



Cost of Capital Study 2018

**New Business Models –
Risks and Rewards**

This study is an empirical investigation with the aim of analyzing management practices. Information provided and explanations offered by the study do not offer a complete picture for deriving financial forecasts or costs of capital nor for proper actions or interpretation of the requirements for impairment tests, other accounting-related questions or business valuations.

When considering the following analyses, it should be noted that the company data presented here stems from companies from different countries, partially with different currencies and at varying points in time. Furthermore, it should be noted that not all participants of the study have answered all questions.

Preface

Dear Readers,

It is our pleasure to present you with the results of the thirteenth edition of our Cost of Capital Study. With 276 companies (compared to 205 companies in the previous year) – 26 of which are DAX-30 corporations – more companies than ever before participated in the study. We would like to express our heartfelt gratitude to all those companies who took part. The large number of participants demonstrates that the study is a fixed component in your practical valuation work. We therefore hope that this year, once again, the study and the key topics will be of particular interest to you.

In the current issue, we examine the impacts of the ongoing dynamic developments on the economic environment, as well as the impacts of the digitalization and high market volatilities on the business models, financial forecasts and on the cost of capital.

Consequently, we have chosen the motto “New Business Models – Risks and Rewards” for this year’s Cost of Capital Study. Based on this theme, we focus on the following subjects:

- Innovative business models – opportunity and risk at the same time
- Disruptive business models – one person’s joy, another’s suffering
- Internationalization of business models – opportunity and risk at the same time
- The optimal company portfolio – necessity of quantifying strategies

In the context of these key topics, we also present the areas for application of CEDA, a simulation and steering model developed by KPMG.

As a reference point, the collection of empirical data is based on the IFRS (International Financial Reporting Standards) impairment test, as this test itself and its related valuations are mandatory for all IFRS users.

Supplementary to the current study, we would like to direct you to the interactive opportunities for analysis of the data on our website at www.kpmg.de/cost-of-capital. There you can compile the parameters relevant for your company and/or industry and use them to perform your own, tailor-made assessment.

We hope that this year’s Cost of Capital Study also meets your expectations and serves as interesting reading. We will gladly discuss the results with you within the framework of a personal appointment and are, of course, available for any questions and comments you may wish to offer.

With best regards,



Dr. Marc Castedello
Partner
Deal Advisory, Valuation
KPMG AG Wirtschafts-
prüfungsgesellschaft



Stefan Schöniger
Partner
Deal Advisory, Valuation
KPMG AG Wirtschafts-
prüfungsgesellschaft

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Editions of the Cost of Capital Study by KPMG



Innovations in the study

– Comparison of the target and actual implementation of the Impairment Test as per IFRS (IAS 36) and US-GAAP (SFAS 142) in German corporations

– Initial participation of corporations from Switzerland and Austria in addition to Germany

– Initial participation of corporations from Great Britain and the Netherlands

– Initial participation of corporations from Spain

– Analysis of industry-specific particularities
– Initial querying of the prognosis of future economic development

– Initial querying of the transaction behavior and intentions of companies

Highlighted subjects of the study

– The effects of the financial market crisis on the balance sheet and valuation practice

– Focus on prognoses in a difficult market environment

– Focus on developments in volatile markets
– Impact of the continued difficult market environment on the practice of valuation, in particular on the cost of capital

– Focus on managing uncertainty

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- First extensive industry analyses

- Impact of volatility on financial forecasts
- Interaction of risk-free rate and market risk premium
- Other risk premiums
- Sustainable growth rate

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- Detailed analyses for every industry

- Consideration of risk in the derivation of cash flows
- Risk equivalence in determining the cost of capital
- Small cap premium
- Debt beta: Sharing of risk between financiers

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- Study layout in tablet-friendly landscape format
- Possibility of individual analysis and data query with an Internet platform

- Corporate Economic Decision Assessment
- Consideration of performance and risk drivers
- Stress testing in times of higher volatility
- Quantification of operative risks
- Effects of the low-interest phase
- Paradigm shift in the determination of the market risk premium
- Value enhancement as a decision-making metric

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- Significant expansion in the number of participating companies
- Expansion of the Internet-based opportunities for analysis

- New methods for value measurement?!
- Big Data and business analytics tools
- Risk transparency and risk management
- Value-based management systems 2.0

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- Assessment by family and non-family-owned businesses
- Provision of extensive industry analyses with the online assessment tool
- Detailed analyses of the sectors Consumer Markets, Chemicals & Pharmaceuticals, Financial Services and Media & Telecommunications

- Macroeconomic uncertainties – part of financial forecasts
- Microeconomic change – predictability of disruptive business models
- Cost of capital – the challenges of low interest rates, populism, and new technologies
- Cost of capital – comparative measures in a world that increasingly defies comparison
- New valuation methods in disruptive times?

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- Provision of a online-based questionnaire to allow and provide various details regarding individual industries and further simplify the completion

- Innovative business models – opportunity and risk at the same time
- Disruptive business models – one person's joy, another's suffering
- Internationalization of business models – opportunity and risk at the same time
- The optimal company portfolio – necessity of quantifying strategies

Summary of Findings

Growth expectations

Regarding sales and EBIT, study participants have different growth expectations between the industries. They expect the highest EBIT growth in the Technology and the Chemicals & Pharmaceuticals sectors and the lowest EBIT growth in Energy & Natural Resources sector.

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WACC

The average WACC across industries was at 7.0 percent and therefore on the same level as in the previous three years.

The highest WACCs were applied in the Technology sector with 8.3 percent and in the Automotive sector with 8.0 percent. The lowest WACC was observed in the Real Estate sector with 4.9 percent.

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Beta factors

The highest unlevered beta factors were applied by the Technology and Automotive sectors; the lowest for this survey period was in the Real Estate sector.

Compared with the previous year, only a slight increase can be observed in the Chemicals & Pharmaceuticals as well as in the Technology sector, the largest decrease was observed in the Consumer Markets and the Energy & Natural Resources sectors.

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Investment decision

Investment decisions are continued to be made by the majority of participants based on both strategic as well as value-based objectives.

Page 39

Planning uncertainty

Growth. Digitalization. Disruption. Volatility. Uncertainty. As a result of innovative and disruptive business models, there is a significant degree of uncertainty in the forecasts of the future even for companies with established business models.

To date, economic risks and customer risks, especially by innovative platform business models, have in particular been given consideration in financial forecasts.

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Risk-free rate

After many years of decline, the average risk-free rate increased from 0.9 percent to 1.3 percent. However, it remained on its second-lowest level since the Cost of Capital Study has been published.

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Cost of debt

The average cost of debt applied continued to decline and decreased from 3.1 percent to 2.8 percent. The average credit spread – defined as the difference between the cost of debt and the risk-free rate – decreased significantly from 2.2 percent to 1.5 percent.

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Monitoring

Most participants continued to consider value-based monitoring of investment decisions as important and observed in particular the change in performance more than the change in risk (cost of capital).

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Market risk premium

In contrast to the increasing risk-free rate, the market risk premium applied remains almost stable with 6.5 percent in Germany, 6.7 percent in Austria and 5.9 percent in Switzerland. **Page 23**

Capital market communication

The cost of capital was, as in the previous years, less relevant in capital market communication and was primarily used only for accounting and reporting purposes.

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Study participants

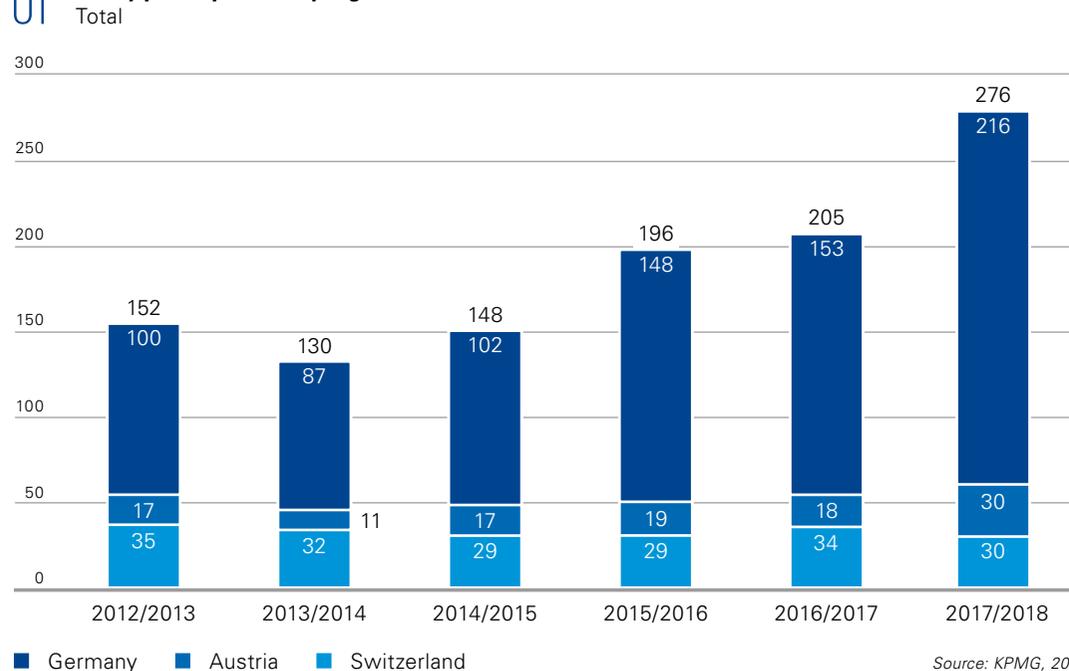
In this year's Cost of Capital Study, the participants represent 216 companies from Germany, 30 from Austria and 30 from Switzerland. In total, the number of companies participating significantly increased in comparison to the previous year's 205 companies to 276, resulting in the highest participation rate since the first Cost of Capital Study in 2006.

The number of DAX-30 companies remained unchanged at 26, the corresponding participation rate stayed high at 87 percent. Furthermore, 62 percent of the MDAX companies took part in this year's study as compared to 44 percent in the previous year.

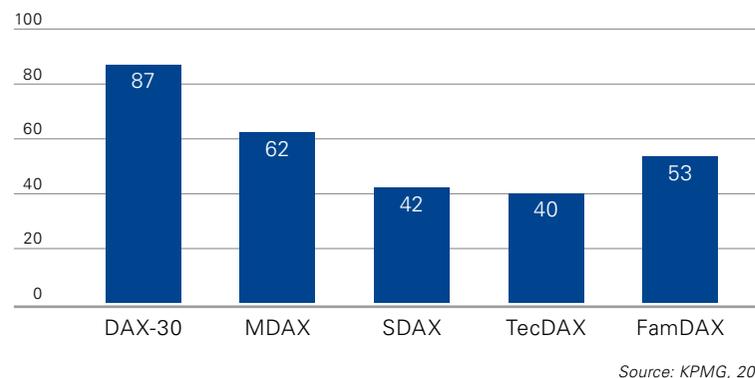
Survey period

The survey of the companies occurred between March and July 2018. The reporting dates of the consolidated financial statements included in the study were between 28 February 2017 and 31 March 2018.

01 Study participations by region



02 Participation rates in Germany (in percent)



Analyses

As in all previous studies, the participating companies were requested to assign themselves to industries in accordance with their business activities. The current study therefore contains overviews of all the material financial forecast parameters and cost of capital parameters according to industries.

Online industry analyses

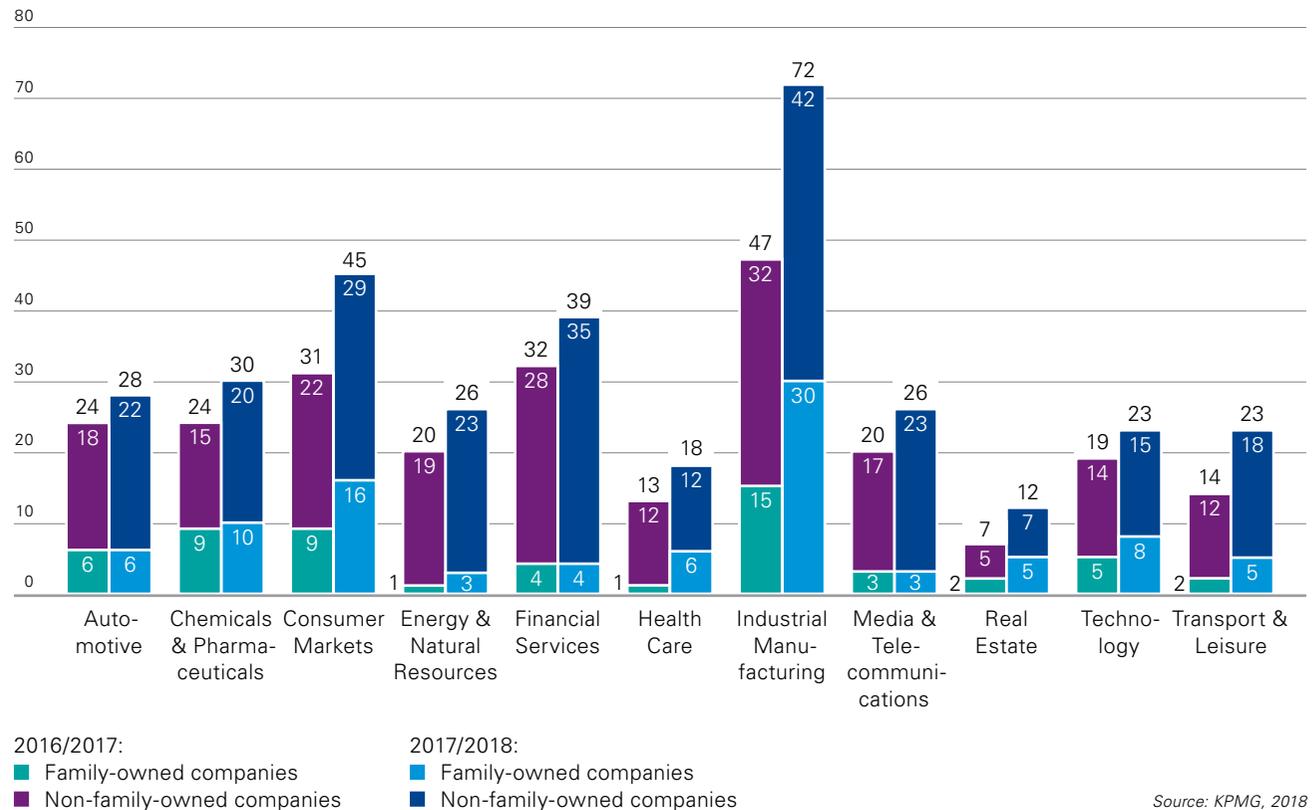
At <https://hub.kpmg.de/kapitalkostenstudie-2018> you will find the financial forecast and the cost of capital parameters from the current study as well as the results of the Cost of Capital Studies from previous years in a clear, self-explanatory presentation. These include figures for all industries as well as for the sub-sectors of Consumer Markets, Chemicals & Pharmaceuticals, Media & Telecommunications and Financial Services.

In addition, we provide you with an individual and interactive data analysis of the study results there. Using your own search criteria, you can generate the data relevant for you and therefore better grasp the values and developments of the cost of capital parameters essential to your situation.

You will also find additional insights regarding the performance of impairment tests as in previous years.

03 Study participations by industry

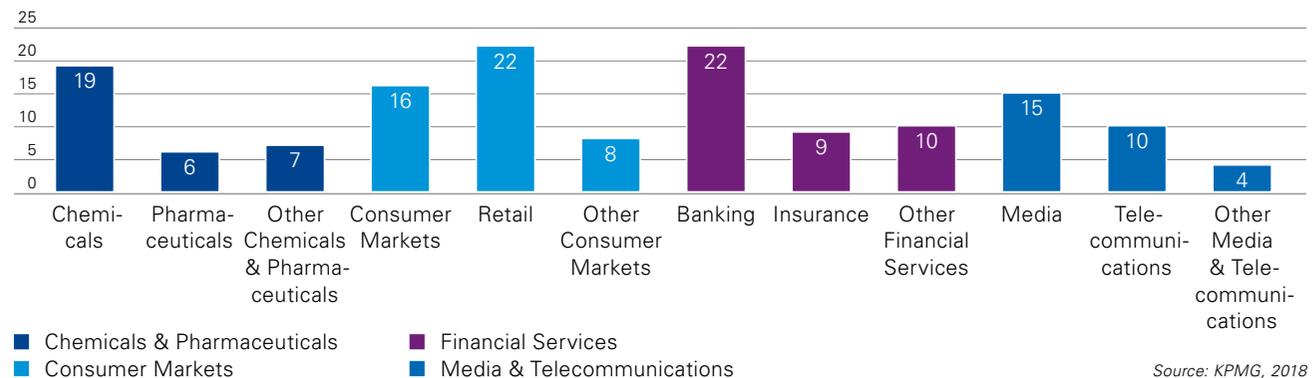
Total (multiple choices possible)



Source: KPMG, 2018

04 Study participants by sub-sectors

Total (multiple choices possible)



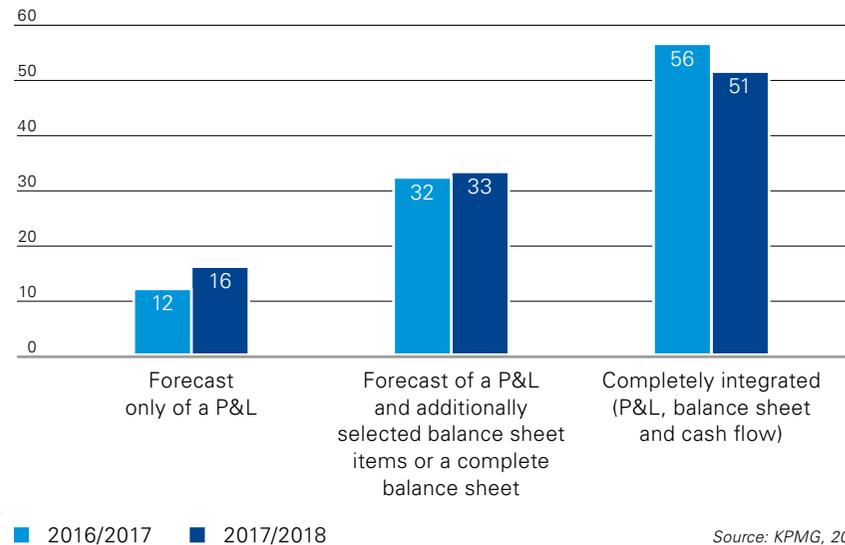
Source: KPMG, 2018

2.1 Preparation of the Financial Forecasts

The prediction of the company's financial profits is subject to an uncertain future. Due to the related lack of planning certainty, the financial forecast has to properly reflect the expected development of the underlying operating performance and risk drivers. Therefore, integrated and sufficiently detailed financial models are of the utmost importance in the context of determining the appropriate enterprise value of the company to be assessed.

In the context of valuation, the proper accounting for cash flow sensitivity requires simultaneous risk equivalent adjustment of the cost of capital. Otherwise, the risk equivalence between numerator and denominator is not given and the valuation results are biased.

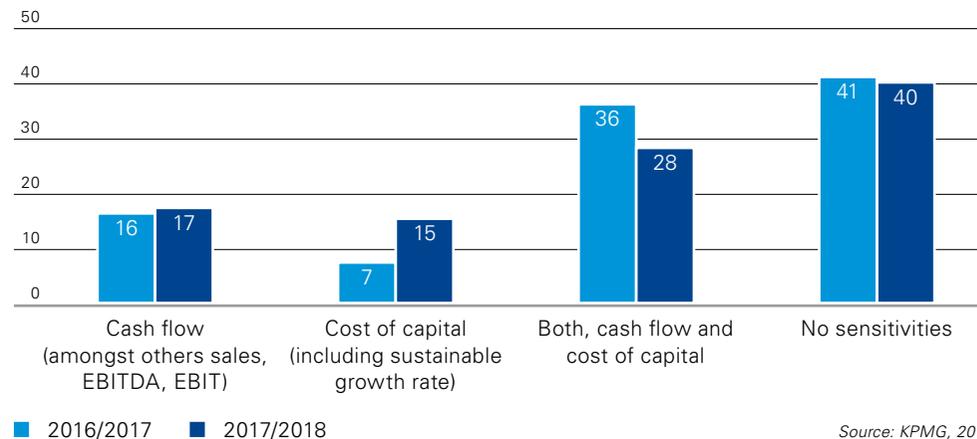
05 Degree of detail of the financial forecasts Total (in percent)



“As a consequence of the increasing complexity and dynamics in the macro- and microeconomic environment, planning should in general be conducted multi-valued. In the framework of sensitivities and simulations, developments that could question the fundamental aspects of the business model should also be analyzed.”

Dr. Marc Castedello
Partner, KPMG in Germany

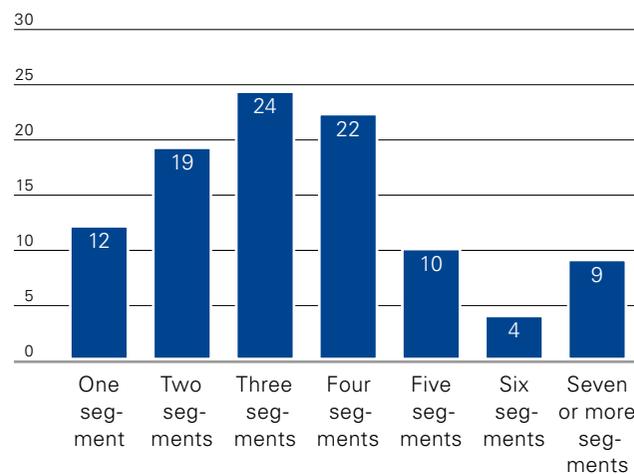
06 Consideration of sensitivities Total (in percent)



The choice of the planning horizon remains a matter of some incongruity. For instance, a longer planning horizon means greater planning uncertainty, whereas a (too) short planning horizon results in investment and product life cycles as well as long-term industry developments not being properly reflected in the financial forecast. This leads to erroneous company valuations and may then result in inappropriate decisions.

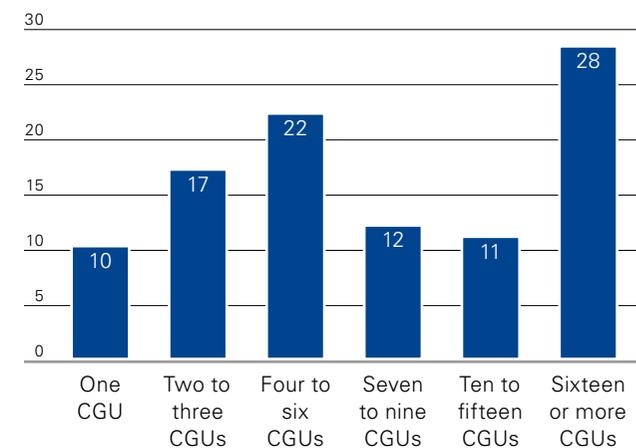
According to the regulation of the International Accounting Standard (IAS) 36.33 (b), the financial forecasts in case of the value-in-use concept should in principle not exceed a planning horizon of five years. Given plausible product and investment cycles, a longer planning horizon can be justified.

07 Number of segments Total (in percent)



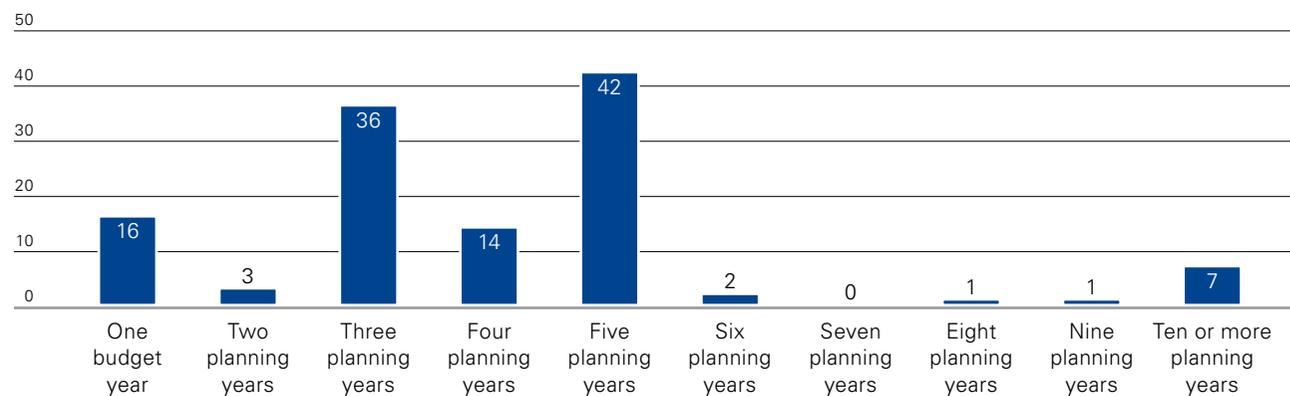
Source: KPMG, 2018

08 Number of cash generating units (CGUs) Total (in percent)



Source: KPMG, 2018

09 Planning horizon Total (in percent, multiple choices possible)



Source: KPMG, 2018

Innovative Business Models – Opportunity and Risk at the Same Time

“Just take a look at this year alone. The Rocket Internet stock has gone up and down. Maybe 50 percent stock price volatility in only four months. I can tell you one thing: Our company does not change by 50 percent in four months. There’s something wrong somewhere.”
Oliver Samwer (CEO Rocket Internet)¹

Volatility means risk. New innovative business models, those developed by start-ups but also those of established companies, are regularly associated with high risks. Their evaluation therefore focuses to a large extent on the assessment of uncertainties. Even established business models do not promise safe returns without exception. Amazon, for example, exposes two established business models – store-based retail and meanwhile branded goods companies via voice systems – to significant risk. What then distinguishes established from new innovative business models with respect to taking the associated risks into account? And what does this mean in concrete terms for the valuation of innovative business models?

The advantage of established business models lies in their rather stable “security over uncertainty”. Specifically, this means that the interconnectedness of a business model, the underlying operative drivers and future expectations regarding their development can be relatively well estimated on the basis of historical experience. This applies in particular to experience with regard to potential probabilities with which different scenarios might

occur; if they can be quantified, this is a “decision under risk”.

The conceptual relationships of new innovative business models and the operational value drivers behind them are not unknown either, as they form the foundation of the new business model. However, initially there is a lack of actual experience with regard to the potential probability of occurrence of future scenarios, as no past exists for comparative purposes. This is called a “decision under uncertainty”.

The lack of certainty about the future probability of occurrence of the value-relevant key metrics causes their expected values to fluctuate severely. This applies both to the estimation of the absolute amount and to the respective estimated range. This results in high volatilities. In the case of new business models, these volatilities are additionally reinforced by large information asymmetries between the stakeholders involved and typical

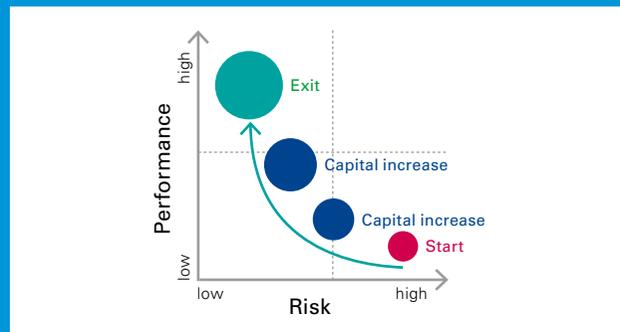
“Ultimately this does not result in a ‘crystal ball’ either, however it does succeed in transparently identifying risk, quantitatively assessing risk and a consistent reconciliation of risk through all phases of an innovative business model’s life cycle.”

Dr. Andreas Tschöpel
Partner, KPMG in Germany

start-up-specific uncertainties beyond the specific business idea, such as management skills or financing limitations. What conclusions can be drawn from this for the valuation of innovative business models?

For their assessment there is no way around transforming the existing “decision under uncertainty” into a “decision under risk”. Even if initially relatively unreliable estimates predominate, the various risks must first be identified step-by-step and captured in a transparent manner. In a first step, information asymmetries on the part of stakeholders can be reduced by a clear description of the business model and the underlying value drivers using appropriate decision-making approaches such as CEDA. In a second step, an ongoing assessment of their attributes and future scenarios will lead to a continuous reduction of business-model-specific risks, especially on the basis of gradually increasing experience. Finally, in a third step, additional start-up-specific risks, which usually lead to increased default risks, must be quantified and monitored.

10 Performance and risk during the life cycle of a business model



¹ Source: Süddeutsche Zeitung, May 9, 2016

Source: KPMG, 2018

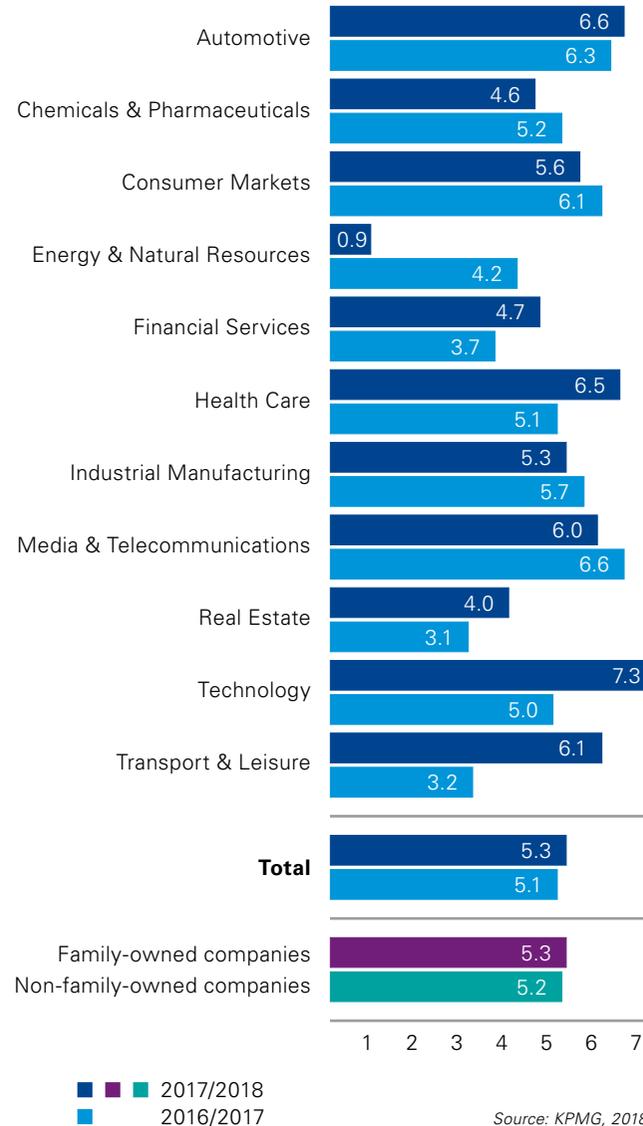
2.2 Growth Expectations

The primary premises for preparing the financial forecast are assumptions regarding the expected growth of several items of the profit and loss statement (P&L). In particular, the growth expectation of sales as well as achievable results in the future, such as earnings before interest, taxes, depreciation and amortization (EBITDA) and earnings before interest and taxes (EBIT), are of primary interest. All financial forecasts are influenced by developments on the company level as well as by future general macroeconomic developments.

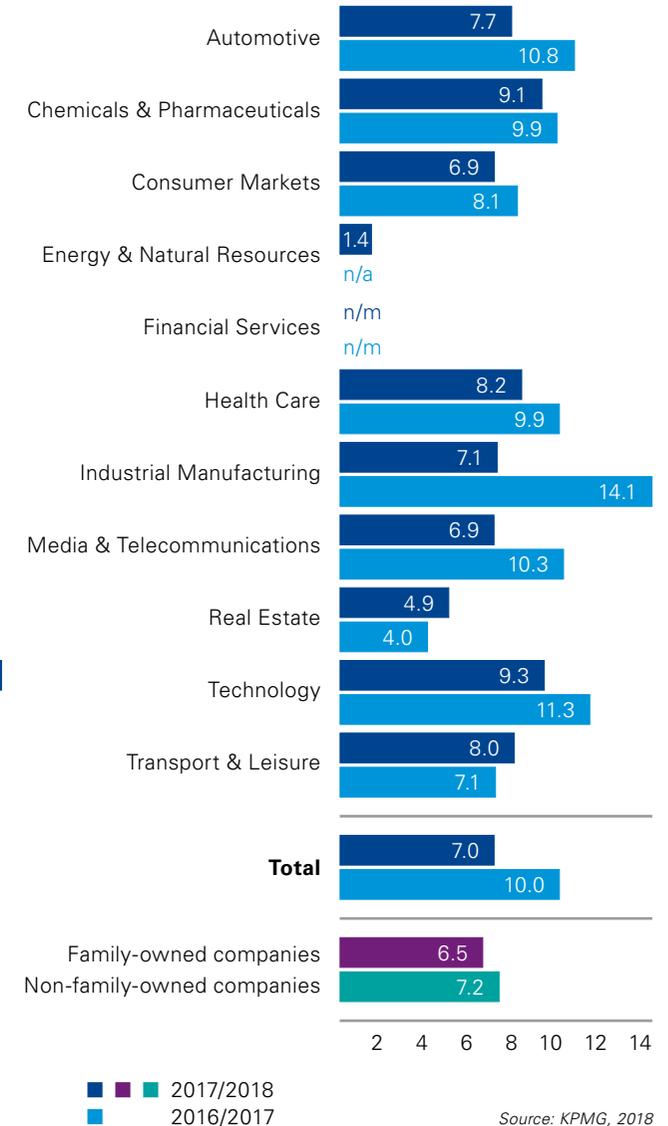
Since the beginning of the decade, economic issues were primarily at the forefront, commencing with the financial crisis of 2009 and the resulting European sovereign debt crisis in 2012. Furthermore, politically charged issues began to have a direct influence on corporate developments in Germany, Austria and Switzerland. In light of this, the Brexit and the new American protectionism have had significant impacts on corporate developments.

These macroeconomic trends are accompanied more than ever by digitalization trends and new, developing business models.

11 **Forecasted sales growth by industry**
(in percent)



12 **Forecasted growth of EBIT by industry**
(in percent)



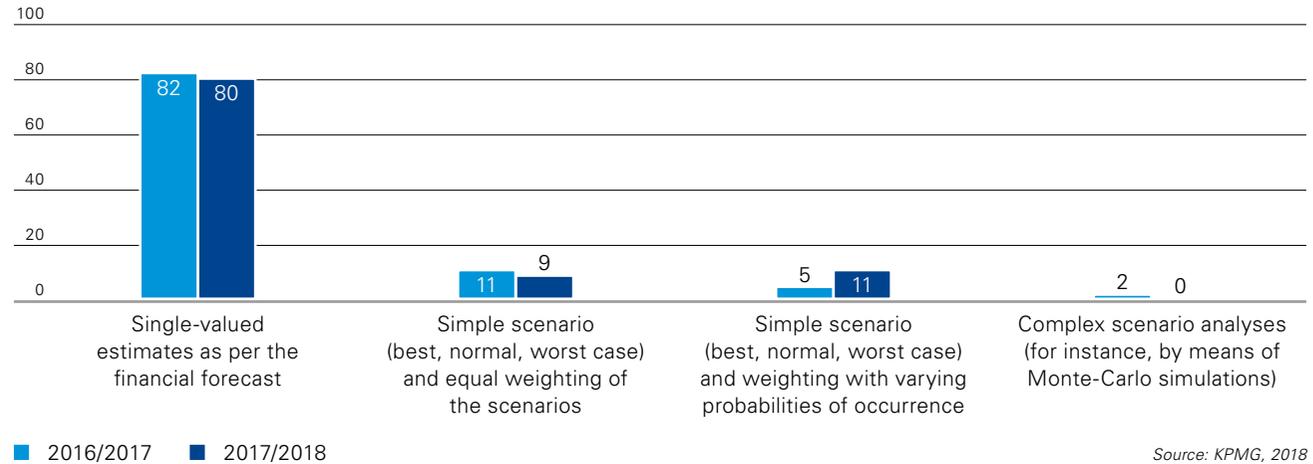
2.3 Determination of Expected Values

The relatively stable economic situation in connection with a long company history made single-valued estimations of future cash flows a generally sufficient and reasonable forecasting tool in the past.

However, in the current economic environment full of uncertainty, the performance and risk drivers can only be systematically and transparently compiled with a scenario- and simulation-based multi-valued financial forecast. Hence, taking the increasingly unpredictable macroeconomic developments as well as the digitalization effects on business models into account, the expected value sought for valuation purposes can no longer be simply determined on the basis of only single-valued planning estimates.

The results of this year's study show that 80 percent of all participating companies used a single-valued estimate and therefore do not adhere to the aforementioned need for simulation-based financial forecasts. Thus, the probability of a financial forecast that does not reflect all possible outcomes remains high.

13 Measurement of expected value Total (in percent)



Source: KPMG, 2018

“The necessity to consider new business models – their tendency to replace established business models as well as their inherent risks – is challenging the determination of the future cash flows. The adequate coverage of all these aspects will lead to multi-scenario analyses.”

Karen Ferdinand

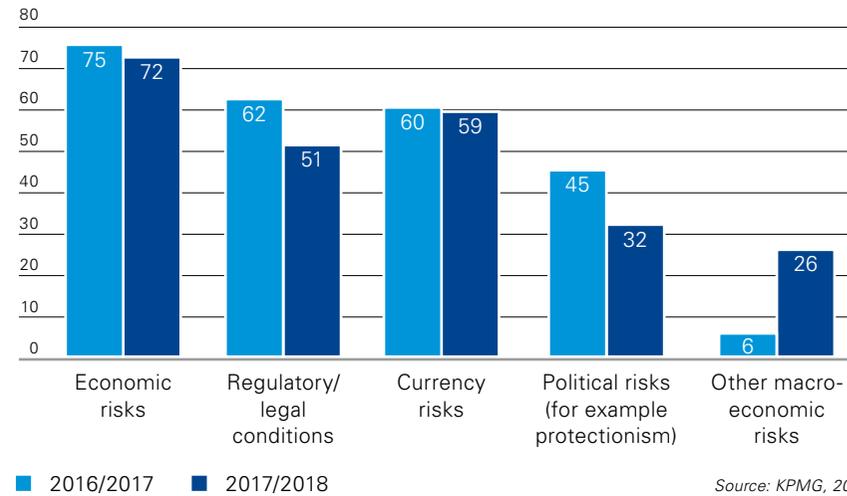
Partner, KPMG in Germany

2.4 Consideration of Risks

Future cash flows are uncertain and must be reflected with their expected values. For that reason, all the opportunities and risks associated with the business model have to be completely considered when compiling the financial forecast and deriving the cash flows. These risks may be macro- or microeconomic in nature.

In general, it was observed that macro- and microeconomic risks were reflected in the financial forecast. Unforeseeable developments, such as the American tendency to protectionism, Brexit and disruptive effects from digitalization, constantly create new challenges at the corporate management level. This makes planning the future corporate strategy increasingly more complex and demands flexible planning instruments.

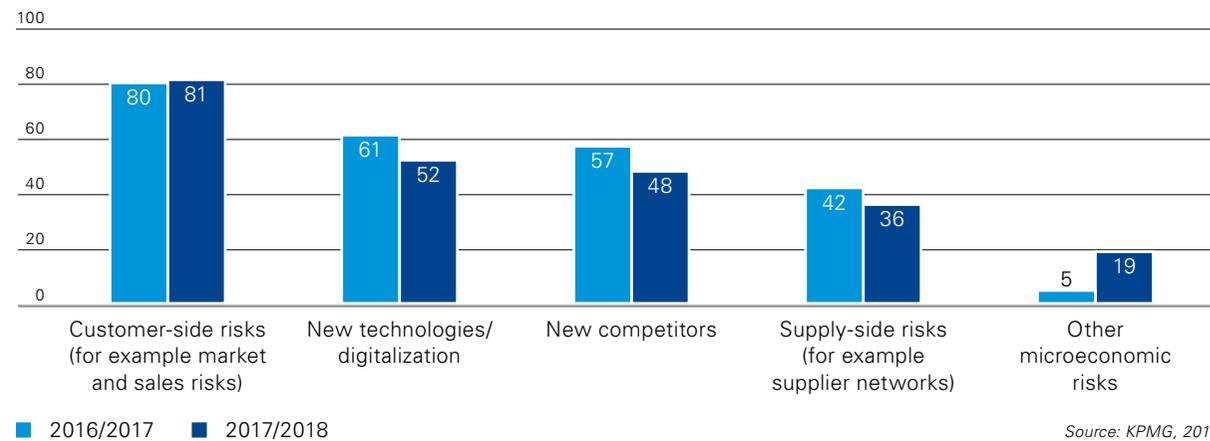
14 Consideration of risks in the financial forecast – macroeconomic risks
Total (in percent, multiple choices possible)



“Existing business models are increasingly being called into question as a result of the disruptive developments caused by digitalization. The subsequent opportunities and risks must be taken into consideration in both the financial forecasts as well as the cost of capital.”

Stefan Schöniger
Partner, KPMG in Germany

15 Consideration of risks in the financial forecast – microeconomic risks
Total (in percent, multiple choices possible)

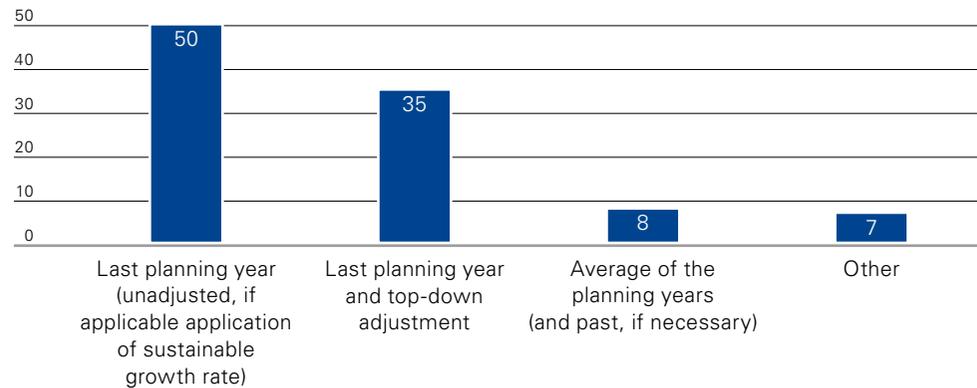


2.5 Determination of the Sustainable Year

The sustainable year or so-called terminal value is the most fundamental component and value driver in deriving the company's value.

The terminal value requires the company to be in an equilibrium-sustainable state. Such a state is typically not achieved at the end of the planning horizon, so that the planning has to be prolonged by transition years in order to transfer the planning towards the steady state. On the grounds of its significant relevance, the determination of the sustainable year should be based on a scenario approach using simulations such as Monte-Carlo simulations.

16 **Determination of the terminal value**
Total (in percent)



Source: KPMG, 2018

“With the increasing relevance of technology cycles for the viability of business models and the potential development of competitively superior technologies, the question arises as to whether the company value should be determined on the basis of a finite planning horizon without a terminal value.”

Dr. Andreas Tschöpel
Partner, KPMG in Germany

3 Determination of the Cost of Capital Parameters

3.1 WACC Overview

3.2 Risk-free Rate

3.3 Market Risk Premium

3.4 Beta Factor

3.5 Cost of Equity

3.6 Other Risk Premiums

3.7 Consideration of Risk in the Cost of Capital

3.8 Cost of Debt and Debt Ratio

3.9 Sustainable Growth Rate



3.1 WACC Overview

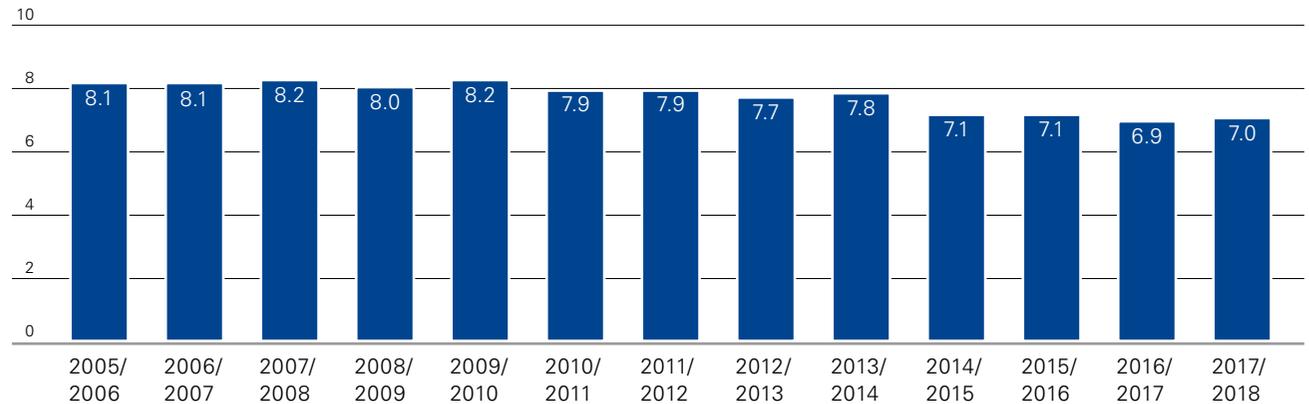
The weighted average cost of capital (WACC) represents the firm's cost of capital in which both the cost of equity as well as the cost of debt are weighted by their equity ratio (at market values) and debt ratio (at market values) respectively.

In the last four years, the WACC remained almost constant as an average across all companies.

While consistent principles should be applied in the derivation of the cost of capital and should also be applied even among different projects, nearly half of our participants do not compare the costs of capital applied in M&A transactions and investment decisions.

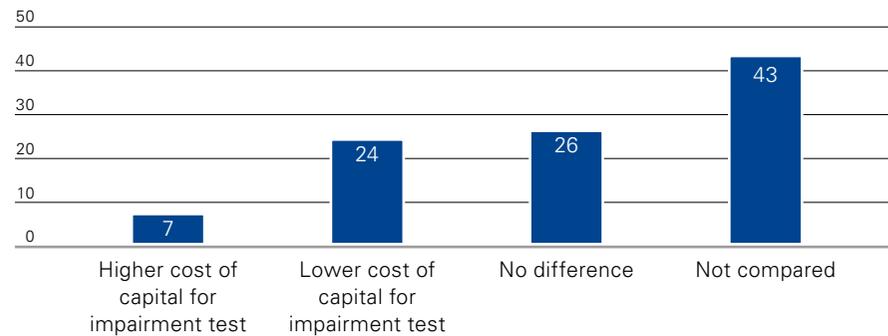
The decisive factor here is not consistency on a value basis of the cost of capital, but rather its methodological consistency across the various occasions for valuation.

17 WACC (after corporate taxes)
Total (in percent)



Source: KPMG, 2018

18 Deviation of the cost of capital in M&A transactions and investment decisions
Total (in percent)



Source: KPMG, 2018

Consumer Markets

“Looking into the decreasing WACC in the overall consumer market sector, the lower operating risk expectations in its eponymous sub-sector seem interestingly inconsistent with observable market developments, especially in the fashion segment. However, it appears reasonable that the WACC remained quite constant in the saturated Retail sub-sector with its unchanged oligopoly market structure.”

Karen Ferdinand, Partner, KPMG in Germany

Media & Telecommunications

“Expected growth in the telecommunication industry is driven by investments in integrated gigabit networks (broadband, 5G technology). At the same time, uncertainty about future converged customer experiences, Internet of Things and competition effects increase, which drives future business risks in the sector – however, not reflected in the quite stable WACC observed today. In contrast, the shift towards digital content and converged products leads to overall lower business risks reflected in the decreasing WACC in the Media & Telecommunications sector.”

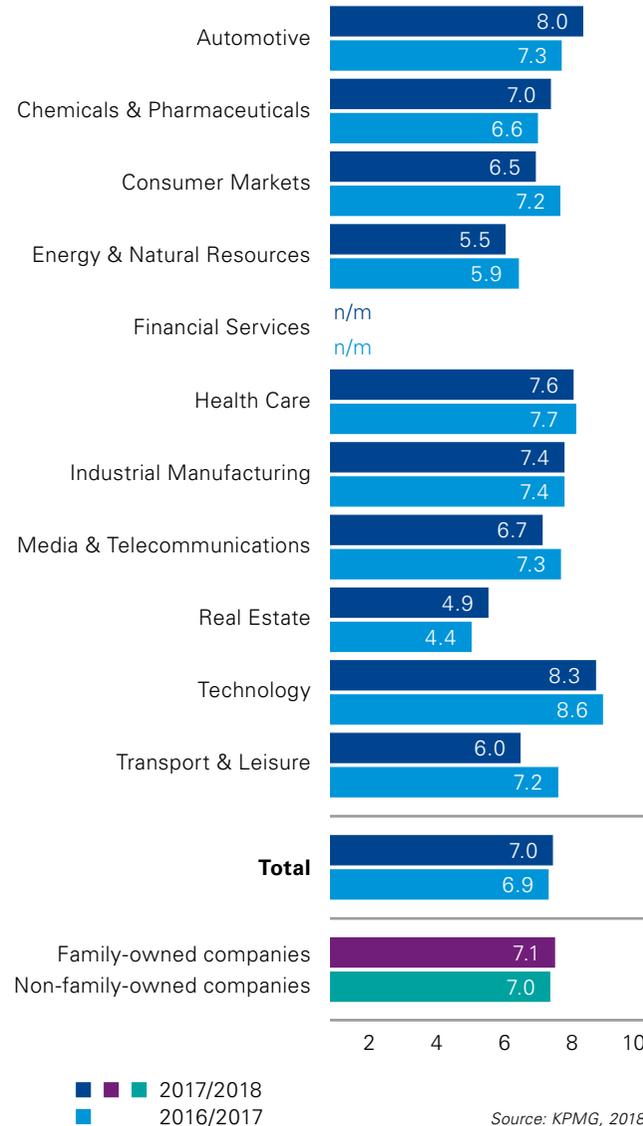
Dr. Gunner Langer, Director, KPMG in Germany

Transport & Leisure

“The transportation of physical goods and passengers will undoubtedly remain the core business model of most transport companies. But in the age of digitalization, flows of data and information will generate more economic value than the global trade of physical goods.”

Dr. Andreas Tschöpel, Partner, KPMG in Germany

19 **WACC (after corporate taxes) by industry**
(in percent)



Energy & Natural Resources

“In the Energy & Natural Resources sector with its high debt ratios, the cost of equity as well as the cost of debt, and consequently the WACC, decreased. This could signal slightly decreasing returns. However, the energy sector will have to realign for technological and competitive reasons. The mere supply of energy will become a consumer product. Nonetheless, markets are not mature yet. This uncertainty initially dampens expectations of future profitability.”

Michael Salcher, Partner, KPMG in Germany

Technology

“Transformation driven by digital technologies (Artificial Intelligence, Blockchain, Cloud Computing, Data & Analytics, Internet of Things, Robotics, Virtual Reality) forms the key dynamics in the Technology sector with different levels of maturity. This trend is accompanied by the continuous increase in capacity of data centers as well as broadband networks. Against the background of innovation and business dynamics in combination with sector growth expectations, the Technology sector has the highest WACC.”

Dr. Gunner Langer, Director, KPMG in Germany

Disruptive Business Models - One Person's Joy, Another's Suffering

Quote: "According to the theory of disruption developed in 1997 by Harvard graduate Clayton Christensen, even the most successful and established companies will one day be threatened by a [...] existential-robbing revolution."²

Existing markets and business models have always evolved through innovation. In contrast, a feature of disruptive innovation is the restructuring of central parts of an (established) business model, up to the complete dismantling of the business. The following example illustrates the consequences of disruptive business models on the value of companies. Business models can basically be described along their value chain. Many established business models are still traditionally based on the manufacture and sale of a specific product or the provision of a specific service in which the operator of this business model has specialized. The main drivers of its business model will be found on the one hand on the production side (e.g. personnel, IP or raw material prices) and on the other hand on the sales side (e.g. customer contacts or dealer networks). The interaction of the relevant drivers along the value chain determines the future performance and the associated risk of this business model and thus ultimately its current value.

Suppose a classic business model is disruptively threatened by a platform-based business model, which is positioned in the value chain between production and distribution of the established business model (such as in the case of Internet-

based trading platforms). It bundles supply and demand on its platform and offers customers additional benefits by providing relevant information about suppliers (prices, qualities, availability) and customers (satisfaction, special requests). As a result, the disruptive business model cuts the classical provider off from its customer base. Does this inevitably lead to the complete destruction of the value of the established business model? Certainly not in such a case. Rather, its management will have to restructure the original business model and now concentrate on the reduced part of its existing value chain. The previous value chain will thus be split up, the performance expectations and risks associated with it as well as their value potential virtually redistributed. The adjusted business model is now based on a new driver logic, which will be accompanied by a change in performance (e.g. lower margin), but also by a change in risk (e.g. reduction of risk through access to a larger market via the platform). Only the

"Disruption threatens established business models, but also offers the opportunity to tap into new value potential if changes are responded to in good time."

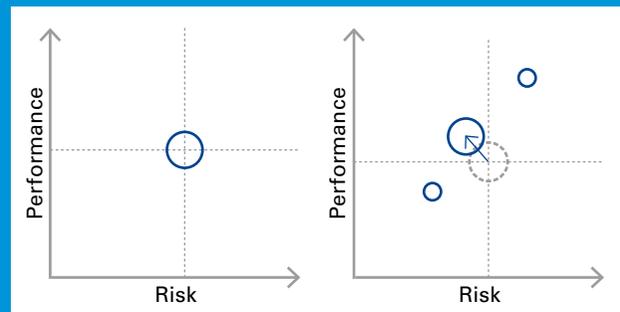
Dr. Marc Castedello

Partner, KPMG in Germany

combination of the two determines the new value. Disruption in the present case therefore means the threat and destruction of the previous business model, but new opportunities and a changed risk profile result in new value potential.

The described disruption by means of the so-called platform economy, which enables a shared use of completely or partially unused resources, can lead to corresponding gains in efficiency and additional value potential in the original value chain. How this value is ultimately distributed between the new partners (producer and platform provider) depends on the new distribution of performance and risk and is strongly influenced by the newly established form of the market where this is the case. A reliable assessment of the value effects associated with disruptive business models therefore requires a transparent and consistent analysis and quantification of the performance and risk contributions associated with them.

20 Disruption – Value enhancement and, if so, for whom?



² Source: <https://www.gruenderszene.de/lexikon/begriffe/disruption>, 17 October 2018

Source: KPMG, 2018

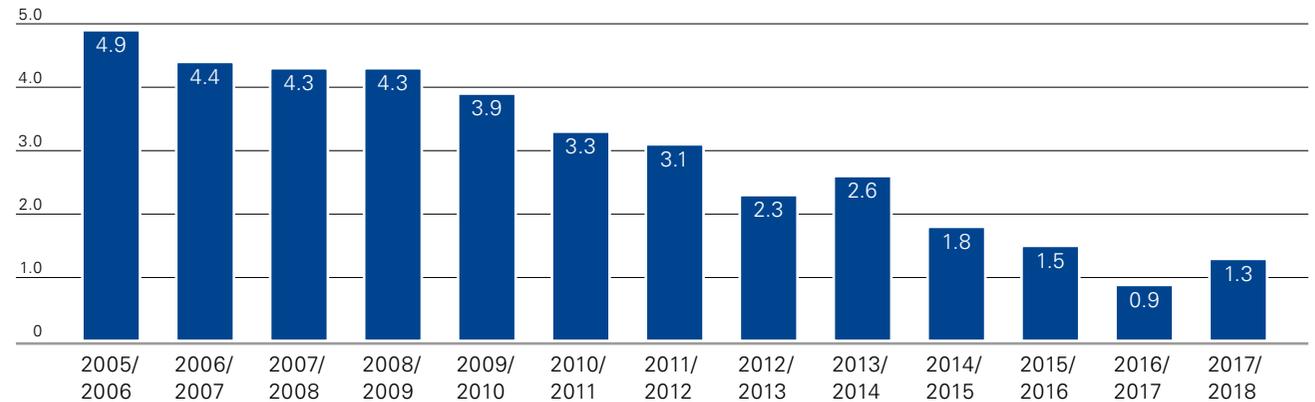
3.2 Risk-free Rate

To ensure equivalence in the maturity, the risk-free rate applied in the cost of capital should be derived by the term structure of interest rates of the relevant central banks.

In contrast to the preceding three years, the risk-free rate applied by the participating companies rose in comparison to the previous year. The increase reflected the interest rate decisions of the Federal Reserve Bank as well as the announcements of the European Central Bank.

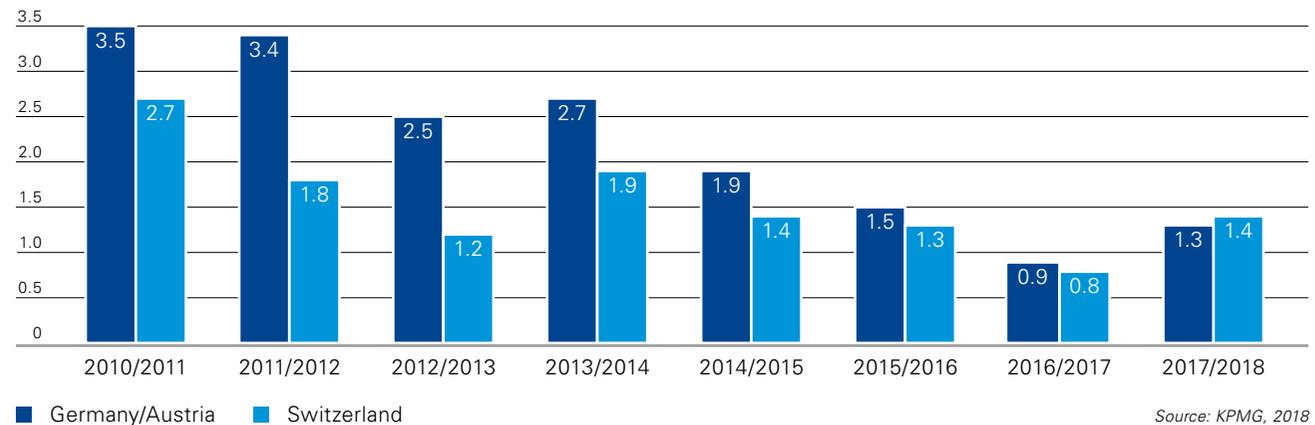
To avoid short-term volatilities, the risk-free rate should be rounded to 1/4-percentage points, if above 1.0 percent, and to 1/10-percentage points, if below 1.0 percent.

21 **Average risk-free rate applied**
Total (in percent)



Source: KPMG, 2018

22 **Average risk-free rate applied**
Germany/Austria versus Switzerland (in percent)



Source: KPMG, 2018

3.3 Market Risk Premium

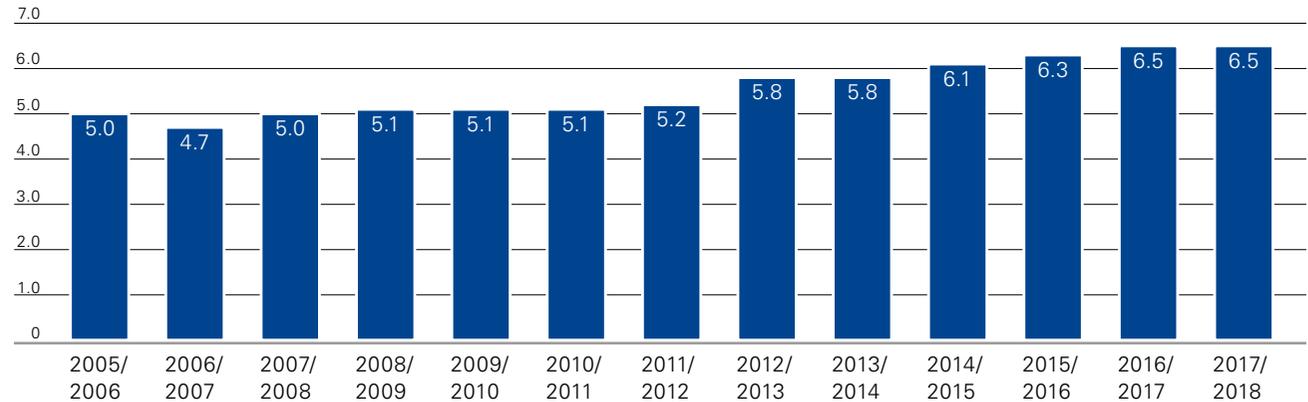
In accordance to the publications of the Technical Committee for Business Valuation and Economics (FAUB, Fachausschuss für Unternehmensbewertung) of the Institute of Public Auditors in Germany (IDW, Institut der Wirtschaftsprüfer), a market risk premium between 5.5 and 7.0 percent should be applied in Germany.

The Council of Experts for Business Administration (KFS/BW, Fachsenat für Betriebswirtschaft) of the Chamber for Tax Advisors and Auditors in Austria (KSW, Kammer der Steuerberater und Wirtschaftsprüfer) recommended a nominal market return of 7.5 to 9.0 percent at the end of 2017. Less the current risk-free rate, this results in a market risk premium between 6.0 and 7.5 percent.

Based on the aforementioned ranges recommended by the standard-setters, own analyses to determine the market risk premium should always be performed.

Our survey results also indicate that the market risk premium, as an industry-independent figure, is roughly constant across industries.

23 Average market risk premium
Total (in percent)



Source: KPMG, 2018

24 Average market risk premium
Germany versus Austria versus Switzerland (in percent)

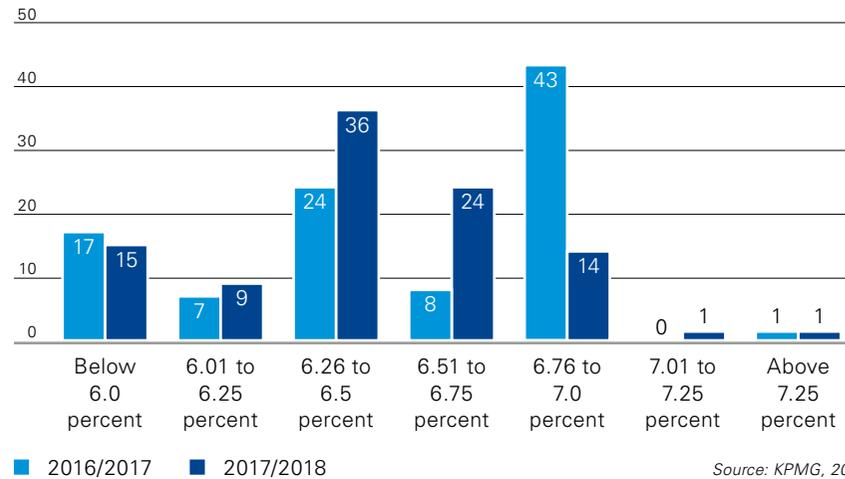


Source: KPMG, 2018

Analyses on the historical returns frequently served as the basis for determining market returns and consequently the market risk premiums. If an average historical risk-free rate is deducted from such an average historical market return, it is implicitly assumed that the risk premium remains constant over time. On the other hand, if the risk premium is calculated as the difference between the market return and the risk-free rate for different points in time in the past, the risk premium would fluctuate over time.

Aside from that, researchers have been applying models for deriving implicit returns for some time and in valuation practice these have become relevant more recently. They enable a future-oriented derivation of returns based on current capital market information. This also takes into account risk premiums that may change over time, which more realistically reflects actual circumstances in the capital markets.

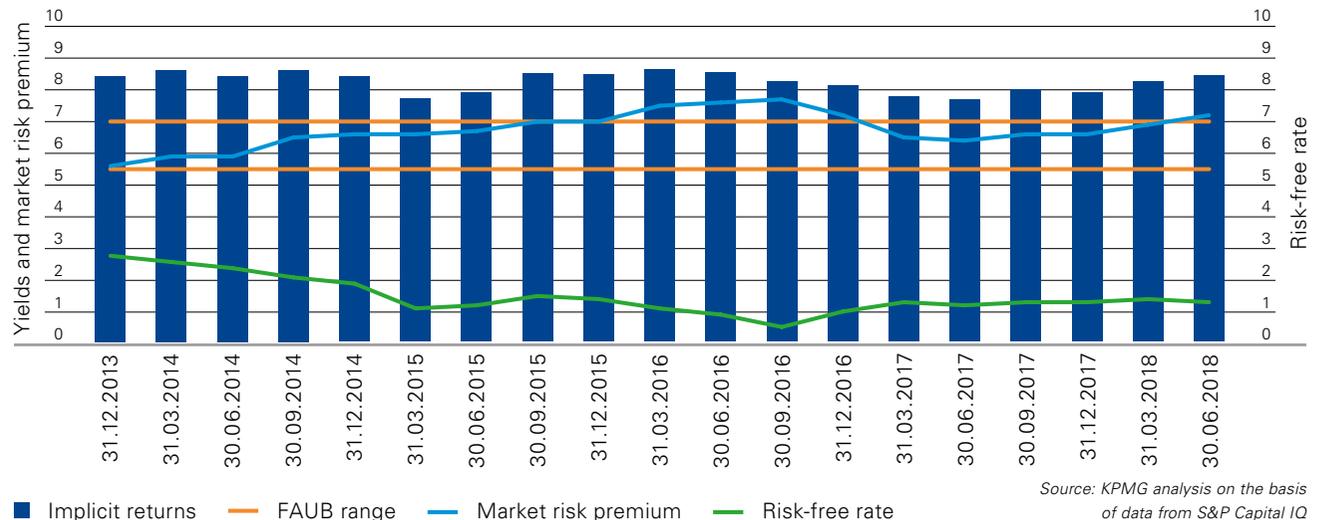
25 Distribution of the market risk premiums of German companies (in percent)



“The market risk premium does not represent a parameter that is observable directly in the capital market. It is determined by the market return and the risk-free rate, whereby both of these parameters should be derived consistently and equivalently.”

Stefan Schöniger
Partner, KPMG in Germany

26 Change in expected returns in Germany (in percent)

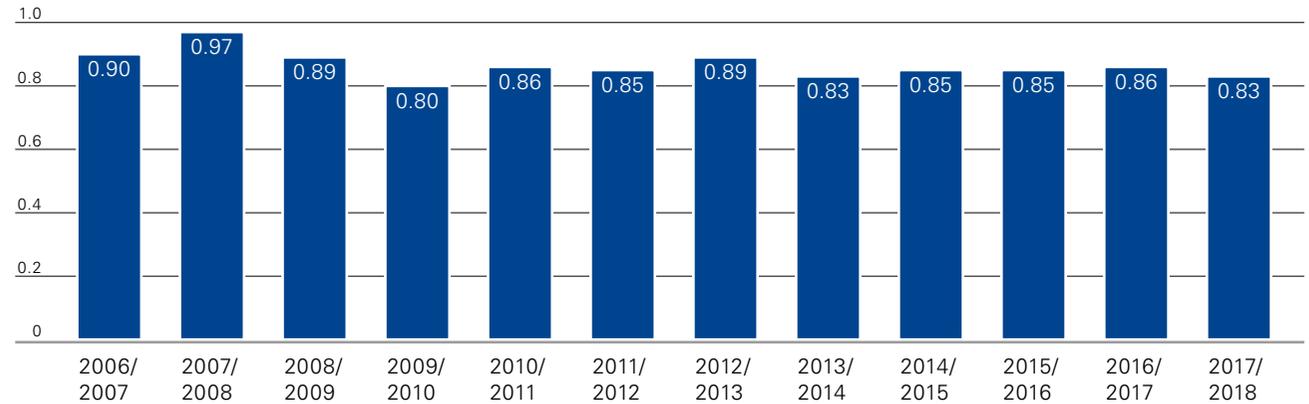


3.4 Beta Factor

The beta factor – along with the risk-free rate and the market risk premium – is another material parameter in determining the cost of equity. It measures the volatility of an individual asset in comparison to the market as a whole and hence represents the valuation-relevant company-specific risk in relation to the general market risk. The most common way to derive non-observable beta factors for unlisted companies is to use a group of comparable, listed companies – a so-called peer group. This allows – together with capital market data on the valuation date – the company-specific risk to be determined as best as possible.

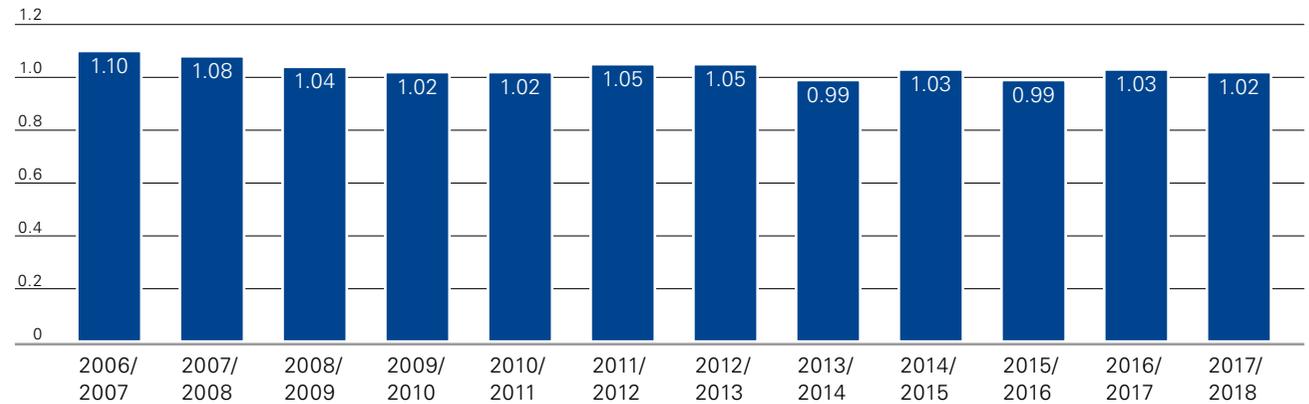
While the unlevered beta factor reflects the operative risk independent of a company’s capital structure, the levered beta factor serves as a metric for the equity provider’s systemic risk under consideration of the risk from debt in the capital structure.

27 **Average unlevered beta factors**
Total



Source: KPMG, 2018

28 **Average levered beta factors**
Total

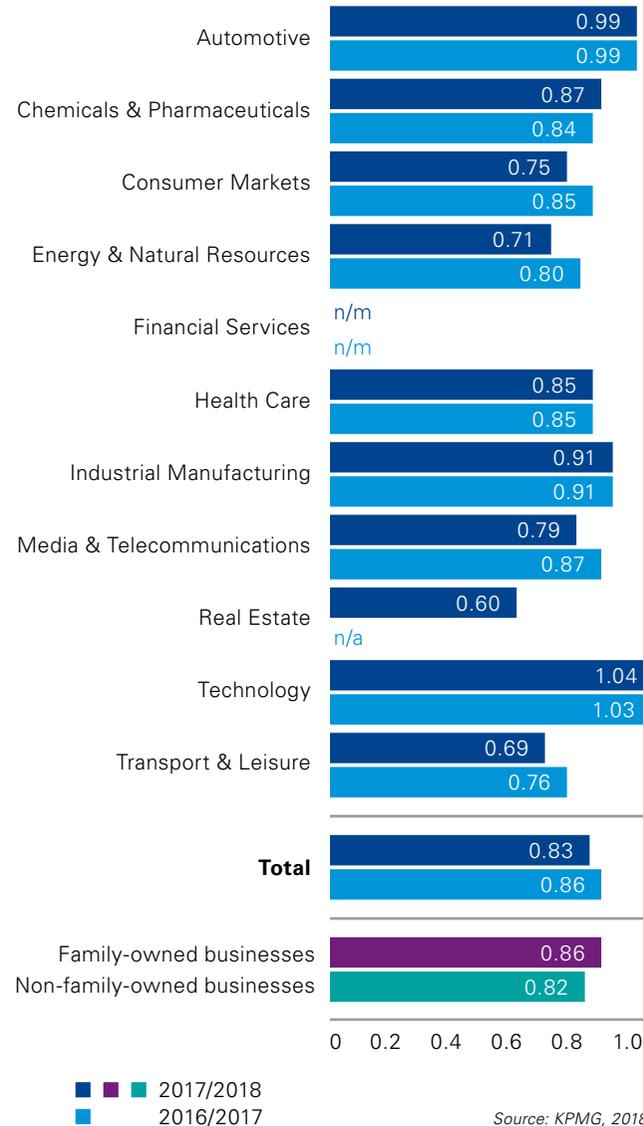


Source: KPMG, 2018

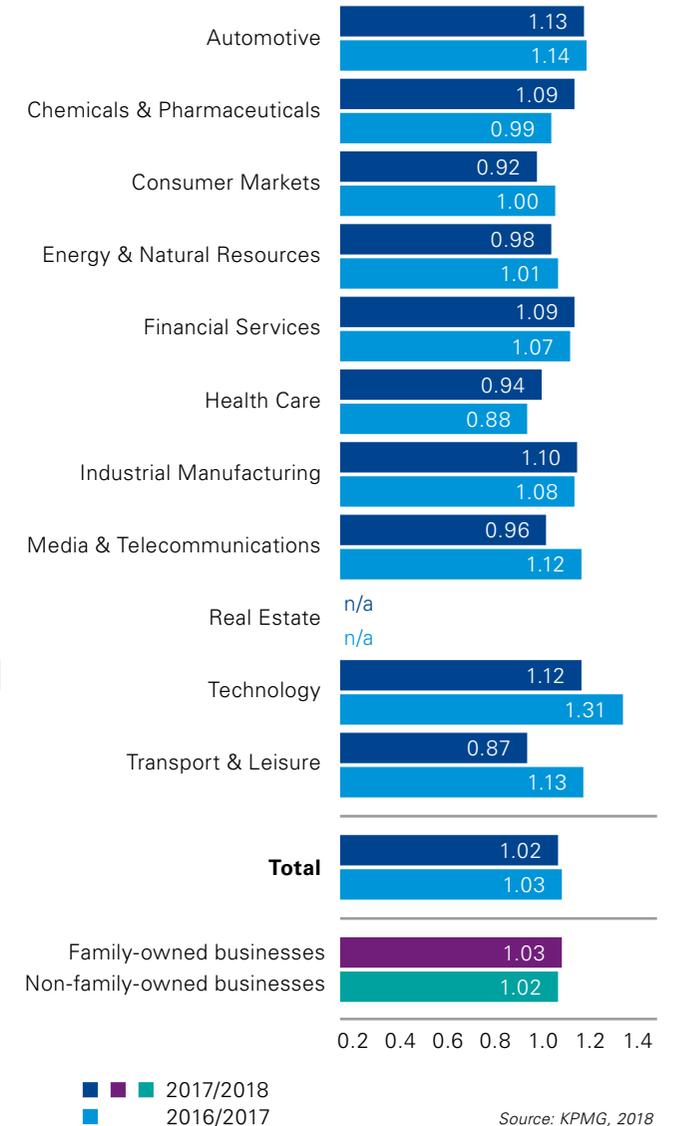
While on average the unlevered beta factor did not materially change across industries, there are relatively strong changes in individual industries.

While the concept of a peer group is still the dominant way to determine a beta factor in both the fair value less costs of disposal and value-in-use concepts, new business models sometimes do not have a peer group consisting of a number of listed companies. Thus, there might be a need for new concepts in the future.

29 Average unlevered beta factors by industry



30 Average levered beta factors by industry



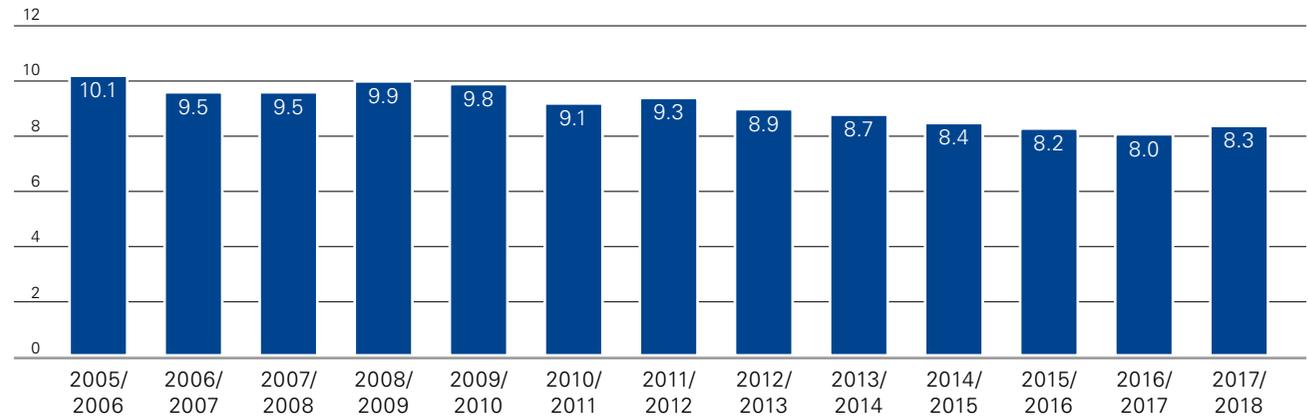
3.5 Cost of Equity

The levered cost of equity results from the risk-free rate, the company-specific levered beta factor and the market risk premium using the mathematical equation according to the Capital Asset Pricing Model (CAPM).

The increase in the levered costs of capital is explained by the increase of the risk-free rate, while the applied market risk premium remained constant on average.

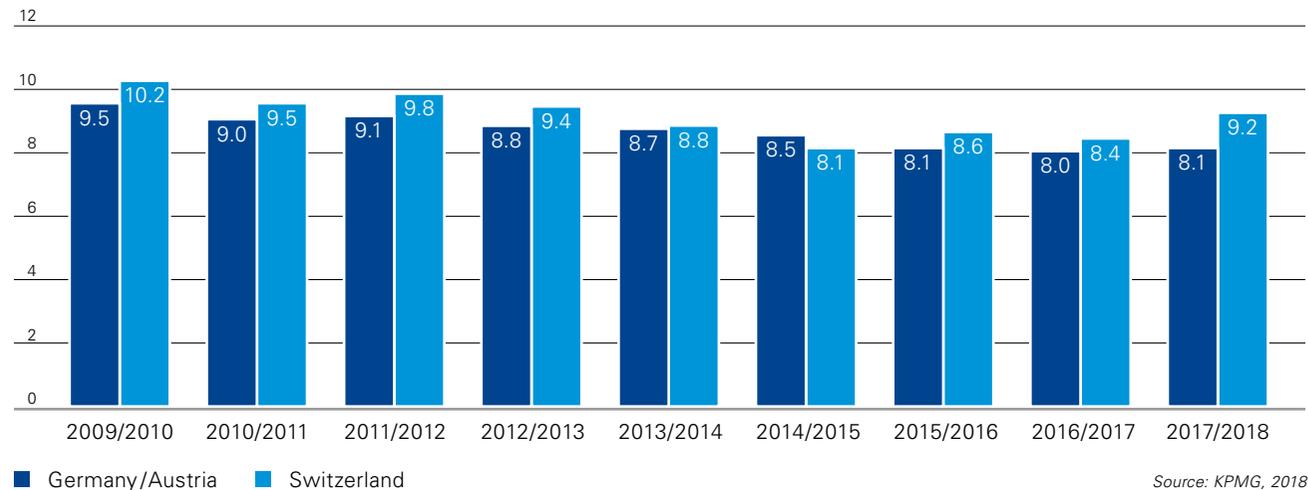
The difference in the levered cost of equity between Austria and Germany on the one hand and Switzerland on the other increased further. This increase is due to a reverse trend in the spread between the applied risk-free rates in both regions, whereas in Switzerland a higher risk-free rate is now applied.

31 Average levered cost of equity
Total (in percent)



Source: KPMG, 2018

32 Average levered cost of equity
Germany/Austria versus Switzerland (in percent)



Source: KPMG, 2018

Automotive

“Especially the Automotive sector is subject to the prevailing and increasing changes in the mobility needs and possibilities. In addition, the uncertainty surrounding the continuous trends in electro-mobility and connected cars are reflected in high business risk and thus high WACCs.”

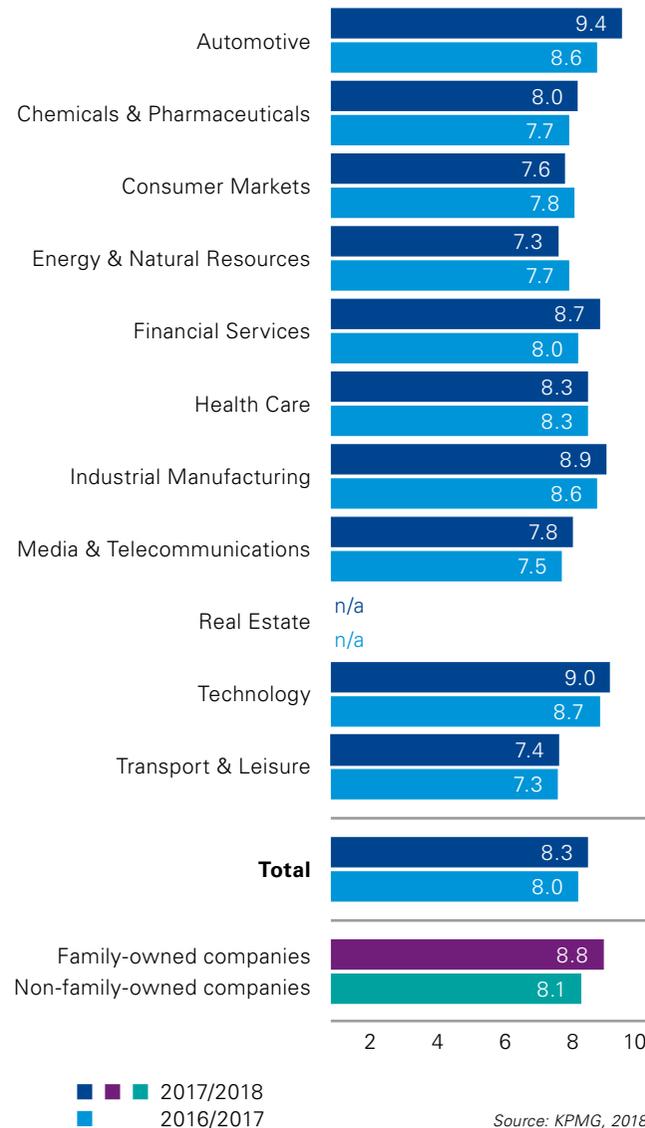
Olaf Thein, Partner, KPMG in Germany

Financial Services

“Despite an upswing in capital requirements, median risk premiums increased significantly in the Financial Services sector from 6.7 to 7.3 percent. Additive risk premiums are reflecting the uncertainties adherent to the deep disruptions and challenges for financial service business models.”

Gudrun Hoppenburg, Director, KPMG in Germany

33 Average levered cost of equity by industry (in percent)



Chemicals & Pharmaceuticals

“Currently, larger pharmaceutical companies continue to report high – but stagnant – sales and earnings levels. Patent expirations, growing price competition, missing future blockbuster candidates as well as rising R&D costs lead to higher risks, which are reflected in increasing cost of capital. The demographic changes and prevention programs in industrialized countries as well as the economic development of the emerging markets require the companies to adapt their business model to the specific regional requirements.”

Christian Klingbeil, Partner, KPMG in Germany

Family-owned companies

“Family-owned companies in general operate more cautiously than non-family-owned companies. The continuation of the business is top priority and therefore also the consideration of risk. This is also reflected in the use of risk premiums for planning uncertainties in the derivations of the cost of capital; these are considered by family-owned companies three times more often than by non-family-owned companies.”

Stefan Schöniger, Partner, KPMG in Germany

Internationalization of Business Models – Opportunity and Risk at the Same Time

“The international orientation of business activities entails not only opportunities [...] but also considerable risks and uncertainties. A lack of information about the foreign environment, different market and competitive conditions as well as cultural differences initially influence the success of internationalization, but ultimately also the long-term success of the company.”³

Companies have always been subject to external influences that require a permanent evolution of business models. Changing customer demands, product innovations or regulatory requirements – companies must always react to changes in the market in order to remain competitive in the long term. The influences of digitalization are currently probably causing the most significant change conditions – with the consequence of replacing or even completely displacing traditional business models. Therefore it is more important than ever for companies to proactively counter the increasing changes in framework conditions and to define a suitable strategy. However, it is not only the insufficient operational experience with the “new”, disruptive business models to date that is proving problematic. It is also external influences by regulators and governments that are subject to the severe changes, which react to this by changing regulations, for instance in the area of taxes.

At the same time, the world has become “smaller” as a result of digitalization and logistics solutions.

³ Source: <http://www.faz.net/aktuell/wirtschaft/start-up-internationalisierung-junger-unternehmen-1148522.html>, 17 October 2018

The physical location of a company – due to a lack of production facilities, raw material sources or stationary sales locations – basically no longer plays a role. As a possible strategy, therefore, “distant” international alliances are now increasingly attracting attention as an alternative to acquisitions. They offer the advantage of spreading risks among partners and can be easily resolved in the event of failure. As an option, the external outsourcing of individual functions can be considered in order to take advantage of local cost advantages and technical specializations. This will bring more and more companies into contact with the regulatory areas of other countries.

In all international acquisitions and reorganizations, it is not only the purely operational opportunities in terms of performance improvements and the resulting changes in the risk profile that must be taken into account. The increasing awareness of the industrial nations should not be underestimated: the tax-oriented relocation of company headquarters to low-tax countries inevitably leads to counter-movements by legislators in order to curb tax erosion. “Spontaneous” changes in the regulatory environment, such as the so-called Trump Tax, may require short-term, complex and expensive considerations for reorganization in companies; there is also uncertainty regarding the actual duration of tariffs and other protectionist measures in the framework of “trade wars” that are currently coming back into focus. In addition to tax risks, which in case of the relocation of a function are more important the more profitable the function is,

uncertainties arising from general country-specific risks or the lack of experience abroad must be taken into account in the decision-making process.

Therefore, in the context of strategic realignments in response to modified general conditions, not only must the positive effects on the performance of companies be considered. Also the major risks, and thus in particular the change in the overall risk of a portfolio, must be analyzed and reflected in a decision-making model covering both aspects – e.g. the CEDA model developed by KPMG. This is the only way to ensure an optimal reaction with respect to value to external influences.

“Meeting growing challenges on domestic markets with the leap abroad often appears at first glance to be a reasonable option – but the risks are not always regarded as openly as in the newspaper advertisement with which E. Shackleton recruited travel companions for an expedition: ‘Men wanted for a dangerous journey. Low wages, bitter cold, long months of complete darkness, constant danger, safe return uncertain. Fame and glory upon success.’ Therefore, reference could be made to C. Columbus: ‘Reliable information is absolutely necessary for the success of an enterprise’ – even if you end up in America instead of India.”

Karen Ferdinand

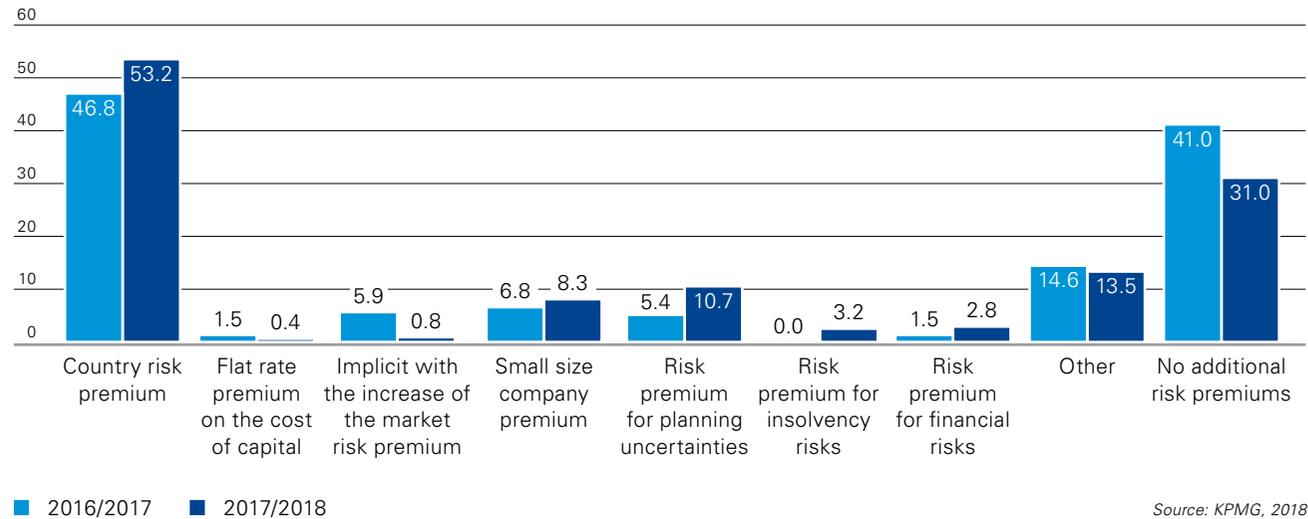
Partner, KPMG in Germany

3.6 Other Risk Premiums

As presented in the previous chapters, companies are exposed to a future with a high degree of uncertainty. To replicate this economic environment, companies consider a wide range of additional risks in determining their costs of capital.

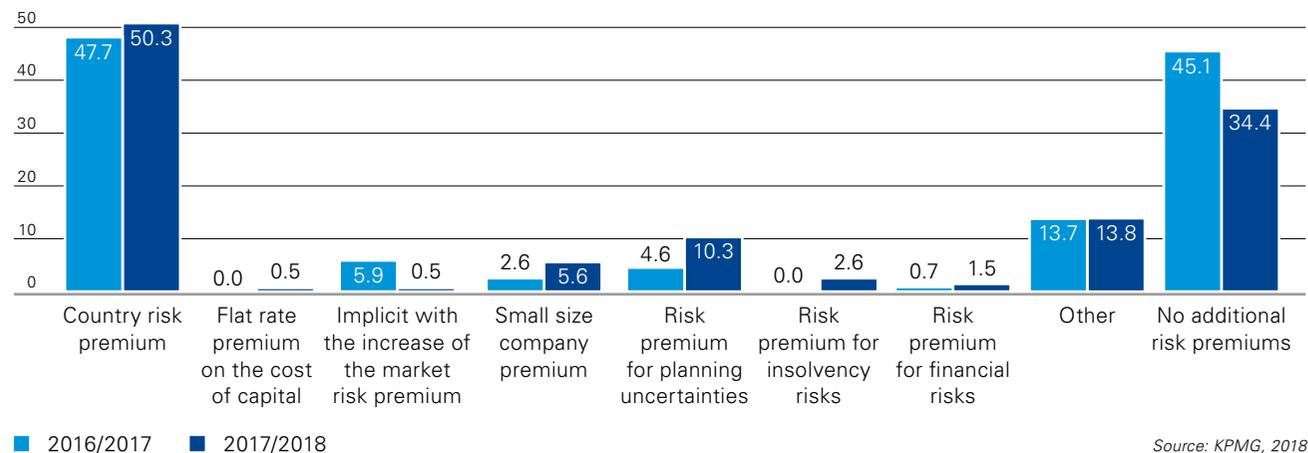
In comparison to the findings of the last year, the country risk premium became increasingly important and was again the most frequently applied other risk premium. Additionally, the use of the risk premium for planning uncertainties also increased significantly.

34 Other risk premiums 2016/2017 versus 2017/2018
Total (in percent, multiple choice possible)



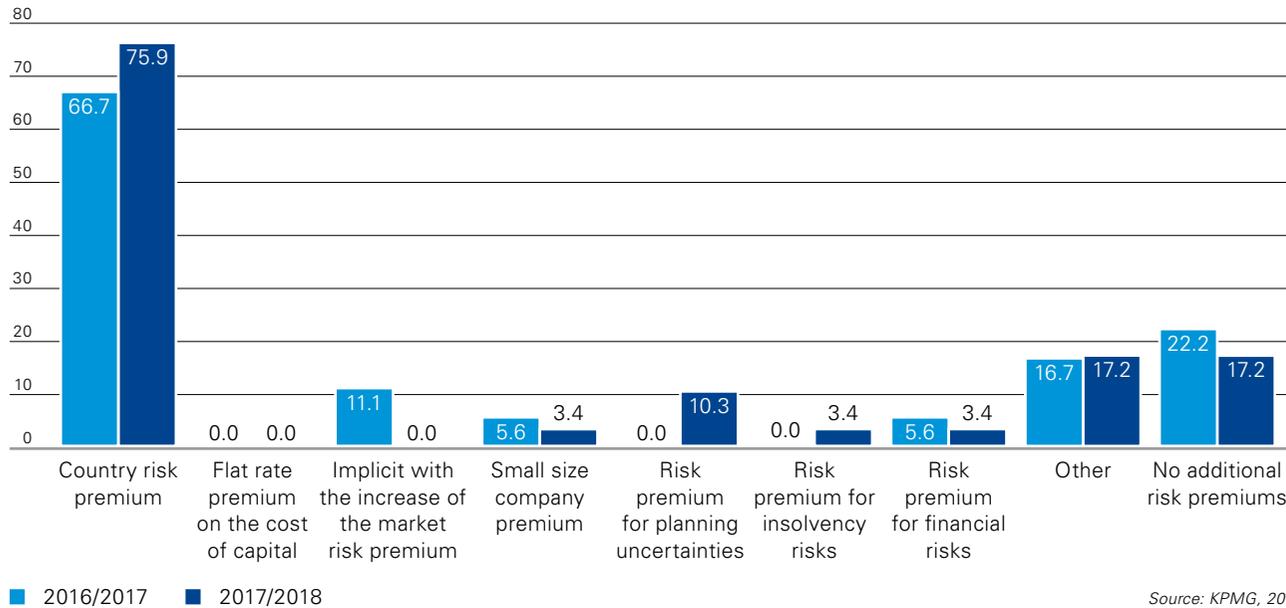
Source: KPMG, 2018

35 Other risk premiums 2016/2017 versus 2017/2018
Germany (in percent, multiple choice possible)



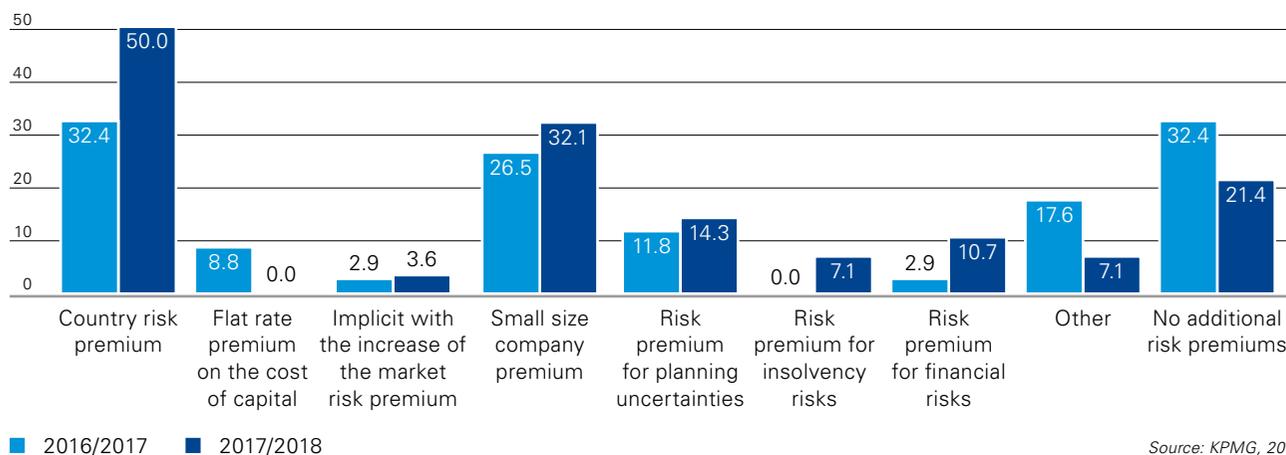
Source: KPMG, 2018

36 Other risk premiums 2016/2017 versus 2017/2018
Austria (in percent, multiple choice possible)



Source: KPMG, 2018

37 Other risk premiums 2016/2017 versus 2017/2018
Switzerland (in percent, multiple choice possible)



Source: KPMG, 2018

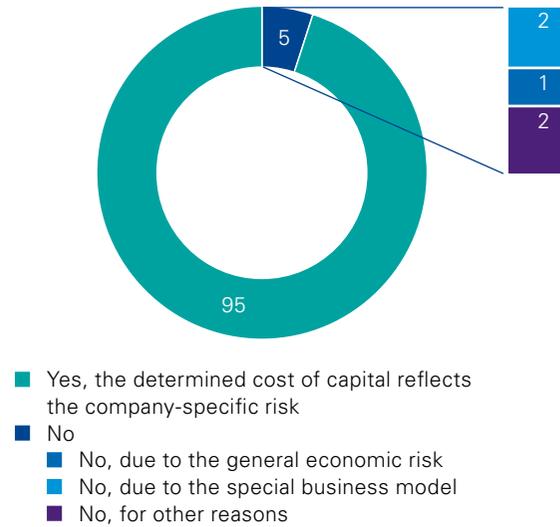
“With respect to other risk premiums, the international valuation concepts are commonly applied by Swiss valuation practitioners. Thus, these ‘alpha factors’ have to be taken into account when comparing cost of capital in Switzerland with those applied in Germany or Austria.”

Johannes Post
Partner, KPMG in Switzerland

3.7 Consideration of Risk in the Cost of Capital

Risk and its representation within the cost of capital is of major importance in the valuation of companies. The future cash flows are uncertain and must therefore be considered with their expected value. In addition to that, the operative risk of the cash flows has to be adequately reflected in the cost of capital by using established methods such as comparable peer groups. The number of participants who answered positively on whether their cost of capital applied sufficiently, reflected the company-specific risks, totaled 95 percent and remained constant compared to the previous year. In future, companies are faced with the challenges concerning new innovative business models. In light of this fact, companies need to be aware of possible repercussions for their own business models.

38 **Company-specific risks in the cost of capital**
Total (in percent, multiple choice possible)



Source: KPMG, 2018

“Even if almost every company currently assumes that the cost of capital determined sufficiently reflects the company-specific risk, the dominant derivation of the cost of capital in practice – via a peer group approach – may lead to incorrect results in view of the increasing number of business models changing through innovation and disruptions. In these cases, it is recommended to consistently derive the cost of capital from the range of fluctuation of the expected cash flows resulting from the financial forecast.”

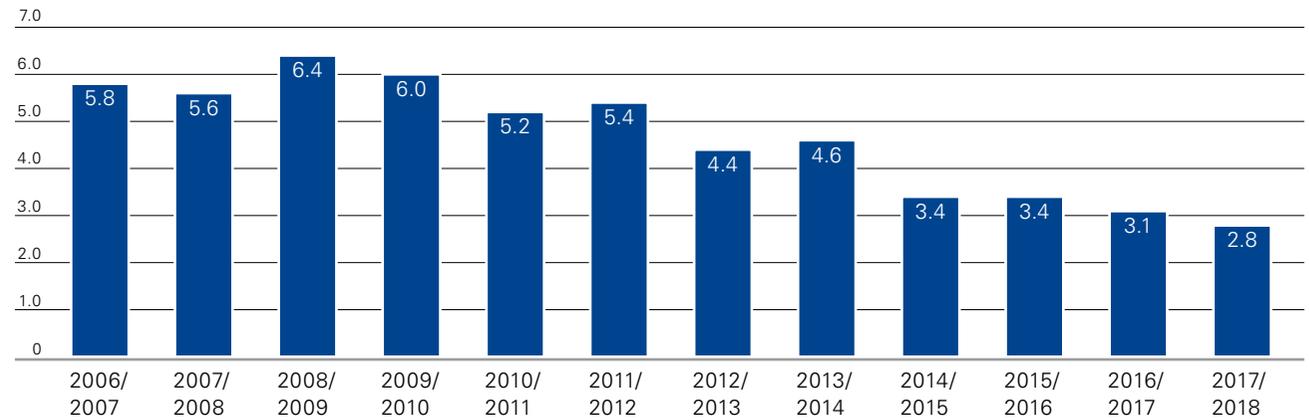
Dr. Andreas Tschöpel
Partner, KPMG in Germany

3.8 Cost of Debt and Debt Ratio

The second fundamental component regarding the WACC's determination is – besides the cost of equity and the related equity ratio (at market values) – the cost of debt as well as the debt ratio (at market values). The latter parameter is defined as the ratio of market value of the (net) debt to market value of the total capital (entity value).

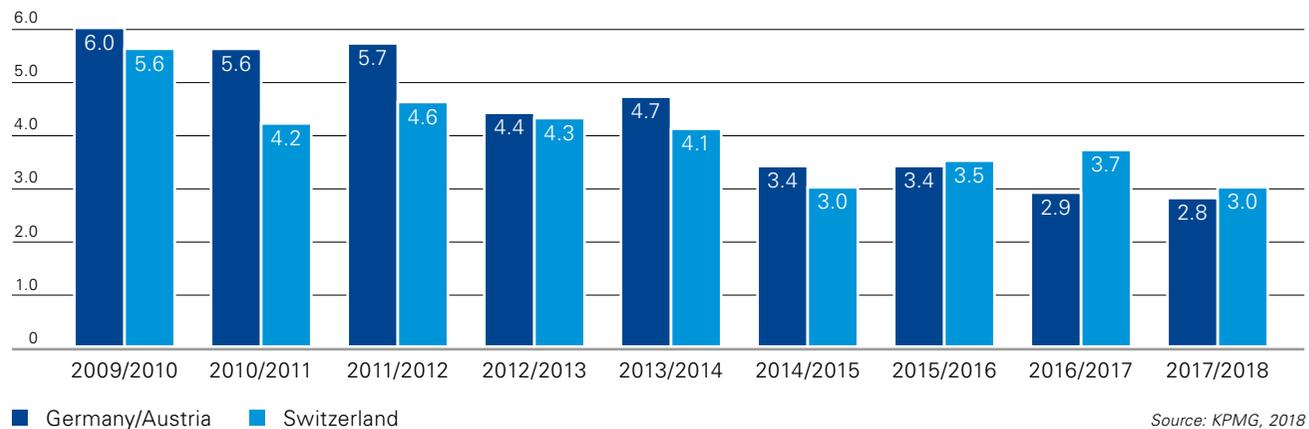
On average, the cost of debt further decreased and has reached the lowest value since the year 2006/2007. The same holds true for the average of Germany and Austria. Similarly, Switzerland again reached its former historical low from 2014/2015.

39 Average cost of debt
Total (in percent)



Source: KPMG, 2018

40 Average cost of debt
Germany/Austria versus Switzerland (in percent)

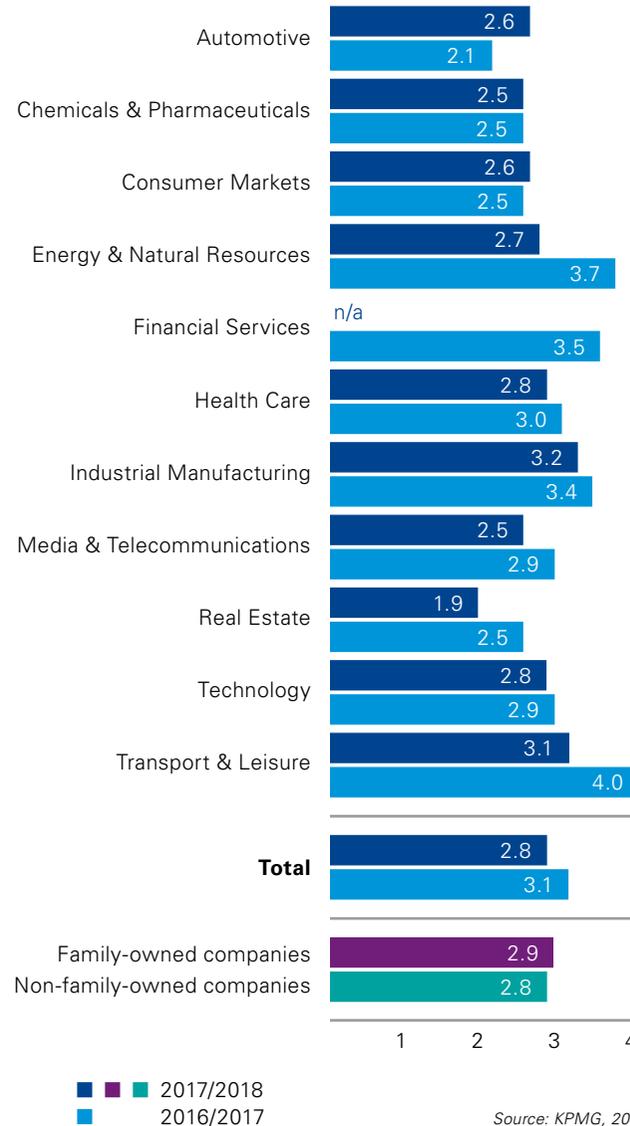


Source: KPMG, 2018

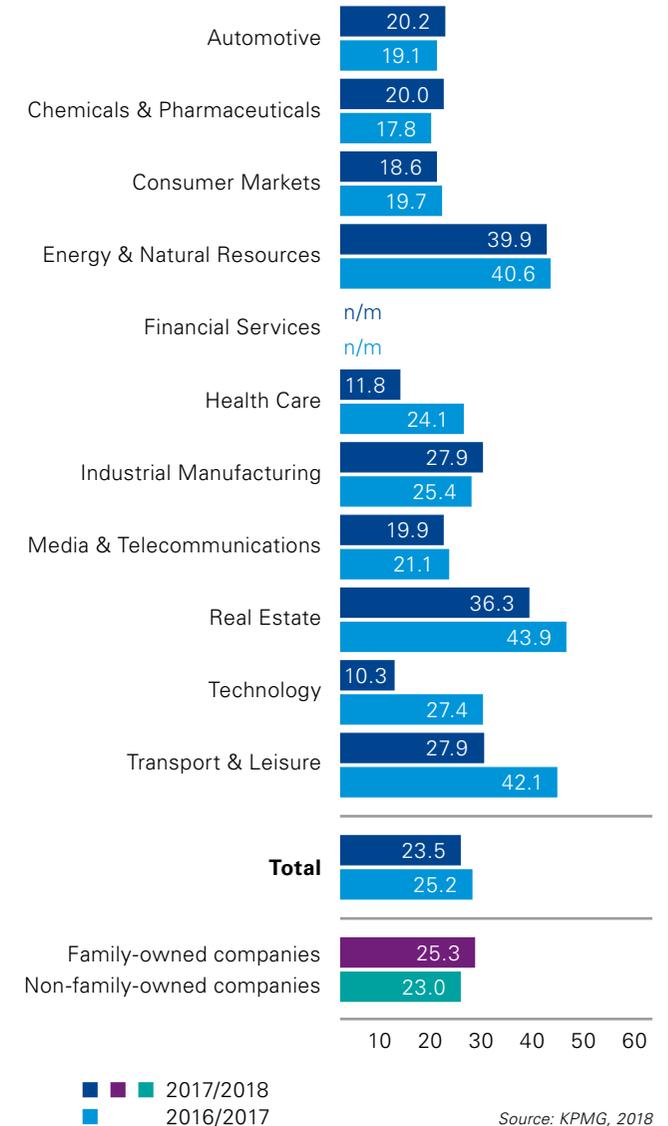
Only minor differences in the cost of debt exist throughout industry segments. In particular, the difference between the highest and the lowest cost of debt in 2018 amounts to only 1.3 percentage points.

In contrast to the trend towards an alignment of the cost of debt across industry segments, the average debt ratio continues to differ significantly across industries and displays a difference of 29.6 percentage points between the Energy & Natural Resources sector and the Technology sector. Nonetheless, the average debt ratio over all industries continued to decline.

41 Average cost of debt by industry
(in percent)

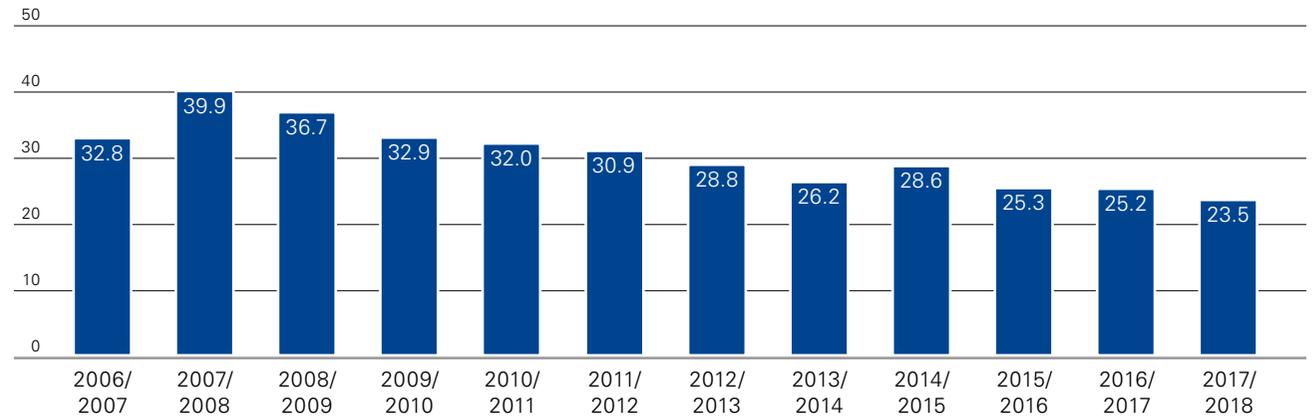


42 Average debt ratio by industry
(in percent)



The average debt ratio is at its lowest level since the beginning of this Cost of Capital Study series in 2006.

43 Average debt ratio Total (in percent)



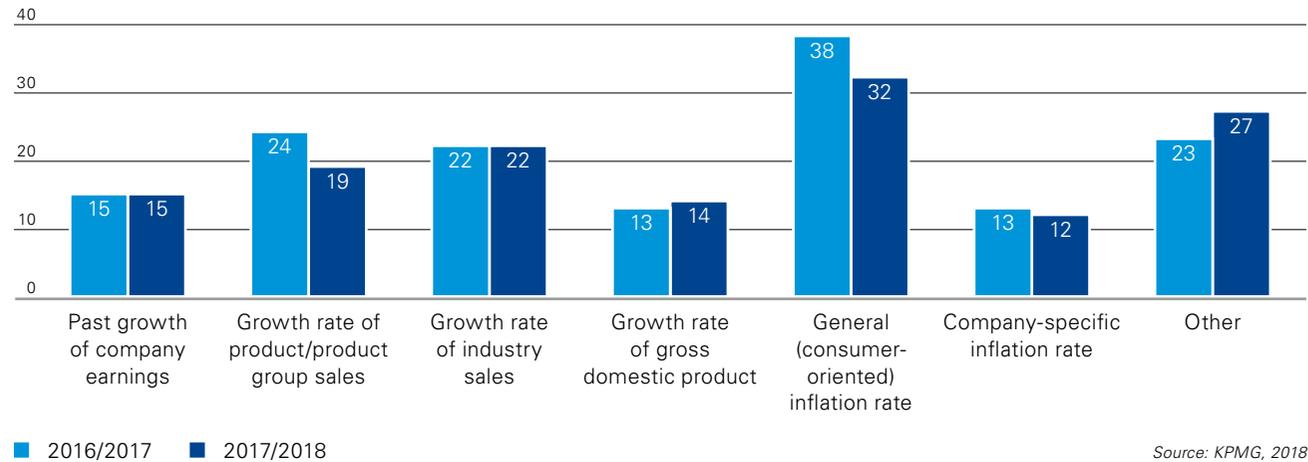
Source: KPMG, 2018

3.9 Sustainable Growth Rate

The sustainable growth rate plays an important role regarding the determination of the terminal value. The terminal growth rate reflects the company-specific inflationary growth in a sustainable state.

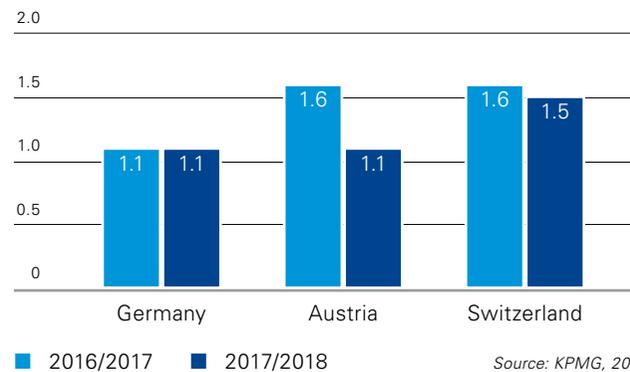
In practice, the company-specific growth rate cannot be easily estimated. This is reflected by the answers given in figure 41. The most common way among this study's participants to estimate the sustainable growth rate was to apply a consumer-based inflation rate.

44 Measurement of the sustainable growth rate
Total (in percent, multiple choice possible)



Source: KPMG, 2018

45 Average sustainable growth rate
Germany versus Austria versus Switzerland (in percent)



Source: KPMG, 2018

“In principle, the sustainable growth rate has to be derived with respect to the company-specific business activities. The fact that only a small number of companies actually derive a company-specific sustainable growth rate might reflect the need for transparent and simple methods in order to derive an adequate growth rate.”

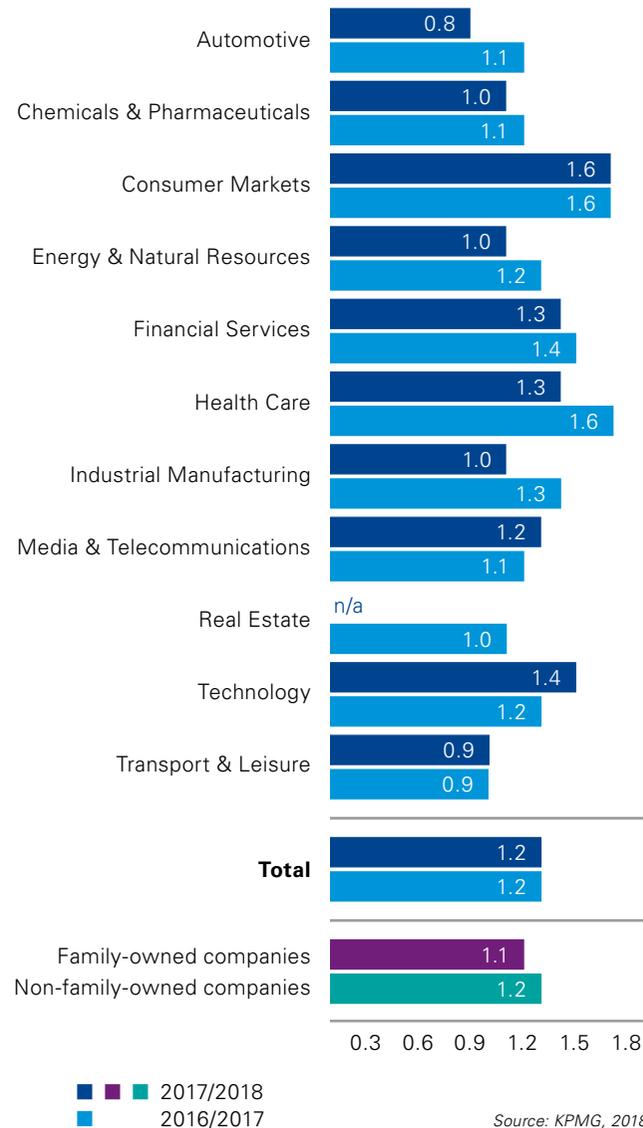
Dr. Klaus Mittermair
Partner, KPMG in Austria

In general, the sustainable growth rate applied by the participants is on a similar level as in the previous year. However, the range of fluctuation between the industries is slightly higher. The reason for this is the significant decline in the growth rate applied in the Automotive sector.

In the sector Consumer Markets, the growth rate applied is twice that of the Automotive sector.

When interpreting the applied growth rate, it is also necessary to consider the length of the specific detailed planning horizon and the growth rate applied there.

46 Average sustainable growth rate by industry (in percent)



4 Relevance of Value and Enhancement of Value

4.1 Criteria for Investment Decisions

4.2 Monitoring the Enhancement of Value

4.3 Cost of Capital in Capital Market
Communication



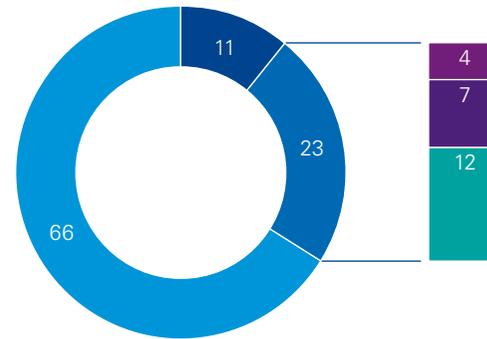
4.1 Criteria for Investment Decisions

Investments decisions have to be evaluated transparently and consistently in order to ensure optimal development of the firm's portfolio.

The objectives must be stipulated in the framework of investment decisions. Investment decisions are typically oriented on strategic or value-based objectives.

Investment decisions are, as a rule, long-term by nature. In times of macroeconomic uncertainties and microeconomic changes from disruptive business models, companies are faced with constantly new challenges to properly consider the valuation-relevant risks in the assessment of investment decisions. Furthermore, the continuing low interest rates, associated with favorable or readily accessible financing opportunities, may result in an underestimation of the risks that are associated with the target returns of investments and not reflect them completely in the decision-making process.

47 Criteria in investment decisions Total (in percent)



- Primarily value-based objectives (EVA, ROCE)
- Primarily strategic objectives
 - Primarily qualitative strategic objectives (for instance, regional coverage)
 - Primarily quantitative strategic objectives (for instance, sales or margin targets)
- Qualitative and quantitative strategic objectives equally
- Strategic and value-based objectives equally

Source: KPMG, 2018

“As a result of conceptual weaknesses, numerous management control systems popular in the market are only suitable to a limited degree for transparent and consistent value-oriented steering, due to the fact that they often fail to provide the necessary connection with the future as well as a complete and flexible reflection of all the value-relevant performance and risk drivers.”

Dr. Marc Castedello

Partner, KPMG in Germany

The Optimal Company Portfolio – Necessity of Quantifying Strategies

General demands for the break-up of the Group, as raised by the second-largest shareholder after the Krupp Foundation, were rejected by the Group's CEO. In view of the global dynamics of technological development, it is good not to be "too tightly positioned".

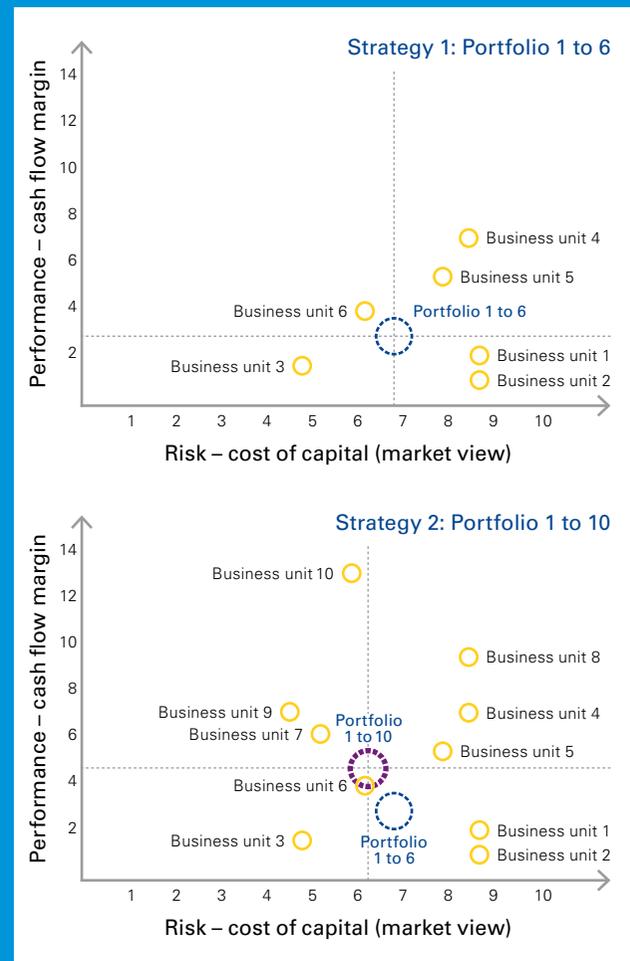
Heinrich Hiesinger (CEO thyssenkrupp AG)⁴

The direction of a company portfolio is described by the strategy of the company management. Consequently, looking to the future without a strategy is not recommendable! In the past, corporate strategies were more oriented towards questions of integration, changes in the depth of value chain or regional presence; moreover, they were often described solely in terms of quality. In the current market environment, however, the challenges posed by completely new business models – even beyond sector boundaries – are coming to the fore. To answer the question of the optimal future positioning of a company in response to this increasing complexity, various alternative strategies are developed from which the best is then selected.

The strategies associated with the challenges are generally as heterogeneous as the challenges are complex. In order to create the optimal company portfolio, the alternative strategies must be clearly distinguishable from each other in terms of their performance and risk potential and be comparable with each other in terms of value-orientation. In the current environment, more than ever before, corporate strategies must not only be formulated

qualitatively, but must be clearly supported quantitatively and documented transparently.

48 Portfolio management – performance and risk analysis (in percent)



“A purely qualitative strategy description no longer meets today’s challenges for companies! In the future, strategies must always carry a clear price tag!”

Dr. Andreas Tschöpel

Partner, KPMG in Germany

In addition to the well-known requirement for a transparent connection between a company’s operating business model and its actual value-relevant operational drivers, the strategic change in the company portfolio now also involves a change in the existing business model through alternative strategies. In addition to performance adjustments, the risk profiles of companies in particular will change. This results in effects on valuation-relevant multiples and expected return requirements.

Through a consistent analysis of the company portfolio in the status quo on the one hand and the optional implementation of an alternative strategy on the other, CEDA allows the most value-enhancing strategy to be identified quickly and transparently. Expected changes in company performance and company risk are taken into account in the decision-making calculation, as are the achievable transaction prices in the current market environment. The question of the optimal strategy as well as that of the optimal implementation time are answered on a quantitative basis.

⁴ Source: <https://www.teleboerse.de/aktien/Thyssenkrupp-in-der-Kritik-Aktionaer-auch-article20241709.html>, 17 October 2018

Source: KPMG, 2018

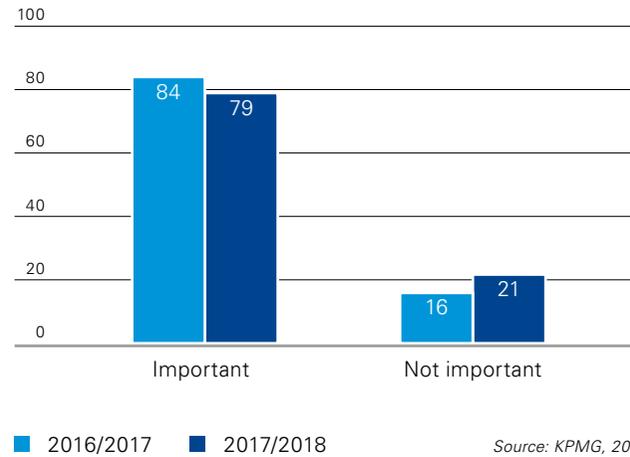
4.2 Monitoring the Enhancement of Value

Investment decisions concluded must be continually monitored with regard to their actual value enhancement in order to be able to react to changes in the market environment quickly and in a targeted manner.

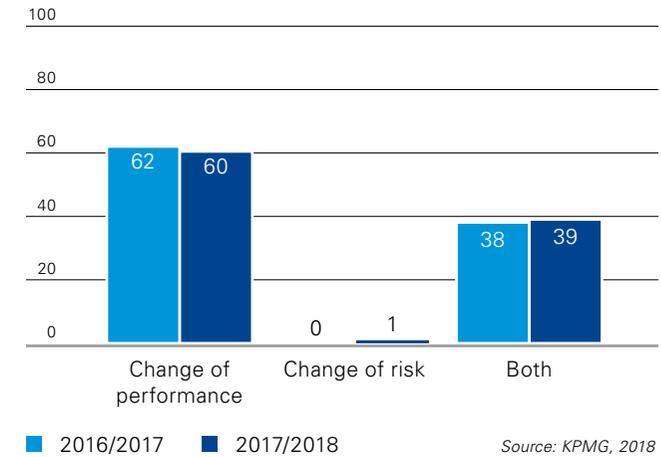
Value enhancement is always based on two factors – risk and performance. Considering and monitoring both risk and performance will improve the decision-making process.

The majority of answers show that the major monitoring instrument is still the company's performance. However, this bears the risk of not incorporating the associated investment risk in firm decisions and thus the monitoring might be biased.

49 Relevance of monitoring value enhancement
Total (in percent)



50 Monitoring of value enhancement
Total (in percent)



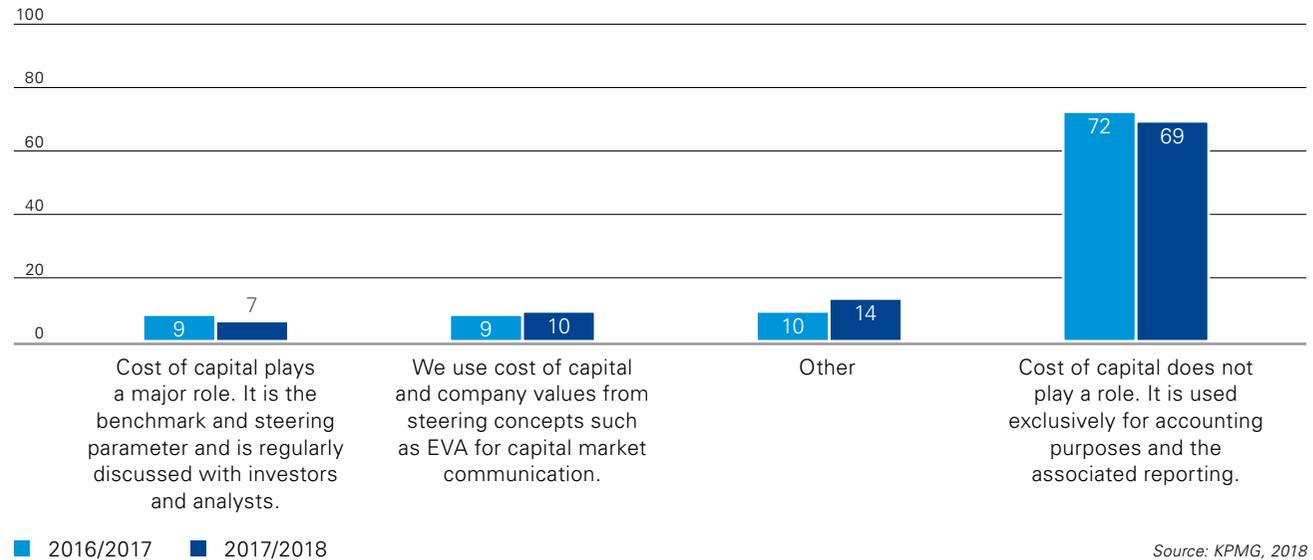
4.3 Cost of Capital in Capital Market Communication

In times where information can be obtained more easily than ever and where firms care about their stock price, transparent communication to the capital market becomes ever more important.

Moreover, stockholders also require transparent communication and an adequate assessment of their underlying investment risk.

Overall, the indicated communication behavior to the capital market of this study's participants does not differ materially from previous years.

51 Communication and use of the cost of capital Total (in percent)



Source: KPMG, 2018

“While most of the companies do not communicate cost of capital to the capital market, the cost of capital could be an important tool for the capital market to evaluate investment decisions and firm strategies.”

Karen Ferdinand
Partner, KPMG in Germany

5 Online Industry Analyses



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Summary

Introduction

Cash Flows

Cost of Capital
Parameters

Company
Values

Online Industry
Analyses

Industry
Specialists



In addition to the findings in the present study, we provide all the industry-specific figures for cost of capital parameters on our website.

At <https://hub.kpmg.de/kapitalkostenstudie-2018> you will find both the forecasting as well as the cost of capital parameters from the current study and the results of the Cost of Capital Studies from previous years in readily viewable graphs. There you have the opportunity to apply your own search criteria to display the industry and/or country-specific parameters that are relevant for you and to select their development over time.

Beyond that, you can also increase the degree of detail for the industry assessments. Interested readers have the opportunity to select sub-sector assessments.

As in the previous year, we have performed separate assessments of sectors/sub-sectors for which we had responses from at least five participants.

52 Instructions for KPMG Cost of Capital Study 2018 interactive

KPMG Cost of Capital Study 2018

User manual

PARAMETER TOTAL
shows the development of the parameter based on all participants

PARAMETER FILTERED
shows the development of the parameter based on the selected filter(s)

GENERAL INFORMATION ON FILTERS

- Only one selection is possible per filter (country, industry, family-owned)
- Filters may be combined (e.g. Germany + Automotive sector)
- A separate evaluation only takes place, if at least 5 answers were submitted

1 ANALYZED PARAMETER
specifies the parameter analyzed on this page

2 After many years of decline the average risk free rate increased from 0.9 percent to 1.3 percent and remained at its second-lowest level since the study has been published.

3 Individualized analysis – Risk-free rate

4 NUMBER OF ANSWERS
indicates the number of answers on which the calculation of the average is based

5 FILTER DAX-30
shows the development of the parameter exclusively on the basis of the participants in the DAX-30 index from Germany

6 FILTER FAMILY-OWNED COMPANIES
shows the development of the parameter exclusively on the basis of the participants, who have classified themselves as family-owned companies or not-family-owned companies

7 FILTER BY COUNTRY
shows the development of the parameter exclusively on the basis of the participants from the selected country

8 FILTER BY INDUSTRY
shows the development of the parameter exclusively on the basis of the selected industry

Source: KPMG, 2018

List of Abbreviations

CAPM	Capital Asset Pricing Model	IDW	“Institut der Wirtschaftsprüfer in Deutschland e.V.”: Institute of Public Auditors in Germany, Incorporated Association
CEDA	Corporate Economic Decision Assessment	IFRS	International Financial Reporting Standards
CGU	Cash Generating Unit	KFS/BW	“Fachsenat für Betriebswirtschaft in Österreich des KSWÖ”: Council of Experts for Business Administration
CEO	Chief Executive Officer	KSW	“Kammer der Steuerberater und Wirtschaftsprüfer in Österreich”: Chamber for Tax Advisors and Auditors in Austria
DAX	Main German Stock Exchange	M&A	Mergers & Acquisitions
DAX-30	The 30 largest blue chips on the main German Stock Exchange	MDAX	German Mid Caps Stock Index
Debt Ratio	Ratio of Market Value of (Net) Debt to Market Value of Total Capital (Entity Value)	n/a	Not available
EBIT	Earnings Before Interest and Taxes	n/m	Not meaningful
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization	P&L	Profit & Loss Statement
Equity Ratio	Ratio of Market Value of Equity to Market Value of Total Capital (Entity Value)	ROCE	Return on Capital Employed
EVA	Economic Value Added	S&P	Standard & Poor’s
FamDAX	DAXplus Family 30 Index, consists of the 30 largest and most liquid family-owned businesses (founding family holds at least 25 percent of the voting rights or seat in the management board of advisory board and 5 percent of the voting rights) in the Prime Standard of the German Stock Exchange	SDAX	Small Caps, the companies following the MDAX with market capitalization and exchange turnover
FAUB	“Fachausschuss für Unternehmensbewertung und Betriebs- wirtschaft des IDW”: Technical Committee for Business Valuation and Economics of the IDW	SFAS	Statement of Financial Accounting Standards
IAS	International Accounting Standards	TecDAX	Stock Index including the Performance of the 30 largest German Companies from the Technology Sector
		US-GAAP	United States Generally Accepted Accounting Principles
		WACC	Weighted Average Cost of Capital

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