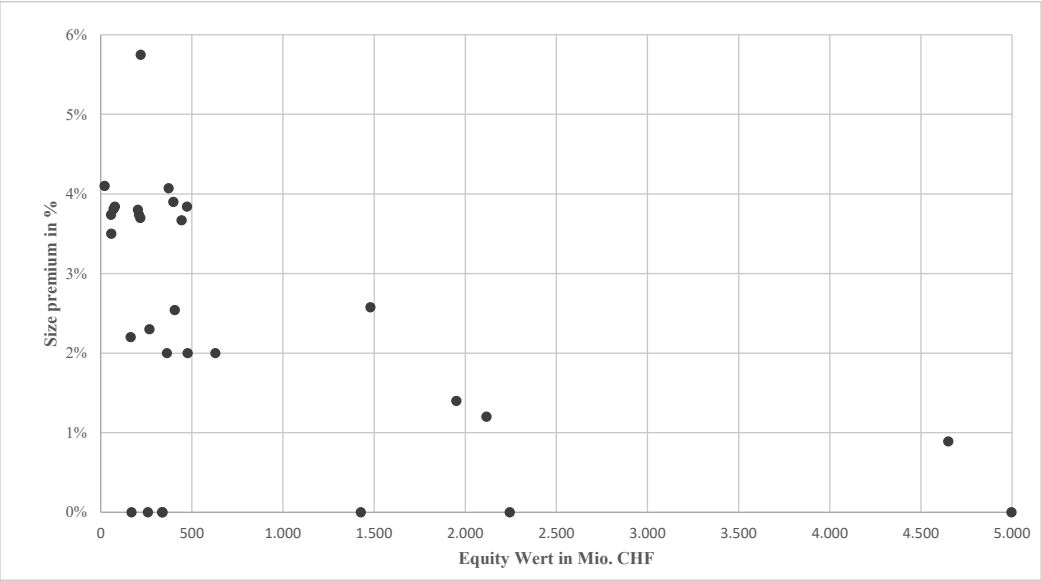

Fig. 8: Size Premium and equity value of Fairness Opinions[31]

Apart from statistical analysis, the *individual case-related analysis* of all 42 fairness opinions is useful to identify "outliers". The following opinions, which are compared "in pairs", show some peculiarities:

- *Different size premia for small companies*: The fairness opinion on Newave Energy (2011, p. 16) does not include a size premium, even though the company is one of the smallest companies with sales of CHF 81 million and an equity value[32] of CHF 169 million.[33] In contrast, the opinion on Uster Technologies (2012), which is more than twice as large with respect to sales and equity value, shows the second highest size premium of 4.07 %. For Day Software (2010), with an equity value of CHF 219 million and sales of €36 million, the highest size premium of 5.75 % is used.
- *Different size premia for large companies*: A size premium of 0.89 % is used to calculate the value of Panalpina Welttransport (2019), even though it is one of the three largest companies with sales of CHF 6 billion and an equity value of CHF 4.65 billion. As seen, no size premium at all is used for smaller companies such as Newave Energy (2011) and LifeWatch (2017), the latter with sales of CHF 113 million and an equity value CHF of 259 million.
- *Inconsistent approach in* specific *sectors*: Size premia between 2.40 % and 3.58 % are used in the opinions on Bank Cler (2018) and the real estate companies Immomentum

31 Not all data points are recognizable in the figure. This applies in particular to the opinions on Swisslog Holding (CHF 338 million, 0.0 %) and Schmolz + Bickenbach (CHF 337 million, 0.0 %) on the one hand and Micronas Semiconductor Holding AG (CHF 210 million, 3.84 %) and WM Technologie AG (CHF 204 million, 3.80 %) on the other, whose data points are almost on top of each other.

32 The equity value is based on the target offer price. Cf. footnote 29.

33 Additionally, a valuation report on Newave was published, which was prepared by KPMG and commissioned by the bidder. In that report a size premium of 4 % was used.

(2017) and Fortimo (2013). In opinions on other banks (e.g. Bank Sarasin & Cie, 2012; Neue Aargauer Bank, 2010; Edmond de Rothschild Suisse 2019) and real estate companies (BfW Liegenschaften, 2019; Pax Anlage, 2017; ACRON HELVETIA VII Immobilien 2016) it is claimed that size premia should not be used for precisely these sectors or premia are omitted without further explanation.

Consequently, a comparison across fairness opinions and across appraisers shows a *different approach to size premiums*. This can result in extreme differences, so that the question arises as to whether this scope for decision-making is too high for appraisers.

No.	Opinion on	year	discount	calculation basis	approach	appraiser	Size Premium
1	BFW Liegenschaften AG	2019	5,70 %	Discount on equity value	put option	IFBC	0,00 %
2	Groupe Baumgartner Holding SA	2019	15,00 %	Discount on equity value	put option and studies	BDO	0,00 %
3	Edmond de Rothschild (Suisse) SA	2019	15,00 %	Discount on equity value	studies	N+1 / Alantra	0,00 %
4	ImmoMentum AG	2017	5,00 %	Discount on equity value	put option	BDO	***3,58 %***
5	Edipresse SA	2011	15,00 %	Discount on equity value	put option and studies	KPMG	***2,00 %***

Table 2: Illiquidity discounts in fairness opinions

The *illiquidity discount*, which in all opinions is deducted from the equity value, is used in 5 fairness opinions (cf. Table 2). The shares of these 5 companies are considered illiquid on the basis of the 0.04 % trading threshold applied in Switzerland (cf. STB Circular No. 2.). However, this also applies to a further 14 companies for which no corresponding discount is used in the opinions. And the illiquidity of the shares of the 5 companies is not particularly pronounced compared to the other 14. Thus, it is not comprehensible why discounts are sometimes applied and sometimes not in cases that are largely comparable for the recipient of the opinions. This, again, opens *scope of discretion for appraisers*.

It appears particularly alarming that a size premium has already been taken into account for the valuation of ImmoMentum (2017) and Edipresse (2011) *in addition* to the illiquidity discount. Both influences result in a considerable reduction in the equity value, and the question also arises as to whether one and the same effect is partially recorded twice here.

Overall, it remains to be noted that a size premium is used in 26 of the 42 fairness opinions and an illiquidity premium in 5 cases. In two cases, even both adjustments are used and cumulatively reduce the calculated value. Not only is the theoretical foundation of such discounts questionable and the empirical evidence ambiguous, but their *inconsistent consideration* in practice also gives appraisers considerable scope for decision-making.

7 Concluding Remarks und suggestions for improvements

Based on the objectives formulated in the introduction, the following can be stated. An in-depth *clinical study* was conducted on fairness opinions commissioned by *targets* and,

to that extent, complementing the buyside-view and large-scale-research that has dominated to date. In addition, *Switzerland*, a European country with its own capital market regulatory system and culture, was taken into account. Finally, as will be shown in more detail below, the *theoretical foundation* of fairness opinions is broadened.

On this basis, the question of why fairness opinions are commissioned was investigated. At the outset, three explanations for the commissioning were offered, which, while not completely mutually exclusive, each have their own emphasis: The *efficient information supply hypothesis* states that corporate boards and shareholders strive to obtain new information efficiently via fairness opinions. The *effectiveness-ensuring neutral certification hypothesis* explains the existence of fairness opinions with possible conflicts of interest of a target's management and the need for a Gatekeeper to neutrally certify the transaction. The third explanation draws on the sociological new institutionalism: Fairness opinions are commissioned to meet expectations of capital markets regarding documentation, to legally protect the boards of directors of the target, and to provide additional legitimacy to the transaction. According to this view, fairness opinions are a measure of *formal documentation and safeguarding*, but not a measure that economically increases effectiveness or efficiency of transactions. Based on our *clinical study* of the fairness opinions, these explanations and objectives can be assessed indicatively in terms of their significance.

Regarding the *information supply hypothesis*, fairness opinions generally do not appear to contain relevant new information for the boards of the target companies. As already seen, the information on the industry and market usually comes from the client, as does the information on the planned financial data, such as future sales, profits, or cash flows. This information is usually supplemented by publicly available information and Q&A-sessions with the target's management. Again, the data originates from the target itself or is available for it. The target is often better suited to assess the relevance of public information due to its greater industry expertise. Only in a few cases do appraisers intensively incorporate information beyond the named sources. Thus, the numerator in income-based valuation methods as well as the financial metrics used in market-based valuation are largely determined by the client. In addition, targets often have more precise ideas about equity cost rates and debt financing conditions, determining the denominator in income-based valuation. Finally, this information is also used for the widespread value-based management tools and KPI, and are also necessary for other occasions of valuation such as impairment tests. This makes it possible for the target to estimate the value of the company just as well as the appraiser. Fairness opinions thus essentially process information available to the target already. At the same time, the aggregation is neither methodologically demanding nor particularly restrictive in terms of value. Based on these considerations and in view of the wide valuation ranges shown in this paper, it seems doubtful that fairness opinions provide any material new information at all. Therefore, the information supply hypothesis should be rejected as the main reason for commissioning fairness opinions. This rejection is reinforced by the argument that fairness opinions involve relevant costs for the client and that targets should proceed in an efficiency-oriented manner.

The *certification hypothesis* is on shaky ground as well. The question arises as to whether target management bodies have any interest at all in reducing their scope for decision-making by commissioning – truly independent – experts for fairness opinions, or whether they do not rather prefer experts that can be influenced. However, the appraisers,

the gatekeeper approach argues, would jeopardize their reputation by issuing opinions in favor of the target management. As a result, shareholders would not attach any value to this courtesy appraisal and the acceptance of the appraiser on the capital market would suffer to such an extent, that he could not be successful in the long run. However, this market mechanism can only be effective if neutral appraisals could be *distinguished* from influenced appraisals with sufficient certainty. According to our analysis, this is not the case. A large number of valuation methods with naturally different results finds acceptance. Moreover, the scope for decisions is considerable when critical parameters for the valuation methods – e.g. risk-free rates, or size premia – have to be determined. Even non-transparent "capping" of valuation results, especially in secondary valuation methods, is apparently tolerated. In this respect, the less well-informed shareholders who are the focus of the gatekeeper approach are unable to judge whether an expert opinion really contains a neutral valuation. The large valuation ranges, which often exceed 30 % or even 50 % in fairness opinions, also have an immunizing effect. Only extreme values can no longer be plausibly justified by appraisers, so that only massive misconduct by the target bodies can be excluded. In this respect, there is much to be said against the hypothesis that targets commission fairness opinions to obtain a truly neutral certification of the transaction and thus limit their own room for maneuver.

The above-mentioned deficiencies in information supply and certification do not negatively affect the hypothesis of *formal documentation and safeguarding*. Fairness opinions can serve as proof of formal documentation of careful decision-making processes and as a safeguard for management against liability claims. One could even argue that only this "rationality façade" (Boiral, 2012) gives the client the room for maneuver to pursue its own interests in a transaction in a covered or protected manner. In this respect, a paradox arises: Fairness opinions give managers the scope for decision-making that – if one follows the certification hypothesis – they supposedly restrict. Of course, the room for maneuver of management bodies can only be preserved if appraisers, for their part, have sufficient discretionary to certify the result in the fairness opinion desired by their clients. This discretionary, as this paper shows, exists to a sufficient extent: information on markets or business plans does not have to be independently collected or validated, let alone substantiated by due diligence, and capital costs can be selected and justified within wide ranges in such a way that they do not have a restrictive effect.

Given this, what are *suggestions for improvements* of fairness opinions? If decisions about the fairness of transactions or valuations in general are based on comparisons, then a first way forward would be to align or standardize the rules of comparison. This proposal was already advocated a long time ago (Davidoff, 2006), yet progress is slow and hindered by interests. These standards could be binding or recommended, the latter in the sense of a "comply or explain" rule (Berndt et al., 2014). A second way, which is partly linked to this, would be that *decisions* made by appraisers in fairness opinions are explained much better to create the required transparency. A third way would be that information bases are not only fully disclosed, but that appraisers must at least provide a verbal assessment of how realistic these plans are. To counter the argument of publishing trade secrets, parts of these enriched fairness opinions could also be published ex post, for example three years after a board decision on M&A. These recommendations, especially the first and last, are of course initially related to the Swiss capital market, however, depending on the regulatory background and culture, a transfer can also be made to

other countries. By following these paths (combined), fairness opinions may become what is thought to be associated with them: An increase in the effectiveness or efficiency of management decisions in the interests of shareholders and thus a useful tool in M&A.

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