



Corporate Valuation _



Best Practice Recommendations Corporate Valuation_

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and Valuation"**

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Corporate Transactions and Valuation _

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Part I: Background

A. Introduction

A.1. Scope of applicability of the recommendations: compensation of minority shareholders

The following recommendations center around the (*ex post* judicially determined or *ex ante* with perspective on the possibility of subsequent judicial review) valuation of a company as the basis for reasonable compensation payable to minority shareholders in a corporation for the loss of their stake.

This kind of compensation, for instance, is payable by the principal shareholder in the context of a squeeze out under Germany's Stock Corporation Act (AktG) or Companies Transformation Act (UmwG) to the expelled minority shareholders (section 327a AktG or section 62 (5) UmwG). Under a domination agreement, this must be offered to the minority shareholders of the dominated entity, with the distinction that compensation is possible in kind (shares) for some case constellations (section 305 AktG). In the case of a mixed merger (e.g. between an AG and a GmbH), those shareholders of the transferring entity who do not want to take part in the merger must have the opportunity to exit the company in exchange for reasonable cash compensation (section 29 UmwG). The same applies in the case of cross-border mergers for the shareholders of a transferring entity in Germany (section 122i UmwG).

All of these valuation instances have in common that they are "dominated transactions" – where the affected minority shareholders have no ability to freely negotiate a reasonable consideration, but must accept the amount determined by the majority. As a corrective measure, the law provides for the possibility of a judicial review procedure, which can be implemented in the vast majority of valuation instances in the case of special appraisal proceedings to determine whether reasonable compensation was offered (*Spruchverfahren*), and for certain case constellations in minority shareholder challenges to the merger under actions of avoidance (*Anfechtungsprozess*). Because of this possibility for review, the transaction participants align their valuation tools and methods – from the very first stages – with those they would expect to see used in the event of a legal challenge.

A.2. Aims of the recommendations

The methods of company valuation applied once a judicial determination has been made are central to the entire transaction – and consequently also of key importance for the proper functioning of the capital market. From the perspective of market participants, these methods are a major consideration when deciding whether a given transaction proposal is economically sound or not.

For proper functioning of the capital market, a high degree of alignment is desirable between the *typical* valuation methods used by various capital market actors and those imposed under the judicial review procedure. A judicial review of securities transactions should be conducted using the same tools and methods that would be applied by the relevant economic agents when making a decision to buy or sell shares under unconstrained conditions. Otherwise, additional (and avoidable) uncertainty arises, which prevents reasoned economic decision making or promotes unsound economic decisions. In Germany, we see this kind of uncertainty arising out of the following:

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- The judicial review procedure in Germany is informed largely by the “IDW S 1 auditing principles for performance of corporate valuations” published by the Institute of Public Auditors in Germany (IDW).¹ For dominated transactions, this standard bases valuation on the so-called *Ertragswertverfahren* (capitalised earnings method). Multiple-based valuation methods and market price analysis play a clearly subordinate role beside this discounting method (in its Germany-specific form).² The primary aim under these rules is not to determine a range of possible valuations (using a number of different valuation methods), but to arrive at an “objectivised” valuation in the sense of an “intersubjectively verifiable present value of future earnings”³, which can be used as a guideline for the judicial review.
- This kind of focus on a single methodological principal is in clear opposition to practical realities from the perspective of *all* capital market participants. To make their investment decisions, rational private investors, strategic investors, financial investors, pension funds and banks (engaged in proprietary trading) calculate a range of possible valuations on the basis of equally valid and applied methods. The differences in these methods and results are transparently disclosed. Typical for this methodological diversity is a combination of the following three elements:
 - Discounting methods (clearly the most common internationally: discounted cash flow method),
 - Multiple-based methods (on the basis of market prices for comparable companies and purchase prices for comparable transactions),
 - Market price analysis (for listed companies) – though recently, it has been understood that actual market prices come about as a result of numerous determinants, among which the fundamental value of the company represents only a portion of the spectrum.

The practice empirically observed throughout all levels of investors is an expression of the understanding that there is no unequivocal (and consequently “correct” or “genuine”) value of a company that is the same for everyone. Because company valuation is a function of the expected utility that a certain economic agent can derive for the relevant forecast horizon from ownership in a company, it is important to arrive at the most precise possible estimate of this future utility from the perspective the given agent. None of the valuation methods commonly in use today is adequate on its own to answer this question and consistently deliver results capable of meeting every valuation need.

All that is possible are approximations, the quality of which depends on transparent disclosure of the limits to the meaningfulness of all these company valuation methods. If this is accomplished, it becomes apparent that robust approximations can best be achieved when a variety of methods are applied in parallel, after which the resulting range of possible valuations are analysed and/or explained.

The Working Group recommends increased application of this principle for cases of company valuation in dominated transactions. It is also recommended to calculate a range of possible valuations in advance of such transaction (and later in the context of the judicial review) on the basis of different (yet equally valid and applied, and weighted in accordance with the individual circumstances of the case) valuation methods.

Methodological approaches that are widely used in actual practice should not be ignored in the valuation process for dominated transactions. Only through transparent implementation of methodological diversity can the valuation and review provide those involved with a rugged approximation that can be used as the basis for determination of reasonable compensation (and later for the judicial review).

¹ IDW S 1 ver. 2008, FN-IDW 7/2008, pp. 271 ff.

² Of the 179 sections of the IDW S1 Principles for performance of Corporate Valuations, ver. 2008, there are only two that cover multiple-based methods as a “simplified pricing” alternative; there are no rules set out for the valuation process.

³ IDW S 1 ver. 2008, No. 4.4.2, sec. 29. significantly different conceptually (methodological diversity, ranges, transparent aggregation) IDW S 8 (on Fairness Opinions), ver.: 17 Jan. 2011. For more on methodological diversity, see DVFA Principles for Fairness Opinions, ver. 2.0 published Nov. 2008.

A.3. Legal requirements

The recommendations by the Working Group are not targeted primarily to legislators, but rather aim to expand, within the scope of current legislation, the methodological tools available for judicially ordered company valuations within the context of the *Spruchverfahren* – and thus also the tools to be implemented in advance of measures subject to later judicial review by the principals and their advisors.

In this context, the Working Group assumes the following interpretation of the relevant constitutional and simple legislative⁴ requirements:

The judicial review procedure followed by the courts is divided into two phases:

In the first phase, the court must determine whether the calculated and/or offered compensation is (still) reasonable. If the answer to this is affirmative – for instance because the court is of the opinion that the calculated/offered sum is based on a company valuation that is within the legal framework⁵ – the judicial review is concluded. For the court, there is no further necessity to precisely determine the value of the company or the value of a share.⁶ Additional need for specification is not needed until a second phase in the review, should the court deem that the compensation calculated and/or offered by the participants, e.g. the principal shareholder, and confirmed by the court-appointed auditor is unreasonably low (because it lies outside the range stipulated by law). In this case, the compensation payment is to be re-determined by the court. Here, a precise amount in euro must be calculated. For this purpose, the court makes an estimate.⁷ Considering all circumstances involved, it can, and must, render a decision based on its free discretion, including a decision as to whether a court-appointed expert opinion is to be ordered in accordance with section 287 of the Code of Civil Procedure (*Zivilprozessordnung* – ZPO). If an expert is called in, it is the task of the court to compose the relevant legal order in accordance with the requirements for conducting of an expert review under the law. In the context of company valuation, these requirements are derived from the statutory “requirement of reasonableness”, which requires interpretation in conformity with the Basic Law. Within the scope of these legal requirements, the commercial experts – as well as their professional organisations – enjoy no discretion in the choice of methods. Where they end, the sphere of commercial expertise begins, within which the selection and application of the (legally appropriate) methods falls into the remit of the relevant expert, taking into account the specific circumstances of the case.

With respect to these legal requirements (which are outside the domain of review and/or redetermination by the court-appointed expert), a differentiation should be made between cash compensation and compensation in the form of shares.

4 Section A.3 examines German national law. Conformity of the recommended aggregation of methods with European law should be beyond contention, given its anchoring in European secondary law, e.g. Art 10 para. 10 of the Third Company Law Directive of 1978 (78/855/EEC, implemented as section 12 (2) UmwG, structurally identical with section 293a AktG): “In the report [= of the independent expert] mentioned in paragraph 1 the experts must in any case state whether in their opinion the share exchange ratio is fair and reasonable. Their statement must at least: (a) indicate the method or methods used to arrive at the share exchange ratio proposed; (b) state whether such method or methods are adequate in the case in question, indicate the values arrived at using each such method and give an opinion on the relative importance attributed to such methods in arriving at the value decided on.” The application of different valuation methods is also in line with practice in numerous neighbouring European countries.

5 That the Basic Law (Grundgesetz) in particular specifies no method of business valuation was recently reconfirmed by the Federal Constitutional Court, cf. BVerfG, ZIP 2011, 1051 ff. (Telekom/t-online).

6 Applying the principals recommended here, this would mean: In this phase of the review, it is not necessary to specify the one valuation from a range of possibilities that the court deems “correct”. Thus, the court’s task is not made more difficult by application of the process recommended here. Indeed it is simplified: Because there can be no “bullseye” when it comes to business valuation, the only logical conclusion is that “reasonable” is anything that falls within a certain range calculated using coherent methods in compliance with the law.

7 For more information on judicial review discretion cf. OLG Stuttgart, AG 2011, 560, 562, 563.

A.3.1. Cash compensation

The primary legal principle from which the legal method requirements are derived in cases of cash compensation is that of “full compensation” under the Basic Law. The minority shareholders exiting the company must receive full compensation⁸ for their loss, in which it is permissible to “limit the property rights of the minority shareholders to the asset component of the ownership interest.”⁹ In the case of cash compensation, the principle of full compensation gives rise to a “twofold minimum”, as clarified by the Federal Constitutional Court in 1999.¹⁰ The rightful compensation recipient has recourse to the more favourable of the following two models in the specific case:

- *Disposal of the shares via the market:* The first of the two models is oriented on the hypothetical proceeds that the compensation recipient would have generated by disposing of the shares on the valuation date in the absence of the action leading to the right of compensation. The hypothetical disposal proceeds – which can be termed the disposal value – can be estimated on the basis of the empirically observable price trend up to the day of the announcement of the action in the invitation to the shareholders’ meeting or an ad hoc disclosure under section 15 of the Securities Trading Act (WpHG).¹¹
- *Sale of the entire company in the M&A market:* The second model is oriented on the hypothetical limit price that a typical third party would have paid to acquire the company as a whole on the valuation date. If this hypothetical purchase price for the entire company is divided among the individual shares according to the proportion of share capital they represent, the result is the fraction of the full company value represented by each share as an “ownership interest determined under corporate law”¹². The methods for calculation of this proportional company value – which can be termed the derived fundamental value of the share – form the basis of the present recommendations. They are based on the idea of a simulated (transaction cost-free) liquidation of the company. The exiting minority shareholder should receive at least what would have been paid if the company had been liquidated and the liquidator had sold the company in its entirety as a going concern to a prudent third party at the “best possible conditions”.¹³ For the result of such a derived share valuation, the value that each shareholder should reasonably ascribe to the shares held in an economic sense is thus immaterial. The important consideration is the purchase price that could be achieved selling the entire company to a typical third party, which is then attributed to the individual shares pro rata, based on the relevant proportion of share capital.¹⁴ The compensation payment is thus conceptually equivalent to a partial shareholder breakup.

8 BVerfGE 100, 289, 305 (DAT/Altana); as well as BVerfGE 14, 263, 283 f. (Feldmühle); for the most recent information on the applicability of this decision to mergers by acquisition, cf. BVerfG, ZIP 2011, 1051 (Telekom/t-online).

9 BVerfG, ZIP 2000, 1670, 1671 (Moto Meter).

10 BVerfGE 100, 289, 305 (DAT/Altana); recently reconfirmed by the Federal Constitutional Court, cf. e.g. BVerfG, ZIP 2011, 1051 (Telekom/t-online) and BVerfG AG 2011, 128 (Kuka).

11 The Federal Court of Justice has now clarified the start of the reference period in BGH, AG 2010, 629 (Stollwerck).

12 BVerfGE 14, 263, 276 (Feldmühle).

13 Established court practice since the 1920s, cf. RGZ 106, 128, 132; BGH, NJW 1967, 1464; OLG Düsseldorf, WM 1984, 732, 733; OLG Stuttgart, AG 2011, 49, 50 with further references.

14 Modelling of the buyer and seller perspective is carried out using comparable methods. This means that there is theoretically no limit price difference that could be founded on circumstances outside of the company. For the same reason, it is adequate to refer to a single range of values that encompasses both the buyer and seller perspective (full compensation from the seller perspective but no participation in buyer-specific factors adding the business value).

A.3.2. Compensation in shares and upstream mergers

For compensation in the form of shares and upstream mergers (in dominated situations), there is some debate as to whether the “twofold minimum” can also be applied. Strictly speaking, in these cases, reference should only be made to the derived fundamental value – which is the focus of the current recommendations – as there is not a single group of minority shareholders to protect, but rather two: the minority shareholders of the subsidiary and those of the parent. Logically then, it is impossible to afford both groups the privilege of greatest benefit simultaneously.¹⁵ Beyond this legal debate, however, it is clear that a fundamental valuation of the affected company or companies may at least be necessary. Thus, we are left with the same conceptual questions about the proper valuation method described in section A.3.1.

A.3.3. Conclusion

In every case when a commercial expert is called in to determine the value of a company in line with applicable laws in the context of reviewing the reasonableness of minority shareholder compensation in dominated situations, a simulation of a full sale of the company is required. The hypothetical time of this full-scale sale is the relevant valuation date, i.e. usually the date of approval by the shareholders’ meeting. The hypothetical seller is the company itself. The hypothetical buyer is a prudent third party, whose subjective characteristics contributing to the value of the transaction (risk tolerance, investment alternatives, taxation regimes etc.) must be attributed prescriptively based on deliberate decisions by the court and/or appointed expert. The recommendations herein are based on the idea that this hypothetical model transaction should be patterned after empirically observable methods followed by real buyers and sellers in the M&A market to a greater extent than typically seen in Germany up to now. In the opinion of the Working Group, implementation of these recommendations would in no way violate European law, German constitutional law or any other directly relevant laws in Germany.¹⁶ On the contrary, it would permit better adherence than previously seen in the context of dominated transactions.

¹⁵ Detailed information in OLG Stuttgart, AG 2007, 705, 713 f. (Kuka). Open for debate in BVerfG, AG 2011, 128 (Kuka).

¹⁶ Particularly in the most recent court decisions, there is a trend toward the application of multiple methods simultaneously, e.g. favouring estimates based on market values over those derived from an expert report on capitalised earnings; cf. OLG Frankfurt am Main, AG 2010, 751 (Telekom/t-online) as well as BVerfG, ZIP 2011, 1051.

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B. Definition of the concept “typical buyer“ as a standard for corporate transaction valuation

For company valuation in the context of corporate actions (domination agreement, merger and squeeze out), the large number of shareholders involved makes it important to identify and standardise the evaluating agent: From whose perspective is the valuation to be made and what are the standard characteristics of this evaluating agent?

These recommendations are based on the concept of the above-described “typical buyer”. This concept is well anchored in the process of transaction-based company valuation. Therefore, it does not constitute a foreign construct in the transaction process. As explained in section A., there is nothing in the applicable legislation that would oppose this concept.

Prior to execution of the transaction, valuation of the company is the basis for determining the relevant negotiating parameters: In buyer-initiated transactions, the maximum offer; in seller-initiated transactions, the minimum acceptable demand – as defined through company valuation. Depending on the stage of the transaction process, either market-based methods (multiples) or discounted cash flow (DCF) methods are applied

Throughout the course of the transaction, company valuations are important for communicating and corroborating the value proposals of the agents. In negotiated transactions, the so-called “negotiation value” is key. In public transactions, such valuations are also necessary in conjunction with governing securities law and takeover rules: e.g. fairness opinions are generally used for public takeover offers as a way to obtain an objective indication and assessment of a given bid. Here too, multiples and DCF valuations play the central role.

If, after conclusion of the transaction, the buyer intends to squeeze out the minority shareholders, a valuation of the company is necessary to assess whether the compensation to be offered is reasonable. The compensation must stand up to scrutiny in the event of a judicial review. For the most part, the courts are still orienting their assessment on the IDW S 1 principles for performance of corporate valuations.¹⁷

Due to the different concept of valuation and numerous other special characteristics of the procedure compared to international valuation practice, such exclusive orientation on the *Ertragswertverfahren* (capitalised earnings method) is seen by many investors as an uncommon approach. Consequently, it is recommended that the concept of the „typical buyer“ be also applied for the review of the reasonableness of compensation.

The following key aspects of the “typical buyer” are in deviation conceptually from the capitalised earnings method according to IDW S 1:

- **Methodological diversity:** The typical buyer applies several valuation methods, usually multiple-based methods and discounting methods, simultaneously. The methods are given equal weight, provided industry-specific characteristics do not justify favouring one method over another. From the different company valuations and/or valuation ranges that result (see below), a definitive valuation is determined. Employment of multiple, equally valid and applied valuation methods is the standard in pricing of an M&A transaction.¹⁸

¹⁷ See section A. above; cf. footnote 17 for information on the increasing flexibility in the selection of methods to be noted in recent decisions.

¹⁸ This also applies for internationally recognised, accounting-based valuation instances.

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- Valuation ranges: For multiple-based valuations, different company valuations result depending on the figures, peers and estimation methods used. If discounting methods are used, changes to the assumptions employed as input factors for the valuation produce differing results. In either case the valuation results are not in the form of precise estimates, but rather ranges of possible valuations. This is meant to render the factors influencing the valuation result transparent. The final value determination is then made on the basis of the above range. This too is in line with the valuation process of a “typical buyer” in M&A transactions and impairment tests.
- Assumptions: The “typical buyer” determines the value of the company on the basis of hypothetical future business policies; in addition to planned investments in fixed and current assets, acquisitions and/or disposals, these also include assumptions relating to financing policies and the capital structure of the company. These assumptions must be consistent with those of the typical buyer, keeping in mind that the “typical buyer” definition does not account purely individual synergies and/or value determinants when calculating the purchase price to be offered. The influence of the chosen assumptions on the company valuation can be made transparent via sensitivity analysis and peer group comparisons.

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Part II: Valuation Methods

C. Typically used discounting methods

C.1. General

Discounting methods are used to determine the value of a company as the present value of future cash flows of the company. In the literature, a differentiation is sometimes made between the so-called discounted cash flow method and the capitalised earnings method. Both methods are based on projections of future earnings, making them subject to estimation uncertainties. Under both methods, future earnings risk is accounted for by adding a risk premium to the base discount rate. The main differences lie in the details with respect to treatment of taxes, inflation and the underlying definition of cash flows and earnings. The entity approach is a DCF method that first calculates the value of all operating assets as an “Enterprise Value”, and determines Equity Value by subtracting net liabilities. The capitalised earnings method and the DCF flow-to-equity approach determine Equity Value through direct discounting of earnings flowing to shareholders.¹⁹

The recommendations contained here neither favour nor reject any particular discounting method; the principle of methodological diversity applies. In those cases where concrete recommendations for application are given, the “comply or explain” rule applies: Deviations from the recommendations are permissible if they are explained and plausibly justified.

When using discounting methods, implementation of the “typical buyer” concept requires certain assumptions as well as information on future business policies, economies of scope, capital structure and the relevance of various taxes (corporate and personal income taxes). Each of these assumptions influences the resulting valuation and must therefore be disclosed. The hypothetical “typical buyer” must represent a reasonable combination of the relevant assumptions.

C.2. Relevant earnings and cash flows

C.2.1. Definition of earnings and/or cash flow figures

When using the DCF entity approach, the relevant cash flow figure is free cash flow to shareholders and creditors after (net) investments in fixed and current assets (“free cash flow”). For the capitalised earnings method and the flow-to-equity approach, the initial basis for valuation is cash flow to shareholders after interest. All of these approaches derive relevant cash flows from an integrated planning model including income statement, balance sheet and financial budget.

Depending on the assumptions used with respect to financing and/or dividend policies, different final cash flow definitions will result: When using these recommendations, assumption of a fixed capital structure is advised; the relevant cash flow figure is then free cash flow to shareholders after interest, loan repayment and/or borrowing (“free cash flow to equity”). The underlying cash flow and earnings figures are defined after corporate taxes (corporate income tax, municipal trade tax). Inclusion of personal income tax on dividends and capital gains is not recommended: The assumption here of a natural person living in Germany with an unlimited tax liability in the country as relevant shareholder is not compatible with the concept of a “typical buyer” given the empirically observable shareholder structures of German corporations and actual buyers in the market. As a rule, buyers in the

¹⁹ Whether there is a difference between the capitalised earnings method and the DCF flow-to-equity approach depends on the relevant assumptions with respect to capital structure and dividend policies, and which taxes are taken into consideration. Identical assumptions give rise to identical valuations. For more information on the recommended assumptions cf. C.2. to C.4 below.

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M&A market do not apply personal income tax in their valuation models.²⁰

The use of discounting methods requires an assumption with respect to the capital structure of the company: Under the DCF flow-to-equity approach, cash flows are defined after interest and changes in borrowing. Under the DCF entity approach, the capital structure is required for determination of the average cost of capital. This assumption must be disclosed and its plausibility established through a peer group comparison. Assumptions with respect to the company's dividend policies and/or payout ratios are not required under this recommendation; the company's dividends as free cash flows to equity directly follow the assumptions on investment policies and capital structure.

C.2.2. Projection of future earnings and cash flows

Discounting methods require an estimation of future earnings or cash flows. These are based on information available and expectations on the relevant valuation date (reference date principle). Actual developments occurring subsequent to the valuation date are to be taken into account provided their cause bears relevance to the valuation date (value adjustment principle). The basis for valuation includes integrated business planning and the information available to the hypothetical "typical buyer" on the valuation date. The projection of future cash flows is to be calculated in nominal terms. The effects of price and/or cost inflation are to be taken into account for the estimation.

The forecast period is to be divided into at least two phases: The detailed forecasting phase generally encompasses between 3 to a maximum of 10 years; in this phase detailed projections of the income statement, balance sheet and future valuation-relevant cash flows are required. In the subsequent "continuing value" phase, a terminal value is determined assuming constant growth in generated cash flows over an infinite horizon. If the company is not yet in a stable situation, a convergence and/or rough forecast phase should precede the continuing value phase. In this way, extraordinary effects can be accounted for in planning and the company brought into a "sustainable" condition.

For determination of the terminal value, an assumption of the sustainable growth rate is required. Given its immense influence on the valuation result, great care should be taken in selecting this assumption. To ensure the plausibility of the growth assumption, it is recommended to establish a link between the earnings retention ratio q , the return on invested capital ROIC and the rate of growth of cash flows g using the Gordon-Shapiro model

$$q \times \text{ROIC} = g$$

Through a combination of the sustainable growth rate g with the retention of earnings ratio q assumed in the expert opinion for the first year of phase 2, the implicit return on invested capital can be determined. To ensure the plausibility of the forecasts, this return can be compared with the costs of capital for the company. Additional inclusion of "inflation-induced growth" is not required under this model: All figures (growth rate, earnings retention ratio, future earnings and free cash flow) are in nominal terms. The effects of inflation are thus already taken into account. Likewise, standardisation of return on invested capital in the amount of capital costs is of little use; this return is the expression of the individual robustness of the business model. The requirement under the IDW S 1 principles for objective valuation of capitalised value-neutral, investment-driven growth for all companies after the end of the forecast period and/or in the terminal value makes it impossible to account for these differences and opens up the possibility for systematic undervaluation.

²⁰ For accounting-based valuation instances under IFRS and/or US GAAP, a typical buyer is generally assumed without taking into account personal income tax. Likewise for fairness opinions used to assess the reasonability of offered transaction prices on the M&A market, no personal taxes are included.

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No matter which discounting method is used, valuation of non-essential assets is a separate matter. These should be valued at the individual disposal prices of the assets. Which items of liquid securities, bank deposits and cash on hand are classified as either essential or non-essential must be disclosed, along with their individual valuations. If they have a material influence, special financing items such as pension liabilities or leasing obligations must be disclosed and clarified.

C.3. Discount rate

C.3.1. General information: entity vs. flow-to-equity approach

The discount rate in the context of company valuation is designed to reflect the return of a paper investment with an equivalent level of risk as an alternative to acquisition of the company. The rate applied is dependent on the selected form of the discounting model. Under the DCF entity approach, the discount rate is the weighted average cost of capital (WACC) as the weighted average of costs for equity and debt capital. The weighting of equity and debt capital here reflects the assumption with respect to the capital structure of the company (see above). For the capitalised earnings method and flow-to-equity approach, only the cost of equity is relevant.

C.3.2. Cost of equity

The cost of equity represents the expected return on a securities investment with an equivalent level of risk. The risk relating to investment of equity capital is taken into account via a premium on the risk-free interest rate. This premium and overall cost of equity are generally derived using the capital asset pricing model (CAPM). The following recommendations apply when determining the appropriate discount rate:

- Risk-free rate: This rate reflects a risk-free investment alternative in the domestic capital market. The yield on German government bonds with the longest available maturities is recommended; if necessary, the so-called Svensson method can be used to determine the risk-free rate.
- CAPM risk premium: When using the CAPM, the risk premium is calculated as the product of the market risk premium and a company-specific beta factor. The market risk premium represents the expected excess return through investment in the equity market vs. the risk-free rate. It can be founded on historical data as the geometric or arithmetic mean of realised excess returns, but other methods, e.g. derivation as an implicit risk premium from actual market prices, are also permissible provided they are disclosed (see part III). A so-called "beta" is applied as a company-specific risk factor. If the company is listed, the relevant beta factor should be estimated based on empirical data (see part III.H.1 for more information on transparency requirements). If the company's own beta factor cannot be used or if it is rejected on liquidity grounds, the beta factor may be borrowed from the sector or a peer group. In this case, capital structure differences should be accounted for through so-called de-levering or re-levering.
- Other risk premiums: For the United States, two further factors with an impact on equity returns have been determined in empirical studies: company size and market to book ratio (MTB). For Germany, there is as yet no in empirical evidence for the relevance of these factors. These and similar factors should only be applied in individual cases with an explanation of their relevance.
- Taxes: Only corporate taxes should be taken into account for valuation. Personal income taxes are not taken into account from the perspective of the typical buyer.
- Inflation: The cost of equity should be determined on the basis of empirical, nominal returns. Because these already contain a market premium for anticipated inflation, no further consideration must be given to the topic of inflation.

C.3.3. Cost of debt

For determination of the company's cost of debt, credit risk must be taken into account.

C.4. Sensitivity analysis and determination of valuation ranges

When applying discounting methods, the resulting valuation hinges on the assumptions used with respect to relevant value determinants. Some of these assumptions, e.g. with respect to capital structure, the resulting cost of equity and average cost of capital, and any relevant economies of scope, are derived directly from the hypothetical "typical buyer" concept. Assumptions relating to future business policies and operational value determinants (revenue growth, future margin developments, capital tie-up and current assets etc.) have a significant influence on the resulting company valuation. Finally, the assumed earnings retention and reinvestment ratios, return on invested capital and resulting rates of growth in the continuing value phase are of decisive importance for the valuation. Given the uncertainty of the above factors, the effects of changing assumptions in relation to cardinal valuation parameters should be examined using sensitivity analysis. See part III H.4. for more information on the relevant documentation requirements.

Thus, the result of the valuation process is not expressed as a single value, but rather a range of possible company valuations for different model assumptions. Determination of the final, definitive value from the various ranges is performed in a separate valuation step.

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D. Typically used multiple-based methods

D.1. General

The methodological diversity called for in these recommendations should include multiple-based valuation methods to determine reasonable compensation in dominated valuation instances and their judicial review.

These methods relate key value determinants from peer group companies, usually earnings and cash flow figures e.g. revenue, EBIT, net profit etc. to their actual market prices, so that the corresponding ratios can be commuted to the company in question. In this context, a proportional relationship is assumed between the reference figures and the valuation of the company.

One advantage of multiple-based company valuations is their strict market orientation: The underlying price constituents are observable and actually paid on capital markets and/or in the context of M&A transactions. On the other hand, this kind of valuation method is also subject to the full range of markets inadequacies and inefficiencies, which can result in deviations between observed prices and intrinsic value.²¹ In the context of these recommendations, multiple-based valuation (as with discounting methods) makes use of planning data and internal information about the company: The multiples determined for the peer group companies are applied to both realised figures and those forecast by the company management (on the basis of the same business plan used for the DCF methods). However, the forecast period is considerably shorter than it is under discounting methods: As a rule, a valuation is only possible on the basis of figures for the next 2 to 3 years.²²

D.2. Peer group selection

In line with the principle of "valuation by comparison", the first step involves finding multiple peer group companies with observable prices. These must be comparable with the company that is the object of the valuation in all key respects (risk, profitability and earnings growth).

D.2.1. Potential sources of peer group companies with observable market prices

Market prices of listed companies can be derived from the relevant valuations in the open market (market-based multiples). Because they relate to the purchase of a single share, these prices – and the multiples derived from them – contain no control premium. Additionally, multiples can be determined using purchase prices paid for companies in recent M&A transactions (transaction-based multiples). In this case, the purchase prices – and thus the multiples derived from them – already contain a control premium. Multiples from the two different categories above should therefore be used separately in the valuation process.

In the case of market-based multiples, the market price of the peer group companies on the date closest to the valuation date (the date of the relevant shareholders' meeting) is the definitive reference date; in certain cases, a three-month average price may be applied in accordance with section 5 WpÜGAngeV. When using transaction-based multiples, it is more difficult to obtain an adequate sample of recent transaction data and the relevant value determinants to derive transaction prices. The timeframe of the relevant transactions requires that market price developments between the transaction dates and the valuation date be taken into account.

²¹ If, in the case of discounting methods, costs of capital are estimated on the basis of market data or CAPM, then these are likewise subject to the same market inadequacies.

²² An advantage of this is that, given the lack of explicit necessity to include and estimate capital costs and sustainable growth rates, there is less danger that these two input factors will be intentionally misrepresented.

D.2.2. Selection of peer group companies

The industry in which the company that is the object of the valuation operates is recommended as a starting point for selection of peer group companies. This is based on the assumption that companies within the same industry will be comparable in terms of risk. A number of classifications are available to assign the companies to different industries and sectors, e.g. standard industry classifications (SIC), definitions from Germany's Federal Statistics Office or sector classifications from national or international market indices. The quality of the selection of peer groups in a given industry can be improved through inclusion of the factors: geographic coverage, comparability of business models, profitability, investment intensity and growth.

D.3. Narrowing down the peer group

As the valuation progresses, the group of peer companies is narrowed through elimination of "unsuitable" companies from the industry group. This can considerably improve the quality of the valuation result. The assessment of which companies are suitable or unsuitable is highly subjective, and the possibility of influencing the result opens the process to overt conflicts of interest on the part of the majority shareholder. Consequently, the transparency requirements under part III.I.1. must be satisfied.

In some cases, companies must be eliminated from the peer group because the determined multiples have taken on extreme values and must therefore be classified as outliers. Here too, there are special requirements to be observed with respect to transparency.

As a rule, the empirical distribution of peer group multiples is positively skewed.²³ This must be taken into account when eliminating outliers and/or aggregating the multiples.

D.4. Aggregation of multiples

Following adjustment, multiples are determined for each individual company from the peer group. From the overall distribution of multiples, a narrow range is to be derived as a result; this will be applied as a valuation factor to the relevant figures of the target company. The first step in this process is always calculation of a point estimator that embodies the central moment of the multiple distribution. From a statistical perspective, the following estimators may be useful:

- The arithmetic mean is determined as the average value of all multiples.
- The median is the multiple separating the upper 50% of determined multiples from the lower 50%.
- The harmonic mean is the reciprocal of the arithmetic mean of the inverted multiple values.
- The geometric mean is initially calculated as the product of all n multiples in the sample, after which an aggregated mean value of the distribution is determined as the n-th root.

The selection of the estimator should also take into account the foregoing elimination of any outliers. In the absence of such an adjustment, the arithmetic mean is not recommended, given its extreme sensitivity to outliers. The remaining estimators of the central value mentioned here serve to counteract any skewing of valuation results by diminishing the influence of outliers: This makes the median value of the distribution less prone to skewing. The harmonic and geometric mean are also more robust in skewed distributions than the arithmetic mean, and thus serve to counteract any distortions of the results.

²³ Very small realizations of the value driver figure yield – even in the case of low market prices – extremely large multiples. In other words, the maximum possible value of a multiple tends towards plus infinity. Potential skewing can also be reduced as necessary through selection of an appropriate aggregation method, cf. section D.4.

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For the further process, it is recommended – based on the central estimator value determined above, taking into account the relative strengths and weaknesses of the target company and the related discounts and premiums – that an individual and justified range be derived for the relevant multiples.

D.5. Selection of multiple definitions: consistency requirements

It is recommended to perform the valuation on the basis of multiples using a set of diverse figures. This will allow the most comprehensive possible view of the different value determinants. Selection of the figures and definitions employed is determined by their meaningfulness, e.g. with respect to the profitability of the company, as well as the availability of the required information.

For multiple-based valuations, the following valuation and/or price figures are of importance:

- Equity Value refers to the value /price of the company's equity capital. If listed companies are included in the peer group, their Equity Value is equal to their market capitalisation (price per share times the number of outstanding shares).
- Firm Value is the value/price of all invested capital as the sum of Equity Value and the value of interest-bearing liabilities. (Firm Value = Debt Value + Equity Value)
- Enterprise Value refers to the value of the company's operating assets. This value is calculated by subtracting financial assets incl. (excess) cash from Firm Value. (Enterprise Value = Debt Value + Equity Value – Value Cash/ Financial Assets).

In principle, there are numerous combinations of earnings and/or reference figures and price figures used to determine multiples. Not all possible combinations make sense; the combinations used should satisfy the consistency requirements. The requirements below relate to 2 dimensions:

- Operational earnings or cash flows vs. total cash flows (incl. financial income): Operating cash flow and earnings figures (e.g. revenue, EBITDA and EBIT) are to be set in relation to operating value and invested capital figures. Please note that income from financial investments, securities and cash are to be reported separately under financial income. On the other side, the definition of relevant Enterprise Value is to be applied excluding the company's financial assets and cash position. If the value of all the company's assets is applied instead (i.e. Firm Value), it must be set in relation to the consistent earnings figure calculated as the sum of financial income and operating (net) income.
- Total capital (entity) vs. equity approach: Under a consistent entity approach, cash flow and earnings figures defined before deduction of interest expenses (EBIT, EBITDA etc.) are to be set in relation to an invested capital figure taking into account the company's (net) liabilities (Enterprise or Firm Value). Consistent application of the equity approach combines earnings figures defined after deduction of interest expenses (EBT, EAT) with Equity Values.

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The following table provides an overview of the consistency requirements:²⁴

Price/value figure and earnings/cash flow figure	Enterprise Value = equity capital + debt capital - financial assets (incl. cash)	Firm Value = equity capital + debt capital	Equity Value equity capital
Operating earnings (excl. financial income) EBIT or NOPLAT EBITDA	Operating income to Enterprise Value Consistent	Price/value figure incl. financial assets, earnings figure excl. financial income Inconsistent	Price/value figure after debt capital, earnings figure before interest Inconsistent
Revenue	Revenue to Enterprise Value Consistent	Price/value figure incl. financial assets, earnings figure excl. financial income Inconsistent	Price/value figure after debt capital, earnings figure before interest Inconsistent
EBIT + financial income NOPLAT + financial income	Price/value figure excl. financial assets, earnings figure incl. financial income Inconsistent	Price/value figure incl. financial assets, earnings figure incl. financial income Consistent	Price/value figure after debt capital, earnings figure before interest Inconsistent
Earnings before taxes (EBT) Earnings after taxes (EAT)	Price/value figure incl. debt capital, earnings figure after interest Inconsistent	Price/value figure incl. debt capital, earnings figure after interest Inconsistent	Price/value figure after debt capital, earnings figure after interest Consistent

The ability of a company to generate operating profit and excess returns is key to its valuation. Consequently, for manufacturers and service providers, special Enterprise Value-based multiples are recommended.²⁵ With respect to the treatment of specific questions in the calculation of Enterprise Value, please refer to the relevant literature.²⁶ Generally speaking, full transparency should be assured with respect to the definition of Enterprise Value used and the cash flow/earnings figure set in relation to it.

If the cash flow and/or earnings figures used for the multiples are derived from consolidated financial statements, the minority shares are to be taken into account as a deduction for valuation of the individual company. Non-consolidated interests recognised "at equity" are to be treated on par with financial investments for the valuation.

²⁴ cf. Chullen/Schwetler, Does consistency improve multiple quality? The German case, Working Paper 2011 HHL Leipzig Graduate School of Management.

²⁵ For banks and insurers, on the other hand, equity-based multiples are better suited.

²⁶ e.g. Damodaran Investment Valuation, New York 2002, Krolle/Schmitt/Schwetler Multiplikatorverfahren in der Unternehmensbewertung, Stuttgart 2005.

D.6. Relevant cash flow and/or earnings figures

D.6.1. Adjustments

The earnings figure to be used for valuation must be interpreted as a “sustainable” earnings figure. This means that the figure must be adjusted for one-off effects. The starting point for data collection in the case of historical multiples (see below) is the current, most recently published financial statements. Adjustments made to non-recurring income and/or expense items and/or changes in the methods of accounting must be disclosed and an explanation provided in each case.

If there are extraordinary, value-determining factors affecting individual companies in the peer group, an adjustment must be performed for these as well.²⁷

D.6.2. Timeframe of the relevant earnings figures

The earnings figures underlying the valuation can relate to different timeframes:

- “Trailing multiples” are based on the most recently published (or older) versions of the relevant figures (e.g. annual financial statements), relating them to the current market price. Alternatively, a rolling (so-called LTM – last 12 month) methodology may be applied, which determines the relevant earnings figures based on published quarterly data for the past four quarters.
- “Forward multiples” combine the relevant price figures with expected future earnings. The future figures used are derived from the aggregated forecasts of financial analysts (“consensus belief”) obtained from specialised financial services providers for a fee.

If the prices for peer group companies are derived from capital market data, the earnings figures for the peer group and valuation target should relate to the same point or period in time. It is recommended that several different reference points and timeframes be applied for the peer group and the target company; if possible, the analysis should be based on both trailing and forward multiples. Final selection should take into account that capital market-based forward multiples generally provide superior results.

²⁷ In the case of an identical extraordinary factor affecting all companies in the peer group (e.g. the financial crisis), it must be assumed that this effect will also apply to the company that is the object of the valuation. Consequently, no adjustment needs to be made for either the target or the peer group companies.

D.7. Possible adjustments

Following application of the aggregated multiple, the preliminary valuation of the target company is generally subjected to adjustment.

- Adjustment of the relevant number of shares: Possible situations that could necessitate such an adjustment are planned share buybacks or the exercise of outstanding stock options. For multiple-based valuations, the number of outstanding shares on the valuation date is of fundamental relevance. No adjustment of the number of shares should be made.
- Adjustment to account for a control premium: Taking into account a positive “control premium” is generally justified by specific benefits that a buyer can achieve by gaining control through acquisition of a majority stake or full ownership of the company and e.g. related synergy effects. If comparable transactions and their prices are used as a reference, it is not permissible to take into account an additional control premium, given that the relevant financial benefits in this case are already contained in the reference prices and the multiples derived from them.
- Adjustment to account for an illiquidity discount: This type of adjustment is meant to reflect the difference between peer group companies and the company that is the object of the valuation with respect to transaction costs for the sale and purchase of shares. It is applied as an adjustment when the target company is not publicly traded while the peer group companies are.

E. Final assessment

The starting point for final assessment as to the reasonableness of the calculated and/or offered compensation or the conversion ratio is the range of possible valuations arrived at using the various valuation methods (discounting methods, multiple-based valuations, market price analysis etc.). These are the result of the foregoing analysis and valuation process. The Working Group recommends the use of at least two different valuation methods.

Conceptually, the various valuation methods are equally valid. However, the parties may assign different weightings to the results, provided this is done transparently with explanations provided. Subject to the same conditions, they may also reject individual methods as inappropriate in certain cases. The final assessment of reasonability should satisfy the following requirement: The proposed compensation amount should be within the range of results of each valuation method, i.e. within the overlap between the ranges determined using the applied methods. Any deviation from this requirement must be justified.

The market price (as such, i.e. not taking into account capital market efficiency) and the present value of discounted cash flows per share under any existing compensation from a domination agreement are to be deemed separate valuation methods, which are not to be taken into account for the company valuation described here.

- According to the DAT/Altana decision²⁸ of Germany's Federal Constitutional Court, the market price of the company's shares represent a minimum for reasonable compensation and can therefore be compared to the proportional company value described above. This also applies when the capital market fails to allocate efficiently, because then the market price is an expression of the (theoretical) alternative that an individual shareholder has to sell the share (in a hypothetical world without the action giving rise to the compensation).
- If, prior to a squeeze out under section 327a AktG or section 62 (5) UmwG, an independent group company has already formed on the basis of a domination and/or profit-loss transfer agreement, giving rise to a claim for compensation, the question arises as to whether the continuing value of the shares is derivable from a capitalisation of the compensation payments. It is important to note that, for the duration of a profit-loss transfer agreement, the minority shareholders no longer participate in the success of the company, or lack thereof.²⁹ Valuation of the company is thus unnecessary for determination of the compensation. According to the dissenting opinion³⁰, the decisive valuation is the proportional company value; in this case, the present recommendations are once more applicable.

²⁸ See footnote 11 above.

²⁹ See Austmann, in: Münchener Handbuch des Gesellschaftsrecht, Volume 4: AG, 3rd edition 2007, section 74 no. 90.

³⁰ OLG Munich, ZIP 2007, 375 ff.; detailed discussion and references in Popp, AG 2010, 1 ff.

Part III: Practical advice for implementation of these recommendations in valuation reports

F. General principles: transparency and consistency

For implementation of the recommendations in parts I and II, every report used to justify the reasonableness of the offered compensation should transparently present the following aspects, so that minority shareholders, judicially appointed auditors and judges can independently verify the results and check their plausibility.

Corporate valuation requires some discretionary choices with respect to certain input factors, which makes it possible to influence the result. The present recommendations are aimed at reducing the potential for targeted exploitation of this flexibility through enumeration of methodological requirements as a way to improve both legal certainty and protection of minority shareholder rights.

One primary objective of the recommendations is to increase the transparency of the underlying assumptions and their consequences for the valuation of the company. This transparency relates initially to the reports used to justify compensation offers. However, the increased transparency is also of benefit for the judicial review of the assumptions underlying a valuation and the reasonableness of the compensation offer.

G. Planning: future earnings

G.1. Basic assumptions for the projection of future earnings

The value of a company, and thus the amount of reasonable compensation for exiting minority shareholders, is dependent on the underlying company strategy. The relevant valuation report (e.g. in the case of a squeeze out under section 327a AktG: the report of the principal shareholder) must consequently be documented and explanations provided as to the future strategy assumed at the time of the valuation, as well as the amount of any additional financial benefits from the proposed action that were taken account of in the valuation process.

The relevant report must also render transparent which (standard) assumptions were applied with respect to the (targeted) capital structure of the company. A comparison with the current capital structure and with typical capital structures in the market should also be included.

Generally speaking, the underlying assumptions for projection of future earnings should be presented in such a way that a knowledgeable third party could assess their plausibility with reasonable effort. The report should also permit an assessment of the company's planning certainty.

G.2. Historical analysis

The starting point for forecasting of future earnings is always an analysis of historical data. The central figures to be documented for this purpose are realised revenues, operating earnings (EBITDA, EBIT), investments and working capital invested over the past three years. Any adjustment for one-off effects must be accompanied by an explanation.

On the basis of this operational data, the relevant figures such as turnover rates, operating margins and return on invested capital (ROIC) can be derived. These figures should also be calculated for past years and the results published in the report. Ensuring the plausibility of detailed planning is fostered by comparing these figures with data from the relevant peer group companies and the assumptions used for projection of future earnings.

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G.3. Detailed forecasting phase

Plausibility of projected future earnings in the detailed forecasting phase is ensured through calculation of future values for the most important key figures such as capital turnover, operating margin and ROIC using the data from the historical analysis.

Particularly important factors and their effects should be presented separately: If, for instance, the company has direct pension obligations or obligations under pension schemes, the underlying assumptions with respect to coverage of the obligations, the discount rate applied for valuation of the obligations and (in the case of external pension schemes) projected returns on the cover assets must be disclosed. Treatment of long-term leasing obligations should also be explained when projecting future earnings.

G.4. Continuing value phase (terminal value)

A justification must be provided with a selected timeframe for the detailed forecasting phase and the related transition into the continuing value phase. Given the difficulty of estimating sustainable future growth rates, the growth rate selected in the relevant report must be justified and a plausibility check performed. The latter can best be done using the Gordon-Shapiro model: By comparing the return on invested capital (ROIC) with the relevant costs of capital, conclusions can be drawn with respect to the profitability of investments in expansion.

H. Cost of capital

H.1. Cost of equity

The derivation of capital costs must be made transparent. The relevant report should contain the assumptions for the individual components of equity costs:

- Risk-free rate: An explanation must be provided for the applied risk-free rate.
- Market risk premium: If the market risk premium was determined on the basis of empirical observations, the relevant time horizon and calculation methods (arithmetic or geometric mean) must be disclosed. If no empirically observable data was used for the calculation, the selected figures must be explained and justification provided.
- Beta factor: If independent estimates are made, the time horizon of the estimate (e.g. 200 days and 2 or 5 years), as well as the intervals of return calculation (daily, weekly, monthly) are to be disclosed along with the selection of the index. A comparison of the results with longer or shorter time horizons is recommended. An indication of the quality of the estimate, using the coefficient of determination R^2 , must be included. The calculated beta factor is to be compared with the relevant sector beta, and any differences (e.g. through deviations in gearing levels) explained. If the beta factor for the company that is the object of the valuation cannot be directly estimated, but rather derived from sector betas, the chosen methodology (de-levering and re-levering) must be explained, as well as the assumed capital structure, assumptions with respect to risks from borrowing and related tax advantages.

H.2. Cost of debt

Information should be contained in the report on determination of cost of debt, in particular how credit risk was taken into account.

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H.3. Average cost of capital

When performing the necessary weighting of equity and debt capital costs, a valid capital structure from the perspective of the typical buyer should be assumed.

H.4. Sensitivity analysis

Due to the estimation problems and the high level of influence on the valuation results, sensitivity analysis is to be performed for the capital costs and published in the report. This sensitivity analysis can be combined with that applied to the growth rate. In this context, the interdependence between growth, profitability and capital costs should be taken into account.

I. Multiples

I.1. Peer group

Given the flexibility available to the party performing the valuation, the process of peer group selection should be made as transparent as possible for all shareholders. In the report, all relevant company multiples should be determined and disclosed in the selected sector classifications. As a next step, the excluded and included companies should be presented along with a brief justification for the elimination, e.g. the existence of negative cash flows. The same requirement applies in the event that a company not initially included in the peer group is added at a later time. "Outliers" must be identified in the context of the valuation and their treatment explained.

I.2. Aggregation

For the various multiple definitions, plausible ranges must first be presented; in a later step a final value is determined as an estimator for the sector multiple.

For aggregation of the peer group multiples, at least two different methods (e.g. mean, median) are to be applied. The further steps of the valuation, such as multiplication by the corresponding earnings figure and determining the value of the company, are to be performed for both methods. In this way, the influence of the selected aggregation methods on results is made transparent.

At the same time, the report on valuation should contain information on the skewness of the multiple-based distribution (incl. after adjustment for any outliers), so that third-party investors can form their own opinions with respect to the combined effect of any skew in the multiple distribution and the selected aggregation method.

I.3. Valuation

If premiums or discounts are applied in the further course of the valuation process (e.g. a control premium), justification must be provided for the applied values. This can, for instance, take the form of a reference to market data.

Aggregation of multiples to individual central values or a range of possible values, and the determination of values or value ranges for the target company must be made transparent for each multiple definition used. A graphical presentation of the value ranges is recommended for all applied multiple definitions.

J. Sector-specific characteristics

Deviations in application of the valuation methods as a result of sector-specific characteristics are possible and must be made transparent.

K. Final assessment

The relevant report on the reasonableness of the offered compensation should contain the results and ranges determined by the individual valuation methods. A graphical presentation of the determined ranges is recommended. For aggregation of different value ranges under the various methods for justification of the offered compensation, the report should explain and justify the values determined as well as any differences between them. If a weighting is applied to individual valuation methods, a relevant explanation must also be provided.

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