Barrie & Hibbert's Response

CEIOPS Consultation Paper No. 40
Draft L2 Advice on TP - Risk free interest rate

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Barrie & Hibbert's Response to CEIOPS-CP 40: Draft L2 Advice on TP - Risk free interest rate

CEIOPS Reference: 3.30

Industry suggests that the risk-free rate could be increased to reflect cases where the liability cannot be cancelled at short notice without penalty. The addition to the rate is referred to as the "illiquidity premium". The great majority of CEIOPS believes that the relevant risk-free interest rate term structure should not include an illiquidity premium reflecting certain cash-flow characteristics of insurance obligations. A minority of CEIOPS Members do not fully share this view and believe that this issue requires further investigation.

This comment also applies to D.16-D.18.

CEIOPS identify three sets of questions related to the application of illiquidity premia:

1) The basic principle: Should the discount rate include an illiquidity premium?

2) Measurability: *How should the illiquidity premium be quantified (in a prudent, reliable and objective way)?*

How can the method [...] be extended [...] across different currencies, including those without government bond and swap markets?

3) Applicability: *Which (re)insurance liabilities should be considered sufficiently illiquid?*

Consider each question in turn:

The basic principle

It is pretty much universally accepted that an illiquidity premium effect is evident in asset prices. See our review of the extensive academic research literature on this subject "*Liquidity Premium: Literature review of theoretical* theoretical and empirical evidence", September 2009 (see footnote[1]). This review demonstrates that liquidity effects on asset prices are evident across many different asset classes and vary significantly through time. Intermediaries who choose to hold the least-cost matching portfolio for a set of illiquid and predictable liabilities are able to capture these illiquidity premia and pass them on to savers. If insurance valuations aim to reflect this cost of replication then, in principle at least, it seems appropriate that illiquidity premia should play a part in valuation. The replicating portfolio principle is explored in the excellent IASB paper (see footnote[2]). In the paper the IASB describe how a replicating portfolio of assets can be constructed that fits the characteristics of the liabilities (in terms of timing, currency and liquidity).

One of the stated aims of Solvency II is that it makes optimal use of the information provided by financial markets (see footnote[3]). Another of the stated aims of Solvency II is to increase the compatibility of Solvency II reporting with financial reporting, to the extent possible, so as to limit the administrative burden placed on companies (see footnote[4]).

We believe, for all of the above reasons, that there is a strong case for CEIOPS to give very careful further consideration to this basic valuation principle.

Measurability

The quantification of illiquidity premia at a specific point in time and for a specified portfolio of assets, remain contentious and create technical challenges for firms and regulators. Nevertheless, as researchers have demonstrated, it is possible to generate estimates. We do not believe that the nature of the estimation challenge should be the reason for rejecting outright the use of illiquidity premia in valuation.

1http://www.barrhibb.com/documents/downloads/Liquidity_Premium_Literature_Review.PDF

2 Discount rates and day one losses", IASB Insurance Working Group, November 2008

3 Solvency II Directive, Recitals, paragraph 27

4Solvency II Directive, Recitals, paragraph 28

A number of methods exist for estimation of illiquidity premia (set out in our literature review) and we believe each of the methods offers valuable information in assessing the level of illiquidity premia at a point in time. These measures might be used individually or combined together. Regulators will clearly need to evaluate them against their standards of reliability, objectively and prudence and compare this performance against the costs of removal.

Applicability

We acknowledge that a further practical issue concerns the circumstances in which an illiquidity premium can be used in valuing liabilities. Our view is that this should be determined by the composition of the least-cost matching portfolio. If a firm can demonstrate that cash-flows are sufficiently illiquid and predictable to hold illiquid matching assets to maturity then it seems reasonable to recognise this in valuation. We have worked with insurance firms to apply this principle across different business lines and would be willing to share this research (on the development of objective quantitative measures of liability liquidity) with CEIOPS.

Summary

Much additional research is likely to emerge on these topics in the coming months including our own contributions to the debate. We believe the proposed policy to exclude illiquidity premia when valuing certain (illiquid) cash flows should be reviewed because:

- The existence of an illiquidity premium in asset markets is generally accepted
- A replicating portfolio could choose liquidity as a characteristic to replicate and the value of the liability would reflect the liquidity premium in the replicating assets.

Some allowance for illiquidity will result in a liability value that is approximately and economically correct rather than one that is almost definitely incorrect (i.e. with no illiquidity premium). There are practical solutions to the quantification of the illiquidity premium and we believe that sensible restrictions can be placed on the circumstances in which it might be used.

Terminology

Regarding terminology - both the terms "liquidity premium" and "illiquidity premium" are used and this can cause confusion. The fundamental point is that assets which offer trading liquidity (i.e. they are relatively cheap to buy and sell) will have higher prices than comparable assets with higher associated trading costs. This premium price is quite naturally described as a "liquidity premium". Note that if asset valuations are expressed in terms of yields, the illiquid asset will offer a higher yield than the liquid asset. This has caused some people to use the term "illiquidity premium". Although somewhat confusing, these terms are interchangeable when used in this context. The convention we follow is to refer to a *liquidity premium* (LP) in line with the idea that a premium price must be paid for liquid assets.

CEIOPS Reference: 3.47

CEIOPS recognises the importance of the choice of the extrapolation technique and is currently still forming its opinion on this issue. CEIOPS welcomes stakeholders' comments and suggestions.

This comment also applies to B.14-B.15.

The valuation of ultra long-term cash flows that fall beyondthe maturity of the longest bonds traded in fixed income markets is a fundamental challenge. You could argue it is the most basic valuation task faced by firms. For some territories (for example, some of the Asian and emerging European economies) the approach used will have a 'first-order' impact on the balance sheet. Developing sound approaches turns out not to be straightforward. As the CPs acknowledge, the simple approaches of extrapolating with constant forward or spot rates have little economic justification (in fact there is justification for *not* using constant spot rates) and have the potential to create damaging, spurious volatility on an insurer's balance sheet (see our report "*Market-consistent valuation of ultra long-term cash flows*", October 2008). In summary, transferring all of the variability in longest (and error-prone) forward rates to the entire term structure has little economic rationale and generates unreasonable volatility in long-term liability values.

We have published a series of papers (see footnote)[5] concerned with:

- Fitting market data
- Setting a long-term, limiting (forward) interest rate assumption
- Setting a plausible path between observed market data and the limiting rate.

The justification for the macroeconomic extrapolation is that it produces long term discount rates with similar levels of volatility to those observed in markets where long maturity bonds are available. In Annex B reference is made to the B+H framework for extrapolating the term structure of interest rates. The B+H framework is composed of 4 components:

- A very long term real yield
- A very long term inflation assumption
- A convexity adjustment
- A nominal term premium adjustment

In paragraph B.15 it is stated that the use of the last two components is more debatable than the first two components. The argument for the second two components is as follows:

- **Convexity adjustment** This is a feature of *any* yield curve where there is uncertainty about future rates. Since the return on a bond is different for a given rise in rates compared to the same fall in rates, as uncertainty increases – all other things equal - long rates must be lower than short rates to equalise expected returns (see footnote[6]).
- **Nominal term premium** Risk premia play an important part in shaping yield curves. In recent years, most practitioners would argue that long-term rates strong demand for long-term bonds from investors. However, over the very long-term, the longest available bonds have tended to offer a higher return than short-dated instruments – a *maturity* or *term* premium. Our view is that the limiting forward rate should be set in line with an unconditional view (i.e. independent of today's market conditions) of the term premium. In our work, we assume this is positive. It would be quite possible (and some experts would argue reasonable) to set this to zero.

For both these assumptions, we believe the key consideration should be *consistency*. Firms and regulators should avoid creating spurious variability in the value of unobservable, non-traded, ultra long-term insurance liabilities by moving these assumptions over time except where there is very strong evidence to support a change. In choosing a convexity and term premium assumption, the question is not whether you are comfortable with it today, but whether you would also have been able to live with it in 1980 and 1930 as well as today.

The use of a term premium is also related to the calculation of the risk margin and CP-42. Using the methods we have proposed the term premium is calibrated to reproduce the market risk premium that is observed for the longest available bond **and** the unconditional (limiting) risk premium. The method produces extrapolated market prices that reflect the risk margins that are evident in the market. The transition from the market risk premium to the unconditional economist's assumption is gradual. This is deliberate and means that short-term volatility in risk premia is not propagated across the entire maturity spectrum. It is this feature of the B+H methodology that makes the CP-42 risk margin calculation redundant for interest rate extrapolation.

CP40 lists two disadvantages of the macroeconomic extrapolation approach:

1. "the method is sensitive to the choice of maturity for the long term equilibrium rate".

   We view this question slightly differently. Our proposed method sets a limiting forward interest rate but does not say when it is reached in the extrapolation. Separately, we specify the rate of decay in the volatility of forward rates which will determine the speed with which the longest market rate moves to the equilibrium assumption. In practice forward rates will be close to the unconditional assumption after 100 years. Spot and coupon rates could still be materially different, even at a 100 year horizon.

2. "the method is sensitive to changes in the long term equilibrium macro economic variables".

5 We have published a number of research reports on this subject: "Exposure Draft: A framework for estimating and extrapolating the term structure of interest rates", September 2008; "Fitting the Yield curve: Spline interpolation and Nelson-Siegel extrapolation", September 2008; "Interest rate calibration: How to set long-term interest rates in the absence of market prices", September 2008; "Real-world interest rate calibration: How to construct a volatility term-structure of interest rates in the absence of market prices", September 2008; "A comparison of extrapolation performance: Flat forwards vs B+H method for USD curves (1985-2007)", November 2008.

6 For a thorough, non-technical explanation of yield curve dynamics see the excellent "Forces That Shape the Yield Curve: Parts 1 and 2", Mark Fisher, Federal Reserve Bank of Atlanta, Working Paper 2001-3, March 2001..

This is true and there is no way of avoiding this fundamental valuation judgment. This is true of any approach but using our methodology the assumption is explicit. As a result we are able to impose consistency and stability. By contrast, whilst superficially appealing, extrapolating using the longest spot or forward rate implicitly says that the equilibrium rate is as volatile as the, say, a 30-year rate (or a 10-year rate in less developed markets). This makes no sense and tends to undermine the whole market-consistent, economic basis of Solvency II valuations.

CEIOPS Reference: 3.56

Where government bonds do meet the risk-free rate criteria (or can beadjusted to meet them) for some maturities but not for all maturities, theyshould be used to derive the relevant risk-free rate for these maturitiesonly. At stage three, different financial instruments may be used to derive the relevant risk-free rates for different maturities.

See comment under 3.47.

CEIOPS Reference:B.14.

We find it essential that the extrapolation method gives a reasonable outcome in a market where there is limited liquidity in the long end. As mentioned above, Barrie & Hibbert[15] (B&H) has proposed an interest rate model based on setting an unconditional long-term forward rate[16]. By using such a method, the volatility in the long end will be reduced. As B&H, we believe that the volatility of interest rates should decrease with maturity.

See comment under 3.47.

CEIOPS Reference: B.15

In B&H's model, the components of forward interest rates are based on long-term macro-economic assumptions regarding the long-term real rate of interest and long-term inflation expectations. In addition B&H include a bond term premia and a technical "convexity" adjustment. However, we find it more debatable whether and how to include the last two factors.

See comment under 3.4.7

CEIOPS Reference: D.16

An adjustment should be made only in cases where government bonds are inappropriate, for example because of technical bias or liquidity considerations. This adjustment should be made following a clear, reliable and well-established methodology. Where government bonds are not liquid or a technical bias in government bond rates cannot be removed, the risk-free term structure should be approximated by means of instruments which are most similar to government bonds.

Should the discount rate include an illiquidity premium? If so, which (re)insurance liabilities should be considered sufficiently illiquid and how should the illiquidity premium be quantified?

See comment under 3.30.

CEIOPS Reference:D.17

Currently there is a suggestion from some undertakings that liabilities which cannot be surrendered should be considered as sufficiently illiquidand therefore the cash-flows of these liabilities could be discounted usinga risk-free rate increased to allow for a "illiquidity premium". However, to date there is no generally acknowledged method which will derive the illiquidity premium in a prudent, reliable and objective way.

See comment under 3.30.

CEIOPS Reference: D.18

As it stands, the industry has divergent views on whether the risk-free rate could be increased for this "liquidity premium". The great majority of CEIOPS believes the relevant risk-free interest rate term structure shouldnot include an illiquidity premium. Some CEIOPS Members do not fully share this view and believe that this issue requires further investigation.

How can the method used to calculate the risk discount rate be extended to derive a figure consistent across different currencies, including those without government bond and swap markets?

See comment under 3.30.

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