

Determination of yield curves for the ICS – reflecting long-term nature of insurance business

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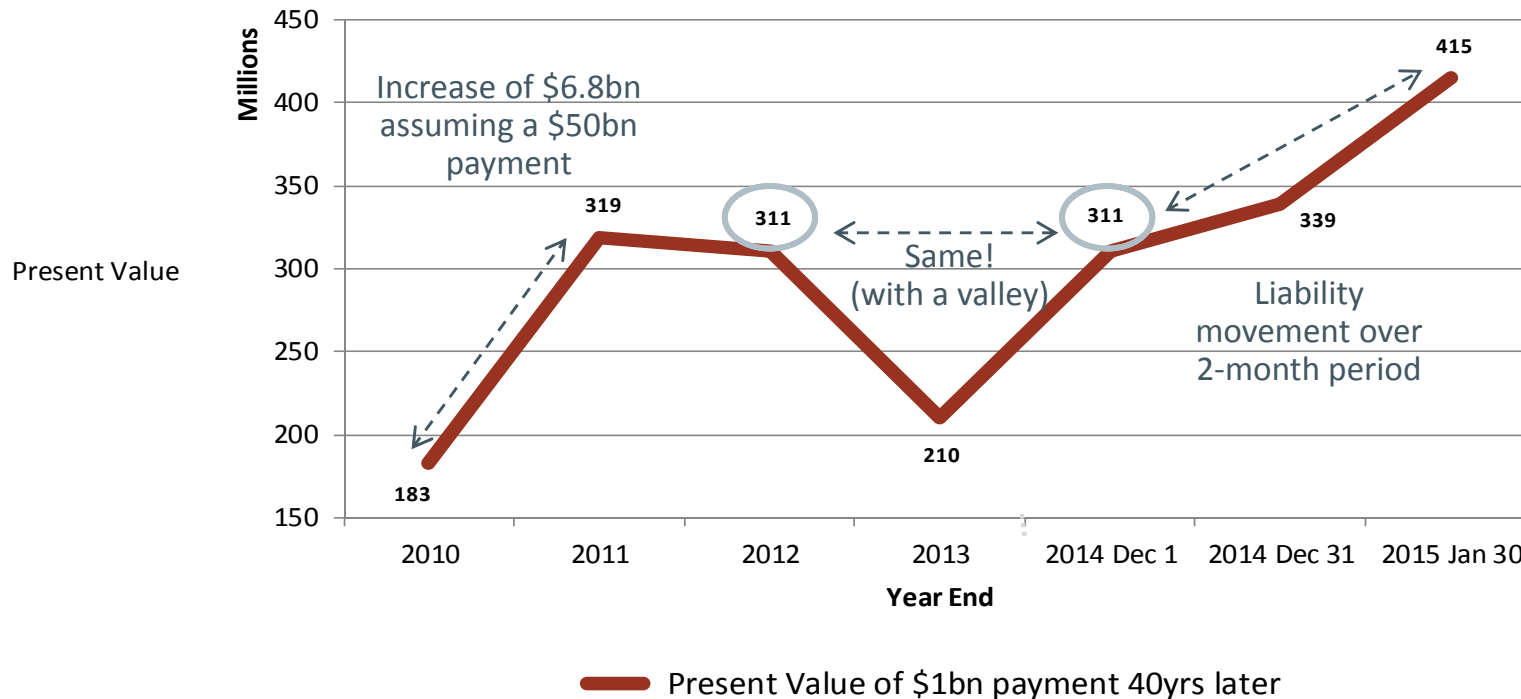


Importance of insurance long-term business

- Valuation must be consistent for all lines of business (life and non-life)
- Attention must be paid that insurance long-term business plays an important role for the economy:
 - Insurers offer long-term products, e.g. pension provisions, to policyholders which is a key element of private retirement planning
 - Insurers provide stable long-term financing of the economy
- **The preservation of insurances' long-term business must not be endangered**
- **Supervisory frameworks must sustain and not disincentivize the viability of long-term products**
- The valuation of long-term liabilities is strongly dependent on the underlying yield curve used for discounting
- **A rational design of yield curves is of major importance for the ICS**

Sensitivity of long-term business to yield curves

Example: Liability of \$1 bn due in 40 years discounted at the actual year-end 30yr US Treasury Yield



% change in Present Value over prior period	2010-2011	2011-2012	2012-2013	2013-2014	2014 Dec 1-2014 Dec 31	2014 Dec 31-2015 Jan 30
	-	74%	-2%	-33%	48%	9%

Source: Manulife

- Small changes in yield can cause significant changes in reserves
- Methodology to construct yield curves must avoid unintended volatility



Yield curve volatility

- For the construction of a rationally designed and stable yield curve, the use of market data is generally supported as a reasonable approach
- To avoid unnecessary volatility, it needs to be adequately reflected that:
 1. For longer maturities markets cease to be deep and liquid enough to generate reliable information
 - **Last liquid point as starting point of extrapolation must not be too late**
 2. Insurers with the intention to hold assets to maturity are not exposed to volatility coming from temporary market changes caused by spread movements that do not reflect realistic changes in the probability of default
 - **Adjustment to yield curves based on asset spreads is needed**

Yield curve construction (1/5)

1. Extrapolation

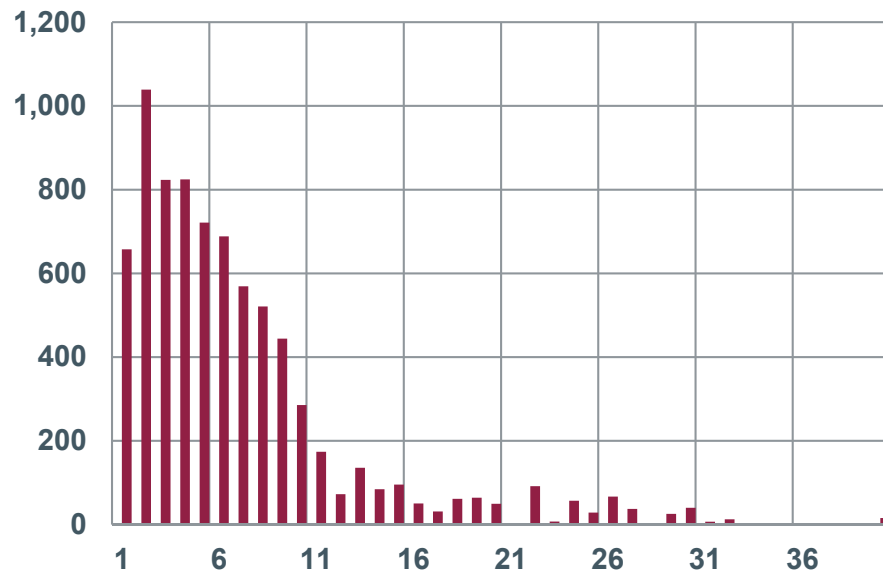
- Due to their lack of reliability, market data cannot be used beyond a specific maturity (last liquid point)
 - Yield curve data for maturities beyond the last liquid point must be constructed by models
 - For the sake of stability and to reduce unnecessary volatility in the balance sheet, a long-term equilibrium rate should be designed for the long end of the curve
- **To provide for a smooth transition from market data to the long-term equilibrium rate, an adequate extrapolation methodology must be used**

Yield curve construction (2/5)

1. Extrapolation: Background

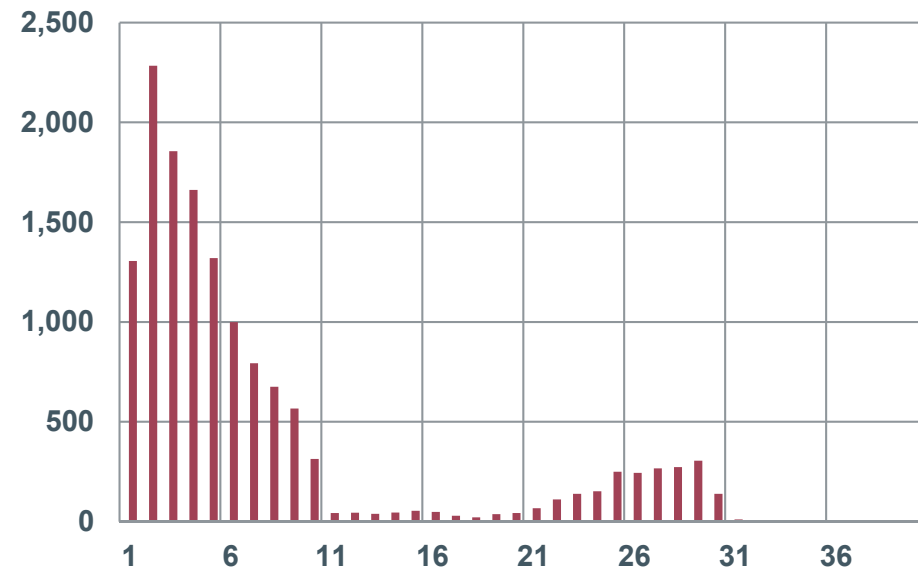
IBoxx EUR Overall - Volume per maturity in bn. EUR

Overall amount: 7,809 bn. EUR (as of February 2015)



IBoxx USD Overall - Volume per maturity in bn. USD

Overall amount: 14,174 bn. EUR (as of February 2015)

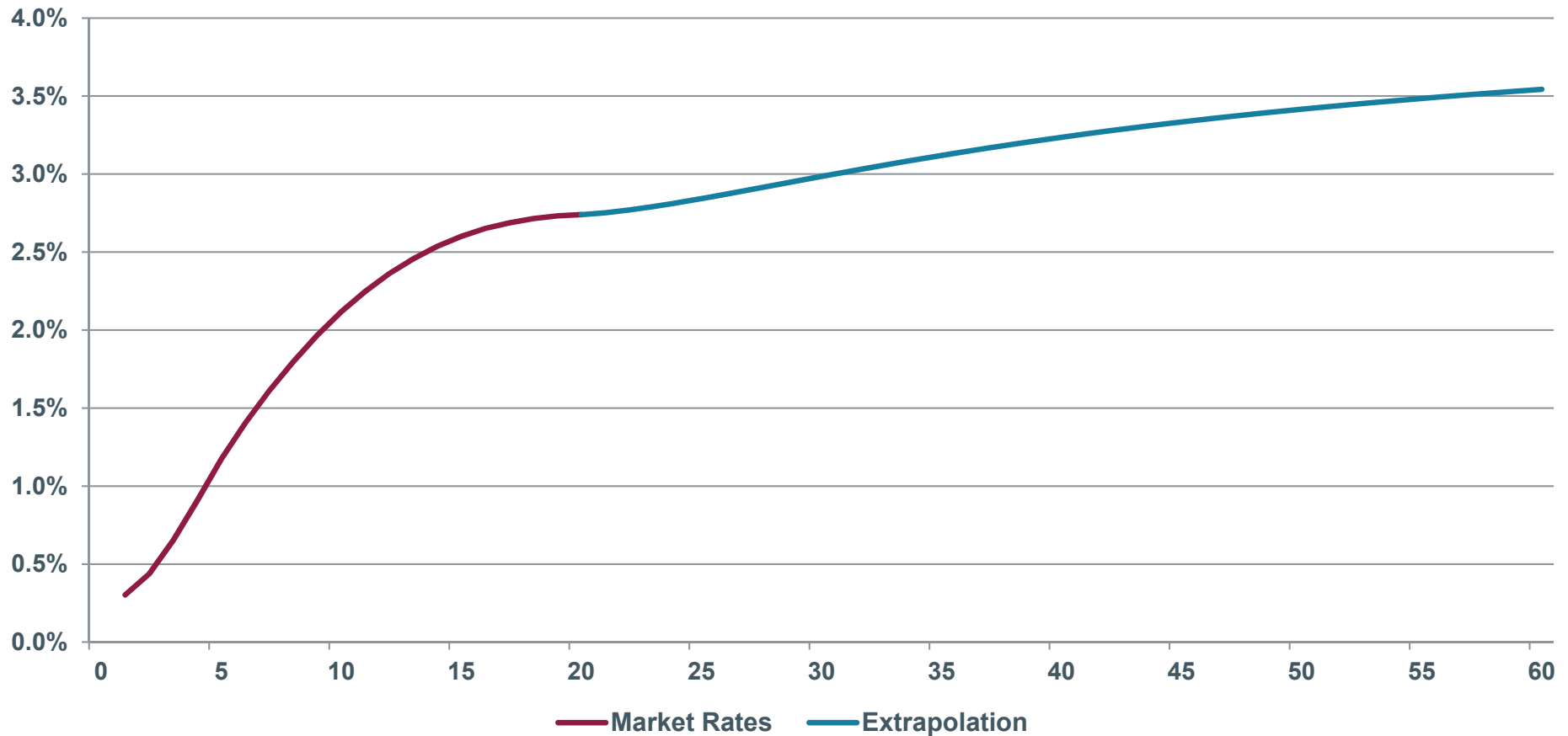


➤ Market data for longer maturities cannot provide reliable information

Yield curve construction (3/5)

1. Extrapolation: Example of EUR swap data, 31.12.2013

Extrapolation of market rates beyond the LLP of Y20



Yield curve construction (4/5)

2. Adjustment to yield curves based on asset spreads

- Insurers offering long-term products have liabilities with particularly long durations and stable cashflows
 - To cover those long obligations, insurers invest in long-term assets with the intention of holding these assets to maturity
 - Due to their Asset Liability Management, insurers are
 - less exposed to forced sales
 - less exposed to full market volatility (beyond the volatility arising from realistic changes in the probability of default)
 - Not reflecting this in the discounting of liabilities would lead to the risk of pro-cyclical behaviour in stressed market situations
- **Adjustments to the yield curves based on asset spreads are needed to account for this and to not endanger financial stability**

Yield curve construction (5/5)

2. Adjustment to yield curves based on asset spreads: Background

- Market values of assets include volatility due to temporary spread movements
- Beyond the reflection of the probability of default the spreads include other components such as illiquidity and more

Example: Spread of mixed portfolio to Euro swap rate
(equal proportions of Euro AAA and AA gov, A financial and non-financial bonds)



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