MILLIMAN WHITE PAPER

IFRS 17: Discount Rates

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Introduction

The new insurance contracts accounting standard, IFRS 17 ('**the Standard**'), was published in May 2017 and is expected to be an area of significant focus over the next few years leading up to the transition date ('**the transition period**').

IFRS 17 has an implementation date of 1st January 2021, however, affected firms will need to be able show their accounts under the Standard for the preceding year[1]. Therefore, firms need to ensure that they are able to produce IFRS 17 compliant financial statements by 1st January 2020 (or the equivalent for firms that have alternative reporting dates).

There are a number of areas of IFRS 17 where the International Accounting Standards Board has allowed firms to make a choice on their approach. Milliman has previously written a paper on a number of the areas that require consideration during the transition period[2] and also on the choices available on the approach used to calculate the Risk Adjustment[3].

This paper focuses specifically on the approaches available under IFRS 17 for the derivation of the discount rates for use in the various calculations required by the Standard.

Discount rates are used in the derivation of the Fulfilment Cash Flows ('**FCF**') but they are also required in other areas of the Standard; in particular, in the calculation of the Contractual Service Margin ('**CSM**').

The sections in this paper cover:

- a summary of the guidance issued with the Standard in respect of discounting within the FCF;
- an overview of the other areas of the Standard that require the use of discount rates;
- a description of the two main methods, referred to in the Standard, to derive relevant discount rates and a discussion on possible approaches to the calculation; and,
- some considerations for firms during the transition period.

It is assumed for the purposes of this paper that the reader has a basic knowledge of IFRS 17 and Solvency II[4].

In particular, a basic knowledge of the three measurement models available under IFRS 17 for insurance contracts is assumed i.e. the General Model ('**GM**') which is used for insurance contracts without direct participation features, the Variable Fee Approach ('**VFA**') which is used for contracts with direct participation features and the Premium Allocation Approach ('**PAA**') which is predominantly used for short-term contracts.

[1] Paragraphs C2(b), IFRS 17 Insurance Contracts

[2] Transition to IFRS 17

[3] IFRS 17: Risk Adjustment

[4] Milliman has produced a paper that provides an introduction to IFRS 17 and this can be found here.

Fulfilment cash flows – discount rates

IFRS 17 requires firms to discount their estimates of future cash flows related to insurance contracts at rates that reflect the time value of money and any financial risks related to the cash flows that have not already been reflected in those estimates.

Firms may adjust for the financial risks inherent in the future cash flows through the discount rates or through a direct adjustment to the cash flows, prior to discounting. For example, the risk of not receiving reinsured cash flows may be considered a financial risk for which the cash flows can be directly adjusted downwards to allow for expected defaults of the reinsurers. It is worth noting that firms are not allowed to make an allowance for their own credit risk when estimating the fulfilment cash flows[5].

The Standard specifies three requirements for discount rates[6]. They must:

- reflect the time value of money, the characteristics of the insurance contract cash flows and the liquidity characteristics of the insurance contracts to which they are applied;
- be consistent with observable current market prices (if such prices exist) for assets with cash flows whose characteristics (such as timing, currency and liquidity) are consistent with those of the insurance contracts; and
- exclude the impact of any factors that are inherent in the observable market prices but do not affect the cash flows of the insurance contracts.

Discount rates should only include factors relevant to the insurance liability cash flows to which the rates will be applied and should therefore not, as a default, be set equal to the expected yields on the assets that are actually held to support the insurance liability.

Firms are given the freedom to decide how to estimate appropriate discount rates. When applying an estimation technique, it must possess the following features[7]:

- it must make maximum use of observable market data and make use of non-market variables (where information is reasonable and supportable) whilst taking consideration of the cost and effort involved. However, discount rates used should be as consistent as possible[8] with relevant market data, and any non-market variables used should not contradict any observable market variables;

[5] Paragraph 31, IFRS 17 Insurance Contracts

[6] Paragraph 36, IFRS 17 Insurance Contracts

[7] Paragraph B78, IFRS 17 Insurance Contracts

[8] Paragraph B44, IFRS 17 Insurance Contracts

- it must be market-consistent, i.e. reflect current market conditions from the perspective of a market participant; and
- it must make use of judgement to determine the extent of the similarity between the characteristics of the financial instruments for which observable market prices are available and the insurance contract liability cash flows and make adjustments to the yield on those financial instruments in respect of any dissimilarities.

In many cases there will not be an observable market on which to base the discount rates as assets will not exist that possess exactly the same characteristics as the insurance contract cash flows. In this case it may be appropriate to consider a portfolio of assets with characteristics that match the characteristics of the liability cash flows as closely as possible as a starting point. It may be that the assets actually held to support the liability would provide this starting point. Adjustments would then need to be made to remove any characteristics from the asset yields that are not relevant to the insurance contracts, such as any premium that is deemed to compensate the holder for default risk. This would be an example of the "top-down" approach which is considered later in this paper.

Alternatively, the guidance specifically mentions deriving discount rates that are consistent with observable market prices for assets that have liquidity characteristics that are consistent with the cash flows of the insurance contracts. This suggests that a similar 'illiquidity premium' approach to that used in other familiar reporting frameworks, such as the Individual Capital Assessment ('**ICA**') under Solvency I Pillar 2 (in the UK), Embedded Value ('**EV**') and also Solvency II, could also be an acceptable approach under IFRS 17.

In other words, where the liquidity characteristics are consistent between the insurance contracts and the assets supporting those contracts, the illiquidity premium implied in the yield on the assets can be reflected in the discount rate but any characteristics that are not consistent must be excluded. This is an example of the "bottom-up" approach which is also considered later in this paper.

The requirement to reflect current market conditions from the perspective of a market participant suggests the use of a market-consistent approach and therefore, at least for the purposes of the FCF, the discount rates used should be updated each reporting period to reflect current market rates.

Discount rates should only include an allowance for the effects of inflation if they are to be applied to nominal cash flows i.e. to those that include the effects of inflation[9].

INSURANCE CONTRACTS WITH DIRECT PARTICIPATION FEATURES

Insurance contracts with direct participation features[10] are those where:

- the contractual terms specify that the policyholder shares in the return of a clearly identified pool of underlying items e.g. a portfolio of assets held in a unit-linked fund;
- the insurer expects to pay to the policyholder a substantial share of the returns on the pool of underlying items; and
- the insurer expects that the majority of any change in the amount to be paid to the policyholder to vary in line with the fair value of the underlying items.

In the UK, insurance contracts with direct participation features are generally unit-linked and with-profits contracts. Outside of the UK, contracts exist that are similar in nature to UK with-profits contracts where a large proportion of profits are shared with policyholders and these may also come under the scope of this definition.

Cash flows that depend on the return of underlying items should either: (i) be discounted at rates that reflect the variability of the returns or (ii) the cash flows themselves should be adjusted for the effect of the variability and then discounted at a rate that reflects that adjustment[11].

IFRS 17 does not require firms to separate those cash flows of a contract that vary with the returns on underlying assets from those that do not. Therefore, if firms choose not to separate these cash flows then they should use discount rates appropriate for the estimated cash flows as a whole, which would most likely be through the use of stochastic modelling techniques such as Monte Carlo simulation or risk-neutral measurement techniques[12] in order to capture any non-linear behaviour.

Other areas that require discount rates

Discounting the estimates of future cash flows is not the only part of IFRS 17 that requires the use of discount rates:

- At initial recognition of a contract (or group of contracts) without direct participation features (i.e. using the GM) firms must calculate the FCF using the discount rates relevant at the inception of the contract. The CSM is then determined as the balancing item between (i) the present value of the premiums and (ii) the FCF (i.e. the best estimate liability plus risk adjustment). The discount rates used for this purpose are then "locked-in" for the lifetime of that contract and the CSM is unwound over the lifetime of the contracts (termed "accretion" in the Standard) using those rates[13]. Under the VFA, the CSM is accreted using current rates.
- Under the PAA firms are required to calculate the Liability for Remaining Coverage ('LRC') under relevant contracts. An adjustment to the LRC for the effects of discounting is required if the contract has a significant financing

[9] Paragraph B74 (c)-(d), IFRS 17 Insurance Contracts

[10] Appendix A, IFRS 17 Insurance Contracts

[11] Paragraph B74 (b), IFRS 17 Insurance Contracts

[12] Paragraph B77, IFRS 17 Insurance Contracts

[13] A negative CSM is still tracked as a Loss Component and if, in the future, it becomes positive the CSM is reinstated.

[14] A contract is said to have a financing component if there is a gap between receipt of the consideration of the contract and the delivery of the services provided by the contract e.g. a regular premium insurance contract where the cover is provided immediately (the services) but the premium is paid over time (the consideration).

component[14], and at the time of initial recognition, the time between providing each part of the insurance coverage and the related premium is expected to be more than a year[15]. If discounting is required then the discount rates used in this calculation should be those determined at inception of the contract.

- If an entity chooses to disaggregate insurance finance income or expenses[16] between profit and loss and other comprehensive income, discount rates are required to determine the amount to be recognised in profit or loss. The rates to be used are those required for the accretion of the CSM.

When deriving the discount rates to use at inception of a group of insurance contracts, firms are permitted to use a weighted average of the discount rates applicable over the year[17] in which the contracts were issued[18].

The Standard uses the terms "yield curve" and "discount rate" interchangeably. Where the term "discount rate" is used, it could be interpreted that firms may be permitted to use a single discount rate rather than a full yield curve. However, it is likely to be difficult to justify the use of a single rate where an appropriate yield curve can be derived given that the discount rates are required to "reflect the time value of money and the characteristics of the cashflows", unless it can be shown that it gives a similar result to using a full yield curve.

Methods for deriving the discount rates

The Standard refers to two main methods for deriving an appropriate yield curve to use for discounting cashflows for a group of insurance contracts (depicted in Figure 1 below):

- the "bottom-up" approach; and,
- the "top-down" approach.

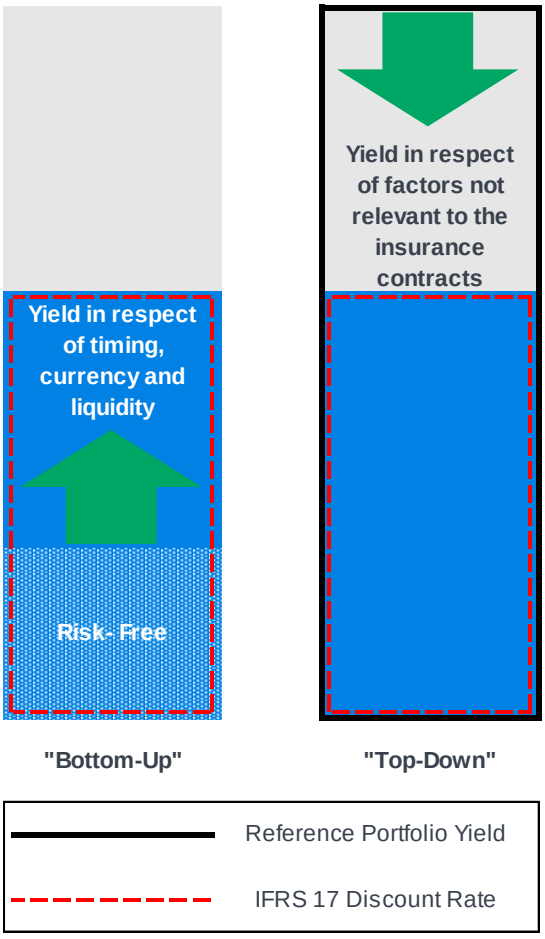
For the "bottom-up" approach, discount rates that represent a liquid "risk-free" rate of return are adjusted upwards to allow for any additional risk-adjusted return that an entity can reasonably expect to earn derived by considering the yield available on a portfolio of financial instruments that display similar characteristics to the underlying insurance contracts i.e. a reference portfolio of assets that consists of financial instruments that are available on the open market with observable market prices. For example, an illiquidity premium could be applied to the "risk-free" discount rates if this is a characteristic of the insurance contracts.

For the "top-down" approach, discount rates that represent the market implied yields of a reference portfolio of assets are adjusted downwards to eliminate any components of the reference portfolio yield that are not consistent with the characteristics of the insurance contracts, for example, a credit default premium on a fixed interest asset.

Although in principle, the bottom-up and top-down approaches to deriving relevant discount rates should result in the same yield curve, in practice this is very unlikely due to the limitations involved in credit and liquidity risk estimation techniques. The Standard does not require firms to reconcile the two approaches[19] however, it does require firms to disclose the chosen methodology[20].

IFRS 17 does not place any restriction on the type of assets that can be used within a reference portfolio of assets for the purposes of deriving appropriate discount rates. The Standard notes that fewer adjustments to the discount rates will be required if a reference portfolio of assets is chosen that possesses similar characteristics to those of the relevant group of insurance contracts[21].

FIGURE 1: TOP-DOWN AND BOTTOM-UP DISCOUNT RATES[22]



[15] Paragraph 56, IFRS 17 Insurance Contracts

[16] Insurance finance income or expenses arise as a result of changes in the carrying amount of a group of insurance contracts due to financial risk i.e. accretion of interest on the FCF, the CSM and changes in economic variables.

[17] Under the modified retrospective approach groups may exist that include insurance contracts that are issued more than a year apart (Paragraph C10, IFRS 17 Insurance Contracts)

[18] Paragraph B73, IFRS 17 Insurance Contracts

[19] Paragraph B84, IFRS 17 Insurance Contracts

[20] Paragraph 117, IFRS 17 Insurance Contracts

[21] Paragraph B85, IFRS 17 Insurance Contracts

[22] For illustrative purposes and therefore not to scale. A "bottom up" approach will not necessarily give the same result as a "top-down" approach.

For groups of insurance contracts where a replicating portfolio exists such that, in all scenarios, the expected cash flows of the insurance contracts exactly match the cashflows of a portfolio of financial instruments, then the requirement to derive a discount rate can be avoided as the Standard allows the fair value of those financial instruments to be used as the value of the FCF in respect of the group of insurance contracts[23]. Although this option is available, it may be particularly difficult, or even impossible, to find a portfolio of assets that exactly replicates the expected insurance contract cash flows in all scenarios.

DISCOUNT RATES USED AT LONG DURATIONS

IFRS 17 is principles based and this means that there are no prescribed rules for determining the discount rate used. In particular, a method is not stipulated for extrapolating discount rates beyond the **last liquid point** i.e. the point at which information is deemed to be insufficiently reliable to determine market rates.

Criteria that can be used in establishing the last liquid point include the availability of relevant financial instruments, the bid-ask spread, trade frequency and trade volume. Some approaches to extrapolation beyond the last liquid point include:

- extrapolation based on constant forward rates;
- extrapolation based on constant spot rates;
- extrapolation to an ultimate forward rate ('**UFR**') (the approach adopted for Solvency II); and
- extrapolation to an ultimate spot rate.

Using constant forward rates or constant spot rates (i.e. applying the forward or spot rate from the last liquid point for the remainder of the curve) has the advantage of simplicity, but doesn't offer the possibility of incorporating long term economic expectations and therefore may be less realistic. Although an ultimate forward rate does incorporate economic expectations it can result in less stability in the value of long-term liabilities when short term interest rate expectations change. An ultimate spot rate would provide this stability but can lead to counterintuitive or unrealistic forward rate curves.

A common approach to setting an ultimate forward rate is to consider a short-term real interest rate and to adjust it for the expected long-term rate of inflation, where the inflation rate might be set with reference to central bank policy (for a particular currency). For an ultimate spot rate, a similar approach may be adopted however, long-term average real rates should be considered together with a long-term rate of inflation.

For both the short-term and long-term real interest rates, either a retrospective or prospective approach might be used. Retrospective approaches may use an arithmetic or geometric mean of historical rates. If the distribution of the ultimate rate is assumed to be normal then an arithmetic mean of historical real rates may provide a better approximation. If the underlying distribution is assumed to be lognormal then a geometric mean may be more suitable. Under this approach, whether macroeconomic fundamentals have changed will need to be considered as this may affect the relevance of the historical data. For a prospective approach, current short-term real rates may be used but long term market trends and forecasts will need to be considered.

Whichever approach is taken with respect to the extrapolation methodology, firms will need to disclose the chosen approach and the significant judgements on which it is based, and any changes to the methodology that are made in the future[24].

INCLUSION OF ILLIQUIDITY PREMIUM IN DISCOUNT RATES

The extent to which an insurance contract is considered to be liquid depends on the ability of the policyholder to exit the insurance contract without significant loss in value or significant risk of a loss of value. The value of a contract may also include any loss of insurance coverage as a result of an exit. If the policyholder receives no value or only a small part of the value of the contract on exit then it is considered to be more illiquid than a contract where the full value can be realised upon exit without a cost to the policyholder.

Examples of insurance contracts that are considered to possess more liquid characteristics are whole of life or endowment insurance contracts (assuming the policy is no longer subject to a significant surrender penalty). A lifetime annuity is an example of an insurance contract that possesses more illiquid characteristics, as most contracts are written such that they cannot be surrendered.

A term assurance contract may be considered to possess both liquid and illiquid characteristics. Depending on when the policy is lapsed the premiums paid may be of more value than the insurance coverage that the policyholder has received, which could be a source of illiquidity. However, if more value can be achieved through lapsing the policy and purchasing a new policy in the open market at cheaper rates then this may be a source of liquidity.

Practical approaches to calculating the illiquidity premium include:

- Construct a reference portfolio and determine its illiquidity premium using top-down techniques.
- Compare the yields observable in the market on illiquid assets to similar liquid assets, for example using covered bonds[25]. The illiquidity premium on covered bonds is typically considered to be equal to the entire yield on the bond that is in excess of the risk free rate (i.e. the spread on the bond is assumed to not contain a credit risk

[23] Paragraph B46-B47, IFRS 17 Insurance Contracts

[24] Paragraph 117, IFRS 17 Insurance Contracts

[25] Covered bonds are debt securities that are collateralised against a pool of assets that in case of default of the bond can cover payments due on the security. Covered bonds therefore contain protection against the risk of default.

premium). If the liquidity characteristics of the covered bond are comparable to the liquidity characteristics of the insurance liability then the illiquidity premium of the covered bond could be used as the discount rate.

Comparing the characteristics of available illiquid assets with the characteristics of the insurance contract cash flows is a matter of expert judgement. This judgement includes the liquidity characteristics but also consideration that the assets will not typically be subject to the same policyholder behaviour and mortality/morbidity characteristics as the insurance contract. Based upon this judgement the illiquidity premium on the illiquid assets needs to be adjusted to reflect the liquidity of the insurance contract liabilities as well as the other characteristics that the contract possesses.

If a contract includes liability cash flows that vary based on the return on a pool of underlying items, then possible sources of illiquidity arise from:

- any illiquidity premium inherent in the yields from the underlying items that is then passed on to the policyholder (i.e. it is included in the best estimate liability cash flows);
- a guarantee on the return of the financial underlying items;
- other insurance cash flows subject to non-financial risk.

The latter two are also present in insurance contracts where the cash flows do not depend on the return on the underlying items.

A practical approach to setting the discount rate would be to first determine an illiquidity premium for the guarantee and the insurance cash flows subject to non-financial risk. This discount rate can then also be used for the discounting of the cash flows that depend on the return on the underlying items as long as the return on the underlying items is projected using the same illiquidity premium.

If a group of insurance contacts has been reinsured by the direct write (the insurer) then a similar illiquidity premium has to be used by the insurer in the valuation of the corresponding reinsurance cash flows. This is because IFRS 17 requires consistent assumptions to measure the estimates of the present value of the future cash flows for the group of reinsurance contracts held and the estimates of the present value of the future cash flows for the underlying group of insurance contracts[26]. A difference in termination conditions between the direct and ceded liabilities could, at least in theory, cause differences in the illiquidity premium.

COMPARISON TO SOLVENCY II

The top-down and bottom-up methodologies for calculating discount rates will be familiar to many firms as both are commonly used in EV reporting. In the UK, a bottom-up approach will have been used by many firms in their ICA calculations. Solvency II also offers an approach broadly similar to the bottom-up approach, albeit with strict asset eligibility requirements and a prescriptive calculation methodology, in that entities can add a Matching Adjustment ('**MA**') to the EIOPA-specified risk-free yield curves. However, as explained below, the Solvency II bottom-up approach may not provide market-consistent discount rates.

Although there are similarities between the approach prescribed under Solvency II and the bottom-up approach permitted under IFRS 17 there are also some important differences:

- The Solvency II risk-free term structure is derived using a prescribed methodology and is published by EIOPA[27] each month whereas under IFRS 17 the approach to the calculation is not prescribed.
- The Solvency II rates at each duration are derived based on observable interest rate swap prices after allowing for a credit risk adjustment whereas under IFRS 17 the rates at each duration can be derived from any relevant observable market data e.g. government bond yields.
- For durations beyond the last point where an actively traded swap market exists (i.e. the last liquid point for the relevant swap market), the Solvency II term structure is extrapolated to a single UFR for each currency. The level of the UFRs were set as part of the package of measures built into Solvency II to address issues faced by insurers from the long term guarantees inherent in their contracts. For some currencies the last liquid point is relatively short, and it could be argued that the specified UFR results in rates at long durations that exceed market-consistent rates. The Standard does not prescribe an approach to extending risk-free rates beyond the last liquid point, but it expects risk-free rates to be consistent with market prices.
- There are strict requirements around the calculation of the MA under Solvency II, together with the use of an EIOPA-prescribed risk-free yield curve, which are not requirements of IFRS 17. In particular:
  - The types of insurance contract to which the MA can be applied under Solvency II are limited to those that meet restrictive eligibility criteria;
  - The types of assets that can contribute to the MA rate are limited to those that meet strict eligibility criteria including in respect of the frequency of trading. In some cases the assets must be transformed in order to meet the criteria; and,
  - The overall calculation methodology for the MA is prescribed and, in particular, the size of the credit risk yield deduction[28] is published by EIOPA on a monthly basis.

Transition to IFRS 17

As firms look to implement and transition across to IFRS 17 they face a number of challenges in respect of the choice of discount rate. In particular:

[26] Paragraph 63, IFRS 17 Insurance Contracts

[27] European Insurance and Occupational Pensions Authority

[28] In determining the liquidity premium the credit risk yield deduction (called Fundamental Spread in Solvency II) is the amount of the yield considered to be compensating the holder for the risk that the issuer defaults on the payments due or that the perceived riskiness of the asset changes.

- Firms will need to consider the functionality of their models and their current data processes as separate discount rates (or yield curves) will be required for each group of insurance contracts. Firms will also need the ability to track and apply current (for FCF) and, for the GM, locked-in (for CSM) discount rates to each group of contracts.
- The choice of discount rate to use could have a material impact on the size of the CSM, which will affect the amount of the reported future profits arising on the insurance contracts.
- Firms will want to perform an impact assessment based on the available options for deriving discount rates to ascertain an optimal outcome. Once the choice of methodology has been made it may be difficult to justify a change in the future.
- When firms are considering the options available for transition to IFRS 17 i.e. whether to adopt the full retrospective approach, the modified retrospective approach or the fair value approach (in line with IFRS 13), discount rates will be required to determine the initial measurement of the insurance contracts and, in many cases, estimates of the discount rates relevant to the contracts at inception will be required.

  In the full retrospective approach locked-in discount rates (where necessary) are determined at the date of inception of the insurance contracts and for this approach an assessment of historical rates will be required.

  If this data is not available one of the other two approaches can be used:

  - The fair value approach requires current estimates of the value of the liability and therefore requires current discount rates.
  - If the modified retrospective approach is applied the discount rate can be determined by either: using an applicable observable rate as an approximation (if available); or determining an average spread over an observable yield curve.

How Milliman can help

Milliman has a depth of experience and expertise in IFRS 17 having closely followed its development over the past 20 years.

We are therefore well placed to offer the following services:

- Advice on discount rate methodology and challenges;
- Training on IFRS 17 concepts;
- IFRS 17 gap analysis through the use of our readiness assessment tool;
- Assistance with transition including impact analysis;
- Review of calculations and methodology; and,
- Implementation of an IFRS 17 systems solution through our award-winning Integrate platform which can be implemented with cashflow output from any actuarial system. For more information see: IFRS 17: The Integrate Solution.

If you have any questions or comments on this paper or any other aspect of IFRS 17, please contact any of the consultants below or your usual Milliman consultant.

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