DISCOUNT RATES

2017 Insurance IFRS Seminar

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Session 8

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Overview of requirements

Discount Rates – Background

General background

- The market value of an asset is, theoretically, simply the expected present value of its future cash flows.
- Insurance companies are run by managing the relationship between assets and liabilities.
- This means the liability cash flows also need to be discounted to compare them with asset values..

Key question: What discount rate should be used for the liabilities?

Ideal answer
Use replicating portfolios – identical cash flows and characteristics – but challenging (more later)

Common today under IFRS 4

Expected return on assets held…however, this means the fundamental economics of the business are not necessarily reflected in the IFRS reserves, for example:

- Different liability values can be obtained depending on the choice of assets;
- Duration mismatches can be hidden from users of the results; and
- Spread income on the assets can be recognised before it is earned.

Discount Rates – Overview of IFRS 17 requirements

IFRS 17 requirements:

- Paragraph 36
- Application Guidance paragraphs B72 – B85
- Basis for Conclusions paragraphs BC185 – BC205

Paragraph 36 (emphasis added)

- *An entity shall **adjust** the estimates of future cash flows to reflect the **time value of money and the financial risks related to those cash flows**, to the extent that the financial risks are not included in the estimates of cash flows. The discount rates applied to the estimates of the future cash flows described in paragraph 33 shall:*

  a) *reflect the time value of money, the **characteristics of the cash flows and the liquidity characteristics** of the insurance contracts;*

  b) *be **consistent with observable current market prices** (if any) for financial instruments with cash flows whose characteristics are consistent with those of the insurance contracts, in terms of, for example, timing, currency and liquidity; and*

  c) ***exclude** the effect of **factors** that influence such observable market prices but **do not affect** the future cash flows of the insurance contracts.*

Discount Rates – Time value of money (1 of 2)

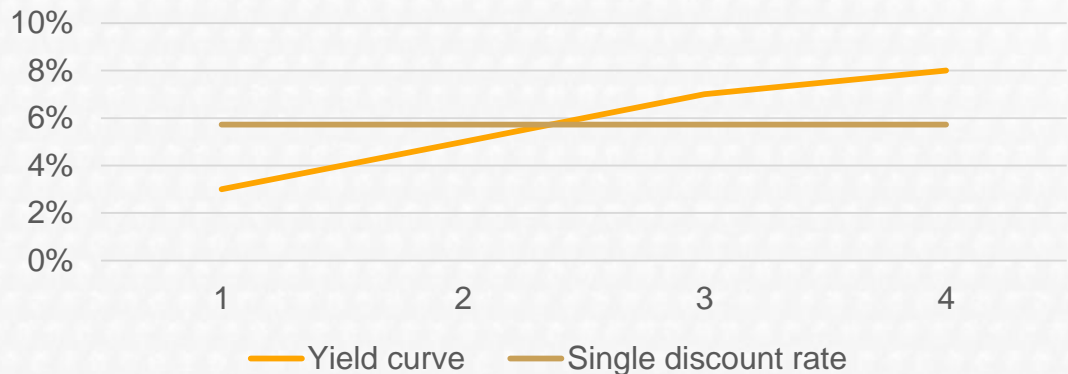Paragraph 36 (extract only, emphasis added)

- *An entity shall **adjust** the estimates of future cash flows to reflect the **time value of money and the financial risks related to those cash flows to** the extent that the financial risks are not included in the estimates of cash flows…*

Observation: "Adjust" - yield curve or single discount rate?

- IFRS 17 does not specify whether an insurer should use a yield curve or a single discount rate. The terms 'yield curve' and 'discount rate' are used interchangeably in the Standard. For the purposes of measuring the insurance contract liability, it is **likely that a full yield curve will be required**.

- Example: consider a single cash flow of 100 currency units ("CU") at time 4.

  A yield curve with discount rates of 3%, 5%, 7% and 8% in years 1-4 respectively mean the cash flow has a present value of 80.01 CU.

  This is equivalent to using a single discount rate of 5.73%.

Discount Rates – Time value of money (2 of 2)

Paragraph 36 (extract only, emphasis added)

- *An entity shall **adjust** the estimates of future cash flows to reflect the **time value of money and the financial risks related to those cash flows to** the extent that the financial risks are not included in the estimates of cash flows…*

Observation: Negative interest rates

- In certain markets, yields on some financial instruments, can be negative. To the extent the liability discount rate is also negative then those rates should be used, even if this results in the present value of the cash flows exceeding the nominal amount. The **use of a 0% floor is not appropriate**.

Observation: Examples of financial risks to consider

- Paragraph 122 (emphasis added):
  - *…Financial risks typically include, but are not limited to, credit risk, **liquidity risk** and market risk.*

Discount Rates – Cash flow characteristics (1 of 6)

<u>Paragraph 36 (extract only, emphasis added)</u>

- *…(a) reflect the time value of money, the **characteristics of the cash flows and the liquidity characteristics** of the insurance contracts…*

<u>Examples of the required linkage between the discount rate and cash flow characteristics</u>

- Paragraph B74 (emphasis added):

  – *Estimates of discount rates shall be consistent with other estimates used to measure insurance contracts to **avoid double counting or omissions**; for example:*

  a) *cash flows that **do not vary based on the returns on any underlying items** shall be discounted at rates that **do not reflect any such variability**;*

  b) *cash flows that **vary based on the returns on any financial underlying items** shall be:*

      i. *discounted using rates that **reflect that variability**; or*

      ii. ***adjusted for the effect of that variability** and discounted at a rate that reflects the adjustment made.*

  c) ***nominal** cash flows (ie those that include the effect of inflation) shall be discounted at rates that **include the effect of inflation**; and*

  d) ***real** cash flows (ie those that exclude the effect of inflation) shall be discounted at rates that **exclude the effect of inflation**.*

Paragraph B74 (extract only, emphasis added)

- …(b) cash flows that **vary based on the returns on any financial underlying items** shall be:
    - i.   discounted using rates that **reflect that variability**; or
    - ii. **adjusted for the effect of that variability** and discounted at a rate that reflects the adjustment made…

Example: Reflecting the variability based on returns on any financial underlying items

- Single premium unit-linked insurance contract where:
    - Initial single premium = 1,000 CU
    - Contract term = 4 years
    - Additional death benefit = 10% of fund value
    - Expected investment returns are: 4% for risk-free gov. bonds; 6% for corp. bonds; and 8% for equity
    - Underlying asset mix = 50% corporate bonds and 50% equity
    - Probability of survival to the end of the contract term = 95%
    - Assume policyholder can only die at the end of year 4
    - Ignore expenses and surrenders

Discount Rates – Cash flow characteristics (3 of 6)

Approach 1: Discount using rates that reflect the variability of the underlying assets (i.e. 7%)

Time:	0	1	2	3	4
Fund Value (projected at 7%)	1,000	1,070	1,145	1,225	1,311
Expected payout (= 1,311 * 95% + (1,311 * 110%) * 5%)					1,317
Present value of payout (discounted at 7%)	**1,005**				

Approach 2: Adjust for the effect of the variability in the projected cash flows (i.e. risk-free projection at 4%)

Time:	0	1	2	3	4
Fund Value (projected at 4%)	1,000	1,040	1,082	1,125	1,170
Expected payout (= 1,170 * 95% + (1,170 * 110%) * 5%)					1,176
Present value of payout (discounted at 4%)	**1,005**				

Sense check

Under a market consistent framework the present value of the expected payout is: 1,000 * 95% + 1,100 * 5% = **1,005 CU**. This is consistent with the result from both approaches above.

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Paragraph 36 (extract only, emphasis added)

- *…(a) reflect the time value of money, the **characteristics of the cash flows and the liquidity characteristics** of the insurance contracts…*

Observation: The variability of cash flows with underlying items is determined based on expected cash flows

- Paragraph B75 (extract only, emphasis added):
  - *…The variability is a relevant factor **regardless** of whether it **arises** because of **contractual terms** or because the **entity exercises discretion**, and **regardless** of whether the entity **holds the underlying items**.*

Discount Rates – Cash flow characteristics (5 of 6)

Paragraph 36 (extract only, emphasis added)

- *…(a) reflect the time value of money, the **characteristics of the cash flows and the liquidity characteristics** of the insurance contracts…*

Observation: Contracts with minimum return guarantees do not vary solely with underlying items

- Paragraph B76 (emphasis added):
  - *Cash flows that vary with returns on underlying items with variable returns, but that are subject to a guarantee of a minimum return, **do not vary solely based on the returns on the underlying items, even when the guaranteed amount is lower than the expected return on the underlying items**. Hence, an entity shall **adjust the rate that reflects the variability of the returns on the underlying items for the effect of the guarantee**, even when the guaranteed amount is lower than the expected return on the underlying items.*

- Paragraph BC203 (extract only, emphasis added):
  - *…they are not expected to vary directly with such returns **in all scenarios**. Accordingly, an **asset-based discount rate (from assets with variable returns) would be inappropriate** for such cash flows.*

Paragraph 36 (extract only, emphasis added)

- *…(a) reflect the time value of money, the **characteristics of the cash flows and the liquidity characteristics** of the insurance contracts…*

Observation: Bifurcation of cash flows is not required

- Different cash flows can have different characteristics, e.g. claim payments for a unit-linked contract will vary with the return on underlying items, but expense cash flows will be unaffected by such returns.

- Paragraph B77 (extract only, emphasis added):

  - *IFRS 17 **does not require** an entity to divide estimated cash flows into those that vary based on the returns on underlying items and those that do not. If an entity does not divide the estimated cash flows in this way, the entity shall apply discount rates **appropriate for the estimated cash flows as a whole…***

- An entity is **neither required** to measure **nor prohibited** from measuring cash flows from an individual insurance contract with different characteristics **separately**.

- The discount rate should be **blended** to reflect the different characteristics of the **combined cash flows** if they are not measured separately.

Discount Rates – Liquidity characteristics

Paragraph 36 (extract only, emphasis added)

- *…(a) reflect the time value of money, the **characteristics of the cash flows and the liquidity characteristics** of the insurance contracts…*

Observation: Different contracts have different liquidity characteristics

- The liquidity characteristics of the insurance contracts depend on the **predictability of the cash flows** and the extent to which the cost of forced liquidation of assets can be passed on to policyholders.

- Embedded value practice in Europe, shows products were typically allocated into different buckets:

Illiquidity %	Examples of products
100%	Immediate annuities in payment
75%	Participating and US-style fixed annuity products
50%	Annual premium protection products, e.g. term life, whole of life etc. Certain savings contracts, e.g. single premium / limited pay endowments
0%	Unit linked

Discount Rates – Market consistent valuation

Paragraph 36 (extract only, emphasis added)

- …(b) be **consistent with observable current market prices** (if any) for financial instruments with cash flows whose characteristics are consistent with those of the insurance contracts, in terms of, for example, timing, currency and liquidity…

Observation: Market consistent measurement of options and guarantees

- The requirement to maintain consistency with current market prices means that **'real-world' measurement techniques**, where some asset classes (such as equity instruments and real estate) are assumed, based on historical market averages, to outperform fixed income asset classes, **are not permitted**.

Observation: Need to maximise the use of observable inputs

- Paragraph B44 (extract only, emphasis added):

  - … An entity shall **maximise the use of observable inputs** and shall **not substitute its own estimates for observable market data** except as described in paragraph 79 of IFRS 13 Fair Value Measurement…

Discount Rates – Exclude irrelevant factors

Paragraph 36 (extract only, emphasis added)

- …(c) **exclude** the effect of **factors** that influence such observable market prices but **do not affect** the future cash flows of the insurance contracts…

Observation: Restriction on using asset-backed discount rates

- An asset-backed discount rate is **not permitted** if this has different characteristics from the cash flows of the insurance contract.

- However, asset yields could be a **starting point** to determine a permissible discount rate.

	Asset	Liability
Contract Features	Yes	Yes
Currency	Yes	Yes
Default	Yes	**No**
Expense	Yes	**No**
Inflation	Yes	Yes
Liquidity	Yes	Yes
Tax	Yes	**No**
Timing	Yes	Yes
Uncertainty	Yes	Yes

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Discount Rates – Where else are they used?

<u>Observation: Discount rates have many other purposes besides calculating the best-estimate liability</u>

- Paragraph B72 summarises where discount rates are used:

  a) To **measure fulfilment cash flows** (current discount rates);

  b) To **accrete interest on the contractual service margin** for contracts measured using the **general measurement model** (discount rates at inception);

  c) To **determine changes to the contractual service margin** for contracts measured using the **general measurement model** (discount rates at inception);

  d) To **adjust the carrying amount for remaining coverage** for contracts measured using the **premium allocation approach** (discount rates at inception); and

  e) If applicable, to **disaggregate finance income or expense** between profit or loss and other comprehensive income:

    − For non-participating contracts using discount rates at inception;

    − For indirect participating contracts using a constant rate; and

    − For short duration contracts measured using the premium allocation approach using discount rates at the date of the incurred claim.

Determining the discount rates to apply

Discount Rates – Permissible approaches

Paragraph B79 (extract only, emphasis added)

- *For cash flows of insurance contracts that **do not vary** based on the returns on underlying items, the discount rate reflects the yield curve in the **appropriate currency** for instruments that expose the holder to **no or negligible credit risk**, adjusted to **reflect the liquidity characteristics** of the group of insurance contracts…*

Paragraph B80 (emphasis added)

- *Hence, for cash flows of insurance contracts that do not vary based on the returns on underlying items, an entity may determine discount rates by **adjusting a liquid risk-free yield curve** to reflect the differences between the **liquidity characteristics** of the financial instruments that underlie the rates observed in the market and the liquidity characteristics of the insurance contracts **(a bottom-up approach)**.*

Paragraph B81 (emphasis added)

- *Alternatively, an entity may determine the appropriate discount rates for insurance contracts based on a yield curve that reflects the **current market rates of return** implicit in a **fair value measurement** of a **reference portfolio of assets (a top-down approach)**. An entity shall **adjust** that yield curve to **eliminate any factors that are not relevant** to the insurance contracts, but is **not required** to adjust the yield curve for **differences in liquidity characteristics** of the insurance contracts and the reference portfolio.*

Discount Rates – A simple illustrative example

Rate / Adjustment	Top Down	Bottom Up
Bond Gross Yield	10%	
Tax @ 30%	-3%	
Credit risk premium	<u>-2%</u>	
Discount Rate	**5%**	<u>**5%**</u>
Liquidity risk premium		2%
Risk Free Rate		3%

Discount Rates – Bottom-up approach (1 of 3)

Paragraph B79 (extract only, emphasis added)

- *For cash flows of insurance contracts that **do not vary** based on the returns on underlying items, the discount rate reflects the yield curve in the **appropriate currency** for instruments that expose the holder to **no or negligible credit risk**, adjusted to **reflect the liquidity characteristics** of the group of insurance contracts…*

Observation: The bottom-up approach can not be used for cash flows that vary with underlying items

Observation: Identifying assets with *'no or negligible credit risk'* could be challenging in parts of Asia

- Paragraph BC196 (extract only, emphasis added):

  - *…a 'bottom-up' approach based on **highly liquid, high-quality bonds**, adjusted to include a premium for the illiquidity…*

Paragraph B80 (emphasis added)

- *Hence, for cash flows of insurance contracts that **do not vary** based on the returns on underlying items, an entity may determine discount rates by **adjusting a liquid risk-free yield curve** to reflect the differences between the **liquidity characteristics** of the financial instruments that underlie the rates observed in the market and the liquidity characteristics of the insurance contracts **(a bottom-up approach)**.*

Observation: Liquidity characteristics of assets and liabilities can differ

- Take **government bonds** traded in deep and liquid markets, which can be **readily sold** by the holder at any time **without incurring significant transaction costs**, such as bid-ask spreads.

- In effect the holder of the government bond is receiving a net return for **two** separate asset components:
  i. A holding in a non-tradable investment; and
  ii. An **embedded option to sell the bond** to a market participant, which incurs a cost and hence lowers the overall net return.

  The embedded option is **not** a characteristic of many insurance contracts. Hence the discount rate for the insurance contract should **only** reflect the first of these components - see Paragraphs BC193-BC194.

Discount Rates – Bottom-up approach (3 of 3)

Paragraph B80 (emphasis added)

- *Hence, for cash flows of insurance contracts that **do not vary** based on the returns on underlying items, an entity may determine discount rates by **adjusting a liquid risk-free yield curve** to reflect the differences between the **liquidity characteristics** of the financial instruments that underlie the rates observed in the market and the liquidity characteristics of the insurance contracts **(a bottom-up approach)**.*

Observation: Calibrating the liquidity adjustment can be challenging

- Paragraphs BC195 and BC196 respectively (extracts only):

  - *…**not appropriate…to provide detailed guidance** on how to estimate liquidity adjustments.*

  - *…feedback suggesting that it may be **difficult to determine a liquidity premium in isolation**…*

- There are three methods that have been commonly used in Europe:

  - **CDS Negative-basis Method -** this compares the spread on a corporate bond with the cost of a Credit Default Swap for the same asset.

  - **Covered Bond Method –** this compares the return on a pair of assets which are assumed to be equivalent except in terms of liquidity, e.g. an index of covered bonds versus swaps.

  - **Structural Model Method** – this uses option pricing techniques to calculate a theoretical credit spread. The difference between the theoretical and actual market spread is assumed to be a liquidity premium.

Paragraph B81 (emphasis added)

- *Alternatively, an entity may determine the appropriate discount rates for insurance contracts based on a yield curve that reflects the **current market rates of return** implicit in a **fair value measurement** of a **reference portfolio of assets (a top-down approach)**. An entity shall **adjust** that yield curve to **eliminate any factors that are not relevant** to the insurance contracts, but is **not required** to adjust the yield curve for **differences in liquidity characteristics** of the insurance contracts and the reference portfolio.*

Observation: The fair value measurement of assets uses the requirements in IFRS 13

- Paragraph B82 (extracts only, emphasis added):
  - *…(a) if there are **observable market prices** in active markets for assets in the reference portfolio, an entity shall **use those prices** (consistent with paragraph 69 of IFRS 13)…*
  - *…(b) if a **market is not active**, an entity shall **adjust observable market prices for similar assets** to make them comparable to market prices for the assets being measured (consistent with paragraph 83 of IFRS 13)…*
  - *…(c) if there is **no market for assets** in the reference portfolio, an entity shall apply an **estimation technique**… (consistent with paragraph 89 of IFRS 13)…*

Paragraph B81 (emphasis added)

- *Alternatively, an entity may determine the appropriate discount rates for insurance contracts based on a yield curve that reflects the **current market rates of return** implicit in a **fair value measurement** of a **reference portfolio of assets (a top-down approach)**. An entity shall **adjust** that yield curve to **eliminate any factors that are not relevant** to the insurance contracts, but is **not required** to adjust the yield curve for **differences in liquidity characteristics** of the insurance contracts and the reference portfolio.*

Observation: The reference portfolio of assets is set using the entity's discretion

- Paragraph B85 (extract only, emphasis added):

  – *IFRS 17 **does not specify restrictions** on the reference portfolio of assets used in applying paragraph B81. However, **fewer adjustments** would be required to eliminate factors that are not relevant to the insurance contracts when the **reference portfolio of assets has similar characteristics**. For example, if the cash flows from the insurance contracts **do not vary based on the returns on underlying items, fewer adjustments** would be required if an **entity used debt instruments as a starting point rather than equity instruments**…*

Paragraph B81 (emphasis added)

- *Alternatively, an entity may determine the appropriate discount rates for insurance contracts based on a yield curve that reflects the **current market rates of return** implicit in a **fair value measurement** of a **reference portfolio of assets (a top-down approach)**. An entity shall **adjust** that yield curve to **eliminate any factors that are not relevant** to the insurance contracts, but is **not required** to adjust the yield curve for **differences in liquidity characteristics** of the insurance contracts and the reference portfolio.*

Observation: Factors that can necessitate adjustments include duration mismatches and credit risk premiums

- Paragraph B83 (extract only, emphasis added):

  - *For cash flows of insurance contracts that **do not vary based on the returns on the assets** in the reference portfolio, such adjustments include:*

    a) *adjusting for differences between the **amount, timing and uncertainty of the cash flows** of the assets in the portfolio and the amount, timing and uncertainty of the cash flows of the insurance contracts; and*

    b) ***excluding market risk premiums for credit risk**, which are relevant only to the assets included in the reference portfolio.*

- As stated in paragraph B81 itself, there is no requirement to exclude market risk premiums for liquidity risk.

Paragraph B81 (emphasis added)

- *Alternatively, an entity may determine the appropriate discount rates for insurance contracts based on a yield curve that reflects the **current market rates of return** implicit in a **fair value measurement** of a **reference portfolio of assets (a top-down approach)**. An entity shall **adjust** that yield curve to **eliminate any factors that are not relevant** to the insurance contracts, but is **not required** to adjust the yield curve for **differences in liquidity characteristics** of the insurance contracts and the reference portfolio.*

Observation: Credit default swaps could help eliminate the market risk premium for credit risk

- Paragraph B85 (extract only, emphasis added):

  – *…**One way** to estimate the effect of credit risk is to use the **market price of a credit derivative** as a **reference point**.*

- If credit default swaps are used then entities would also need to eliminate the credit risk of the issuing party that is embedded within the price of the derivative.

Observation: Own credit risk is not reflected in the discount rate

- Paragraph BC197 (extract only, emphasis added):

  – *IFRS 17 requires an entity to **disregard its own credit risk** when measuring the fulfilment cash flows…*

Discount Rates – Top-down versus bottom-up

Observation: Differences between these two approaches do not need to be reconciled

- Paragraph B84 (emphasis added):

  - *In principle, for cash flows of insurance contracts that do not vary based on the returns of the assets in the reference portfolio, there should be a single illiquid risk-free yield curve that eliminates all uncertainty about the amount and timing of cash flows. However, in practice the top-down approach and the bottom-up approach may result in different yield curves, even in the same currency. This is because of the inherent limitations in estimating the adjustments made under each approach, and the possible lack of an adjustment for different liquidity characteristics in the top-down approach. An entity is not required to reconcile the discount rate determined under its chosen approach with the discount rate that would have been determined under the other approach.*

Observation: The choice of the top-down or bottom-up approach is treated as an accounting estimate

- The calculation of the discount rate using a top-down or bottom-up approach represents an estimate in accordance with IAS 8. This is because both approaches, should, in principle, produce the same result – see paragraph B84 above.

Discount Rates – Unobservable inputs

- In determining the discount rates to apply **some inputs might not be observable** in the market, e.g. discount rates beyond a certain duration; credit and liquidity risk premiums; and forward FX rates.

Observation: Such inputs are non-market variables and should be determined on a best-estimate basis

- Paragraph B43 (emphasis added):

  - *Market variables will generally give rise to financial risk (for example, observable interest rates) and non-market variables will generally give rise to non-financial risk (for example, mortality rates). **However, this will not always be the case.** For example, there may be assumptions that **relate to financial risks** for which variables **cannot be observed in, or derived directly from, markets** (for example, interest rates that cannot be observed in, or derived directly from, markets).*

- Paragraph B49 (emphasis added):

  - *Estimates of non-market variables shall **reflect all reasonable and supportable evidence available without undue cost or effort, both external and internal**.*

- Paragraph B82 (extract only, emphasis added):

  - *…develop unobservable inputs using the **best information available** in the circumstances. Such inputs **might include the entity's own data**…the entity **might place more weight on long-term estimates than on short-term fluctuations**…adjust those data to reflect all information about **market participant assumptions that is reasonably available**...*

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