

Study on German Valuation Practice in
Corporate Law
7th Edition (2010 – 2020)

Düsseldorf, February 2021

Dear Reader,

I am pleased to present you our latest study on valuation practice in connection with structural measures under the German Stock Corporation Act as of February 2021. In our 7th edition, we have added the cases with a valuation date in 2020. This means that our study is now based on eleven years respectively 214 valuations examined. For the first time, we also go into more detail on individual valuations of the past year.

Structural measures under stock corporation law are serious interventions in the ownership rights of minority shareholders. In the case of a squeeze-out or change of legal form, the shareholders must therefore be granted appropriate compensation and, in the case of a control and profit transfer agreement, a guaranteed dividend must also be granted. The company valuation used as a basis for this is usually prepared by external valuation experts. The appropriateness of the offered cash compensation and guaranteed dividend is to be ensured by a court-selected and appointed auditor. In the vast majority of cases, the shareholders' meeting that decides on the measure is followed by appraisal proceedings in which the appropriateness of the cash compensation or guaranteed dividend is reviewed by the courts.

The aim of this study is to provide an overview of the different procedures and valuation parameters applied in company valuations initiated by stock corporation law and to identify current trends in valuation practice. With this study we want to create transparency and an overview, but not to judge and evaluate. The reader should also not draw the conclusion that a common practice is equivalent to best practice, e.g. if new, better findings are implemented in practice with a delay.

With kindly regards,



A handwritten signature in blue ink, appearing to read 'Jochen Beumer', written in a cursive style.

WP Dr. Jochen Beumer

Table of content

Chapter	Content	Page
1.	About this study and data collection	4
2.	Valuation process, methods and results	6
2.1	Valuation methods	6
2.2	Compensation based on valuation approach or stock price	7
2.3	Period between announcement and valuation date	8
3.	Distributable earnings	8
3.1	Analysis of past performance	8
3.2	Projection of future cash flows and business plans	9
3.3	Earnings growth in the planning	11
3.4	Growth rate in terminal value	12
3.5	Payout ratios	14
4.	Cost of capital as discount rate	15
4.1	The risk-free rate	15
4.2	The market risk premium	16
4.3	Beta factor	18
5.	Market-based valuation and multiples	26
6.	Control and profit transfer agreements	27
I-ADVISE AG – Valuation Team		28
Appendix 1	Analyzed Valuations	30
Appendix 2	Unavailable Valuations	33

Analyzed valuations by valuation measure (1/2)

1. About this study and data collection

For our study, we analyzed the reports of the management boards on the conclusion of control and profit and loss transfer agreements and on the transfer of shares to the majority shareholder pursuant to sections 327a et seq. of the German Stock Corporation Act (AktG) or section 62 para. 5 of the German Transformation Act (UmwG) as well as merger reports and expert opinions on the occasion of changes of legal form pursuant to sections 190 et seq. of the German Transformation Act (UmwG) with regard to the valuation methods and parameters applied. As each of these structural measures creates an audit duty, each case also requires an audit report by German Certified Public Accountants.

We did not intend to examine the jurisdiction concerning legal valuations in Germany. Expert reports within legal procedures and shareholder compensation claim challenges ('Spruchverfahren' according to the 'Spruchgesetz'), legal verdicts or negotiated settlements have therefore not been included. In many cases they refer to valuation dates significantly before the year 2010.

We have included in the analysis all appraisals available to us with valuation dates within the eleven-year period from 2010 to 2020. The years 2009 and earlier are not included because the introduction of the final withholding tax led to changes in the valuation parameters.

With 19 cases in 2020, the number of measures is approaching the long-term average again after a downward trend in previous years. With a valuation of around €66.7 billion for Audi AG and around €23.8 billion for Innogy SE, exceptionally large squeeze-out measures were also carried out.

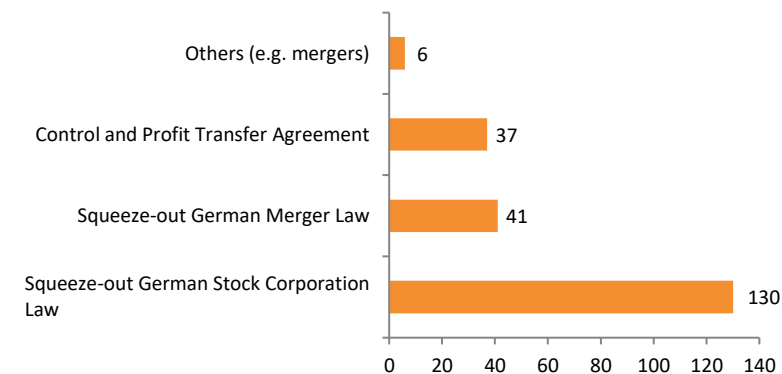
The valuations and audit reports evaluated in the study are listed in Annex 1. Appendix 2 includes non-public structural measures under company law whose valuation reports were not available and therefore could not be evaluated for the study. Should a reader send us further appraisals that have not yet been included, we will supplement the study accordingly. In total, we analyzed 214 company valuations, most of which were carried out on the occasion of squeeze-outs, as the chart opposite shows.

VALUATIONS IN 2020

Companies	Date	Valuation measure
Schuler AG	24.09.2020	Squeeze-out German Stock Corporation Law
AUDI AG	31.07.2020	Squeeze-out German Stock Corporation Law
HSBC Trinkaus & Burkhardt AG	19.11.2020	Squeeze-out German Stock Corporation Law
WORLD HOTELS AG	10.03.2020	Squeeze-out German Stock Corporation Law
IMW Immobilien SE	06.08.2020	Squeeze-out German Stock Corporation Law
Mercurius AG	22.12.2020	Squeeze-out German Stock Corporation Law
Axel Springer SE	26.11.2020	Squeeze-out German Stock Corporation Law
Stada Arzneimittel AG	24.09.2020	Squeeze-out German Stock Corporation Law
Kontron AG	13.03.2020	Squeeze-out German Stock Corporation Law
Comdirect Bank AG	05.05.2020	Squeeze-out German Merger Law
Innogy SE	04.03.2020	Squeeze-out German Merger Law
Design Hotels AG	17.12.2020	Squeeze-out German Merger Law
BHS tabletop AG	22.09.2020	Squeeze-out German Merger Law
Renk AG	22.12.2020	Squeeze-out German Merger Law
ISRA VISION AG	15.12.2020	Squeeze-out German Merger Law
msg life AG	10.11.2020	Control Agreement
OSRAM AG	03.11.2020	Control and Profit Transfer Agreement
First Sensor AG	26.05.2020	Control and Profit Transfer Agreement
EASY SOFTWARE AG	23.12.2020	Control and Profit Transfer Agreement

Source: own analysis I-ADVISE.

Analyzed valuations within 2010-2020 by valuation measure



Analyzed valuations by valuation measure (2/2)

The chart on the right illustrates the valuation measure of the analyzed reports in a timeline.

Since the low point of public structural measures in 2018, the number of cases has increased again in 2020 after 2019. In contrast to the previous year, this again included numerous cases from significant share indices such as MDAX or TecDAX, such as Innogy SE, Osram AG or First Sensor AG.

In 2020, the share of squeeze-outs under merger law in the total number of squeeze-outs peaked at 40%. For a squeeze-out under merger law, the approval of only 90% of the shareholders is required, whereas a squeeze-out under stock corporation law requires a majority of 95%.

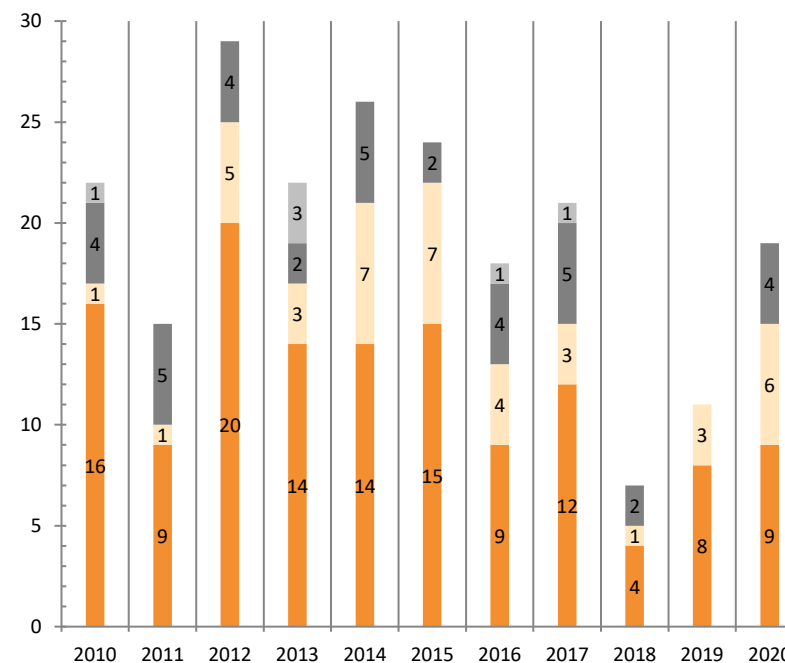
CASES IN 2020 - SQUEEZE-OUTS GERMAN MERGER LAW

Companies	Date	Valuation measure
BHS tabletop AG	22.09.2020	Squeeze-out German Merger Law
Comdirect Bank AG	05.05.2020	Squeeze-out German Merger Law
Design Hotels AG	17.12.2020	Squeeze-out German Merger Law
Innogy SE	04.03.2020	Squeeze-out German Merger Law
ISRA VISION AG	15.12.2020	Squeeze-out German Merger Law
Renk AG	22.12.2020	Squeeze-out German Merger Law

Source: own analysis I-ADVISE.

Analyzed valuations by year and valuation measure

Number of reports



- Others (e.g. mergers)
- Control and Profit Transfer Agreement
- Squeeze-out German Merger Law
- Squeeze-out German Stock Corporation Law

2. Valuation methods, process and results

Fundamentals of the applied valuation methods

Business valuations are based on the going-concern-principle and purely financial objectives. Therefore, future projected earnings are discounted with the risk-adjusted cost of capital. The sum of the present values of future earnings is the company value. This means that the value of the business is derived solely from its earnings power, i.e. its ability to earn cash flows for the owner or the shareholders. Any disposable non-essential assets have to be valued separately. The higher value of the in this way derived net present value and the liquidation value represents the corporate value.

A detailed derivation of the liquidation value is only necessary in cases where, after a rough calculation of the liquidation value, it can be assumed that the liquidation value is higher than the present value of the financial surpluses plus the non-operating assets.

The general practice of corporate valuation applies the methods of the dividend discount model or of the discounted cash flow model (DCF). The DCF approach includes the WACC-method, the Flow-to-Equity and the Adjusted Present Value (APV) approach. With the same assumptions all methods will lead to the same corporate value.

The capitalized earnings model ('Ertragswertverfahren') and the Flow-to-Equity-method calculate the value of equity directly (equity value or equity approach) while the DCF-method calculates in a first step the entire enterprise value included the value of debt by discounting the cash flows before interest with the weighted average cost of capital (WACC). In the second step the value of net debt is subtracted from the enterprise value to derive the value of equity.

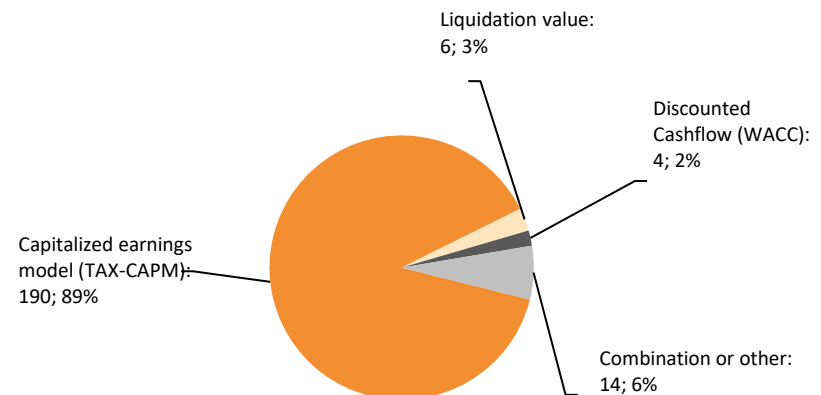
Different to international contexts, valuations for legal measures according to German law in general require explicitly modelling of personal tax consequences on the level of a typified German shareholder for future dividends, capital gains and the effects of personal taxes on the discount rate (the so called TAX-CAPM).

2.1 Valuation methods

The dividend discount model based on the TAX-CAPM is still the basis of the majority of valuations regarding stock related structural measures.

For valuation dates in the period from 2010 to 2020, it was used exclusively in 89% of cases. No other valuation method was used in 2020.

Valuation methods (number/share)



2.2 Compensation based on valuation approach or stock price

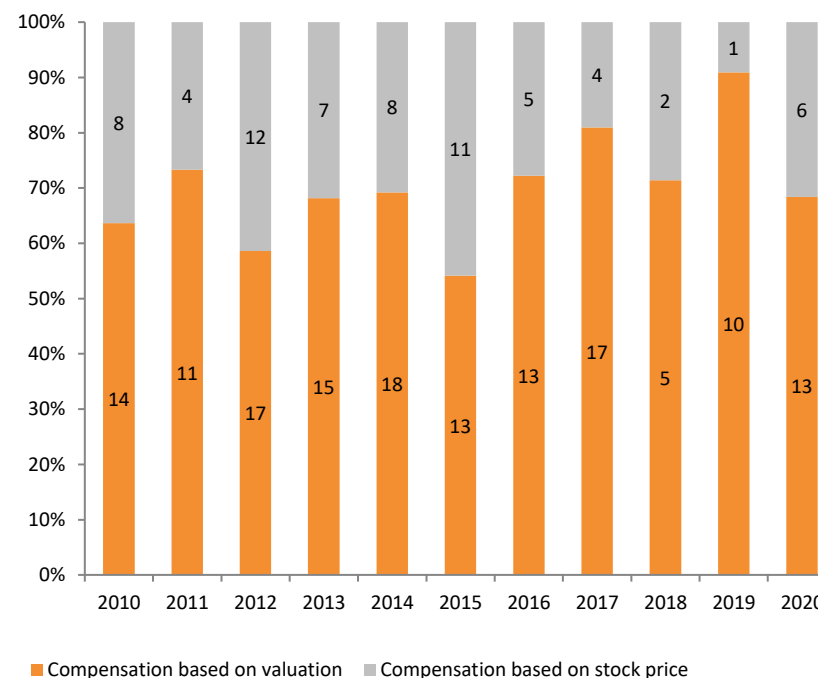
In 68% of the cases in the years 2010 until 2020 the compensation was based on the derived enterprise values. Reasons for that are either that the target was delisted, the derived value was higher than the stock price or the stocks price was not a good indication for the market value of the company.

In 2020 in one third of the cases the stock market price was higher than the capitalized earnings value per share, including Innogy SE and Comdirect Bank AG.

CASES IN 2020 - COMPENSATION BY STOCK PRICE

Companies	Date	Valuation measure
Comdirect Bank AG	05.05.2020	Squeeze-out German Merger Law
Innogy SE	04.03.2020	Squeeze-out German Merger Law
Design Hotels AG	17.12.2020	Squeeze-out German Merger Law
Renk AG	22.12.2020	Squeeze-out German Merger Law
ISRA VISION AG	15.12.2020	Squeeze-out German Merger Law
First Sensor AG	26.05.2020	Control and Profit Transfer Agreement

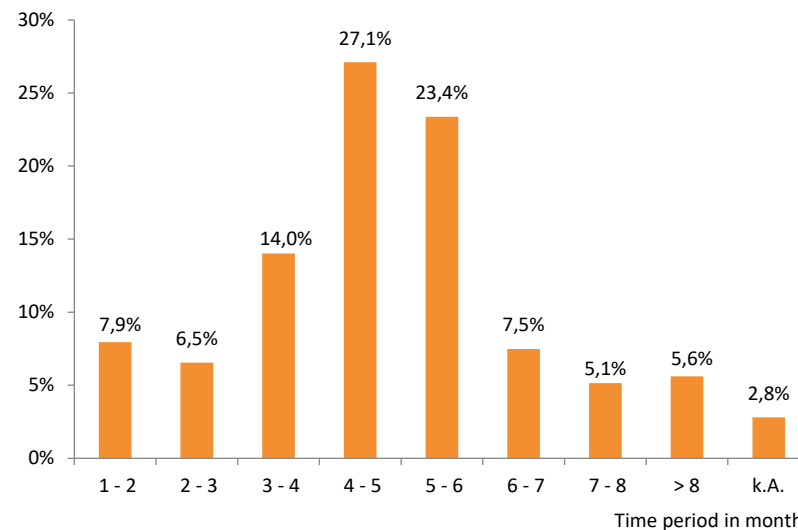
Source: own analysis I-ADVISE.



2.3 Period between announcement and valuation date

The time period between the ad-hoc announcement of the valuation and the reporting date in regard to the valuation itself is 4,9 months on average, with a minimum of 1,2 and a maximum of 22,4 months. In the latter case a forward projection of the stock value was used as lower limiting value for the compensation. For most of the cases the announcement occurred in between a time horizon of three to six months before the valuation date. Moreover in 2020, the mean value between announcement and valuation date was at 5,4 months. The maximum was just under 10 months. In six reports respectively 2.8% of the structural measures, the announcement date could not be determined.

Time period in months between valuation data and announcement



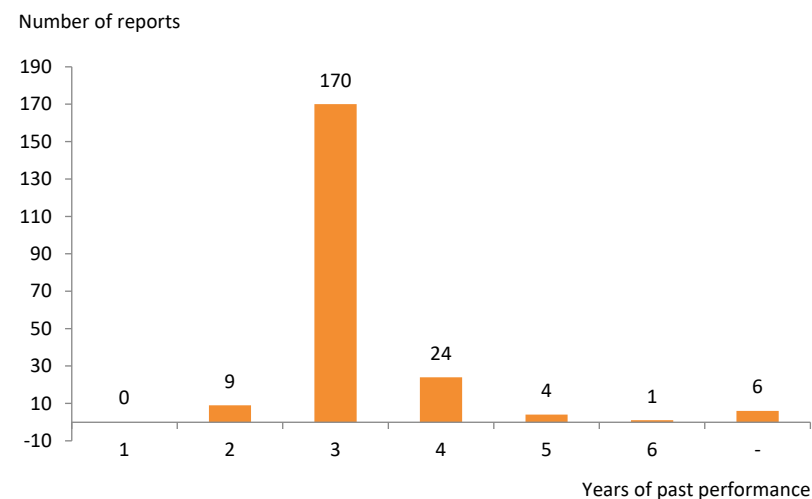
3. Distributable earnings

3.1 Analysis of past performance

The purpose of the historical analysis is to find a suitable benchmark for assessing the planning. In order to establish comparability, adjustments are made for extraordinary or out-of-period results or with regard to changes in the group structure (purchase or sale of participations). The past results are to be presented and explained in an appropriate level of detail. The relevance of past results decreases with increasing distance from the valuation date.

In 80% of the analyzed cases the historical analysis consists of a three-year period and in 11% the analysis consist of a 4-year period.

Amount of historical years analyzed



3.2 Projection of future cash flows and business plans

A realistic current planning calculation is the basis of every company valuation. According to IDW S 1 as amended in 2008 paragraph 90 et seq., the planning on which the company valuation is based on should reflect expected values and give equal weight to risks and opportunities, i.e. be neither optimistic nor pessimistic

The IDW Practical Note 2/2017 provides recommendations for the assessment of corporate planning in valuation, restructuring, due diligence and fairness opinions. Nevertheless business plans usually applied in business valuations may have steering functions or the purpose to incentivize the company's management. In those cases the business plans do not represent expected values but aggressive targets to align management incentives. At the same time overpessimistic or optimistic forecasts or business plans with technical shortfalls have to be adjusted by the valuator to reflect expected values and realistic projections.

Projection of cash flows in phases

The projection of future cash flows of the business valuation process can be divided into a detailed planning period (so called phase I of the business plan), extended for companies that are also growing or shrinking in the medium term by a second phase with an update of the corporate planning by the valuer and/or the management of the valuation object (so called phase II or convergence phase) and a subsequent "perpetual annuity" with sustainable results that increase at a constant growth rate (so called phase III or terminal value). The Austrian standards for valuation KFS/BW1 (2014) require an approximated planning as transition into the terminal value. This should aid to illustrate investment- and product lifecycles, above average growth rates and returns as well as to track taxes and other extraordinary positions.

The accuracy of cash flow projection diminishes the longer into the future the business plan assumptions reach. Therefore, long-term forecasts are less reliable than the business plan projections in years close to the valuation date. Furthermore, there are no specifications concerning the actual length of the planned horizon. The planning horizon should be long enough to ensure that the recognizable, initiated developments have been completed and the company has reached a state of equilibrium.

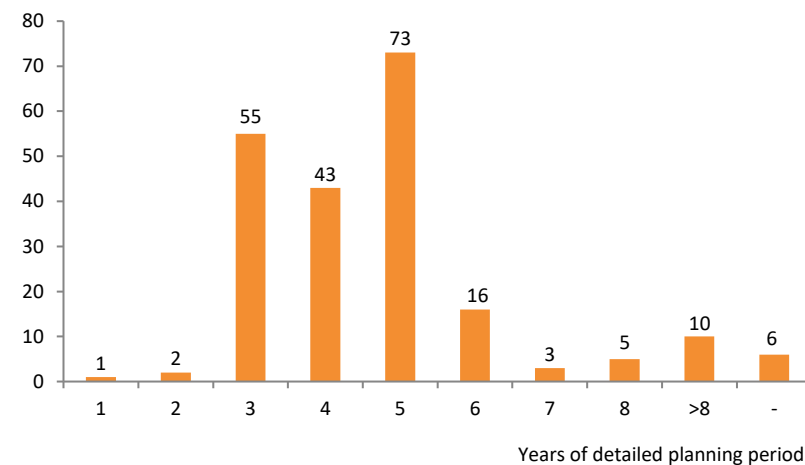
3.2.1 Planning horizon

In 80% of the expert opinions, a detailed planning horizon of three to five years is taken as a foundation for the valuation process. Only around 1.5% of the expert opinions from 2010 to 2020 show a shorter planning period than three years. Significantly longer planning periods mostly concern infrastructure investments as well as solar companies or life insurance companies.

In 2020, longer detailed planning periods were observed than on average in the past. For example, in the case of IMW Immobilien SE from 2020, a 10-year planning period was used as a basis. In the cases of BHS tabletop AG, OSRAM AG, EASY SOFTWARE AG and Audi AG, the company's own planning extended over six years. In the case of Innogy SE, a three-year detailed planning period was extended by a subsequent seven-year rough planning phase.

Horizon of planning

Number of reports



3.2.2 Projection of cash flows in phases

The projection of future cash flows of the business valuation process can be divided into a detailed planning period (so called phase I of the business plan), extended for companies that are also growing or shrinking in the medium term by a second phase with an update of the corporate planning by the valuer and/or the management of the valuation object (so called phase II or convergence phase) and a subsequent "perpetual annuity" with sustainable results that increase at a constant growth rate (so called phase III or terminal value).

The Austrian standards for valuation KFS/BW1 (2014) require an approximated planning as transition into the terminal value. This should reflect investment- and product lifecycles, above average growth rates and returns as well as special tax items and other extraordinary positions.

IDW PH 2/2017 equally sees the need for a transition phase if the state of equilibrium has not yet been reached at the end of the detailed planning phase.

The valuation practice of the recent past is characterized by a tendency to make greater use of rough planning phases to derive a sustainable level of results, as well as the derivation of sustainable margins on the basis of average values of the past and/or planning periods. More rarely, sustainable results are derived directly from the last planning year.

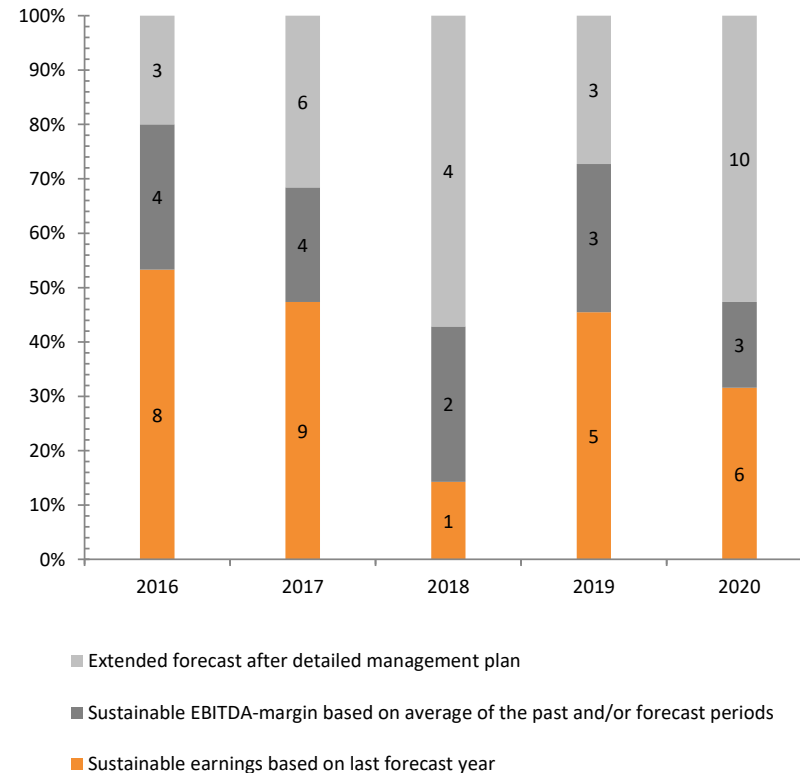
In 2020, convergence phases or rough planning phases have been added in more than half of the cases to derive the sustainable outcome.

Cases in which a re-investment rate and the growth rate for one year were taken into account when deriving the perpetual annuity are also recorded as "derivation of the sustainable results from the last plan year".

In the valuations of Mercurius AG, EASY SOFTWARE AG, ISRA VISION AG, Stada Arzneimittel AG, OSRAM AG, IMW Immobilien SE, First Sensor AG, Comdirect Bank AG, Kontron AG and Innogy SE, the detailed planning period was extended by a convergence phase or rough planning phase. The convergence phase or rough planning phase supplemented by the respective valuation expert covered a period of up to 7 years in individual cases.

Extension of the detailed forecasts and derivation of the sustainable return

Share of the reports



Assumptions for earnings growth

3.3 Earnings growth in the planning

A compounded annual growth rate (CAGR) was calculated by comparing the last adjusted actual EBIT with the EBIT figure of the last year of the planning horizon.

Only two cases in 2020 showed a negative adjusted EBIT in the last actual year. Although the planning calculations generally show a positive development, these cases are not included in the average earnings growth.

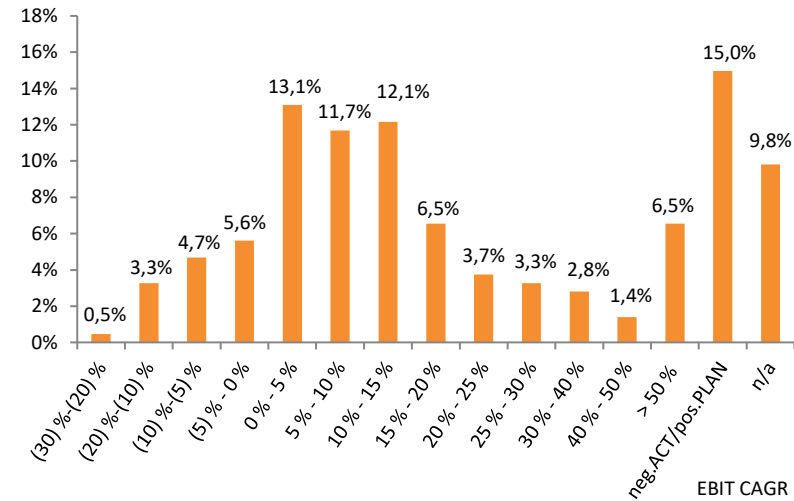
The average annual earnings growth of 18.1% and the median of 9.5% across all evaluable 161 forecasts have increased compared to our evaluation in the previous year.

Remarkable growth rates in 2020 were achieved by Schuler AG with almost 400%, OSRAM AG with 80% and First Sensor AG with 40%.

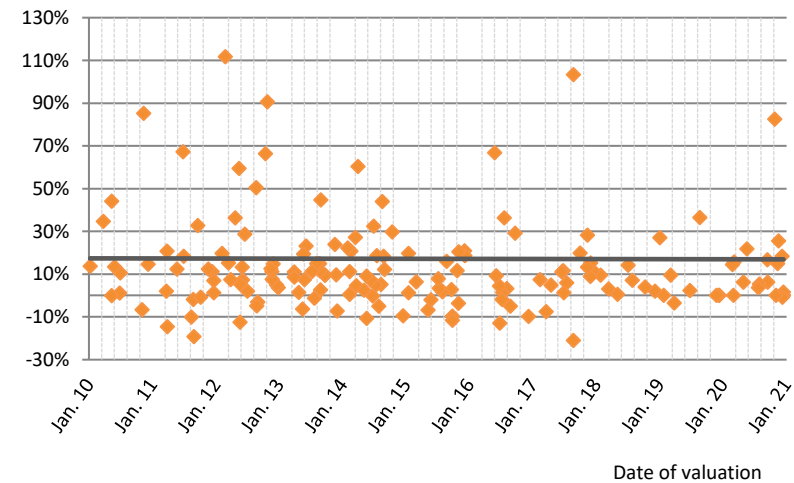
In the case of Innogy SE, earnings growth of 14.5% was assumed in the detailed planning period (2020-2022), although the 7-year rough planning phase added by the valuation expert shows a declining earnings level in this case, among other things due to falling returns from electricity grids. In the valuation of Innogy SE, synergy effects with the parent company were explicitly taken into account.

Average growth rate in business plans (CAGR) based on the last reported adjusted EBIT

Share of the reports



CAGR



3.4 Terminal Growth Rate

Growth discount in the capitalization rate

The growth discount deducted from the capitalization interest rate in the denominator of the Present Value Calculation serves to reflect future increases in sustainable financial surpluses in the numerator of the Present Value Calculation.

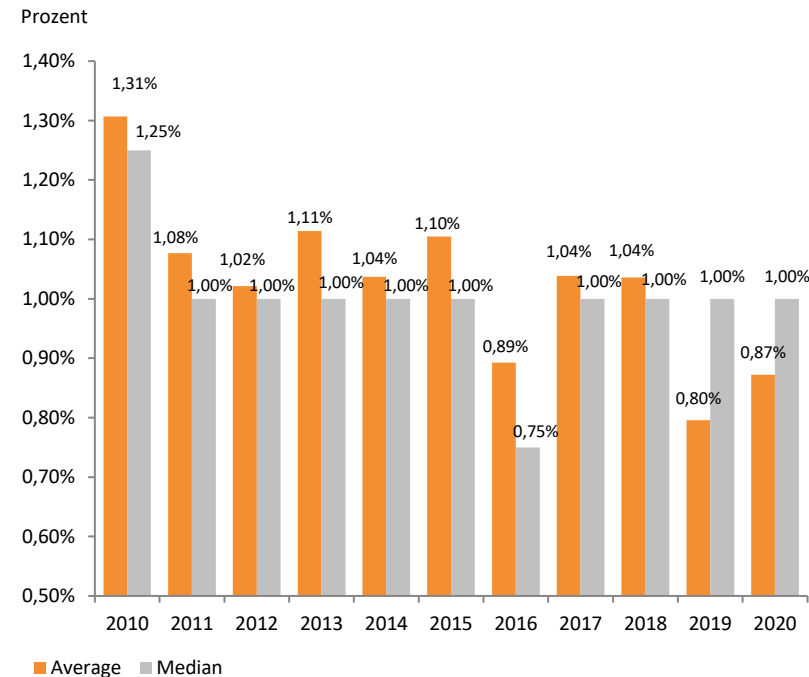
Besides the terminal growth rate as an assumption for perpetual growth, a growth-related retention amount can be applied. The underlying assumption is that for generating a perpetual growth a specified proportion of the perpetual earnings has to be retained and invested into the company to sustain this perpetuity.

Assuming that the company's return on invested capital equals the required cost of capital, such a growth-related retention has no effect on the company value beside its tax consequences. An increasing value only results if the retention amount (before taxes) assumes a lower tax burden on the shareholder level than the tax charge for dividends. This can be justified by assuming that capital contribution through dividends or realized capital gains by selling the company shares will occur later than the capital retention. The personal taxes on this effect are realized in the future and therefore their present value is lower compared to an immediate taxation of the earnings distribution.

Almost all valuations in which the value was derived on the basis of the capitalized earnings value method or a DCF-method contained information on the growth rate. The median of the growth rates of sustainable earnings has stabilized at 1.00% during the past three years since its lowest point of 0.75% was reached in 2016.

While a growth rate of more than 1% was not applied in any case in 2019, several cases are found in 2020. For ISRA VISION AG, the sustainable growth rate is 1.50% and for Axel Springer SE 1.75%. In the valuation of IMW Immobilien SE, a growth rate of 1.20% is applied after a 10-year detailed planning period. Innogy SE, Kontron AG and Design Hotels AG are at the lower end of the range of growth rates to be determined in 2020 with a growth rate of 0.50%.

Perpetual growth rates



Growth rate (2/2)

The variation of growth assumptions in all analyzed cases is relatively low. In 110 cases (54% of all valuations carried out with the capitalized earnings value method or a DCF-method) a perpetual growth rate of exactly 1.00% was applied.

The majority of the cases assumes adjustments of the capital structure of debt and equity to finance perpetual growth. In 24% of the cases no growth-related retention was assumed or a clear evaluation was not possible due to missing information.

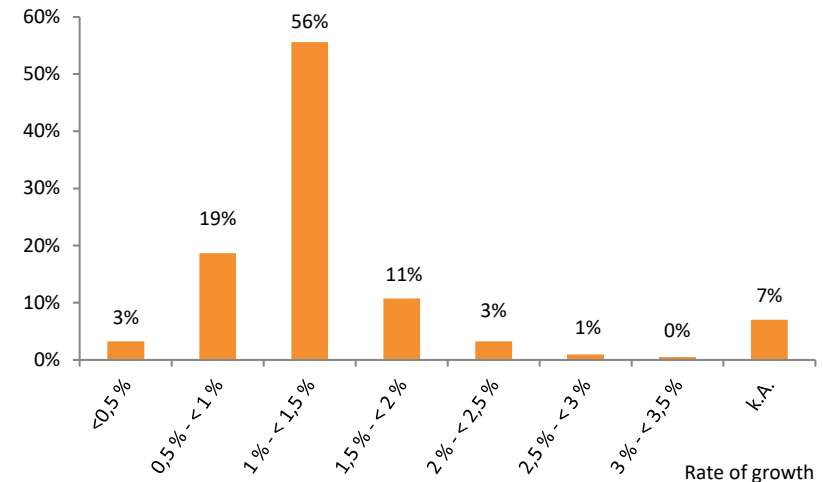
There are two approaches concerning perpetual growth related capital adjustments. In general they may lead to comparable results. In 69% of all cases, sustainable depreciation and growth-related retention were applied, which reflects the required growth of equity capital based on a growth rate of sustainable results.

Meanwhile 7% of the cases assumed a higher reinvestment rate for CAPEX to account for the necessary growth of the sustainable asset base. The necessary investment rate is financed by debt and equity. In those cases earnings are increased by the debt-financed and interest-carrying proportion of net-investment based on the planned debt ratio in the capital structure. The reports state this mainly as "changes in net debt to sustain a perpetual debt ratio".

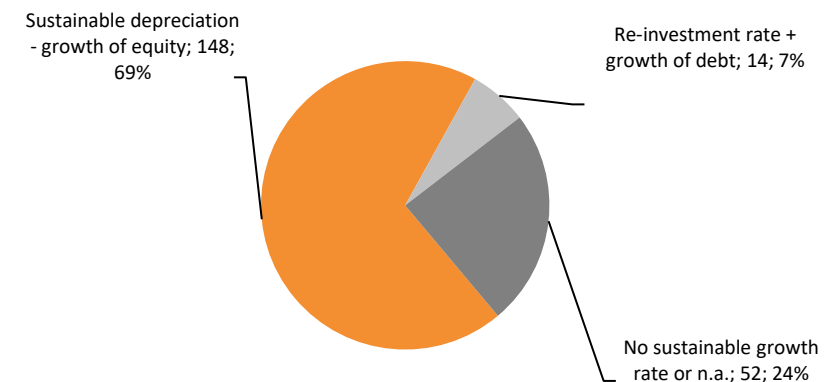
In 2020, no retention was assumed for sustainable growth-related balance sheet changes in only two cases, namely at Comdirect Bank AG and First Sensor AG. In all other cases, growth retention was assumed.

Perpetual growth rates (EBIT)

Share of the reports



Perpetual depreciation or reinvestment rate



3.5 Payout ratios

The relevance of payout ratios

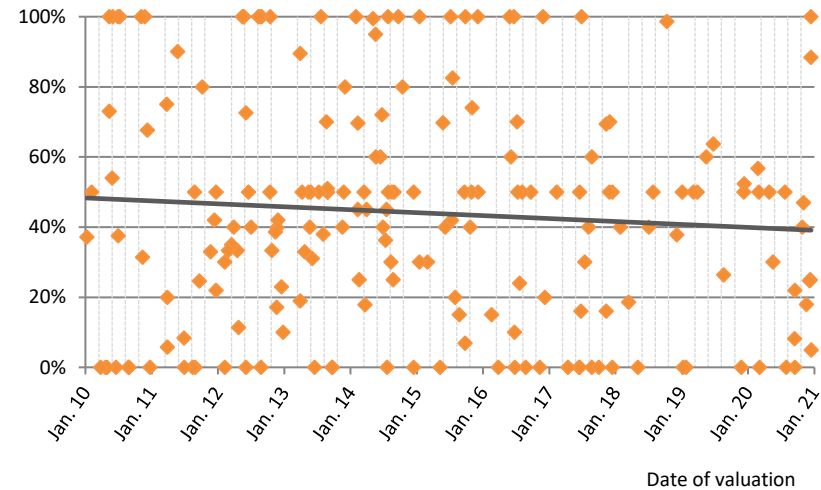
The underlying payout policy has a relevant influence on the entity value of the company. In general it is assumed that retained earnings are taxed in the future, while distributions (e.g. dividends) are taxed immediately with withholding taxes in Germany. Commonly, only half of the final withholding tax is applied to retained earnings in order to account for the present value effect. Due to the tax deferral effect, retained earnings result in higher enterprise values than direct distribution through dividend payments.

The average payout ratios in the **detailed planning period** are generally derived by considering the previous as well as the planned payout policy, taking into account financial and legal restrictions that may result from the planning. As a consequence, the results are broadly diversified. The mean value is 44% and the median is 44%. There is no significant trend, as the following chart shows.

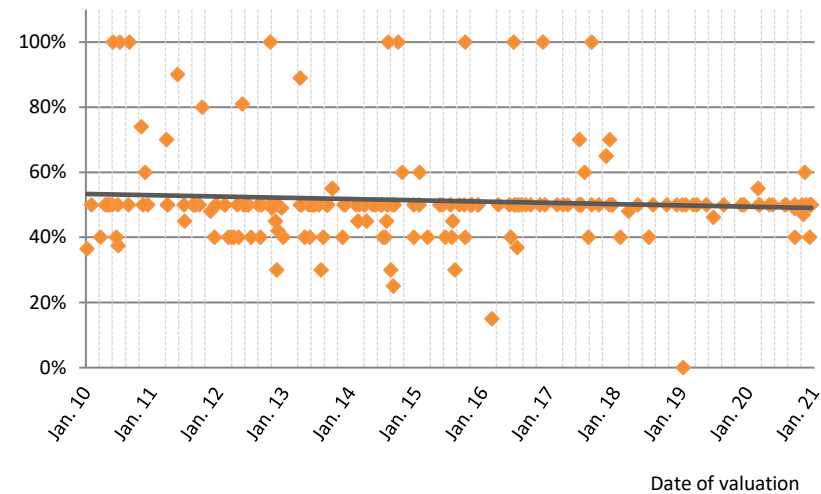
In the **terminal value**, with an average of 51% and a median of 50%, the variance is much lower. The payout in the terminal value is derived in different ways, e.g. from the average payout ratios of industry or peer group companies as well as from the company itself

In 2020, a payout ratio of 50% was generally assumed as sustainable payout behaviour. In the case of HSBC Trinkaus & Burkhardt AG, the sustainable payout ratio is 60% and for Innogy SE 55%. In the cases of ISRA VISION AG (40%), msg life AG (47%), Stada Arzneimittel AG (40%) and BHS tabletop AG (48.9%), payout ratios were set slightly below 50%.

Payout ratios in the detailed planning



Payout ratios in the terminal value



The risk-free rate and the cost of capital

4. Cost of capital as discount rate

Derivation of the discount rate and the cost of capital

The discount rate can be expressed as the investment alternative of the investor. The discount rate therefore represents the interest rate or return an investor would expect or should demand when investing in a comparable risky asset. Consequently, it should be equivalent to the valuation target concerning its maturity, its risk and its taxation.

4.1 The risk-free rate

Role of the risk-free rate within the CAPM

In the theory of the Capital Asset Pricing Model (CAPM) the risk-free rate represents an interest rate carrying no risk and at which money can be invested at any time and without restrictions. As risk-free rates are just a theoretical concept and can not be observed in practice the risk-free rate is determined by investments in government bonds of the Federal Republic of Germany as the closest proxy. Therefore, the equivalence of maturities between public bonds and the valuation target has to be considered.

The average base rate has fallen almost steadily during our period of observation, and in 2020 it once again fell below the previous low point reached in the previous year.

The spread of the base interest rates used is low. In 2020, the average base interest rate was -0.01%. Negative base rates were also applied for the first time for valuation dates in December. This concerns Mercurius AG, EASY SOFTWARE AG, Renk AG, Design Hotels AG, Axel Springer SE and ISRA VISION AG. The approaches are partly based on adjustments within the framework of the update on the respective valuation date.

The dispersion of the base rates and the development of the average base rates before personal taxes in the period 2010 to 2020 are shown in the chart and the table to the right.

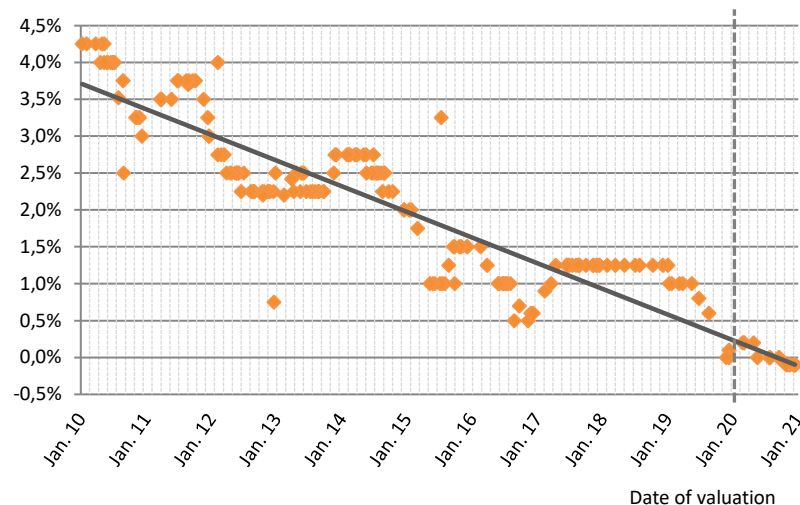
AVERAGE RISK-FREE RATE BEFORE PERSONAL TAX

Period	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1st Quarter	4,25%	3,50%	2,95%	2,35%	2,75%	2,10%	1,38%	0,95%	1,25%	1,06%	0,20%
2nd Quarter	4,06%	3,63%	2,47%	2,39%	2,63%	1,00%	1,00%	1,25%	1,25%	1,00%	0,10%
3rd Quarter	3,44%	3,74%	2,29%	2,25%	2,48%	1,44%	0,87%	1,25%	1,25%	0,70%	0,00%
4th Quarter	3,19%	3,30%	2,12%	2,67%	2,08%	1,50%	0,57%	1,25%	1,25%	0,03%	-0,07%
Annual Average	3,79%	3,53%	2,39%	2,37%	2,52%	1,55%	0,92%	1,22%	1,25%	0,70%	-0,01%
Annual Median	4,00%	3,50%	2,25%	2,25%	2,50%	1,50%	1,00%	1,25%	1,25%	1,00%	0,00%

Source: own analysis I-ADVISE.

Development of the risk-free rate over time

risk free rate



4.2 Market Risk Premium

The market risk premium within the CAPM

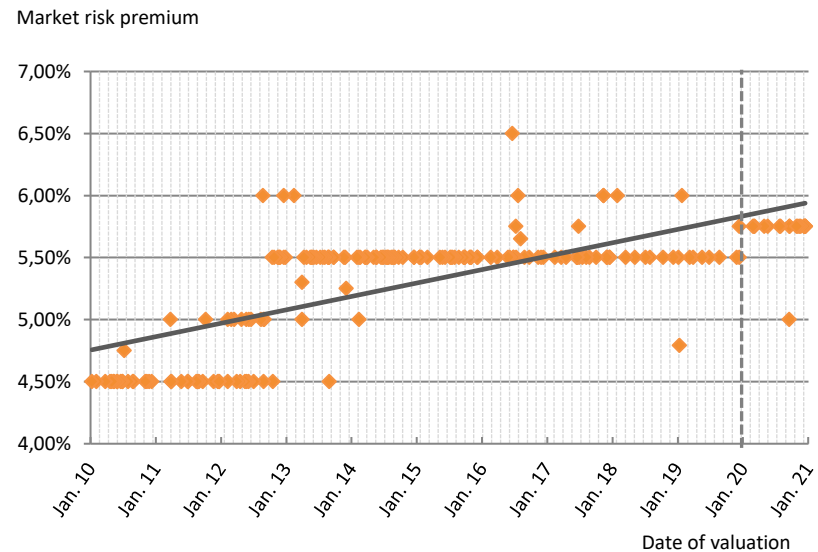
Within the CAPM the market risk premium is one of the two parameters determining the cost of capital as the defined 'systematic risk component'. In theory the market risk premium is the demanded average excess return figure all equity investors expect or demand. Therefore, the market risk premium is derived by comparing the return of a diversified market portfolio as proxy for the whole market and the risk-free rate. The market portfolio consists of all risky investment opportunities in the entire market. As German legal valuations require the consideration of personal income taxes on the level of the shareholder (TAX-CAPM), the market risk premium in valuation practice reflects a return measure after personal income taxes.

Derivation of the market risk premium in practice

For estimating the market risk premium in practice historical return differences between the market portfolio and the risk-free rate are calculated. Most of the time a broad-based market index aids as a proxy for the market. The risk-free rate is usually determined through historical yields of German government bonds. The historical market risk premium then is calculated as the difference between the average historical market return and the average risk-free rate. It is important to note that the market risk premium is not an indicator for what the market actually demands. It only indicates historical realized returns in excess of risk-free investments.

The implicit market risk premium can be derived by applying the Capitalized earning-Model or the DCF-Model from the current market cap in combination with future earnings and cash flow expectations. For the derivation necessary information are analysts' earnings forecasts for the company, the risk-free interest rate at the respective observation date and the beta factor, which reflects the undiversifiable risk of the corporate entity itself. With the help of the previously named information the implicit market risk premium is determined at which the calculated company value would match the market capitalization. By repeating this procedure for a for the market representative amount of companies it is possible to derive the market risk premium which is demanded by the whole market.

The following graph shows the development and spread of the applied market risk premiums after personal taxes of the shareholders over time.



With one exception, the market risk premium in the cases of 2020 was 5.75%; only in the case of BHS tabletop AG a market risk premium of 5.0% was applied. The valuation expert points out that this was done for reasons of prudence and in favour of the minority shareholders.

Average market risk premiums after personal taxes

An increase of the applied market risk premiums can be observed since the year 2012, especially in the 4th Quarter of 2012. Obviously this is in connection with the publication of the “Fachausschuss für Unternehmensbewertung und Betriebswirtschaft” (‘FAUB’) des Instituts der Wirtschaftsprüfer in Deutschland e.V. (‘IDW’) of January 10, 2012, in which the FAUB recommended an examination of whether the uncertainty on the capital market necessitated the application of a market risk premium at the upper end of the recommended range of 4.0% to 5.0% after personal taxes.

On September 19, 2012, the FAUB recommended a further increase to a range of 5.0% to 6.0% after personal taxes. Consequently, 84% of the valuations in 2013 to 2019 were based on a market risk premium of 5.5% after personal taxes.

Since June 2016, higher market risk premiums of up to 6.5% have been observed in ten cases. In 2017, a market risk premium of 5.75% was applied in a case and 6.0% in two comparative valuations to determine a compensation in shares of the controlling company in accordance with section 305 (2) no. 1 AktG. In one other case the market risk premium was measured at 5.5% and 6.0% in two variants in 2018.

In a case with a valuation date of January 31, 2019, the valuation experts and auditors have set the market risk premium after personal taxes at the upper end of the range (6.0%), with regard to the economic situation of the object under valuation and the low interest rate level. In a case with a valuation date of January 16, 2019, however, another valuation expert, referring to the case law of the responsible regional court and the value-enhancing effect, and has set a market risk premium of 4.79% after personal taxes, which is still below the opinion of the responsible regional court later in specialized legal procedures.

With the publication date of October 25, 2019, the FAUB increased the recommended range for the market risk premium before personal taxes between 6.0% and 8.0% and adjusted the recommendation for the market risk premium after personal taxes to a range of 5.0% to 6.5% in light of current capital market conditions, in particular the lower interest rate level.

The FAUB has adhered to this recommendation (cf. FAUB technical notes dated 25 March 2020). Accordingly, all valuations for 2020 - with one exception - take into account a market risk premium of 5.75% after personal taxes.

AVERAGE MARKET RISK PREMIA AFTER PERSONAL TAX

Period	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1st Quarter	4,50%	4,67%	4,80%	5,43%	5,40%	5,50%	5,50%	5,50%	5,75%	5,45%	5,75%
2nd Quarter	4,50%	4,50%	4,75%	5,50%	5,50%	5,50%	5,70%	5,55%	5,50%	5,50%	5,75%
3rd Quarter	4,56%	4,50%	5,00%	5,39%	5,50%	5,50%	5,65%	5,50%	5,50%	5,50%	5,60%
4th Quarter	4,50%	4,60%	5,45%	5,42%	5,50%	5,50%	5,50%	5,64%	5,50%	5,58%	5,75%
Annual Average	4,51%	4,57%	5,05%	5,43%	5,48%	5,50%	5,62%	5,57%	5,57%	5,50%	5,71%
Annual Median	4,50%	4,50%	5,00%	5,50%	5,50%	5,50%	5,50%	5,50%	5,50%	5,50%	5,75%

Source: own analysis I-ADVISE.

Although the average market risk premium increased from 4,5% in 2010 to 5,75% in 2020, the sum of the pre-tax risk-free rate and the market risk premium declined from 7.6% to 5.7% between the first quarter of 2010 and the last quarter of 2020.

4.3 Beta factor

Beta factor within the CAPM

The beta factor is, beside the market risk premium, the second parameter for determining the cost of capital based on the CAPM. Its purpose is to account for systematic risk. The magnitude of the beta factor reflects the degree of systematic risk of a stock compared to the entire market, where systematic risk represents the proportion of the entire portfolio risk, which cannot be reduced through a diversified portfolio approach. The investor therefore only gets compensated for this non-diversifiable proportion of entire risk.

Interpretation of the beta factor

Multiplying the market risk premium with the beta factor leads to the risk premium of the investment. A higher beta factor therefore reflects a higher demanded return by the capital market participants, because the investments include more risk than.

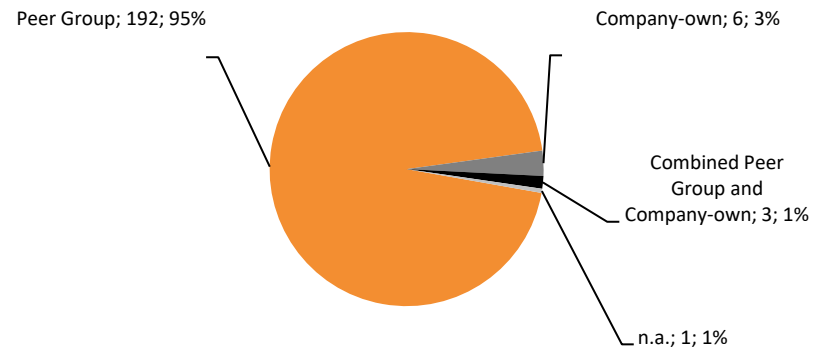
Mathematical definition of the beta factor

The beta factor of a stock-listed company is the statistically derived covariance between the stock's return and the return of the market index, divided by the variance of the market's return. Beta factors can be calculated through linear regressions of the stock's returns to the market's returns. The beta factor then is the slope of the statistical regression line.

4.3.1 Peer group or beta factor of the valuation target

In 95% of the expert opinions with a capitalized earnings value method or a DCF-method, the average or median of the beta factors of the peer group companies is applied to derive the cost of equity. Only 3% of the valuations used the beta factor of the valuation object and 1% a mixture. In the two valuations classified as a "mixture", the valuers did not calculate an average between the company's own beta factor and the peer group beta factor, but determined a beta factor on the basis of an expert opinion and included both the company's own beta factor and the peer group beta factor. The company's own beta factor corresponded (almost) exactly to the average peer group beta factor.

In all 19 valuation cases of the year 2020, the beta factor was derived on the basis of peer groups.



4.3.2 Number of peers

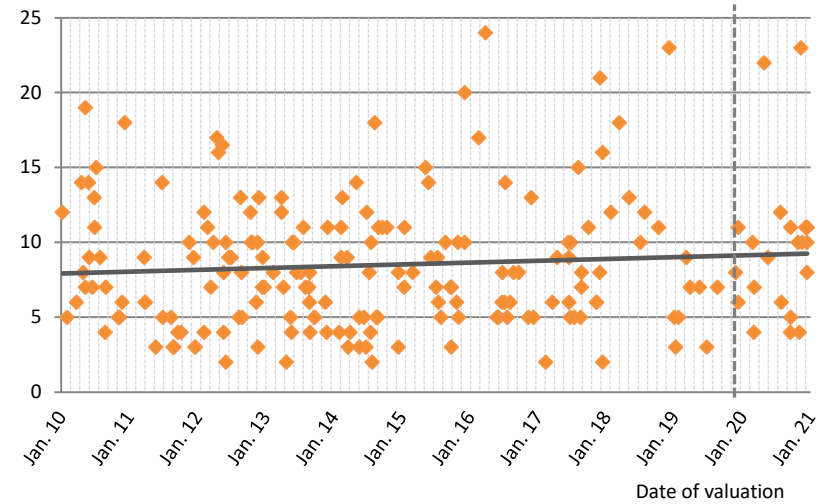
The number of peer group companies used shows a significant spread between the minimum of 2 and the maximum of 24 companies, as shown in the following chart. On average, the beta factors of about 8,6 peer group companies are used.

In 2020, the squeeze-outs of HSBC Trinkaus & Burkhardt AG and Comdirect Bank AG formed particularly large peer groups of 23 respectively 22, with separate peer groups being examined for different business segments.

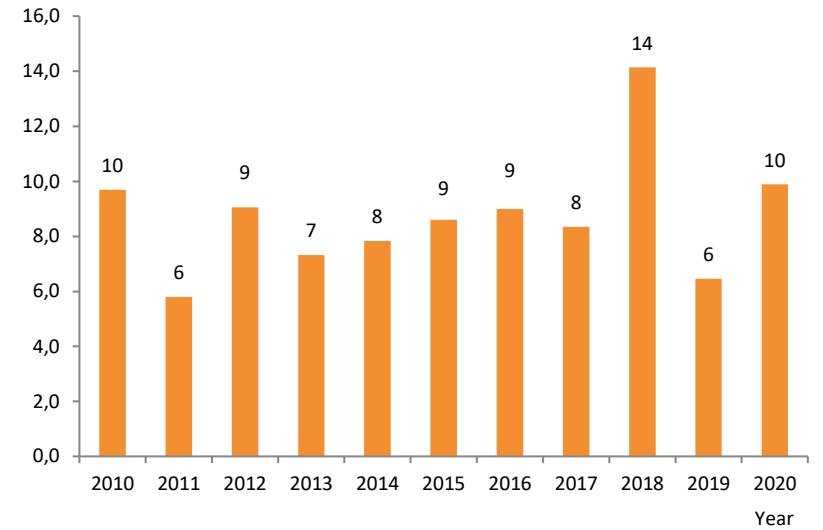
For Audi AG, a peer group of 12 companies was formed, which includes all the major car manufacturers. In the case of Innogy SE, a peer group of 10 companies was formed for the business area "Grid and Infrastructure" and another peer group of 15 other companies was formed for the business area "Renewable Energies".

In the valuation cases CONET Technologies AG, primon Technology AG, Etienne Aigner AK, HYMER AG and W.O.M World of Medicine AG, only two peer group companies were used to derive the beta factor.

Number of peer group-companies



Average number of companies in the Peer Group



4.3.3 Benchmark index

Benchmark index

The benchmark or reference index represents the portfolio of the typified investor and is used to calculate the covariance between the returns of the stock and the return of the benchmark index, which in turn is used to calculate the beta factor.

A global index represents the market portfolio for a well-diversified international investor, which reflects the assumptions of CAPM more than the use of a local index.

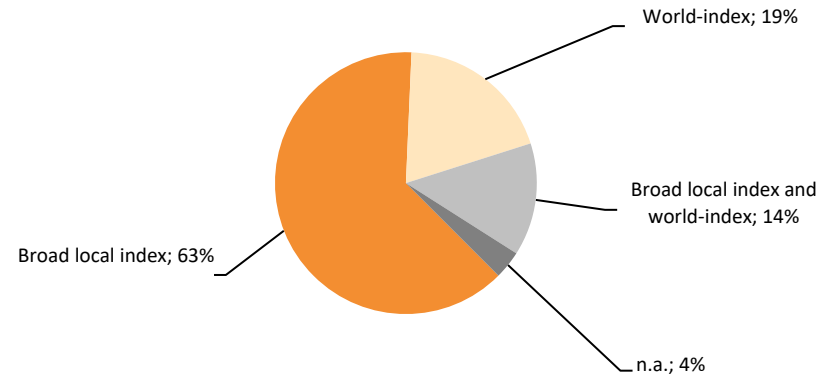
Opponents to the application of global indices claim, that global indices influence the statistical regression with different currency effects, while proponents of the approach argue that different currencies and their changes are a part of the total return variances that globally diversified portfolio investors have to face in reality.

A problem of a global approach can be the timing-difference between the index calculation and the stock quotes of the peer group company's (e.g. between the US and Asia), which may lead to underestimating the correlation of stock and market returns.

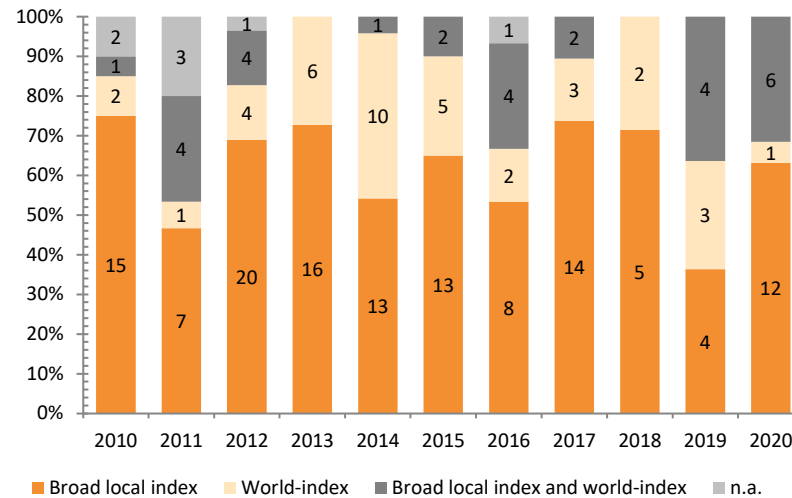
In 63% of all cases analysed, only a broad local index (in each case related to the peer group company) is used, in 19% of the cases a world index.

In 2020, only one case relied exclusively on a world index. A clear majority of the cases in 2020 focused on a broad local index. In 6 cases, both considerations were analysed and presented

Local or global index



Share of the reports



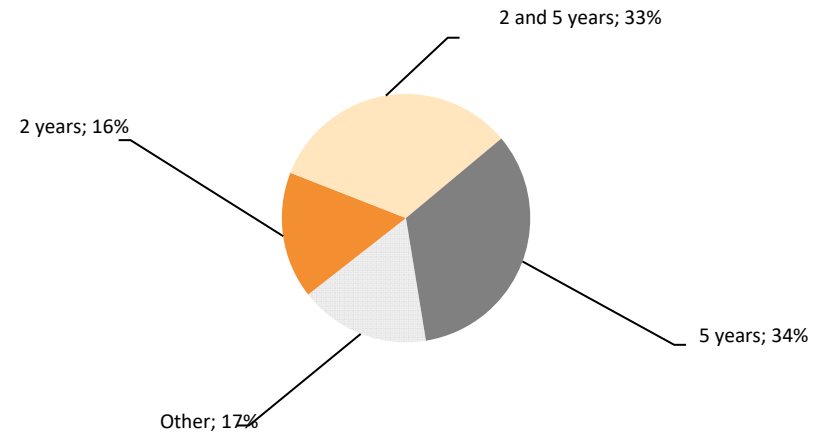
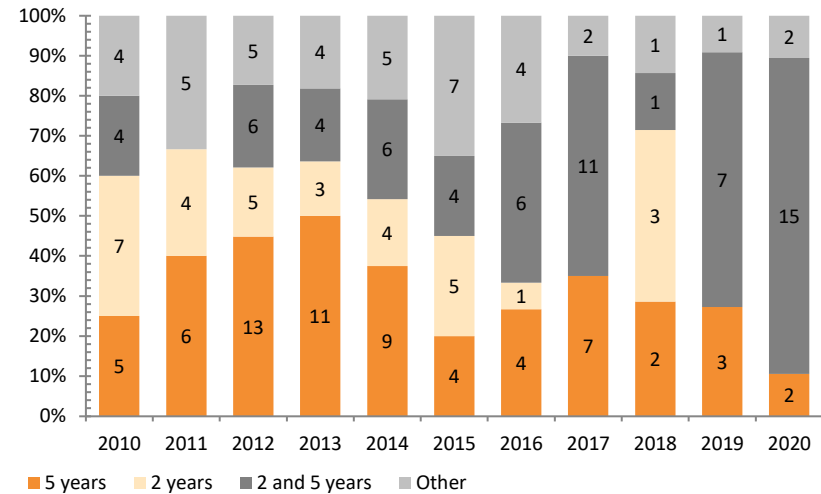
4.3.4 Benchmark period

For the derivation of the beta factor a 5-year period is commonly considered (67%). However, beta factors were also collected additionally over a 2-year period in 33% of the cases. In 16% of the cases the beta factors were collected exclusively for 2-year periods.

The proportion of valuations in which beta factors were collected for both 2- and 5-year periods increased in 2020 to 79%, after a temporary decline in 2019. As an alternative approach, 2020 includes a case in which annual slices were considered.

The category "Other" also includes two cases in 2020 in which a 1-year survey period was considered in addition to 2- and 5-year survey periods. Only in two cases in 2020 was a 5-year period used exclusively.

Share of the reports



4.3.5 Observation intervals

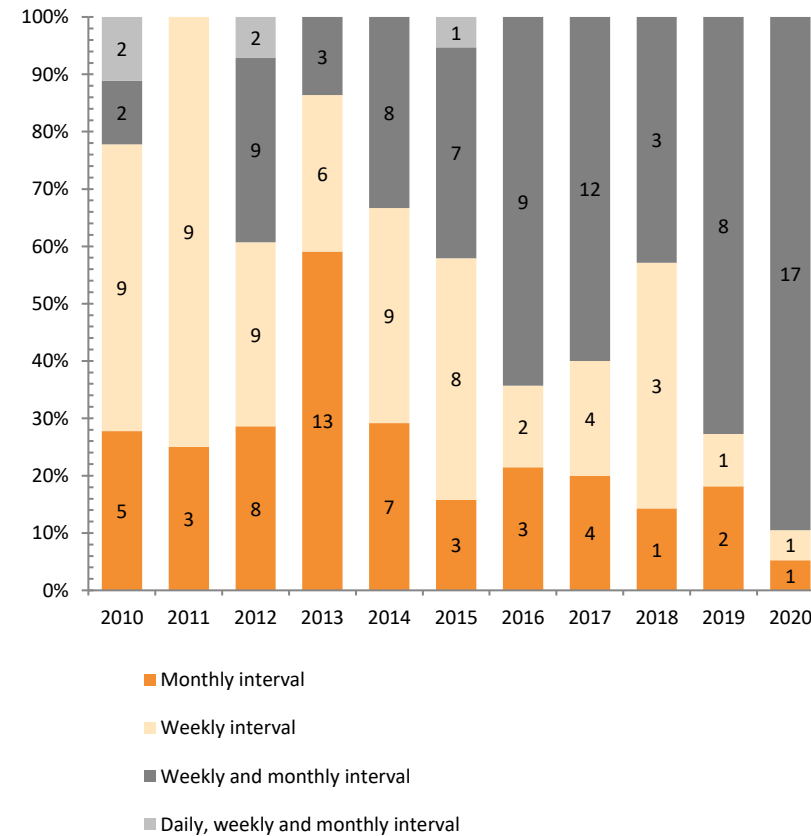
Depending on the survey interval (monthly, weekly or daily return measurement), different beta factors may result.

In the survey reports examined, weekly or monthly survey intervals or both intervals are used side by side for the most part. The proportion of cases in which both survey intervals are examined has increased significantly since 2014 and amounts to 89% in 2020.

The supplementary consideration of daily intervals was carried out in a total of only 2% of the evaluations.

There is a focus on the collection of beta factors over 2-year periods with weekly intervals and 5-year periods with monthly intervals.

Share of the reports



Beta factor – raw or adjusted

4.3.6 Raw or adjusted beta factor

Adjustments of beta factors

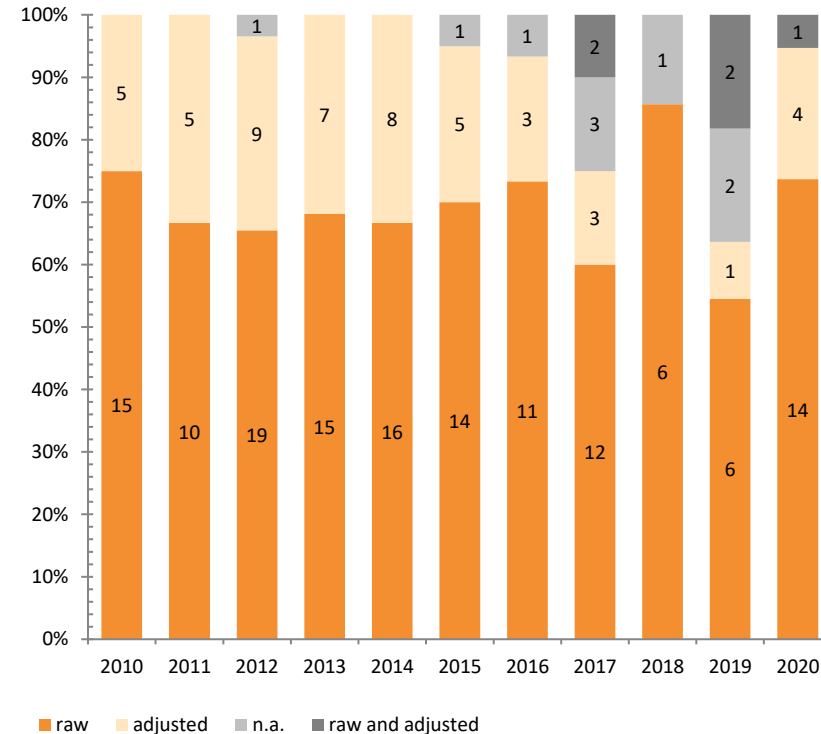
Raw beta factors correspond to the values directly derived from capital market data. So-called adjusted beta factors are based on the assumption that beta factors have an autoregressive tendency and tend towards 1 in the long term.

The financial information service provider Bloomberg provides adjusted betas which correspond to the sum of the raw beta factor weighted with 0.66 and 0.33 (so-called Blume-adjustment).

In 68% of the valuations, the raw beta factor is used without adjustments. In 2020, 72% of the valuers used raw beta factors alone.

The proportion of cases in which only adjusted beta factors were used has again increased significantly compared to the two previous years. In four cases (Innogy SE, Comdirect Bank AG, HSBC Trinkaus & Burkhardt AG, ISRA VISION AG) adjusted beta factors were used, in one case (Design Hotels AG) raw and adjusted beta factors were considered alongside each other.

Share of the reports



4.3.7 Debt Beta

Debt Beta – theoretical meaning and derivation

The so-called debt beta can be applied when unlevering and re-levering beta factors in order to take into account that the debt providers assume part of the risk and the risk of the equity providers is reduced accordingly.

When determining the debt beta, the part of the interest rate spread representing the systematic risk is set in relation to the market risk premium. Thus, the debt beta expresses the share of the systematic risk assumed by the providers of debt capital.

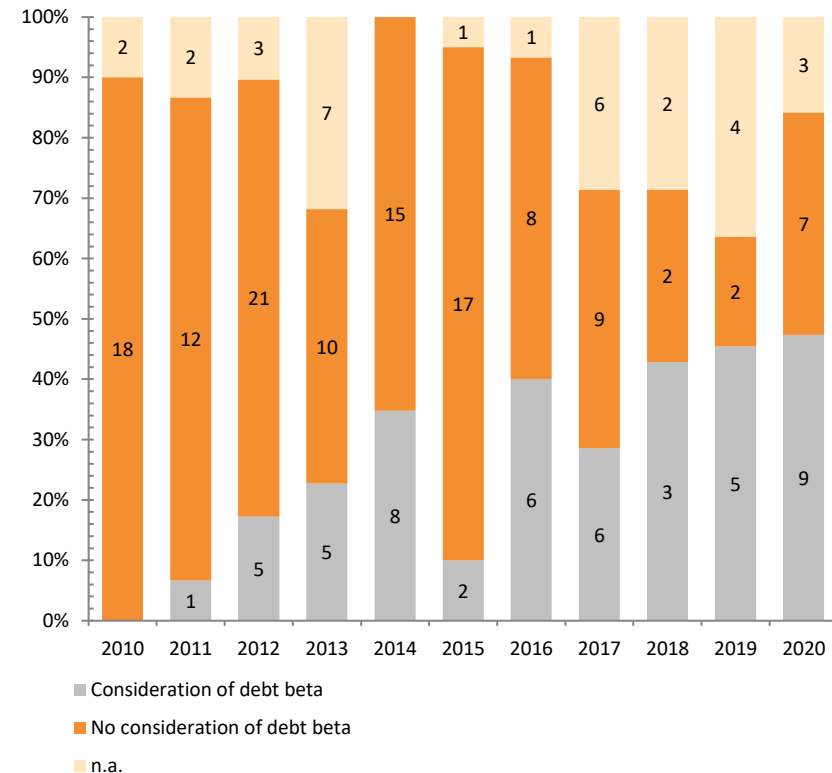
The part of the interest spread attributable to the lender's margin and the expected value of the credit default is not taken into account. Debt betas for exchange-traded debt instruments of different risk classes can also be derived directly through regression analyses.

Consequences of applying Debt Beta

The use of debt beta over the entire credit spread leads to the same value for the capitalized earning model and the DCF-method. Applying the debt beta should be consistent and applied both in un-levering the peer group beta factors and in re-levering the cost of capital to the valuation target. If the capital structure of the valuation target and the peer group do not differ significantly, the impact of the debt beta on the valuation is minor.

In 2020, the consideration of debt beta increased further. Debt beta was taken into account in the valuations of Design Hotels AG, ISRA VISION AG, msg life AG, Stada Arzneimittel AG, BHS tabletop AG, OSRAM AG, First Sensor AG, Kontron AG and Innogy SE.

Share of the reports



Beta factor – value

4.3.8 Value of unlevered beta factors

The unlevered beta factors applied in the expert opinions amount to 0.86 on average and show a wide spread, which is due to sector-specific differences.

The range across all circumstances extends from the lowest beta factor of 0.2 (for a real estate investment company) to the highest value of 1.50 for a bank.

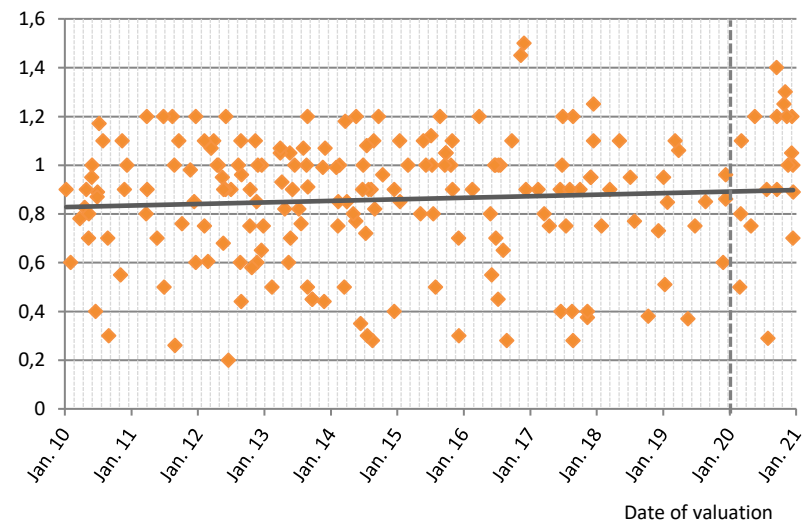
An evaluation of the beta factors by sector would not be meaningful due to the too small number of observations and the not always clear and subjective sector allocation as well as the different cut-off dates over a meanwhile 11-year survey period.

BETA FACTOR OF VALUATIONS IN 2020

Companies	Date	Industry	unlevered Beta factor
Schuler AG	24.09.2020	Plant construction	1,20
AUDI AG	31.07.2020	Automotive industry	0,90
HSBC Trinkaus & Burkhardt AG	19.11.2020	Bank	1,20
WORLD HOTELS AG	10.03.2020	Hotels	0,80
IMW Immobilien SE	06.08.2020	Real Estate	0,29
Mercurius AG	22.12.2020	Real estate holding (segment-weighted)	0,70
Axel Springer SE	26.11.2020	Media	1,00
Stada Arzneimittel AG	24.09.2020	Pharma	0,90
Kontron AG	13.03.2020	Software	1,10
Comdirect Bank AG	05.05.2020	Bank	0,75
Innogy SE	04.03.2020	Grid and Distribution / Renewable Energies	0,50 / 0,60
Design Hotels AG	17.12.2020	Hotels	1,20
BHS tabletop AG	22.09.2020	Ceramics manufacturer	1,40
Renk AG	22.12.2020	Mechanical Engineering	1,00
ISRA VISION AG	15.12.2020	Technology	1,05
msg life AG	10.11.2020	Software	1,30
OSRAM AG	03.11.2020	Lighting technology	1,25
First Sensor AG	26.05.2020	Measurement technology	1,20
EASY SOFTWARE AG	23.12.2020	Software	0,89

Source: own analysis I-ADVISE.

Beta factor



Multiple valuation – realized or forecasted figures

5. Multiple valuation

Basis of multiples

The multiplier valuation is a market-oriented valuation approach based on prices already achieved on the market and information processed there. The multiplier method is based on the assumption that comparable companies in a market are valued similarly.

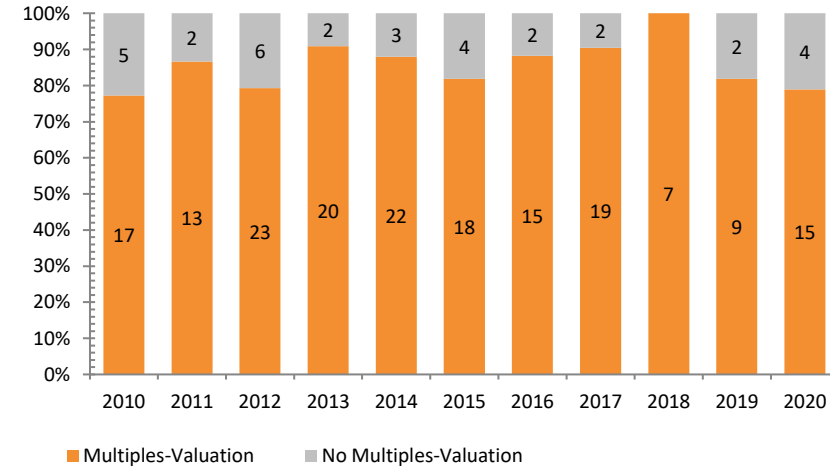
The vast majority of the appraisals (84%) contain a multiplier valuation to check the plausibility of the calculated enterprise value.

In 2020, valuation experts waived multiplier valuations in two cases. In both appraisals reference was made in this context to the limited comparability of the existing or future business model of the valuation object. In another case the planning period did not yet show any positive results, so that a valuation using forward-looking earnings multiples did not appear to make sense.

In only 10% of all cases in 2010 to 2020 is the multiple valuation based exclusively on actual figures. In 2020, on the other hand, four reports were based exclusively on actual figures.

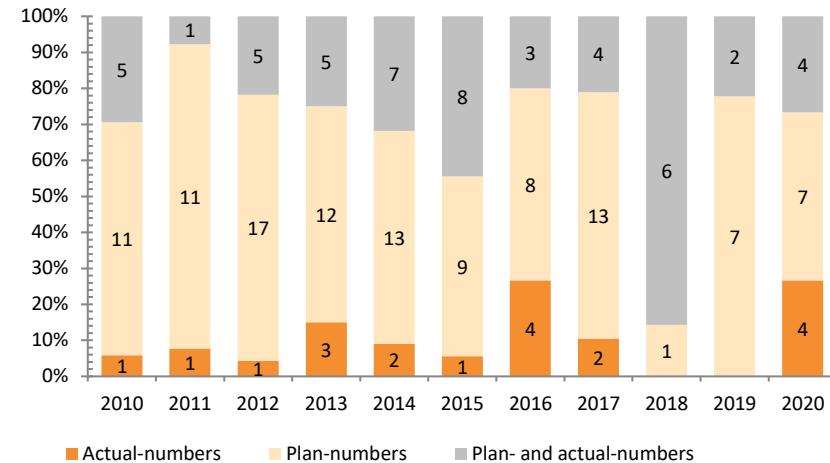
Multiple valuations

Share of the reports



Multiples based on realized and forecasted figures

Share of the reports



6. Control and profit transfer agreements

Control and profit transfer agreements offer the minority shareholder the choice between an immediate compensation and the possibility to continue its shareholder position under the corporate contract in return for a granted guaranteed annual dividend payment for the lasting time of the contract. In 59% of the expert opinions on the occasion of control and profit and loss transfer agreements, the risk-free interest rate was increased by half of the risk premium applied in the company valuation to determine the compensation payment.

In 41% of the cases, the annuity rate is composed of the risk-free interest rate and a lower credit rating premium.

For the year 2020, the circumstances are as follows:

CASES IN 2020 - COMPANY CONTRACTS

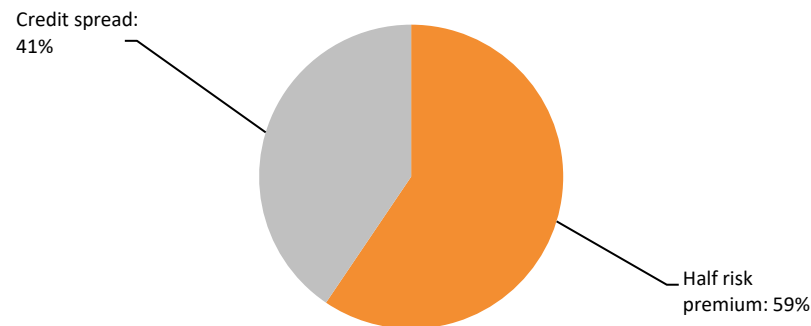
Companies	Date	Valuation measure	Determination of the annuitization rate
First Sensor AG	26.05.2020	Control and Profit Transfer Agreement	Credit spread
OSRAM AG	03.11.2020	Control and Profit Transfer Agreement	Half risk premium
msg life AG	10.11.2020	Control Agreement	Credit spread
EASY SOFTWARE AG	23.12.2020	Control and Profit Transfer Agreement	Half risk premium

Source: own analysis I-ADVISE.

In the case of World Hotel AG, a termination of the contract and a revival of the severance offer from the contract was assumed.

Against the background of the current BGH case law, it remains to be seen in how many future cases the present value of the compensation payment will be relevant for the assessment of the cash compensation in the event of a squeeze-out following a domination and profit and loss transfer agreement.

Allocation according to compensation payment



About I-ADVISE AG

I-ADVISE AG is an independent auditing company specializing in business valuation and transaction advisory. In the field of business valuation we act as neutral expert, consultant, auditor or arbitrator in the context of various occasions, such as purchases, squeeze-outs, mergers, control and profit and loss transfer agreements, purchase price allocations or impairment tests, and prepare fairness opinions. The main focus of our transaction advisory services is the execution of financial and tax due diligence projects.

We consider independence, integrity and objectivity as integral components of our services. Unencumbered by any conflicts of interest, we focus solely on the task assigned to us. Our team of consultants with above-average experience works to the highest professional standards.

With our international network of auditors and consultants specialized in transactions, we also support our clients in cross-border transactions.



Dr. Jochen Beumer

Partner

German Public Accountant, MBA

T +49 (211) 5 180 28 16

jochen.beumer@i-advise.de



Pia Brandenstein

Senior Manager

German Public Accountant, German Tax Accountant, MBA

T +49 (211) 5 180 28 17

pia.brandenstein@i-advise.de



Christian Gerber

Senior Manager

German Public Accountant, CFA, CVA, MBA

T +49 (211) 5 180 28 14

christian.gerber@i-advise.de



Klaus Jürgens

Senior Manager

German Tax Accountant, CVA, MBA

T +49 (211) 5 180 28 23

klaus.jürgens@i-advise.de

Appendix 1: Analyzed Valuations (1/4)

Valuation target/ controlled entity/ transferred entity	Majority shareholder/ controlling company/ acquiring entity	Year	Valuation target/ controlled entity/ transferred entity	Majority shareholder/ controlling company/ acquiring entity	Year
Valuation Date in 2020			Valuation Date in 2019		
WORLD HOTELS AG	BV Acquisitions X GmbH	2020	AGO AG Energie+Anlagen	HCS Holding AG	2019
Mercurius AG	C.A.B. GmbH	2020	Kofler Energies AG	Dacapo S.à.r.l.	2019
EASY SOFTWARE AG	deltus 36. AG	2020	IC Immobilien Holding AG	E.L.A. Vermögensverwaltung GmbH	2019
Renk AG	Rebecca BidCo AG	2020	AVW Immobilien AG	Herr Frank Albrecht	2019
Design Hotels AG	Marriott DH Holding AG	2020	Weber & Ott Aktiengesellschaft	RSL Investment GmbH	2019
Schuler AG	Andritz Beteiligungsgesellschaft IV GmbH	2020	Sanacorp Pharmaholding AG	Sanacorp eG Pharmazeutische Großhandlung	2019
ISRA VISION AG	Atlas Copco Germany Holding AG	2020	Triplan Aktiengesellschaft	TTP AG	2019
Axel Springer SE	Traviata B.V.	2020	Diebold Nixdorf AG	Diebold Nixdorf Holding Germany Inc. & Co. KGaA	2019
HSBC Trinkaus & Burkhardt AG	HSBC Germany Holdings GmbH	2020	m4e AG	Studio 100 Media AG	2019
msg life ag	msg systems AG	2020	Elektrische Licht- und Kraftanlagen AG	Park-Bau Verwaltung Borken in Hessen KG	2019
Stada Arzneimittel AG	Nidda Healthcare GmbH	2020	Pironet AG	Cancom AG	2019
BHS tabletop AG	BHS Verwaltungs AG	2020	Valuation Date in 2018		
OSRAM AG	ams Offer GmbH	2020	Linde AG	Linde Intermediate Holding AG	2018
IMW Immobilien SE	IMW Holding SE	2020	SM Capital Aktiengesellschaft	SM Wirtschaftsberatungs AG	2018
AUDI AG	Volkswagen AG	2020	Softchip	CargoWise GmbH	2018
First Sensor AG	TE Connectivity Sensors Germany Holding AG	2020	SQS Software Quality Systems AG	Assystem Services Deutschland GmbH	2018
Comdirect Bank AG	Commerzbank AG	2020	Oldenburgische Landesbank	Bremer Kreditbank AG	2018
Kontron AG	S&T AG	2020	Dürkopp Adler	DAP Industrial AG	2018
Innogy SE	E.ON Verwaltungs SE	2020	Stada Arzneimittel AG	Nidda Healthcare GmbH	2018
			Valuation Date in 2017		
			Meyer Burger (Germany) AG	MBT Systems GmbH	2017
			SWS Spannwerkzeuge GmbH	Pittler Maschinenfabrik AG	2017
			GfK SE	Acceleratio Capital N.V.	2017
			Kontron AG	S&T Deutschland Holding AG	2017
			CONET Technologies AG	Conet Technologies Holding GmbH	2017
			FIDOR Bank AG	3F Holding GmbH	2017
			Chorus Clean Energy AG	Capital Stage AG	2017

Appendix 1: Analyzed Valuations (2/4)

Valuation target/ controlled entity/ transferred entity	Majority shareholder/ controlling company/ acquiring entity	Year	Valuation target/ controlled entity/ transferred entity	Majority shareholder/ controlling company/ acquiring entity	Year
SinnerSchrader AG	Accenture Digital Holdings GmbH	2017	NTT Com Security AG	NTT Communications Deutschland GmbH	2016
UNIWHEELS AG	Superior Industries International Germany AG	2017	KENA Verwaltungs AG	Herr Harry Witt	2016
WCM Beteiligungs- und Grundbesitz-AG	TLG Immobilien AG	2017	Analytik Jena AG	Endress + Hauser	2016
TLG Immobilien AG	WCM Beteiligungs- und Grundbesitz-AG	2017	Valuation Date in 2015		
Agroinvest Plus AG	AGRARINVEST AG	2017	Molda AG	Döhler Holding AG	2015
Conwert Immobilien Invest SE	Vonovia SE	2017	AREAL Immobilien und Beteiligungs-AG	Thelen Holdings GmbH	2015
XCOM AG	FinTech Group AG	2017	Youniq AG	Corestate BenBidCo AG	2015
Pelikan AG	Pelikan International Corporation Berhad	2017	Piper + Jet Maintenance AG	Piper Deutschland AG	2015
Creaton AG	Etex Holding GmbH	2017	GFKL Financial Services AG	Garfunkel Holding GmbH	2015
Bremer Straßenbahn AG	Bremer Verkehrsgesellschaft	2017	PIXELPARK AG	MMS Germany Holdings GmbH	2015
DVB Bank SE	DZ Bank AG	2017	Impreglon SE	GMT Investment AG	2015
STRABAG AG	Ilbau Liegenschaftsverwaltung AG	2017	MeVis Medical Solutions AG	VMS Deutschland Holdings GmbH	2015
primion Technology AG	Azkoyen, S.A.	2017	Kässbohrer Geländefahrzeug AG	LuMe Vermögensverwaltung GmbH	2015
KÖLN-DÜSSELDORF Deutsche Rheinschiffahrt AG	KD River Invest GmbH	2017	Deutsche Postbank AG	Deutsche Bank AG	2015
Valuation Date in 2016			Forst Ebnath AG	Münchener Rückversicherungs-Gesellschaft	2015
PETROTECH AG	REG Germany AG	2016	Sky Deutschland AG	Sky German Holdings	2015
IKB Deutsche Industriebank AG	LSF6 Europe Financial Holdings, L.P.	2016	Ehlenbracht AG	Ehlebracht Holding AG	2015
MWG-Biotech AG	Eurofins Genomics B. V.	2016	Jetter AG	Bucher Beteiligungsverwaltung AG	2015
Wincor Nixdorf AG	Diebold Holding Germany Inc. & Co. KGaA	2016	AS Abwicklung und Solar-Service AG i.L.	Robert Bosch GmbH	2015
Colonia Real Estate AG	TAG Beteiligungs-und Immobilienverwaltungs GmbH	2016	Onvista AG	Boursorama S.A.	2015
Bochum-Gelsenkirchener Straßenbahnen AG	Holding für Versorgung und Verkehr GmbH	2016	DAB Bank AG	BNP Paribas Beteiligungsholding AG	2015
Medisana AG	Comfort Enterprise GmbH	2016	Dresdner Factoring AG	abcfinance Beteiligungs AG	2015
VBH Holding AG	TLF Holding AG	2016	Karlsruher Sanatorium AG	Marseille-Kliniken AG	2015
DMG Mori AG	DMG Mori GmbH	2016	Matth. Hohner AG	HS Investment Group Inc.	2015
DO Deutsche Office AG	DO Deutsche Office AG	2016	HOMAG Group AG	Dürr Technologies	2015
net mobile AG	DOCOMO Digital GmbH	2016	WMF AG	Finedining Capital GmbH	2015
elaxis AG	SMS GmbH	2016	ADC African Development Corporation AG	Atlas Mara Beteiligungs AG	2015
Atevia AG	Cinetic GmbH	2016	Augusta Technologie AG	TKH Technologie Deutschland AG	2015
Saint-Gobain Oberland AG	Horizon Holdings Germany GmbH	2016	Valuation Date in 2014		
Gruschwitz Textilwerke AG	pdm Holding AG	2016	Hotel AG Wuppertal	Stadt Wuppertal	2014
			Curanum AG	Korian Deutschland AG	2014

Appendix 1: Analyzed Valuations (3/4)

Valuation target/ controlled entity/ transferred entity	Majority shareholder/ controlling company/ acquiring entity	Year	Valuation target/ controlled entity/ transferred entity	Majority shareholder/ controlling company/ acquiring entity	Year
nextevolution Aktiengesellschaft	Die HeidelbergCapital Private Equity Fund II GmbH & Co. KG	2014	Rücker AG	ATON Engineering AG	2013
Realtime Technology AG	3DS Acquisition AG	2014	Hansen Sicherheitstechnik AG	Kopex S.A.	2013
Heidelberger Lebensversicherung AG	Heidelberger Leben Holding	2014	Computec Media AG	Marquard Media International AG	2013
P&I Personal & Informatik AG	Argon GmbH	2014	Dyckerhoff AG	Buzzi Unicem S.p.A.	2013
Travel Viva AG	Travel Viva Holdein AG	2014	Ventegis Capital AG	Berliner Effektengesellschaft AG	2013
Pulsion Medical Systems SE	Maquet Medical Systems AG	2014	MAN SE	Truck & Bus GmbH	2013
Etienne Aigner Aktiengesellschaft	Frau Evi Brandl	2014	Douglas Holding AG	Beauty Holding Two GmbH	2013
Hanfwerke Oberachern A.G.	AGM Anlagen GmbH	2014	Intelligence AG	NTT DATA EUROPE GmbH & Co. KG	2013
Ferd. Rückforth Nachfolger AG	REWE-ZENTRALFINANZ eG	2014	SCA Hygiene Products SE	SCA Group Holding B.V.	2013
Design Hotels AG	Starwood Hotels & Resorts Worldwide Inc.	2014	HYMER AG	Erwin Hymer Vermögensverwaltungs AG	2013
Celesio AG	Dragonfly GmbH & Co. KGaA	2014	Heiler Software AG	Informatica Deutschland AG	2013
IBS AG	Siemens Industry Automation Holding AG	2014	Reply Deutschland AG	Reply S.p.A.	2013
Essanelle Hair Group AG	Hair Group AG	2014	Reply S.p.A.	Reply Deutschland AG	2013
GSW Immobilien AG	Deutsche Wohnen AG	2014	7C Solarparken NV	COLEXON Energy AG	2013
Bien-Zenker AG	ADCURAM Fertigung Holding AG	2014	Valuation Date in 2012		
CyBio AG	Analytik Jena AG	2014	F. Reichelt AG	Fedor Holding GmbH	2012
Röder Zeltsysteme und Service AG	Zurmunt Madison Deutschland GmbH	2014	AIRE GmbH & Co. KGaA	AIG Century GmbH & Co. KGaA	2012
Buch.de Internetstores AG	Thalia Holding GmbH	2014	Andreas-Noris Zahn AG (ANZAG AG)	Alliance Healthcare Deutschland Holdings 1 GmbH	2012
Vk Mühlen AG	Good Mills	2014	Holcim (Deutschland) AG	Holcim Beteiligungs GmbH (Deutschland)	2012
Advanced Inflight Alliance AG	Global Entertainment AG	2014	IBS AG excellence, collaboration, manufacturing	Siemens Beteiligungen Inland GmbH	2012
C.J. Vogel AG	Otto AG für Beteiligungen	2014	Derby Cycle AG	PON Holding Germany GmbH	2012
Kabel Deutschland Holding AG	Vodafone Vierte AG	2014	net-m privatbank 1891 AG	net mobile AG	2012
Sedo Holding AG	United Internet Ventures AG	2014	Tognum AG	Engine Holding GmbH	2012
Varta AG	GOPLA Beteiligungsgesellschaft mbH	2014	RENERCO Renewable Energy Concepts AG	BayWa r.e. GmbH	2012
Valuation Date in 2013					
Generali Deutschland Holding AG	Assicurazioni Generali S.p.A.	2013	MCS Modulare Computer und Software Systeme AG	Franz Hensmann AG	2012
GBW AG	Pearl AcquiCo Eins GmbH & Co. KG	2013	SHIGO ASIA AG	Crown Eminence Investment Limited	2012
Terex Material Handling & Port Solutions AG	Terex Industrial Holding AG	2013	Württembergische Leinenindustrie AG	VEM Vermögensverwaltungs AG	2012
OCM German Real Estate Holding AG	Prime Office REIT-AG	2013	Graphit Kropfmühl AG	AMG Mining AG	2012
Prime Office REIT-AG	OCM German Real Estate Holding AG	2013	Damp Holding AG	HELIOS Kliniken GmbH	2012
hotel.de AG	Hotel Reservation Service Robert Ragge GmbH	2013	Comarch Software und Beratung AG	Comarch AG	2012
CinemaxX AG	Vue Beteiligungs GmbH	2013	Utimaco Safeware AG	Sophos Holdings GmbH	2012
W.E.T. Automotive Systems AG	Gentherm Europe GmbH	2013	Rathgeber AG	F.X. Meiller Beteiligungs-GmbH	2012

Appendix 1: Analyzed Valuations (4/4)

Valuation target/ controlled entity/ transferred entity	Majority shareholder/ controlling company/ acquiring entity	Year	Valuation target/ controlled entity/ transferred entity	Majority shareholder/ controlling company/ acquiring entity	Year
Deutsche Postbank AG	DB Finanz-Holding GmbH	2012	Valuation Date in 2010		
W.O.M. World of Medicine AG	ATON GmbH	2012	Winter AG	Trüb AG	2010
INFO Gesellschaft für Informationssysteme AG	INFO Gesellschaft für Informationssysteme Holding AG	2012	Berlin-Hannoversche Hypothekenbank AG	Landesbank Berlin AG	2010
Solarparc AG	SolarWorld AG	2012	PC-Ware AG	PERUNI Holding GmbH	2010
Bausparkasse Mainz AG	INTER Krankenversicherung AG	2012	GENEART AG	Applied Biosystems Deutschland GmbH	2010
Landesbank Berlin Holding AG	Erwerbsgesellschaft der S-Finanzgruppe	2012	Gasanstalt Kaiserslautern AG	EWG Energie-Wasser-Partner AG	2010
TDS Informationstechnologie AG	Fujitsu Services Overseas Holding Ltd	2012	Actris AG	ACTRIS Beteiligungs GmbH & Co. KG	2010
Leica Camera AG	Lisa Germany Holding GmbH	2012	Klöckner-Werke AG	Salzgitter Mannesmann AG	2010
Demag Cranes AG	Terex	2012	Christ Water Technology AG	Eimco Water Technologies GmbH	2010
Deutsche Immobilien Holding AG	Zech	2012	HBW Abwicklungs AG	InBev Germany Holding GmbH	2010
Schramm Holding AG	Salvador AG	2012	Cembra Beteiligungs AG	Raiffeisen International Bank-Holding AG	2010
Versatel AG	VictorianFibre Holding GmbH	2012	ALTANA AG	Skion GmbH	2010
Valuation Date in 2011			Computerlinks AG	CSS Computer Security Solutions Erwerbs GmbH	2010
PROCON MultiMedia AG	MHG Media Holdings AG	2011	k.A.li-Chemie AG	Solvay k.A.li-Chemie Holding GmbH	2010
Medion AG	Lenovo Germany Holding GmbH	2011	Themis Industries Group	Heliad Equity Partners	2010
Süd-Chemie AG	Clariant AG	2011	syskoplan AG	Reply S.p.A.	2010
Triumph International AG	Triumph International Holding GmbH	2011	Ergo Versicherung AG	Münchener Rückversicherungs-Gesellschaft AG	2010
LHA Internationale Lebensmittelagentur Krause AG	LHA Holding A. und R. Krause GbR	2011	Burgbad AG	ECZACIBASI	2010
REpower Systems SE	AE-Rotor Holding B.V.	2011	Maihak AG	Sick Maihak GmbH	2010
FrankonoWest AG	TAG Immobilien AG	2011	Winkler+Duennebieer AG	Körber AG	2010
W.E.T. Automotive Systems AG	Amerigon Europe GmbH	2011	Dom-Brauerei AG	Vertriebsgesellschaft deutscher Brauereien mbH	2010
A. Moxel AG	VION N.V.	2011	IDS Scheer AG	SAG Beteiligungs GmbH	2010
Frogster Interactive Pictures AG	Gameforge AG	2011	TA Triumph-Adler AG	KYOCERA MITA Corporation	2010
INTERHYP AG	ING Direct N.V.	2011			
GeneScan Europe AG	Eurofins ventures B.V.	2011			
INTERSEROH SE	ALBA Group plc & Co. KG	2011			
P&I Personal & Informatik AG	Argon GmbH	2011			
Internolix AG	netPULS Beteiligungsgesellschaft mbH	2011			

Appendix 2: Unavailable Valuations

Valuation target/ controlled entity/ transferred entity	Majority shareholder/ controlling company/ acquiring entity	Year
Baumaterialien-Handelsgesellschaft Aktiengesellschaft	B u. B Süd-Ostbayern Betriebs GmbH	2019
TIVOLI Grundstücks-AG	Portia Grundstücks-Verwaltungs- gesellschaft mbH & Co. Objekt KG	2019
Vereinigte Volksbank AG	Vereinigte Volksbank eG	2016
Lantana AG	Beichlinger Tier- und Pflanzenproduktions GmbH	2016
KWG Kommunale Wohnen AG	KWG Kommunale Wohnen GmbH	2016
e.optimum AG	e.optimum Aktienholding GmbH	2016
Barmer Wohnungsbau AG	Barmer Wohnungsbau GmbH	2016
Ariston Real Estate AG	Herr Hans-Dieter Lorenz	2016
AHT GROUP AG	Deutsche Projekt-Union GmbH	2016
Gontermann AG	Gontermann Holding GmbH	2016
TGE Marine AG	MES Germany Beteiligungs AG	2016
Kurfürstin Holding AG	Kurfürstin GmbH & Co. KG	2015
PlanetHome AG	Planet Acquisition GmbH	2015
LTS Lohmann Therapie-Systeme	Dievini patch Beteiligungs GmbH	2015
Osteuropäische Zementbeteiligungs AG	Holcim Auslandsbeteiligungs GmbH (Deutschland)	2014
SEKISUI NordiTube Technologies SE	SEKISUI SPR Europe GmbH	2014
ODDSLIME Entertainment AG	ODDSLIME GmbH	2014
proALPHA Software Aktiengesellschaft	deltus Zwölfte AG	2013
biolitec AG	biolitec Unternehmensbeteiligungs AG	2012
Garant Schuh + Mode AG	ANWR Garant International AG	2012
Varta AG	Gopla Beteiligungsgesellschaft mbH	2012

Locations I-ADVISE

DÜSSELDORF

Klaus-Bungert-Straße 5a
D-40468 Düsseldorf

 +49 211 5180 28 - 0

FRANKFURT

Bettinastraße 35 - 37
D-60325 Frankfurt

 +49 69 56 80 34 - 46

Disclaimer: This study document is a convenient translation of the German document “Studie zur Bewertungspraxis bei gesellschaftsrechtlichen Anlässen 2010 - 2019”, 6th Edition. The included information are of general nature and are not appropriate to any specific individual or any specific legal situation of any person or any corporation in any jurisdiction. While the data and information of the study have been collected with highest dedication to accuracy, correctness and currentness of data, the author and/or the I-ADVISE AG Wirtschaftsprüfungsgesellschaft assume no liability of any kind to anybody. Nobody should make any decision without appropriate legal advice and act without thorough analysis of the situation. By reading the study the reader hereby confirms that he/she have read and taken note of the legal notice and the disclaimer.