



# International Valuation Newsletter

February 2017

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# Dear reader

Following a turbulent 2016 that presented a host of unexpected developments we are pleased to share with you KPMG's first International Valuation Newsletter of 2017. This edition contains a new section in which we share recent capital market data that are highly pertinent to any valuation analysis:

- A comparison of major stock market performances in 2016: Significant differences between regions
- EURO STOXX 600 sector multiples: Despite disruptions in 2016, multiples remained stable
- Current risk-free rates for major currencies: Will the decreasing trend end? Negative rates in Switzerland
- Recent country risk premiums and inflation forecasts for the BRIC countries: Uncertainties remain

As we expect volatility to continue in 2017, we plan to update these relevant parameters in each edition because we believe this is of relevance for you.

Two further articles this quarter meanwhile shed light on long-running questions in corporate finance:

- The deceptive charm of share splits: A study on the value effect of share splits of Euro STOXX 600 companies over the past 12 years
- Valuing entities with complex capital structures: A practical approach to distinguishing share prices for different share classes

This leads to the following contents of this newsletter:

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new and recurring section

As always, this newsletter is of interest to those involved in the many different fields of valuations. Please therefore feel free to forward the newsletter to anyone who is interested in an informed debate on the subjects raised.

We wish you a prosperous, peaceful 2017 and look forward to discussing with you any questions you might have regarding valuation trends and practices.

Yours faithfully



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# The deceptive charm of share splits

With a view to attracting investor interest in a company's shares, the practice of share splitting peaked in Europe in 2007. Although the technique abated sharply during the financial crisis, share splits still occur regularly and are therefore worth discussing. How does share splitting work? And is its perceived appeal to investors and companies delivered in reality?

In 2007 the STOXX Europe 600 ('Euro STOXX 600') saw a peak in the volume of share splits. Although activity tailed off substantially in 2008 and 2009, the number of share splits in the Euro STOXX 600 increased again in the aftermath of the financial crisis. In the last six years, share splits have been occurring regularly on a relatively stable level.

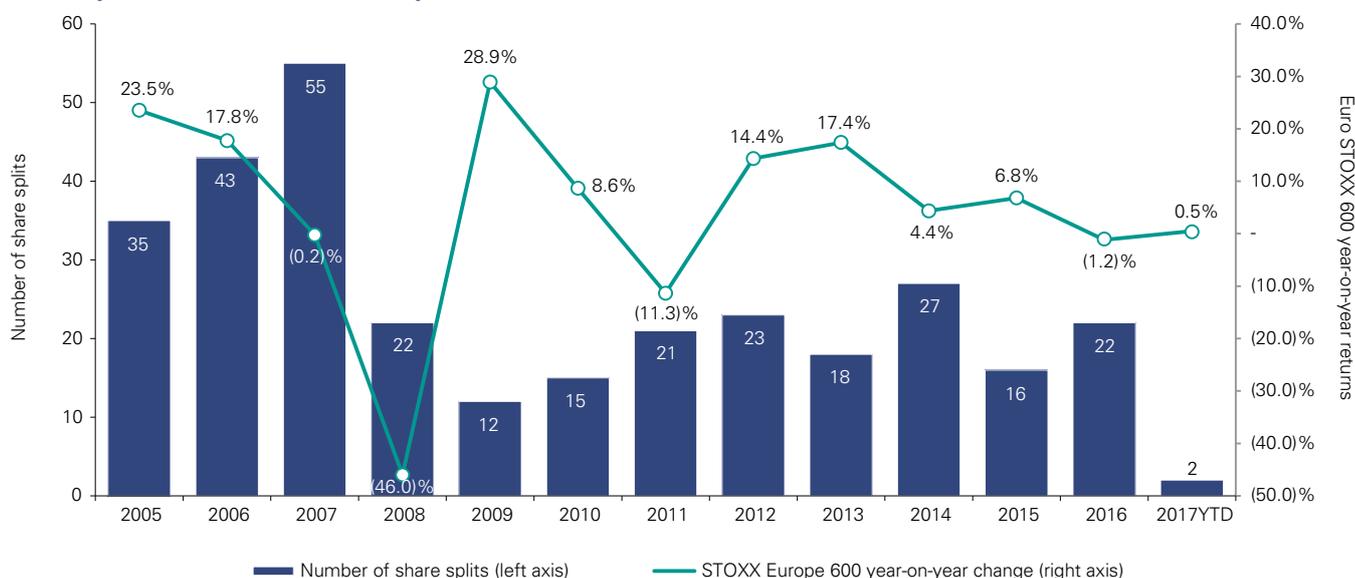
## How does a share split work?

Share splitting is the act of allocating additional shares to existing shareholders while lowering the unitary value of all shares proportionately so that the sum value is not affected. For instance, a share split may involve giving every existing shareholder one additional share for every one share already held, but reducing the value of each share by one half. A two to one share split such as this means the trading

volume involves twice as many shares, with each share worth half of its previous price. In practice, it changes neither the enterprise value nor the investor's participation in the company's assets.

To illustrate: A company with 40 million issued shares listed at EUR 2 each before the share split is capitalized (market value) at EUR 80 million. By undergoing a share split of two to one, the number of company shares rises to 80 million and the price falls to EUR 1 per share. This means that the company's market value remains the same at EUR 80 million following the split. Share and capital reserve positions on the balance sheet remain unchanged and the market value of an ordinary share has been corrected to the new total numbers of outstanding shares.

## Development of number of share splits and market return of the Euro STOXX 600



Source: STOXX Europe 600 (Composition of the STOXX Europe 600 as of 31 January 2017), Capital IQ, Thomson ONE, KPMG analysis

### **So why split?**

A key motivation is to increase the appeal and availability of a company's shares to a larger group of investors by lowering the share price. The hope is that this will translate into greater trading volumes and an improvement in liquidity through a proportionate rise in the number of securities in the market. As such, some researchers argue that a share has a desirable trading range in which the marketability is maximized with minimum transaction costs. When share prices rise significantly, share splits can be used to bring the share price down into the preferred trading range whereby the improved liquidity will lead to a share price increase.<sup>1</sup>

Furthermore, share split announcements are often accompanied by positive company announcements such as potential takeover information or the publication of strong financial results. Such announcements may also influence share prices and spur investor interest.

A further reason for share splitting is to prepare for and facilitate future share capital increases. In other words, lowering the subscription prices for newly-issued shares allows for a greater participation of small and medium-sized investments and thereby a more diversified investor base.

### **Is it all about the psychology?**

From the investor's perspective, a share split is primarily a psychological matter. Many investors may expect a share split to be a precursor to a share price increase. For example, some researchers argue that share splits are seen by investors as a signal of management's optimism about a company's future earnings prospects – they may therefore begin to buy the shares and positively influence the share price. Under this line of argumentation, a company's management is more likely to split shares when the management is confident that the post-split earnings will likely be of a more sustainable nature than the past earnings growth.<sup>2</sup>

An equally important psychological aspect is that individual investors tend to trade in securities that have low, rather than high, nominal rates. This is because many investors perceive shares with a high share price to be expensive, which discourages them from purchasing. As such, if a security has reached a high share price, investors may think that the share has already reached its upper limit and therefore has very low potential to rise further.

Interestingly, prominent US investor Warren Buffet does not support share split operations. He believes investors should take a long-term view of investing and that high share prices discourage short term, riskier investment decisions. In Buffet's opinion high share prices are tools to eliminate share price fluctuations that do not arise from fundamental factors. Share prices in Buffet's Berkshire Hathaway were trading at in excess of USD 240,000 per share in February 2017, one of the highest single stock prices in the world.

### **Do share splits genuinely stimulate value?**

In order to provide further insights into the effects of share splits, KPMG conducted a simple analysis of share price developments before and after share splits. We analyzed 201 companies that were listed on the Euro STOXX 600 and that had performed a share split in 2005 to January 2017 – looking at their share price over the course of three months following the share split. As some companies performed more than one share split in this period, the data sample comprises a total of 311 share splits (see the chart above). We consider a period of three months to be appropriate as, in the longer term, other factors arise which can impact a share price.

The analysis suggests that the period 2005 to 2007 not only saw a rapid increase in the number of share splits in the Euro STOXX 600 index but also saw the share price rise shortly after the split for those companies that conducted share splits. However, it should be noted that share prices boomed in general in the period 2005 to mid-2007.

During the financial crisis, the amount of share splits decreased significantly. Of the companies that performed share splits, share prices also dropped on average in the three month period following the share split.

Cases of share splits that were followed by a positive share price development were mainly observable in years in which the stock market overall increased, such as 2005, 2006, 2009, 2010, 2012, 2013 and 2016 (see figure below).

Overall, there is no clear indication in the data sample of an increase in the post-split share price in any period other than 2005, where all cases of share splits were followed by a share price increase. In fact, in many cases the share price development over all 311 share splits indicates a decline in the share price following the share split.

<sup>1</sup> Wo, R and Tse, Y. (2000). Rationality of Stock Splits: The Target-Price Habit Hypothesis. *Review of Quantitative Finance and Accounting*, 14(1), 67-84.

<sup>2</sup> Kalay, A. and Kronlund, M. (2012). The Market Reaction to Stock Split Announcements: Earnings Information After All.

### In numbers: The influence on share prices

The highest number of positive share price developments (a price increase of at least 0.1 percent) in the three months following a share split was in 2005. In fact, all such cases in 2005 yielded a share price increase. In 2006, share prices rose in 35 out of 43 cases. During the onset of the financial crisis in 2007 and 2008 – as well as in 2011, 2014 and 2015 – negative share price developments following a share split dominated (see figure below).

### Overall success is questionable

A share split is a technical operation that in theory should have no long-term effect on the share price. When the timing of a share split accompanies positive corporate news the psychological effect on investors may positively affect the share price. Nevertheless, long-term impacts are questionable and a post-share split fall in share prices cannot be ruled out.

The 311 share splits in the Euro STOXX 600 index from 2005 to January 2017 seem to confirm that a pure share split should have no long-term share price effect. The positive share price development of companies that undertook share splits in 2005 and 2006 is most likely the result of the positive prevailing market environment in this period. In most years, there is no observable trend towards rising share movements being related to a share split. Given the far-from-certain outcome of share splits, companies may be well advised to question the cost-benefit assumptions of expending time and effort in performing them. The analysis performed indicates that the overall market sentiment has a greater impact than the share split itself on share price development over the three month period.

Number of positive and negative price developments following share splits vs. market



Source: STOXX Europe 600 (Composition of the STOXX Europe 600 as of 31 January 2017), Capital IQ, Thomson ONE, KPMG analysis

# Valuing entities with complex capital structures



Complex capital structures are experiencing growing use. Typically involving a number of classes of ordinary and convertible preferred shares that allow different classes of shareholder to enjoy varying rights, they are proving more popular among private equity (PE) and venture capital (VC)-backed businesses in particular. Yet with the benefits of such structures come immense difficulties when seeking to value the business – whether upon investment (for transaction pricing), regular financial reporting purposes or for tax purposes in the context of management share and option incentive schemes. So how should the valuation of complicated capital structures be approached, and what are the pitfalls?

In a PE or VC environment, investors generally hold convertible preference shares that they can convert into ordinary shares or receive their liquidation preference<sup>1</sup> upon an exit event.

Unlike entities with a single class of shares (where shareholders all receive a defined percentage of a company's equity) a complex capital structure makes matters less straightforward. The equity received by each class of shares varies depending on the overall value on exit. Where the equity value on exit is less than the liquidation preference, for example, preferred shareholders receive 100 percent of the equity value while ordinary shareholders receive nothing. Conversely, where preferred shareholders seek to realize a higher amount by converting their preferred shares into ordinary shares and participating with pre-existing ordinary shareholders, their share of the equity value will be based on their share of the fully diluted shares outstanding. Of course, there can also be points in between where preferred shareholders receive less than 100 percent of the equity with the residual passing to pre-existing ordinary shareholders.

And that is before one considers the complications of different classes of preferred shareholders converting at different equity values depending on their liquidation preferences.

## **The answer? The option pricing method**

The lack of clarity over how much current equity value will accrue to each class of shares is in part because the business is not sold on the valuation date; and the value at the exit date is as yet unknown. This translates into securities resembling options. Therefore, option pricing techniques can be applied. This approach, referred to as the option pricing method (OPM), is set out in the American Institute of Certified Public Accountants (AICPA)'s influential publication *Valuation of Privately-Held-Company Equity Securities Issued as Compensation*.

For example, preferred shares have the priority claim upon an exit but can be viewed as having given up to ordinary shareholders an option on the upside above their liquidation preference. The ability of preferred shareholders to participate in the upside at higher exit values if the ordinary value per share exceeds their liquidation preference can be viewed as a different option given by the ordinary shareholders to the preferred shareholders allowing them to participate in the upside in equity values above their liquidation preference.

<sup>1</sup> The liquidation preference per share of a class of preferred shares is generally equal to the amount paid for the share, often grown at a notional coupon rate over the holding period up to exit. Because different prices are paid in each investment round, each new round involves a new class of preferred shares with a liquidation preference equal to the price in that round.

### Illustration

Entity A has 6,000 ordinary shares outstanding. On 1 January 2014, it issued 4,000 convertible preferred shares at a price of EUR 10 per share. These convert into ordinary shares on a one for one basis at the option of the holder. The opening liquidation preference of EUR 10 per share increases at an interest rate of eight percent per year.

On 30 June 2016, the company used income (e.g. discounted cash flow (DCF)) and market approaches to estimate its overall equity value at EUR 140,000. It expects an exit on 31 December 2018.

In applying the OPM, the usual option pricing inputs are required:

Input	Parameter	Basis
Equity value	EUR 140,000	–
'Exercise price'/ Points at which relative participation changes	1. Liquidation preference of preferred 2. Preferred convert	1. $EUR\ 10 * (1.08)^5 * 4,000$ EUR 58,773 2. $EUR\ 10 * (1.08)^5 * 10,000$ EUR 146,932
Expected exit date	2.5 years	1 July 2016 – 31 December 2018
Expected dividends	Nil	Company expectations
Expected volatility	50 percent	Based on comparable companies
Risk-free rate	1 percent	Bond yields

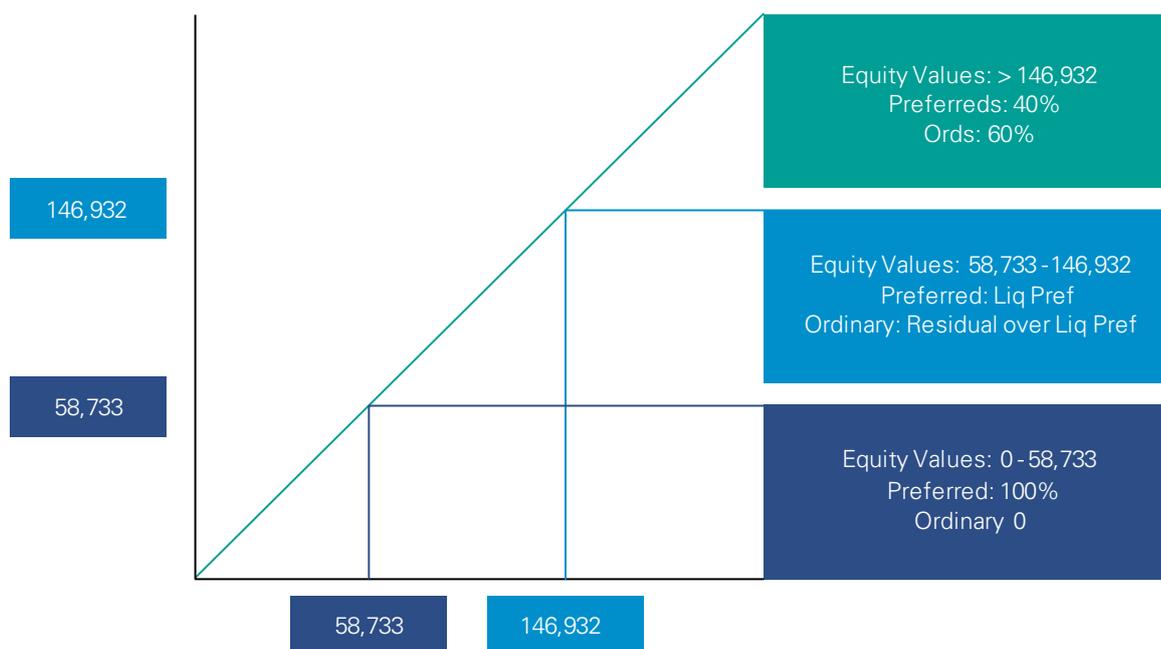
The exercise price can be confusing. It is therefore worth taking a closer look. Essentially, it represents points at which the participation of different classes of shares shift. Different participation levels are illustrated using various possible equity values at exit, as below:

### Sample Allocation between Preferred and Ordinary Shares at Different Exit Values (figures in EUR)

Equity Value at Exit	Value of preferred shares				Value of ordinary shares	Comment
	Liquidation Preference	Received if Convert <sup>2</sup>	Convert or Liquidation Preference	Value of Preferred		
30,000	30,000	12,000	Do not convert	30,000	0	Where the overall equity value at exit is between zero and the liquidation preference of the preferreds, 100% of the proceeds are received by the preferreds, albeit there are insufficient proceeds to pay the liquidation preference in full.
58,773	58,773	23,509	Do not convert	58,773	0	Where the overall equity value at exit is between the liquidation preference of the preferreds and the point at which the preferreds convert, the preferreds do not convert because their share if they were to convert, i.e., 40% of the equity value, is below their liquidation preference so they receive their liquidation preference, with the residual going to the existing ordinary shareholders. Therefore, this marks the point above which the ordinary shares participate in exit proceeds.
146,933	58,773	58,773	Indifferent	58,773	88,160	The equity value where the preferred shareholders would receive the same if they converted as under their liquidation preference, marks the point above which the preferreds convert and the equity value is shared between the ordinary shares (60%) and the preferred shareholders (40%) based on their number of shares in the enlarged number of ordinary shares. Therefore, this marks the point above which the preferreds start to receive more than their liquidation preference.
200,000	58,773	80,000	Convert	80,000	120,000	As the equity value is above the point at which the preferreds convert, the equity value is shared 60% (original ordinary): 40% (converted preferreds).

<sup>2</sup> 40% (4,000 converted shares as % of the enlarged ordinary shares on conversion (10,000 shares)) multiplied by the equity value.

The equity values at exit at which participation changes can be seen in the following graph (figures in EUR):



Applying option valuation techniques, e.g. OPM, to model possible future exit values, the amount of the total current value that is attributable to the ordinary and preferred shares respectively is calculated as follows (before considering possible discounts for lack of control and/or lack of marketability; figures in EUR):

	Gross Value	Number of Shares	Price per Share
Preferred shares	69,734	4,000	17.43
Ordinary shares	70,266	6,000	11.71
	140,000	10,000	

This methodology results in a higher value on a per share basis for the preferred shares than for the ordinary shares due to the downside protection offered by the liquidation preference. If an exit were to occur on the measurement date, then based on the current overall equity value the preferred shares would convert into 40 percent of the ordinary shares and receive the same amount as the existing ordinary shareholders. However, the technique recognizes that the exit is not expected to occur until another 2.5 years, during which time the value of the company could fall – and preferred shareholders would receive more than 40 percent.

Entities with complex capital structures raise difficult valuation questions. It is important that valuations take account of the specific characteristics of the entity's securities to ensure an appropriate value conclusion. The systematic incorporation of such factors into a valuation is not widely understood and suitable advice should be sought.

# Financial market data: A snapshot



With this edition of KPMG's International Valuation Newsletter we introduce for the first time an overview of selected financial market data, which we will include periodically in future edition:

- Comparison of major stock market performances in 2016
- EURO STOXX 600 sector multiples
- Risk-free rates for major currencies
- Recent country risk premiums and inflation forecasts for the BRIC<sup>3</sup> countries

## Performance of major stock market indices: UK and US outperform their peers

A concise overview of recent market dynamics within major equity markets, based on the development of major stock market indices is provided below. This month, we compare year-on-year growth with that of Q4 2016.

On an annual basis, UK and US markets outperformed their peers despite uncertainties caused by Brexit and the US presidential election. In the US, the S&P 500 index grew by 9.5 percent and the technology-driven NASDAQ by 7.5 percent in 2016. In the UK, the FTSE 100 increased by 14.4 percent.

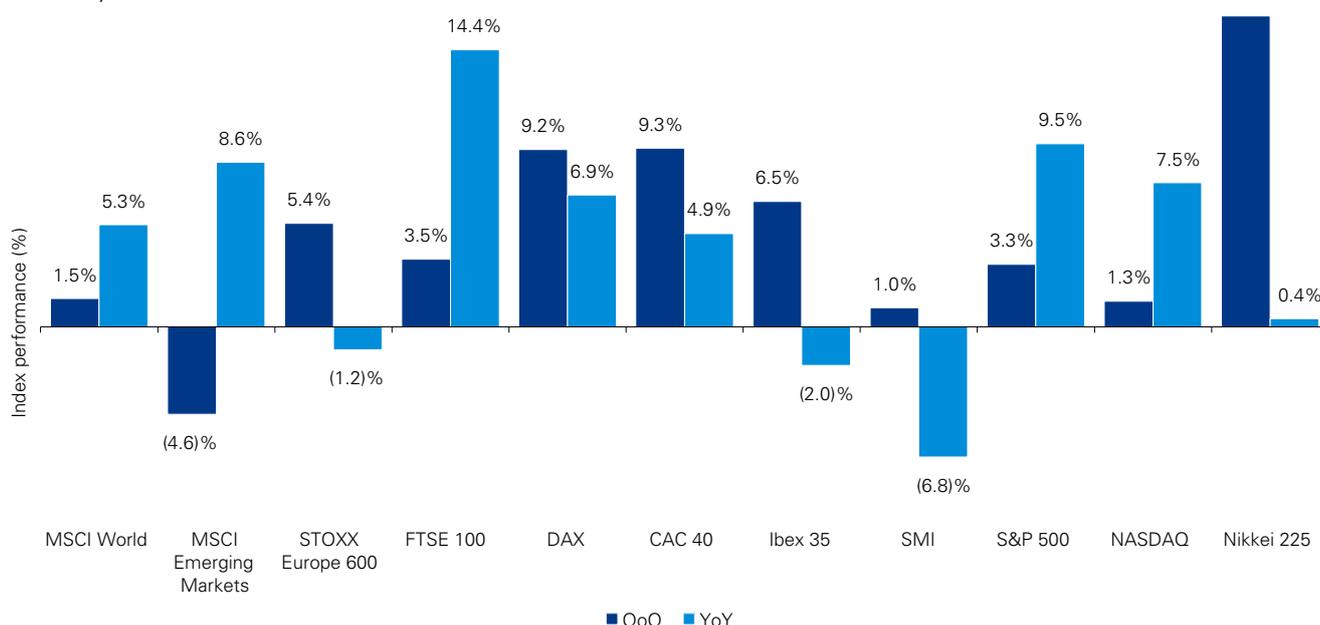
Emerging markets recovered after a volatile few recent years to increase by 8.6 percent on an annual basis but weakened in Q4 2016 at minus 4.6 percent. The Nikkei 225 performed very poorly in the first three quarters of 2016 but thanks to a strong Q4 2016 (with 16.2 percent growth) a slight increase of 0.4 percent was recorded for 2016 overall.

The laggards in 2016 were the Swiss (SMI) and Spanish (Ibex 35) stock market indices with performances of minus 6.8 percent and minus 2.0 percent respectively.

<sup>3</sup> Brazil, Russia, India and China

## Performance of major stock market indices

1 January 2016 - 31 December 2016



Source: Capital IQ, KPMG analysis

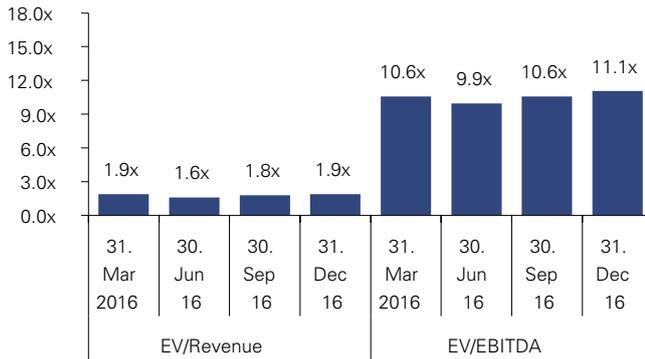
### EURO STOXX 600 sector multiples

Enterprise value (EV) multiples state the market value of the business in relation to an appropriate base metric, with commonly used EV multiples being EV/revenue and EV/EBITDA. The numerator (EV) and denominator (revenue, EBITDA) represent all investor claims on the business.

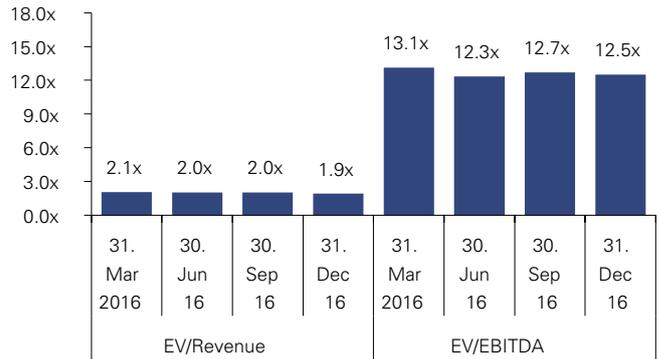
The Euro STOXX 600 sector overview of trading multiples shows no significant outliers or other extremes based on

EV/revenue and EV/EBITDA for the past four quarters. As there are no time-driven changes in a sector, substantial differences can be observed between the different sectors. Healthcare EV/EBITDA multiples are at the upper end of the multiples range at around 15x while IT and Consumer staples are in the middle of the range with EV/EBITDA multiples of around 14x and 13x. At the lower end are utilities and telecommunications services with EV/EBITDA multiples of around 8x.

#### Consumer Discretionary Median



#### Consumer Staples Median



#### Energy (Oil and Gas) Median



#### Financials Median



Financial services companies differ from many other companies in how they operate. For financial firms, debt acts more like raw material than operational capital. A common valuation metric used by analysts evaluating such firms is the price to book (P/B) ratio.

#### Healthcare Median

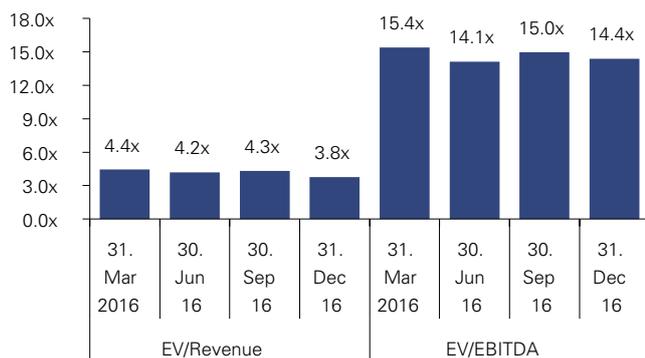


#### Industrials Median

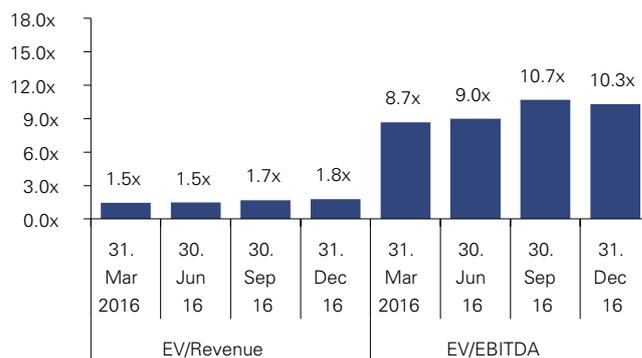


Source: Capital IQ, KPMG analysis

### Information Technology Median



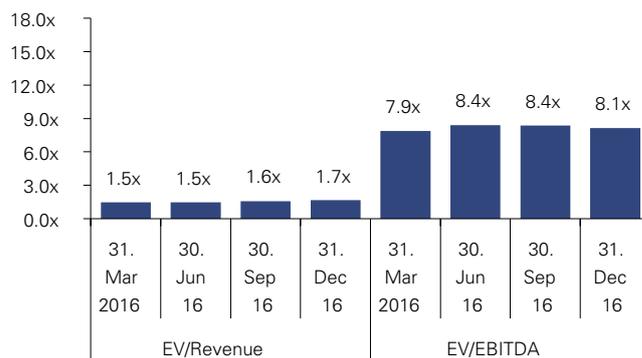
### Materials Median



### Telecommunication Services Median



### Utilities Median



Source: Capital IQ, KPMG analysis

### Risk-free rates: Will the recent upward trend continue?

The risk-free rate (or base rate) can generally be broken down into two key components that seek to compensate the investor: the first for expected inflation and the second for deferred consumption. The base rate is free of risks except for risks embedded in the underlying currency and risks related to investments in the particular country (including general political, legal, regulatory and tax risks, as well as the risk of a moratorium). As no investment is truly risk free, the risk-free rate is typically approximated by

reference to the yield on long-term debt instruments issued by presumably financially healthy governments. The historical risk-free rates for Germany, the Eurozone, the US, the UK and Switzerland are below.

The downward trend in risk-free rates continued in 2016. The US Federal Reserve's decision in mid-December 2016 to raise interest rates might, however, trigger a chain reaction among central bank decision-makers in other countries.

### Input Parameter Basis

rounded Date	Euro-countries EUR	Germany EUR	UK GBP	Switzerland CHF	USA USD
31/03/2013	2.50%	2.24%	3.23%	1.34%	3.17%
30/06/2013	2.74%	2.51%	3.60%	1.60%	3.56%
30/09/2013	2.71%	2.62%	3.57%	1.74%	3.81%
31/12/2013	2.88%	2.81%	3.72%	1.93%	4.06%
31/03/2014	2.53%	2.51%	3.58%	1.65%	3.67%
30/06/2014	2.28%	2.26%	3.49%	1.56%	3.44%
30/09/2014	1.92%	1.97%	3.12%	1.28%	3.30%
31/12/2014	1.46%	1.56%	2.58%	0.80%	2.85%
31/03/2015	0.69%	0.70%	2.39%	0.43%	2.66%
30/06/2015	1.79%	1.65%	2.80%	0.79%	3.31%
30/09/2015	1.51%	1.38%	2.58%	0.81%	3.06%
31/12/2015	1.70%	1.55%	2.77%	0.70%	3.17%
31/03/2016	1.03%	0.90%	2.39%	0.25%	2.81%
30/06/2016	0.46%	0.49%	1.85%	0%	2.50%
30/09/2016	0.53%	0.47%	1.61%	(0.06)%	2.48%
31/12/2016	0.97%	0.95%	2.03%	0.35%	3.06%

Source: KPMG analysis; Approach: determination of a present value-equivalent uniform interest rate based on the yield curve of the specific central bank

### Country risk premium: Lowest for China (out of BRIC)

The country risk premium is a measure of risk faced by businesses when investing in sovereign states, reflecting a number of risks including economic, financial, political and institutional. The country risk premium is effectively the risk of low probability, high impact events that could lead to significant losses in investment values. These types of risk are at the forefront of many investors' thinking now more than ever due to a number of major economic and geopolitical events such as the Eurozone sovereign debt crisis and events in the Middle East and North Africa, all of which have led to previously stable countries becoming

much riskier. KPMG's Valuation practice has been analyzing and measuring country risk for 15 years and covers more than 150 sovereign states in a proprietary KPMG analyst model.

The country risk premium for Brazil, Russia, India and China as of 30 September 2016 for an investment period between 0.5 and 2 years are set out below. The country risk premium for China is substantially lower than for Brazil, Russia or India. This is driven chiefly by political and institutional uncertainties in Brazil for various investment horizons.

Country risk premium	0.5 year	1.0 year	2.0 year
Brazil	2.9%	3.6%	3.3%
Russia	2.0%	2.3%	2.8%
India	2.0%	2.2%	2.2%
China	0.9%	1.1%	1.0%

Source: KPMG CRP study

### Growth rates

Growth rates are a major component of the terminal value calculation for the discounted cash flow method. In valuation practice, it is best practice to assume that the terminal growth rate should not exceed real GDP growth or long-term inflation expectations of the countries to which a company is exposed to. Therefore, the growth rates are based on country-specific inflation forecasts. The growth

rates for Brazil, Russia, India and China are based on the International Monetary Fund Economist Intelligence Unit inflation forecast for the years 2016 until 2021.

Brazil and Russia demonstrate high inflation rates in 2016 and 2017 but face a cooling down period after 2018 as indicated in the table. A more stable and moderate growth rate development is expected for India and China over the coming years.

Inflation forecast	2016	2017	2018	2019	2020	2021
Brazil	9.0%	5.4%	4.8%	4.6%	4.5%	4.5%
Russia	7.2%	5.1%	4.5%	4.0%	4.0%	4.0%
India	5.5%	5.2%	5.3%	5.2%	5.0%	4.9%
China	2.1%	2.3%	2.4%	2.6%	3.0%	3.0%

Source: IMF

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