Equity Market Risk Premium – Research Summary

3 July 2018

We recommend a MRP of 5.5% as per 30 June 2018

If you are reading this, it is likely that you are in regular contact with KPMG on the topic of valuations. The goal of this document is to provide a summary to our business partners about our recent observations and conclusions regarding one of the key valuation parameters, the equity market risk premium.

We recommend the use of an equity market risk premium of **5.5% as of 30 June 2018**, in line with last quarter.
For Europe we observe fairly stable equity returns, as well as stable or minimal decreases in risk-free rates. After a period of decrease, the USA market reflects an increase in expected equity returns, mainly driven by the changes in tax policies, amongst others.

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Introduction – valuation and discount rates

Introduction

The discount rate is an important input parameter to any valuation based on the discounted cash flow methodology ("DCF"). All else equal, a higher discount rate will lead to a lower asset value and vice versa.

In this document, we will specifically focus on the derivation of the cost of equity for company valuations. This discount rate can either be directly applied to equity cash flow forecasts of a company or it can be used in conjunction with the cost of debt and a certain financing structure to derive the weighted average cost of capital ("WACC").

A general DCF model can be expressed by the following formula:

$$\text{Present value} = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \ldots = \sum_{t=1}^{\infty} \frac{CF_t}{(1+k)^t}$$

Present value = value of the analysed asset (e.g. a company)
CF_t = cash flow that the asset will generate in period t
k = asset-specific discount rate

Discount rate derivation

While there are several ways to derive discount rates, the most commonly applied methodology is the 'build-up methodology' based on the Capital Asset Pricing Model ("CAPM"). This methodology builds up the discount rate by summation of several asset-related risk components in order to derive a return at which investors are willing to invest in this asset (e.g. a company).

The build-up of the cost of equity ("k") of a company can be expressed as:

$$k = rfr + \beta \times MRP + \alpha$$

k = required return on equity
rfr = risk-free rate
β = a company's systematic risk
MRP = market or equity risk premium
α = asset-specific risk factors

The function and derivation of the individual discount rate parameters are briefly discussed on the following slide.

Introduction – discount rate parameters

Risk-free rate

The risk-free rate forms the basis for any discount rate estimation using the build-up methodology. As the name implies, this rate should not take into account any risk factors and should only include two general components:

— The time value of money; and

— Inflation.

Since there are no investments that are truly risk-free, the risk-free rate is commonly approximated by reference to the yield on long-term debt instruments issued by presumably financially healthy governments (e.g. AAA-rated government bonds with a maturity of 30 years).

Beta

Beta measures how the returns of a certain company behave in relation to the returns of the relevant market benchmark.

A beta greater/smaller than 1.0 means that the share price of a company is more/less volatile than the general market and therefore investors will require a higher/lower return to compensate for this volatility.

Alpha

Alpha is an asset-specific adjustment factor that may need to be applied for a number of different reasons. If a financial forecast does not account for certain operational risks, it may be appropriate to include a forecast risk premium. Other examples of alpha adjustments are size premia and illiquidity premia.
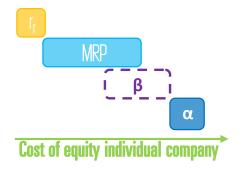
Equity market risk premium (MRP)

The equity market risk premium ("MRP") is the average return that investors require over the risk-free rate for accepting the higher variability in returns that are common for equity investments (i.e. the MRP reflects a minimum threshold for investors in order to be willing to invest).

Since alpha only relates to company-specific adjustments, it can be omitted if considering the overall market (alpha = 0). Furthermore it is important to note that for the overall market, beta will by definition always be 1.0, since the sum of all returns of individual stocks equals the overall return of the market, and therefore the two are perfectly correlated.

As the figure below shows, the required return for the overall market is defined entirely by the risk-free rate and the equity market risk premium.

r_f

MRP

β

α

Cost of equity individual company

r_f

MRP

Cost of equity overall market

Measurement of the equity market risk premium - methodologies

Implied equity market risk premium

The general DCF formula discussed earlier can be used to solve for the implied discount rate that reconciles these parameters.

Deducting the risk-free rate from this implied discount rate will yield an implied equity market risk premium.

The implied equity market risk premium methodology is to some extent sensitive to input assumptions and careful consideration must be given to:

— The selection of income proxies (e.g. dividends, buy-backs, cash flow);

— The basis of expected growth rates (e.g. macroeconomic considerations, analyst forecasts); and

— The trade-off between outcome stability and current relevance with regards to certain historical inputs (e.g. dividend yield normalisations, pay-out ratios).

We deem the implied equity market risk premium methodology the most appropriate methodology in order to derive changes in the equity market risk premium as a result of the financial crisis, because it incorporates recent market developments, expectations, and it can be logically deduced from observable market data.

Historical observation methodology

This methodology assumes that the expected equity market risk premium can be derived by studying historical equity returns.

While this methodology is well established and theoretically sound, it does not allow for the incorporation of the most recent market developments.

Other methodologies

There are a number of other prominent methodologies which may lead to additional insights, the most common being:

— The multi-factor model;

— The yield spread build-up; and

— The survey approach.

While each of these methodologies offers some unique advantages, the application of these methodologies involves similar trade-offs as the ones between the historical and the implied equity market risk premium methodology.
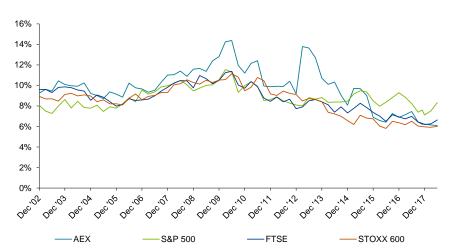
Development of discount rates

⊕ Implied equity return

The graph below illustrates the movement in the implied equity returns for a number of major equity markets over time. Last quarter, we observed a stabilisation and slight recovery of the substantial drops in prior quarters. For the European markets (i.e. AEX and the Stoxx 600), no noticeable trends are observed and implied equity returns remain fairly stable, while the FTSE shows a slight increase. Furthermore, implied equity returns for the U.S. market are more volatile and show a major increase. This effect is mainly caused by a strong increase in growth expectations which take the tax-cut for US entities in account, while this effect was already taken into account in the shares prices in the prior quarter.

Furthermore, we observe stable growth expectations for the STOXX 600 while the growth expectations for the FTSE are recovering from all time lows.
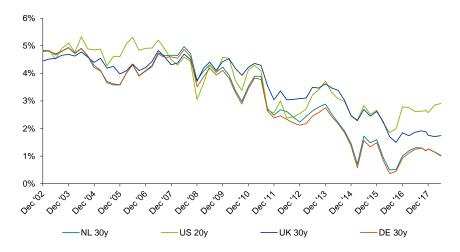
% Yield on long-term bonds

In the graph below, the interest rate movements for a number of highly developed markets (Netherlands, UK, Germany and US) are displayed.

As can be observed, the interest rates as per 30 June 2018 in Europe showed minor decreases compared to 31 December 2017 after a strong increasing trend since half 2016. Interest rates for the US showed a clear increase last half year, in line with government policies regarding risk-free rate hikes as well as, to a lesser extent, ongoing political uncertainty.
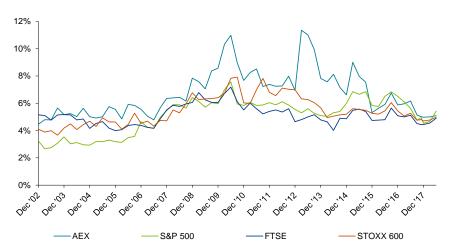
Equity market risk premium as per 30 June 2018: 5.5%

Findings

Since markets fluctuate on a daily basis and there are some differences between market risk premia in different regions, it is difficult to mathematically derive one single point estimate for a universal equity market risk premium for all developed markets.

In our current update we observe weak signs of an increasing equity risk premium. As set out in our previous publication, we expected the tax-cut effect to be neutralised in the current quarter and therefore an increase.

Due to this increase in the equity market risk premium and our previous statement to keep the equity market risk premium at 5.5% despite a minor drop (related to the tax-effect), we have decided to keep the current equity market risk premium equal to 5.5% as well.

Equity market risk premium KPMG NL

Based on the analyses set out in this report, we conclude that the effect of the tax-cut is incorporated in the US market by now while European markets remain fairly stable or show small signs of an increase. Therefore KPMG Netherlands recommends the use of an **equity market risk premium of 5.5%** as per 30 June 2018, constant compared to prior quarters.

We note that our estimation is based on information available as at 30 June 2018. Developments in the market after 30 June 2018 may have an impact on the perceived market risk which is not reflected in the equity market risk premium estimate as at 30 June 2018.

Considerations

In order to assess the reasonableness of the outcomes of our implied equity market risk premium study, we have considered various other methodologies as previously described. To the extent that these methodologies are valid to derive insights about the current level of the equity market risk premium, these methodologies have confirmed our findings.

Based on our research and professional judgement we propose a global equity market risk premium. However, when calculating a discount rate consideration must be given to (amongst others):
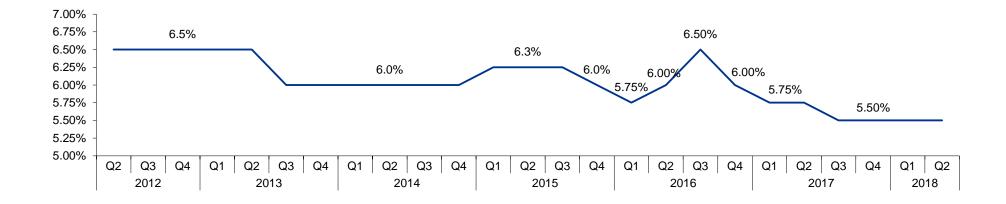
- The basis for the applied risk-free rate;
- The applicable country risk premia; and
- Expected differences in inflationary outlook.

We highlight that individual input parameters should never be viewed in isolation.

Legend: AEX, S&P 500, FTSE, STOXX 600

Appendix

Historic MRP estimates

Please find an overview of the historic MRP estimates by KPMG in the graph below.

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