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12. Jahreskonferenz der EACVA

Market and Sector Returns for Cost of Capital – a DACH and European View

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Disclaimer

The ValueTrust European capital market study presents an empirical analysis, which serve the purpose of illustrating the cost of capital of specific capital markets. Nevertheless, the available information and the corresponding exemplifications do not allow a complete exposure of a proper derivation of costs of capital. Furthermore, the market participant has to take into account that the company specific costs of capital can vary widely due to individual corporate situations.

The listed information is not specified to anyone, and consequently, it cannot be directed to an individual or juristic person. Although we are always endeavored to present information that is reliable, accurate, and current, we cannot guarantee that the data is applicable to valuation in the present as well as in the future. The same applies to our underlying data from the data provider S&P Capital IQ and Thomson Reuters Aggregates App.

We recommend a self-contained, technical, and detailed analysis of the observed situation, and we dissuade from taking action based on the provided information only.

ValueTrust does not assume any liability for the up-to-datedness, completeness or accuracy of this study or its contents.

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1.   Introduction

Theoretical models for derivation of equity or opportunity costs

- According to valuation principles, the cost of equity shall be future oriented and valuation date specific. Under the general assumption that cost of capital are comprised of a risk free component and a risk premium, the risk free rate is generally measurable at market rates whereas the risk premia for equity is generally not.

- Theoretical models for derivation of equity costs or opportunity costs:

Capital market models (e.g. CAPM)	Historical Total Shareholder Return (dividend yield plus share price development)	Implied cost of equity (expected dividend yield plus growth rate)

Models based on historical returns[1]
- ✓ Wide, transparent database
- ✓ Simple use
- ✗ Assumption of a constant MRP over time
- ✗ Measurement of realized returns
- ✗ Combination with ex-ante value risk-free rate problematic

Models based on implied returns
- ✓ Future orientation
- ✓ Inverse application of valuation methods
- ✓ Short-term measurement possible
- ✗ Influenced by non-financial expectations
- ✗ Forecast uncertainty

> In the current low interest rate environment, the assumption of a time-invariant market risk premium is strongly debated.

1) For a further discussion see also Bertram/Castedello/Tschöpel, Überlegungen zur Marktrendite und zur Marktrisikoprämie, Corporate Finance (2015) 468 - 473.

Introduction
The concept of implied cost of capital gained in momentum

- In June 2012, the Regional Court Cologne demanded an own comprehensible assessment of the risk premium independent of the CAPM in the appraisal proceedings of ALBA/Interseroh[1]:

Topic	1st expert opinion	ValueTrust	Cologne regional court
Market risk premium	Analysis of historical excess stock returns	Determination of the market risk premium taking into account both historical stock market returns and implied stock market returns	• Approval of the market risk premium determined by ValueTrust • Reasoning: No mathematical exact determination of the market risk premium possible *(para. 136);* a forward-looking view on the market risk premium is explicitly appreciated *(para. 137)*

- In March 2016, the first ValueTrust capital market study for Austria was published in cooperation with JKU Linz. In June 2016, ValueTrust published in cooperation with JKU Linz an article[2] on the implied market risk premium on the Austrian capital market.

- In 2018, the concept of implied cost of capital was recognized by the German *Institut der Wirtschaftsprüfer (IDW) Fachausschuss für Unternehmensbewertung (*FAUB)[3].

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1) ValueTrust expert report, Ruling of the Cologne regional court as of 23. February 2018, case number 82 O 66/11.
2) cf. Aders/Aschauer/Dollinger, Die implizite Marktrisikoprämie am österreichischen Kapitalmarkt (RWZ, 6/2016, p. 195 – 202).
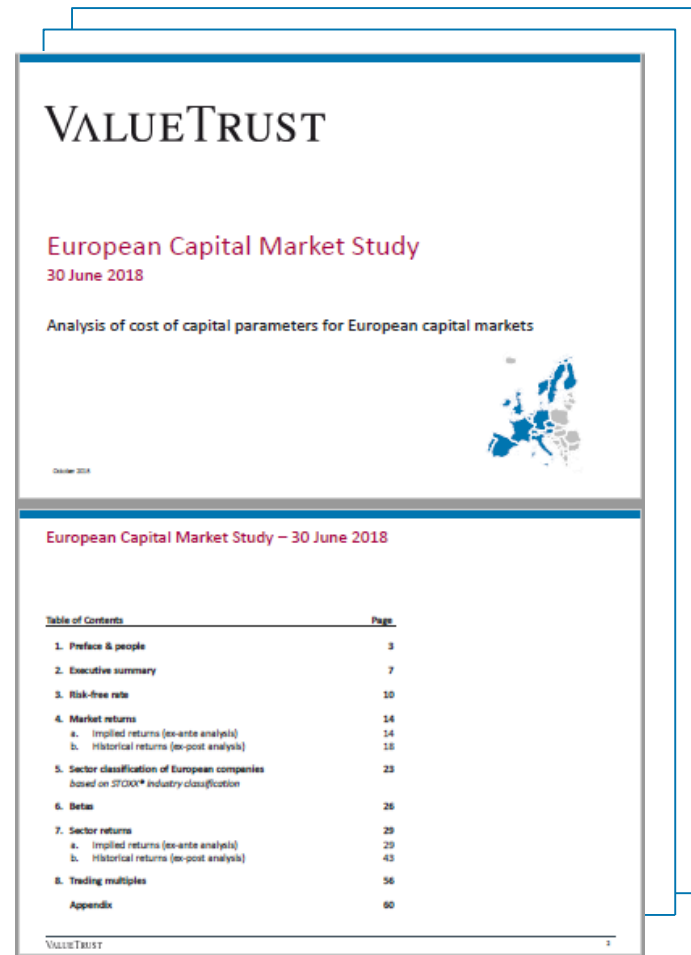3) cf. Castedello/Jonas/Schieszl/Lenckner, Die Marktrisikoprämie im Niedrigzinsumfeld – Hintergrund und Erläuterung der Empfehlung des FAUB (WPg, 13/2018, p. 806-825).

2.   Data set and data sources

Data set and data sources
ValueTrust capital market studies

- 1st edition of the ValueTrust European Capital Market Study and 3rd edition of the ValueTrust DACH[1] Capital Market Study powered by finexpert and JKU Linz both released in October 2018:
  - Parameters to calculate the cost of capital based on the Capital Asset Pricing Model (risk-free rate, market risk premium and sector betas)
  - Implied as well as historical market and sector returns
  - Capital structure-adjusted implied sector returns (indicator for the unlevered cost of equity)
  - Analysis of empirical (ex-post) cost of equity in the form of total shareholder returns
  - Analysis of trading multiples

Data set and data sources
ValueTrust capital market studies

	Europe	DACH
Indices	▪ STOXX Europe 600	▪ Germany: CDAX, ▪ Austria: WBI, ▪ Switzerland: SPI
Number of companies	▪ Europe: 596	▪ Germany: 547 ▪ Austria: 59 Σ 807 ▪ Switzerland: 201
Sector classification	Thomson Reuters	finexpert
Data provider	Thomson Reuters	Capital IQ
# of studies	1 (as of 30 June 2018)	3 (latest as of 30 June 2018)
Time period covered	31 Dec 2012 - 30 June 2018	31 Dec 2011 - 30 June 2018
Sector split	Financials 134 22% Industrials 114 19% Consumer Cyclicals 90 15% Basic Materials 58 10% Healthcare 47 8% Consumer Non-Cyclicals 45 8% Technology 31 5% Energy 26 4% Telecommunications Services 26 4% Utilities 25 4%	Industrials 214 27% Information Technology 106 13% Consumer Goods 97 12% Consumer Service 71 9% Financial Services 70 9% Pharma & Healthcare 68 8% Real Estate 60 7% Basic Materials 42 5% Banking 36 4% Telecommunication 15 2% Insurance 14 2% Utilities 14 2%

Note: CDAX - Composite German Stock Index, WBI - Vienna Stock Exchange Index, SPI - Swiss Performance Index.

3   Methodology and empirical results

Implied and historical market returns and market risk premium

Methodology
Implied market returns – basic concept

- The ex-ante analysis method seeks costs of capital which represent the **return expectations of market participants**. The **future-oriented** computation of **implied market returns** and **market risk premia** is based on profit estimates for public companies and return calculations.
- It is supposed that the estimates of financial analysts reflect the expectations of the capital market.
- The basic logic assumes:

$$(1) \quad MV = \frac{CF}{r - g} \quad \longrightarrow \quad r = \frac{CF}{MV} + g \; .$$

1) MV = market value, CF = expected cash flows, r = cost of capital, g = projected growth rate.

Methodology
Implied market returns – basic models

- Three basic models can be used for the calculation of implied costs of equity[1]:

	Dividend Discount Model	Residual Income Valuation Model	Earnings Capitalization Model
Description	- Expected dividend distributions as proxy for the expected future cash flow	- A residual income is net income for the year less the return on the book value of equity demanded by equity investors	- Expected profits as the basis for deriving the implicit return on capital
Pros	- Most commonly used model	- No assumption on reinvestment rate necessary	- No input of book value for the estimation required
Cons	- Requires an assumption on reinvestment rate	- Systematic distortions in analyst estimates may result in estimation errors - Input of book value for the estimation required	- Implied assumption of full retention - Multi period planning horizon requires detailed input and forecasts
Applied by	e.g. Berg et al. (2017)[2]	e.g. Gebhardt/Lee/Swaminathan (2001)[3] e.g. Jäckel/Kaserer/Mülhäuser (2013)[4]	e.g. Ohlson/Jüttner-Nauroth (2005)[5]

- Various model specifications were developed based on the three basic models.

1) For a discussion of the models see also Beumer, Implizite Marktrisikoprämien – Konsistente Ermittlung und Anwendung, Corporate Finance (2015) 330 ff .
2) Berg/Heigermoser/Kaserer/Kittlauss/Willershausen, Schätzung erwarteter Marktrisikoprämien mittels impliziter Kapitalkosten, Corporate Finance (2017), 226 ff.
3) Gebhardt/Lee/Swaminathan, Toward an implied cost of capital, Journal of Accounting Research (2001), 135 ff.
4) Jäckel/Kaserer/Mühlhäuser, Analystenschätzungen und zeitvariable Marktrisikoprämien – Eine Betrachtung der europäischen Kapitalmärkte, WpG (2013) 365 ff.
5) Ohlson/Jüttner-Nauroth, Expected EPS and EPS growth as determinants of value, Review of Accounting Studies (2005), 349 ff.

- The – **simplified** to annually – Residual Income Valuation Model was applied:[1]

$$(1) \quad MC_t = \frac{DIV_{t+1}}{r - g} \quad ; \quad (2) \quad MC_t = BV_t + \frac{NI_{t+1} - rBV_t}{r_t - g} \quad ; \quad (3) \quad r_t = \frac{NI_{t+1}}{MC_t} + \left(1 - \frac{BV_t}{MC_t}\right) * g \quad .$$

- Where:

  MC_t= market capitalization in t; BV_t= Book value of equity in t; DIV_{t+1}= expected dividend in the following period t+1; r_t= cost of equity in t; g = projected growth rate; NI_{t+1}= expected net income in the following period t+1.

- The model does not need any assumptions on retention rate and Return on Equity for reinvestments. These value drivers and thus the value of growth are reflected by the market in the Price-/Book-Ratio.

- The assumption on the growth rate was set to 2.0% according to the inflation rate target of the European Central Bank.

- The analysis is based on the consensus of subjective analysts' estimates of the projected net income in one year.

- Data sources for the expected annual net income, market capitalization, and book value of equity of the analyzed companies are S&P Capital IQ/Thomson Reuters.

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1) cf. Babbel, Challenging Stock Prices: Stock prices und implied growth expectations, in: Corporate Finance, N. 9, 2015, p. 316-323, in particular p. 319. For further explanation of the Babbel model, see the ValueTrust capital market studies for Austria, the DACH region and Europe.

Empirical results
Implied market risk premium: European Market – STOXX Europe 600

In the years from 2012 to 2018 the **implied market returns** were within a range of **7.6% to 9.8%** .

Subtracting the risk-free rate from the implied market return, the **market risk premium** ranges between **5.4% to 7.3%.**

Implied market risk premium - Europe
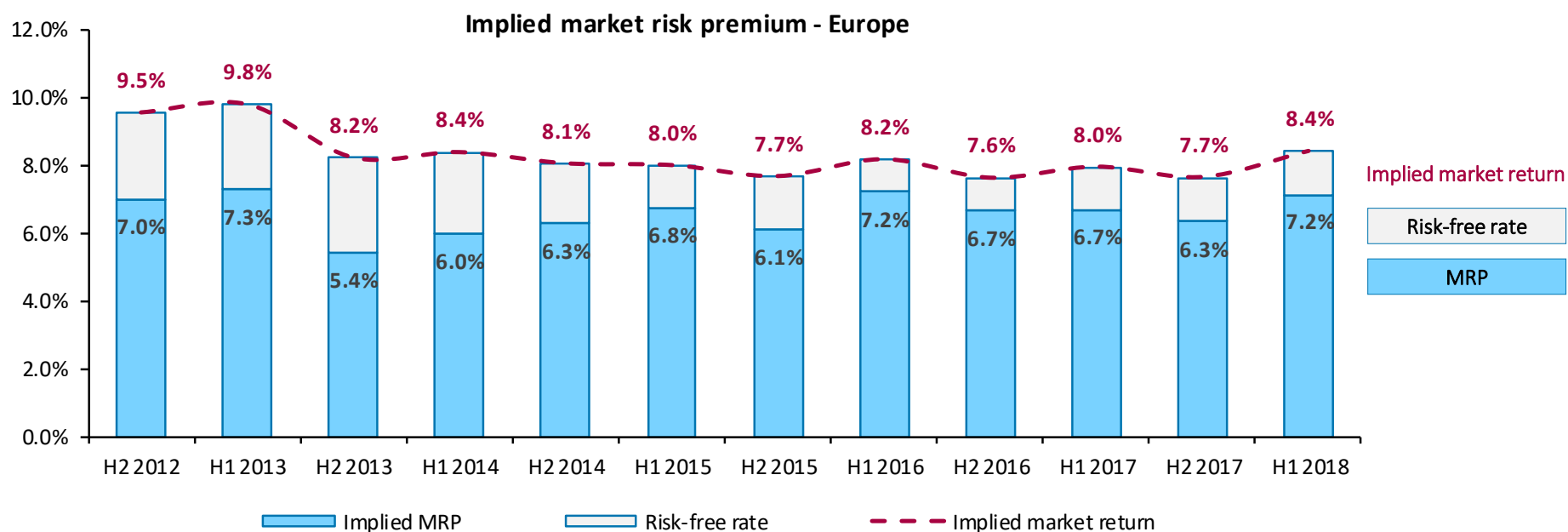
	H2 2012	H1 2013	H2 2013	H1 2014	H2 2014	H1 2015	H2 2015	H1 2016	H2 2016	H1 2017	H2 2017	H1 2018
Implied market return	9.5%	9.8%	8.2%	8.4%	8.1%	8.0%	7.7%	8.2%	7.6%	8.0%	7.7%	8.4%
Risk-free rate	2.5%	2.5%	2.8%	2.4%	1.8%	1.2%	1.6%	1.0%	1.0%	1.2%	1.3%	1.3%
Implied MRP	**7.0%**	**7.3%**	**5.4%**	**6.0%**	**6.3%**	**6.8%**	**6.1%**	**7.2%**	**6.7%**	**6.7%**	**6.3%**	**7.2%**

Note: Interest rate as of reference date using 3-month average yield curves in accordance with IDW S 1.

Source: Thomson Reuters, European Central Bank, ValueTrust analysis.

Methodology
Historical market returns

- Observation period: 15 years (start: 2004).

- Calculation method: geometric and arithmetic mean.

- Annually realized returns are shown in the return triangle.[1]

- Total shareholder returns (TSR) are analyzed, which include the price development and dividend yield.

- STOXX Europe 600 is a performance index, it only includes price yields. The relevant total return index for Europe is the STOXX Europe 600 Gross Return ("STOXX Europe 600 GR").

- The EURO STOXX 50 Volatility ("VSTOXX") serves as an indicator for the stock market's expectations of volatility and can thus be used as a risk measure.

- Note that the historical market return calculations are based on actual index data points, whereas the implied market return and all sector calculations are based on the Thomson Reuters Aggregates App. Therefore, the comparability can be impeded by different aggregation and composition methodologies.

1)   The German Stock Institute e.V. (DAI) developed the return triangle for DAX and EURO STOXX.

Empirical results
Historical market returns and volatility – European Market
STOXX Europe 600 GR vs. VSTOXX since 2012

- In the first half of 2018 the STOXX Europe reached a new record high of 195.99.
- At the beginning of 2018 the VSTOXX remained at rather low levels below the 10% quantile. In February and March, a short period of higher volatility was observed. Starting from April 2018 the VSTOXX was inside or below the lower end of the volatility range.

Historical development of STOXX Europe 600 GR vs VSTOXX

High: 40.80

High: 195.99

Low: 101.67

Low: 10.68

STOXX Europe 600 (Total Return Index)   EURO STOXX 50 Volatlity (VSTOXX) - right axis   Volatility range (10% - 90% quantile)

Source: Thomson Reuters, CapitalIQ, ValueTrust analysis.

Empirical results
Historical market returns (Arithmetic Mean) – European Market STOXX Europe 600 GR Triangle

Reading example:
An investment in the STOXX Europe 600 Index mid of the year 2012, when sold mid of the year 2017, would have yielded an average annual return (arithmetic mean) of 13.0%. Other five-year investment periods are displayed along the black steps.

Legend:

Color value	Description
15.0%	Return greater than 13%
10.0%	Return between 8% and 13%
5.0%	Return between 3% and 8%
0.0%	Return between -3% and +3%
-5.0%	Return between -3% and -8%
-10.0%	Return between -8% and -13%
-15.0%	Return lower than -13%

STOXX Europe 600 GR Triangle (rows = Buy year, columns = Sell year)

Buy \ Sell	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2017															3.6%
2016														18.9%	11.2%
2015													-10.4%	4.2%	4.0%
2014												15.1%	2.3%	7.8%	6.8%
2013											23.9%	19.5%	9.5%	11.9%	10.2%
2012										17.6%	20.8%	18.9%	11.5%	13.0%	11.4%
2011									-4.2%	6.7%	12.4%	13.1%	8.4%	10.1%	9.2%
2010								16.1%	6.0%	9.8%	13.4%	13.7%	9.7%	11.0%	10.1%
2009							22.3%	19.2%	11.4%	12.9%	15.1%	15.1%	11.5%	12.4%	11.4%
2008						-24.1%	-0.9%	4.7%	2.5%	5.5%	8.6%	9.5%	7.0%	8.3%	7.9%
2007					-25.4%	-24.8%	-9.1%	-2.8%	-3.1%	0.4%	3.7%	5.1%	3.4%	5.0%	4.8%
2006				26.5%	0.5%	-7.7%	-0.2%	3.1%	1.8%	4.1%	6.6%	7.5%	5.7%	6.9%	6.6%
2005			19.7%	23.1%	6.9%	-0.8%	3.8%	5.8%	4.4%	6.0%	8.0%	8.7%	7.0%	8.0%	7.6%
2004		17.9%	18.8%	21.4%	9.7%	2.9%	6.1%	7.6%	6.1%	7.4%	9.0%	9.6%	7.9%	8.8%	8.4%
2003	22.6%	20.3%	20.1%	21.7%	12.3%	6.2%	8.5%	9.4%	7.9%	8.9%	10.3%	10.7%	9.0%	9.7%	9.3%

Investment period in years: 5 / 10 / 15

Empirical results
Historical market returns (Geometric Mean) – European Market STOXX Europe 600 GR Triangle

STOXX Europe 600:

- the **arithmetic mean** of the historical market returns is **9.3%**
- the **geometric mean** of the historical market returns is **7.9%**

Legend:

Color	Meaning
15.0%	Return greater than 13%
10.0%	Return between 8% and 13%
5.0%	Return between 3% and 8%
0.0%	Return between -3% and +3%
-5.0%	Return between -3% and -8%
-10.0%	Return between -8% and -13%
-15.0%	Return lower than -13%

Buy / Sell matrix (Sell years as columns, Buy years as rows):

Buy \ Sell	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2017															3.6%
2016														18.9%	11.0%
2015													-10.4%	3.2%	3.3%
2014												15.1%	1.5%	7.0%	6.1%
2013											23.9%	19.4%	8.5%	11.0%	9.5%
2012										17.6%	20.7%	18.8%	10.7%	12.3%	10.8%
2011									-4.2%	6.1%	11.8%	12.6%	7.6%	9.4%	8.5%
2010								16.1%	5.5%	9.4%	12.8%	13.3%	8.9%	10.3%	9.4%
2009							22.3%	19.1%	10.8%	12.5%	14.7%	14.7%	10.7%	11.7%	10.8%
2008						-24.1%	-3.7%	2.5%	0.8%	3.9%	7.0%	8.1%	5.6%	7.0%	6.7%
2007					-25.4%	-24.8%	-11.6%	-5.3%	-5.1%	-1.7%	1.6%	3.2%	1.6%	3.2%	3.3%
2006				26.5%	-2.9%	-10.6%	-3.3%	0.3%	-0.5%	1.9%	4.5%	5.6%	3.9%	5.2%	5.0%
2005			19.7%	23.1%	4.1%	-3.8%	0.9%	3.3%	2.2%	4.0%	6.1%	6.9%	5.2%	6.3%	6.1%
2004		17.9%	18.8%	21.3%	7.4%	0.2%	3.6%	5.3%	4.0%	5.5%	7.2%	7.9%	6.2%	7.1%	6.9%
2003	22.6%	20.2%	20.1%	21.6%	10.3%	3.6%	6.1%	7.3%	6.0%	7.1%	8.5%	9.0%	7.4%	8.2%	7.9%

Investment period in years (5, 10, 15)

Practical implication
Combined use of ex-ante and ex-post analysis to derive MRP - Europe

Analysis of market returns and volatility (2012-2018) - Europe
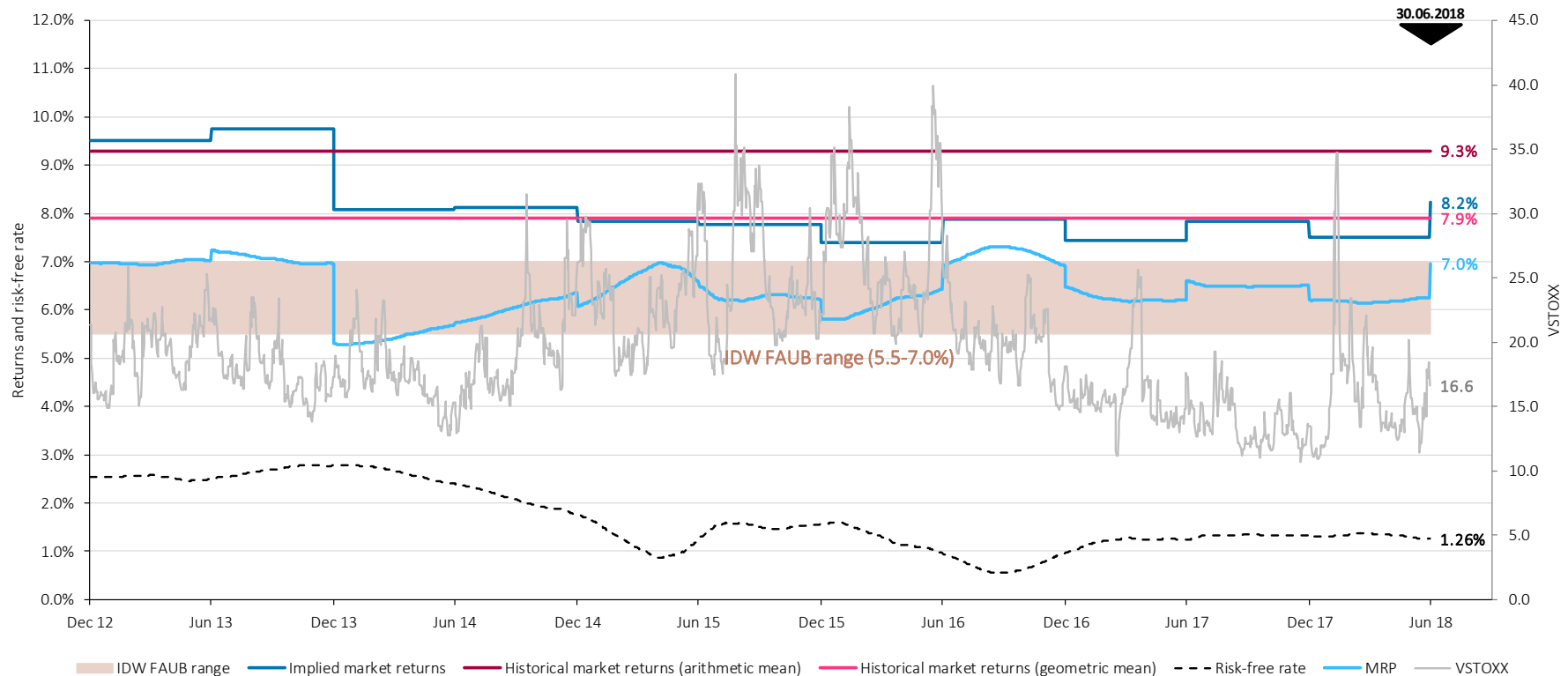
| IDW FAUB range | Implied market returns | Historical market returns (arithmetic mean) | Historical market returns (geometric mean) | Risk-free rate | MRP | VSTOXX |

> The combined use of ex-ante and ex-post analyses allows the strengths of both approaches to be realized and mitigates the weaknesses of the approaches when applied solely.

Source: Thomson Reuters, European Central Bank, CapitalIQ, ValueTrust analysis.

3   Methodology and empirical results

Implied and historical sector returns

- Sector return calculations are based on the Residual Income Valuation Model.[1]

- The required data (i.e. net income, market capitalization, and book values of equity) are sourced from the data provider Thomson Reuters on an aggregated sector level.

- Regarding the profit growth, for all sectors for simplification purposes a growth rate of 2.0% was assumed.

- Implied returns are unlevered with the following adjusting equation for the costs of equity[2] to take the specific leverage into account[3]:

$$k_E^L = k_E^U + \left(k_E^U - R_f\right) * \frac{D}{E}$$

with:

k_E^L	=	Levered cost of equity
k_E^U	=	Unlevered cost of equity
R_f	=	Risk-free rate
$\frac{D}{E}$	=	Debt [4] -to-equity ratio

1) cf. Babbel, Challenging Stock Prices: Share prices and implied growth expectations(Corporate Finance, n. 9, 2015, p. 316-323, especially p. 319).

2) In situations in which the debt betas in the market are distorted, we would have to adjust these betas to avoid unsystematic risks. For simplification reasons, we deviate from our typical analysis strategy to achieve the enterprise value (Debt beta > 0) and assume that the costs of capital are at the level of the risk-free rate. This process is designed by the so-called Practitioners formula (uncertain tax shields, debt beta = 0), cf. Pratt/Grabowski, Cost of Capital, 5th ed., 2014, p. 253.

3) We assume that the cash and cash equivalents are used entirely for operational purposes. Consequently, we do not deduct excess cash from the debt.

4) "Debt" is defined as all interest bearing liabilities. The debt illustration of the companies of the "Financials" sector only serves an informational purpose. We will not implement an adjustment to the company's specific debt (unlevered) because a bank' s indebtedness is part of its operational activities and economic risk.

Methodology
Implied sector returns

- The ValueTrust European capital market study includes the following analysis on a sector level:
  - Sector betas in accordance with CAPM
  - Implied as well as historical sector returns
  - Capital structure-adjusted implied sector returns (indicator for the unlevered cost of equity)
  - Analysis of empirical (ex-post) cost of equity in the form of total shareholder returns

- Sector classification:
  - Financials
  - Basic Materials
  - Consumer Cyclicals
  - Telecommunications
  - Industrials
  - Consumer Non-Cyclicals
  - Healthcare
  - Technology
  - Utilities
  - Energy

Implied sector returns – Telecommunication companies in Europe

Implied sector returns for Telecommunication companies in Europe

ø *Levered implied sector return (2012-2018):*   *7.6%*

ø *Unlevered implied sector return (2012-2018):*   *4.3%*

Legend:
— Unlevered weighted mean
- - - Levered weighted mean

Data labels (Levered weighted mean): 11.0%, 10.3%, 6.9%, 7.0%, 6.4%, 6.3%, 6.3%, 7.0%, 6.9%, 7.6%, 7.3%, 8.3%

Data labels (Unlevered weighted mean): 6.5%, 5.9%, 4.6%, 4.5%, 3.9%, 3.5%, 3.6%, 3.5%, 3.5%, 3.9%, 3.8%, 4.3%

X-axis: H2 2012, H1 2013, H2 2013, H1 2014, H2 2014, H1 2015, H2 2015, H1 2016, H2 2016, H1 2017, H2 2017, H1 2018
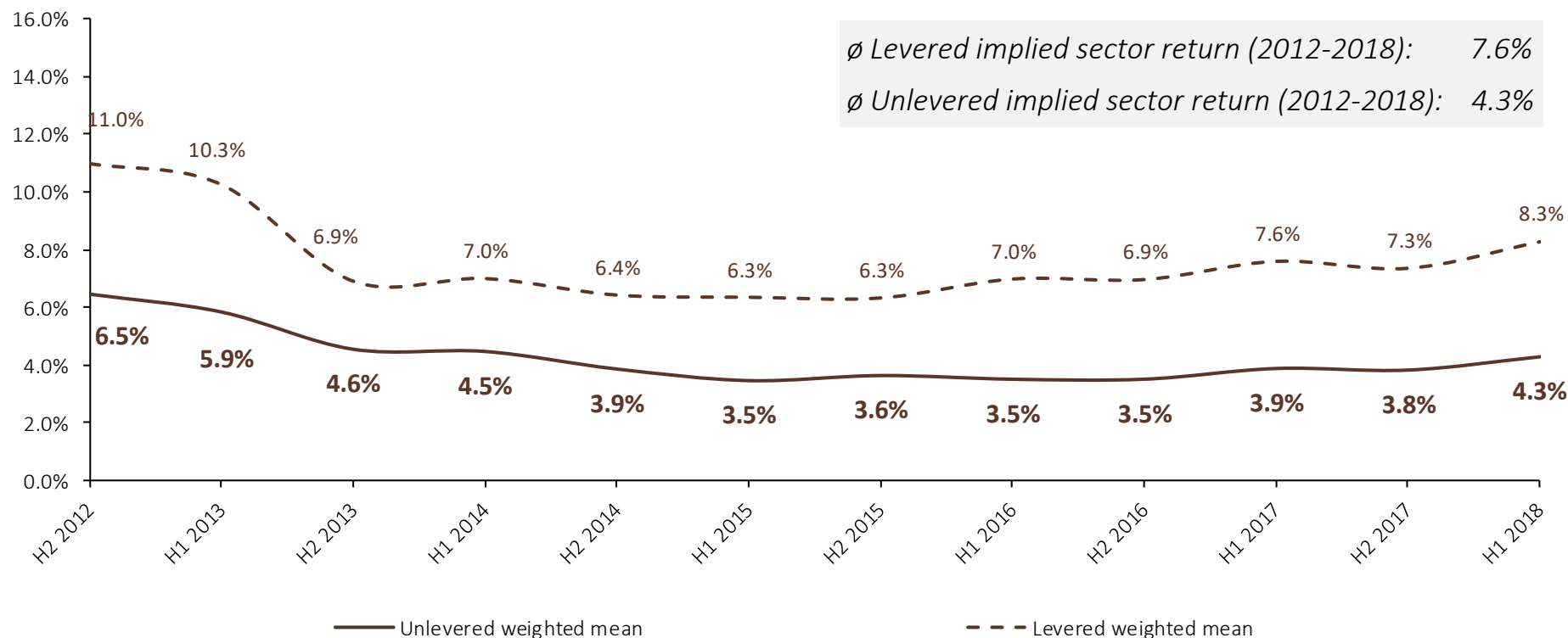
▶ The **unlevered implied sector return** for European companies is at **4.3%** as of 30 June 2018 which is at the same level as the historical average while **levered implied sector returns** at **8.3%** are higher than the historical average **(7.6%)**.

Source: ValueTrust European Capital Market Study

Empirical results and practical implications
Total shareholder return – Telecommunication companies in Europe

Historical development of the annual TSR since 2013
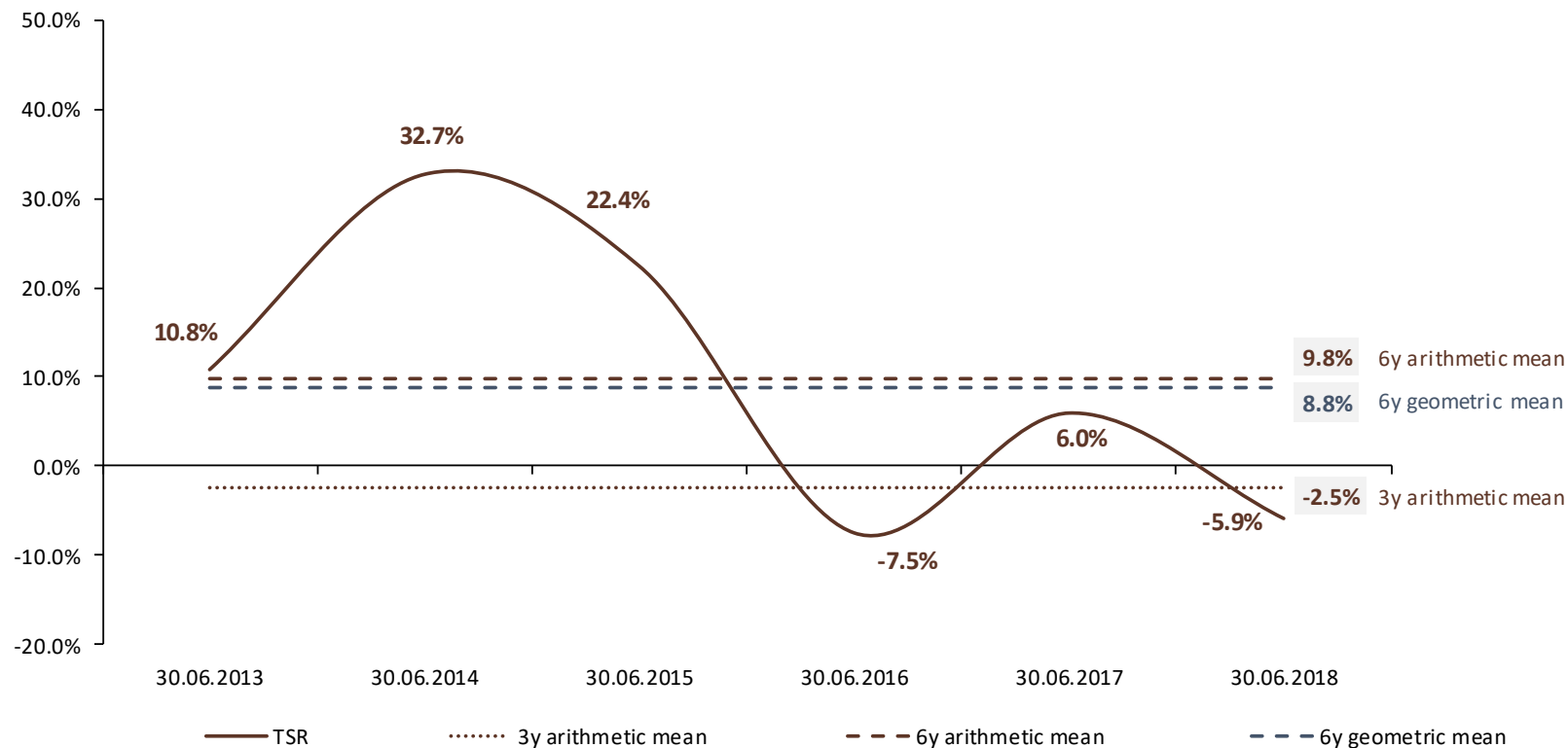
In the **last 3 years**, the **average annual TSR** of European Telecommunication companies is at **-2.5%** as of 30 June 2018 and **thus significantly below the long-term average (9.8%)**.

Source: ValueTrust European Capital Market Study

Empirical results and practical implications
CAPM – Telecommunication companies in Europe

Derivation of beta

Sector	Beta levered	Debt ratio	Leverage	Rating	Credit Spread	Debt Beta	Beta unlevered
	5-years 2018-2014 monthly	5-years 2018-2014 monthly	5-years 2018-2014 monthly	as of 30. Jun 18	5-years 2018-2014 monthly	5-years 2018-2014 monthly	5-years 2018-2014 monthly
Financials	1.07	70%	232%	A-	1.13%	n.a.	n.a.
Telecommunications Services	0.93	57%	131%	BBB-	1.63%	0.23	0.53
Industrials	0.92	53%	111%	BBB+	1.20%	0.17	0.53

Capital market parameters - Europe

- Risk-free rate as of 30 June 2018
  - ➢ 1.26%
- Implied market return as of 30 June 2018
  - ➢ 8.4%
- Implied market risk premium as of 30 June 2018
  - ➢ 7.2%

Cost of equity (CAPM)

- Beta 5-year - levered
  - ➢ $k_E^L = 1.26\% + 0.93*(8.4\% - 1.26\%) =$ **7.9%**

- Beta 5-year - unlevered
  - ➢ $k_E^U = 1.26\% + 0.53*(8.4\% - 1.26\%) =$ **5.0%**

> ▶ For **European Telecommunication companies** a **levered cost of equity** of **7.9%** as of 30 June 2018 is derived. By using an unlevered beta, **unlevered cost of equity** of **5.0%** as of 30 June 2018 result.

Source: ValueTrust European Capital Market Study

Empirical results and practical implications
Cost of capital analysis – European Telecommunication companies

Europe		
	30 June 2018	Ø Historical
CAPM CoE	7.9% *levered*	-
Total Shareholder Return (TSR)	-5,9% *1 year*	9.8% *6 years*
Implied CoE	8.3% *levered*	7.6% *6 years*

Source: ValueTrust European Capital Market Study

Empirical results and practical implications
ROE – Telecommunication companies in Europe

Historical development of ROE in the Telecommunications sector since 2008

$$ROE\ before\ taxes_t = \frac{EBT_t}{Book\ Value\ of\ Equity_{t-1}}$$

$$ROE\ after\ taxes_t = \frac{Net\ income_t}{Book\ Value\ of\ Equity_{t-1}}$$

in %

| | Arithmetic mean ROE before taxes | ø ROE before taxes (2008-2017) | Arithmetic mean ROE after taxes | ø ROE after taxes (2008-2017) |

ø ROE before taxes **19.2%**

ø ROE after taxes **15.6%**

ø 6 years **16.0%**

ø 6 years **12.8%**
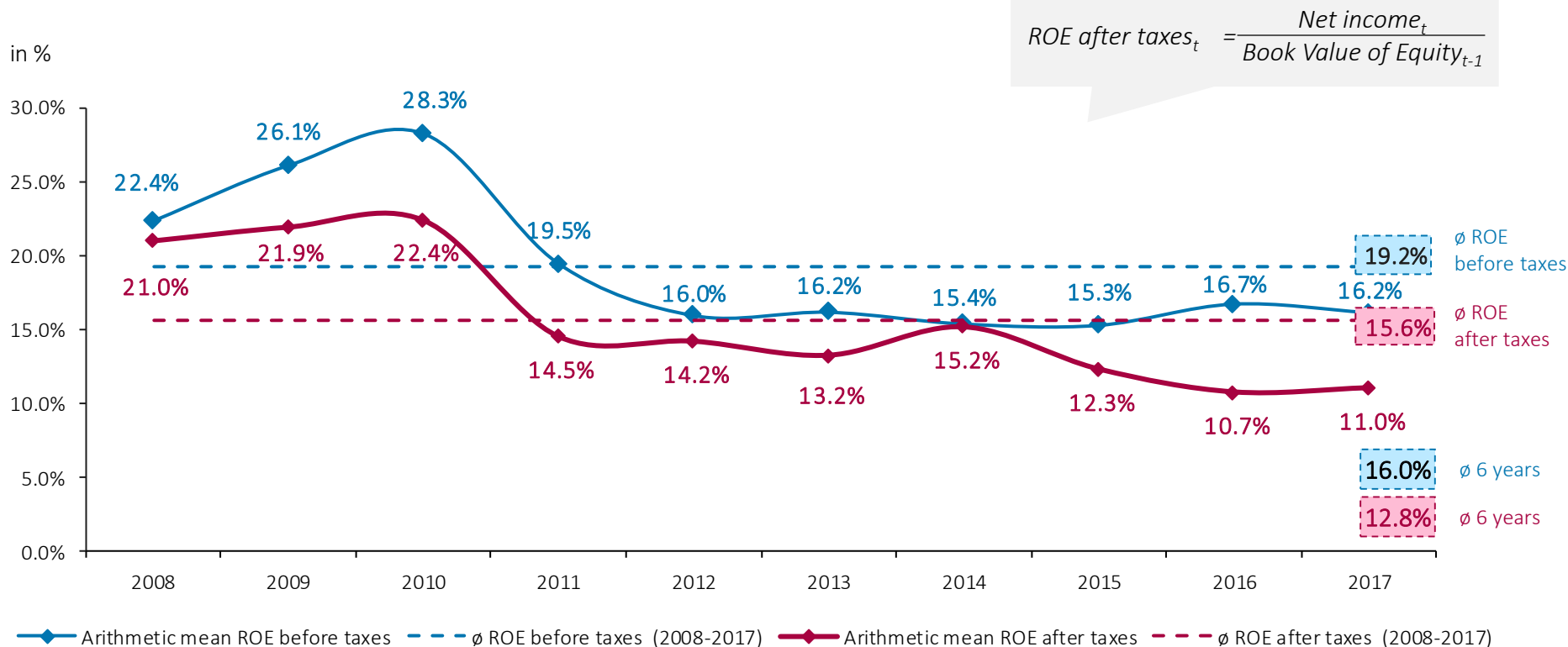
As of 31 December 2017, the **ROE after tax** of Telecommunication companies in Europe amounts to **11.0%**. The average **ROE after tax** over the **past 10 years** is at **15.6%** and over the **past 6 years** at **12.8%**

Source: Capital IQ, ValueTrust analysis. Note: ROE analyses are not part of the ValueTrust European capital market study.

Empirical results and practical implications
Summary of Outside-in analysis of European Telecommunication Companies

Europe		
30 June 2018		**Ø Historical**
CAPM CoE	7.9% *levered*	-
Total Shareholder Return (TSR)	-5,9% *1 year*	9.8% *6 years*
Implied CoE	8.3% *levered*	7.6% *6 years*

Europe		
31 Dec 2017		**Ø Historical**
ROE after taxes	11.0%	12.8% *6 years*

Source: Capital IQ, ValueTrust European capital market study, ValueTrust analysis. Note: ROE analyses are not part of the ValueTrust European capital market study.

Empirical results and practical implications
Summary of cost of capital analysis – All sectors

	Implied CoE (levered)		Total Shareholder Return (TSR)	
	30 June 2018	Ø Historical *6 years*	30 June 2018 *1 year*	Ø Historical *6 years*
Financials	9.6%	9.2%	1.2%	18.1%
Industrials	7.6%	8.3%	12.4%	18.9%
Consumer Cyclical	9.7%	9.1%	16.2%	20.4%
Basic Materials	8.4%	8.0%	17.7%	14.6%
Healthcare	8.2%	8.0%	3.1%	14.4%
Consumer Non-Cyclicals	7.1%	7.1%	2.3%	11.6%
Technology	6.4%	6.9%	24.5%	23.8%
Energy	8.8%	9.0%	34.0%	13.9%
Telecom	8.3%	7.6%	-5,9%	9.8%
Utilities	8.3%	8.2%	8.2%	13.0%
All	8.4%	8.3%	10.0%	16.6%

Source: ValueTrust European Capital Market Study

4. Summary

Summary
Practical implications

- In the current low interest rate environment, valuation practitioners need to carefully evaluate the validity of a time-invariant MRP before drawing any value conclusions.

- The MRP can not be directly empirically determined from capital market data, but – according to the CAPM – is the difference between the empirically observable market return and the risk-free rate.

- Therefore, most discussions on MRP should focus on the "right" market return and not the amount and method of deriving the "right" MRP.

- The ex-ante method offers an alternative to the ex-post approach of calculating the costs of capital by means of regression analysis through the CAPM. The ex-ante method is conveniently applied for plausibility purposes.

- While historically determined MRP serve as an indicator for long-term return ranges, implied returns are date specific estimates and capture future oriented return expectations.

- The combined use of ex-ante and ex-post analyses allows the strengths of both approaches to be realized.

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