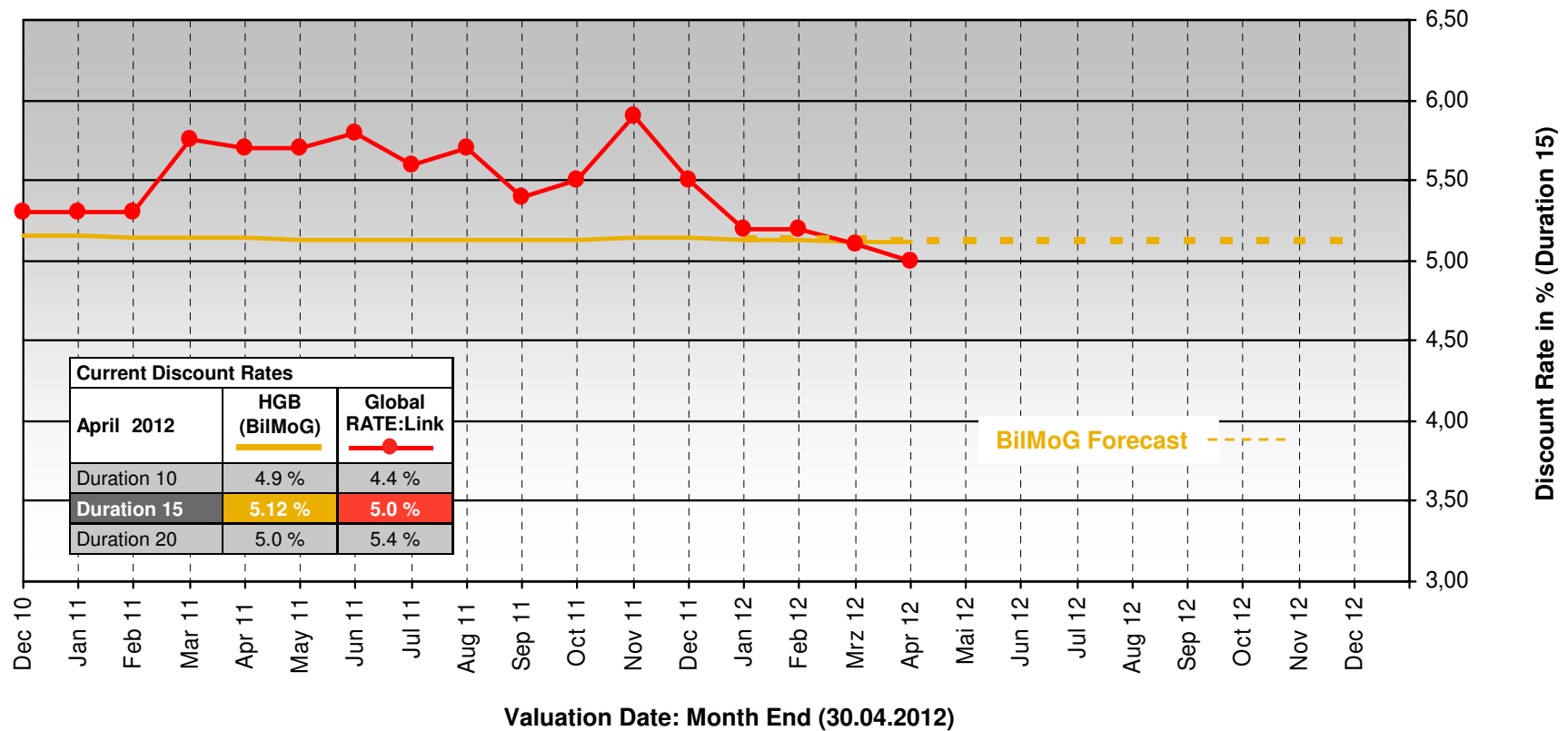


# Discount Rate under IFRS, US-GAAP and German GAAP

Expanded explanations on pages 2 and 3

## Discount Rate bandwiths for the valuation of employee benefits under IFRS, US-GAAP and German GAAP

(Euroland, typical populations, annuity benefits / Sources: Deutsche Bundesbank, Markit, Bloomberg, own calculations)



- The graph shows the discount rate for the most representative sample population with a 15-year duration (i.e. weighted, average due date). Please note that these and those contained in the table are not rates read directly from a yield curve but represent discount rates determined on the basis of representative populations. Thus, if the duration of a particular population of beneficiaries is known to be 10, 15 or 20 years, the average, weighted discount rate can be read from the table.
- The “GlobalRate:Link”-methodology can be described as follows:
  - The data basis for the approach is the AA-rated corporate bond universe from Bloomberg.
  - After standardisation by means of the “par bond” approach, the yields to maturity are then grouped together in clusters and then curve-fitted. From this a yield curve is derived by bootstrapping.
- For German GAAP, in accordance with section 253 HGB, we show the permitted discount rate for a 15 year time to maturity (as published by the Bundesbank) to two decimal places. The discount rates shown for the 10 and 20 year durations are based on the sample populations applied to the official yield curve.
- The forecast of the German GAAP discount rate for a 15 year time to maturity results from a Towers Watson forecast tool, which approximates the specifics of the official discount rate setting methodology as applied by the Bundesbank. For the 84-months-averaging it is assumed that the current discount rate level remains unchanged over the forecast period.
- If you have any further questions on the approaches, please contact your consultant.

- Commencing in late 2007 and in the wake of the loss of confidence in the creditworthiness of bond issuers in general and that of financial institutions in particular, markets showed a significant increase in volatility and in the spread between the yields of high-quality corporate bonds and government bonds. In December 2011, the spread between government bonds and AA corporate bonds lay very close to the peak reached in 2009. It is therefore not surprising that there is a need to carefully analyse market data made available by the different providers on bonds traded in the capital market. The main issues of such analyses are:
  - Choice of provider – there are a number of companies that provide financial data, amongst others Barclays, Bloomberg and Markit
  - The ratings' appropriateness – are the rating grades up-to-date and correct?
  - Comprehensiveness of the database – in addition to AA bonds should other data be included or should certain bonds be excluded from the data set? Should the data be grouped?
  - The method used to determine the yield curve
- Practice has shown that under current market conditions, the discount rate depends significantly on the data universe selected for those bonds with a maturity of more than 10 years. The central issue is that some analysts do not focus on the entire information available but rather only on a subset of all available information.
  - Some approaches use an index for a group of bonds, such as the iBoxx 10+ Index. This has the disadvantage in that its average duration – the weighted duration of all the bonds grouped in this index – is under 10 years. Taken on its own and because it aggregates all these bonds, it does not provide adequate representation of market developments in the long end of the maturity spectrum which is of particular relevance for pension obligations with annuity payout form. The very short duration make a separate extrapolation imperative. However, such extrapolations are usually performed on the basis of a constant spread along the yield curve for euro swaps or government bonds, even though the spread has experienced considerable and sustained change. Since September 2007, the predominately stable spread has become volatile and has risen to new levels so that in our view, continuation of an AA yield structure on the basis of the fixed spread is no longer tenable.
  - Some approaches exclude a whole range of bonds that we have included in our data universe. For example, we include collateralised bonds. Also, bonds with a redemption value below a particular limit, for iBoxx corporate bonds the limit is €500m, are sometimes excluded. In contrast, international accounting standards do not provide any basis for such exclusion. In fact, the standards explicitly specify that market observations should, wherever possible, not be subjectively interpreted.