



Institute  
and Faculty  
of Actuaries

# Technical aspects of IFRS 17 insurance contract liabilities

Richard Bulmer - Willis Towers Watson

Peter England - EMC Actuarial and Analytics

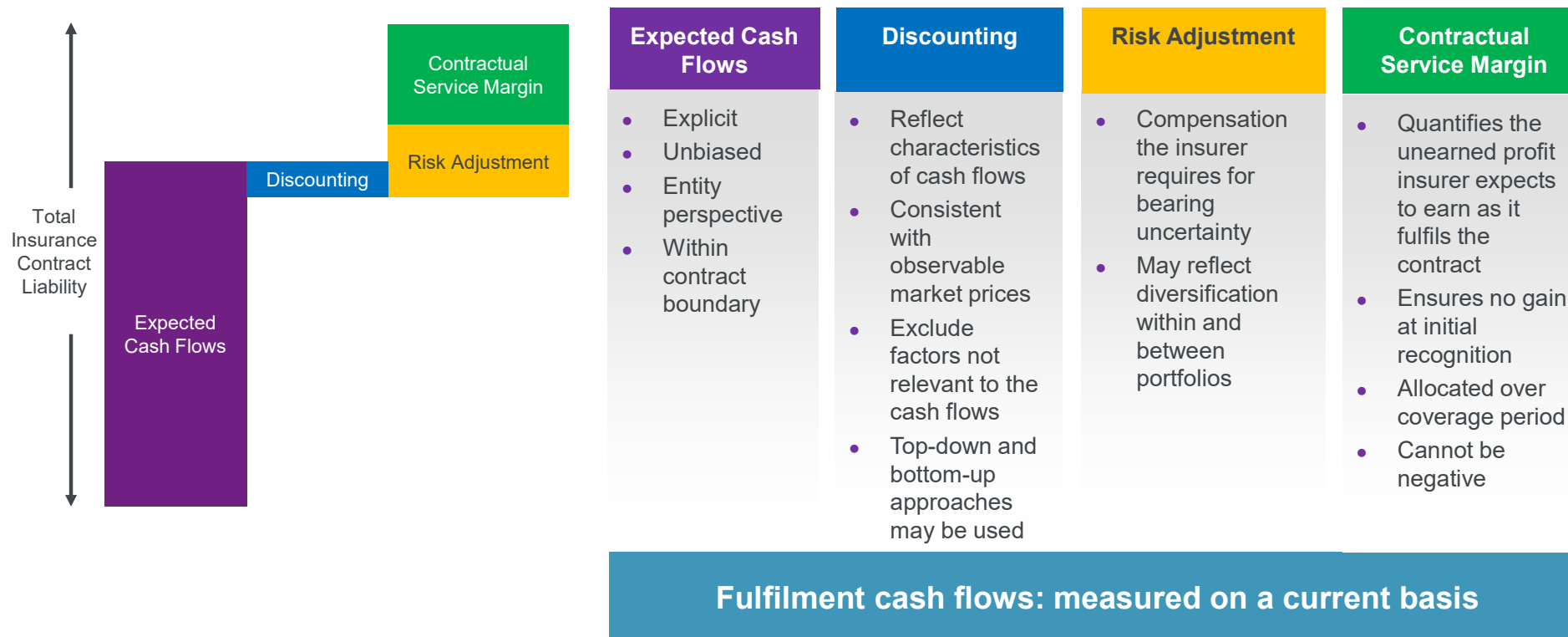
GIRO 2017, Edinburgh



# Agenda

- Summary of Building Block Approach (BBA) and Premium Allocation Approach (PAA)
- Segmentation / aggregation
- Recognition of insurance contracts / contract boundaries
- Discounting
- Reinsurance
- Risk adjustment
- Transition rules and conclusions

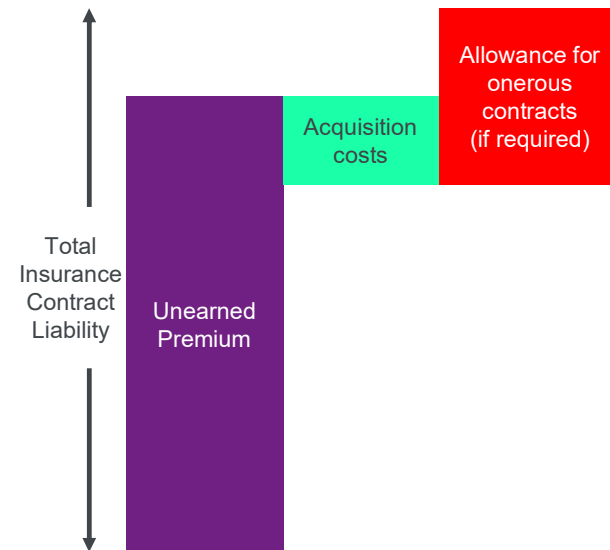
## Building Block Approach (BBA)



# Premium Allocation Approach (PAA)

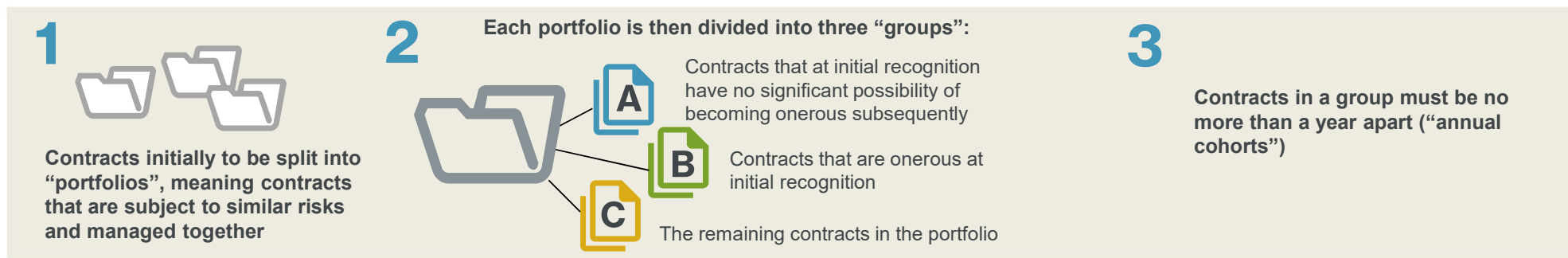
## Simplified Approach

- Premium allocation approach for **liability for remaining coverage** only
- Permitted, but not required, if:
  - Reasonable approximation to the Building Block Approach, or
  - Coverage period one year or less, and so ...
  - ... potentially applicable to most P/C business
- No need to adjust valuation of **incurred claims** for time value of money provided:
  - There is no significant financing component, or
  - Claims cash flows are expected to be paid over a period of less than one year
- Onerous contract test, but no need to allow for time value of money, if time value of money not taken into account in valuation of incurred claims



# Segmentation / aggregation

## IFRS 17 requirements



## Implications

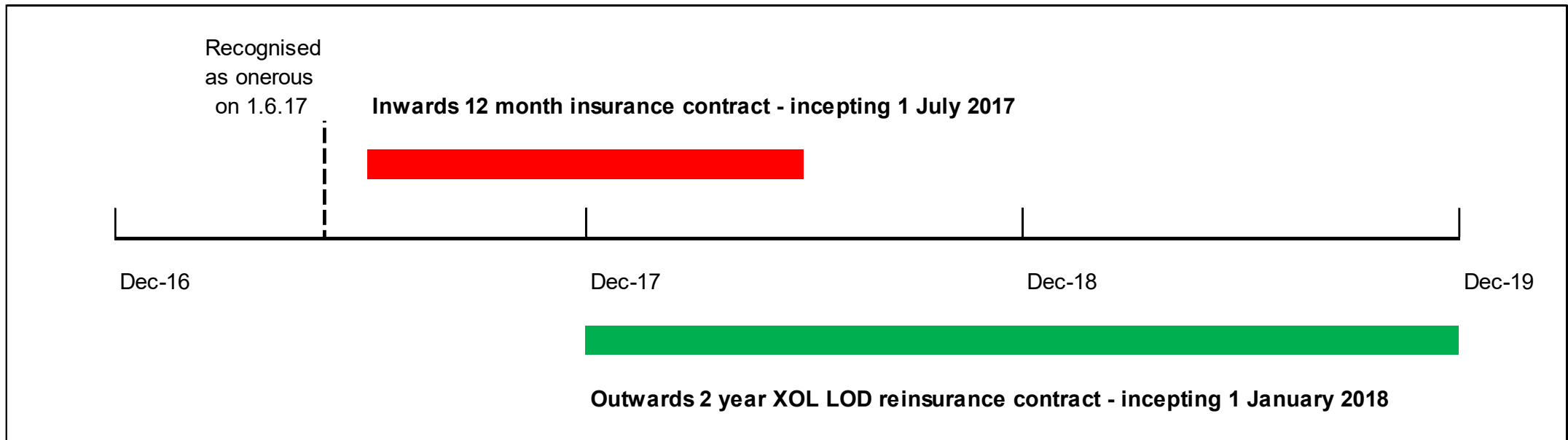
- Level of segmentation for IFRS 17 is very likely to be more granular than for Solvency II
- Highly desirable for Solvency II technical provisions and IFRS 17 insurance contract liabilities to be derived from the same cash flow module. Important therefore to ensure a simple mapping of Solvency II lines of business to IFRS 17 groups
- The determination of whether a contract is onerous at initial recognition or has no significant possibility of becoming onerous subsequently is fundamental to the determination of the group of contracts to which it is allocated. Once determined at outset, groups remain fixed
- It has been suggested that separate analysis of onerous / non-onerous contracts may potentially require separate reserving analyses for:
  - Young drivers and older drivers
  - New business and renewal business
  - Different sales channels
- IFRS 17 is principles-based. Market best / good practice is likely to develop gradually over time

# Recognition of insurance contracts (1)

## IFRS 17 requirements

- A group of insurance contracts is to be recognised on the **earliest** of the following dates:
  - The beginning of the coverage period of the group of contracts
  - The date on which the first payment from a policyholder in the group becomes due
  - For a group of insurance contracts, when the group becomes onerous. This means effectively, for such a group, that the onerous contract test is on a bound basis
- A group of reinsurance contracts held is to be recognised:
  - If the reinsurance contracts held provide proportionate coverage, at the beginning of the coverage period of the group of reinsurance contracts held or at the initial recognition of any underlying contract, whichever is the later; and
  - In all other cases, from the beginning of the coverage period of the group of reinsurance contracts held

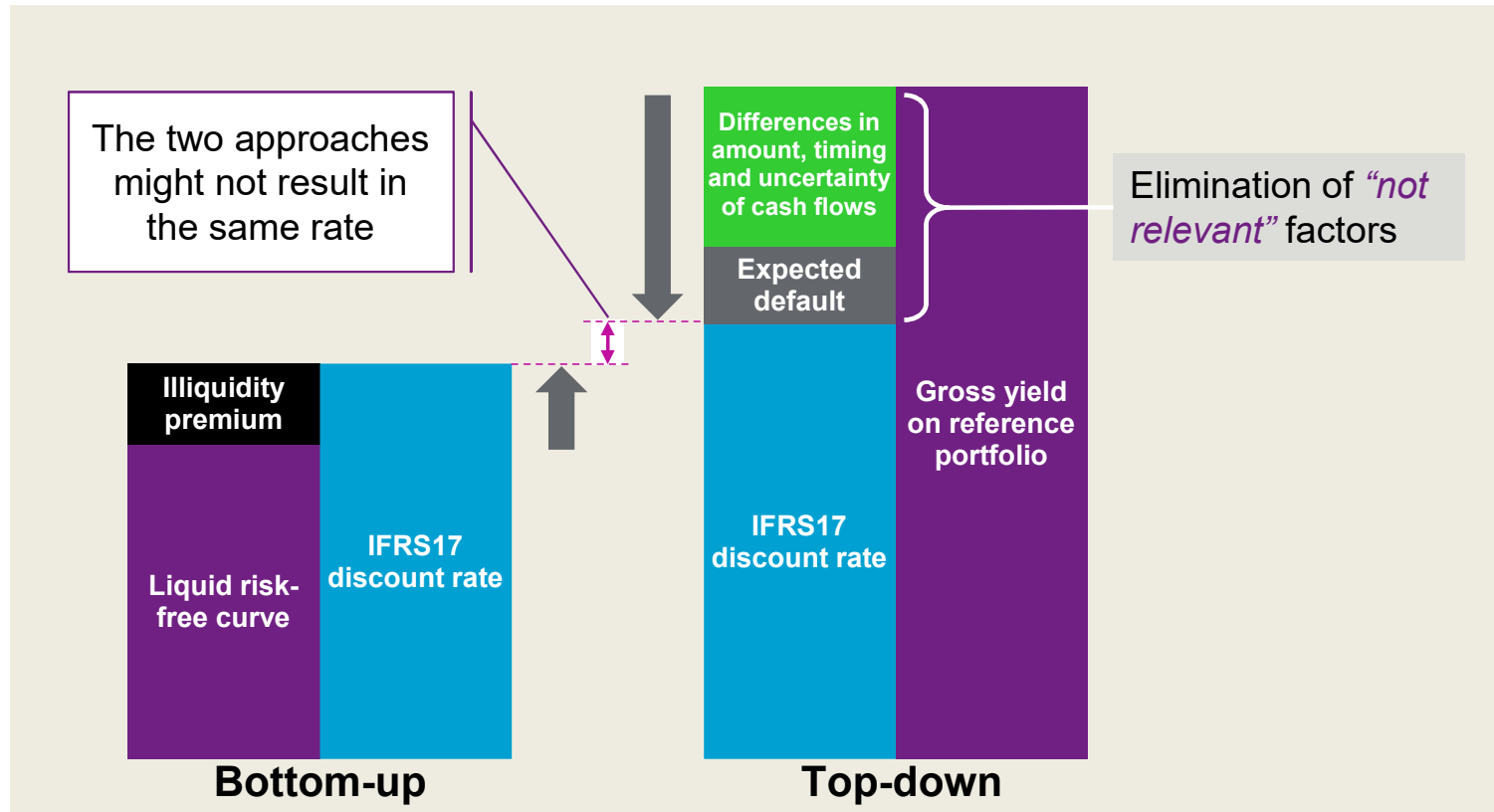
## Recognition of insurance contracts (2)



### Implications

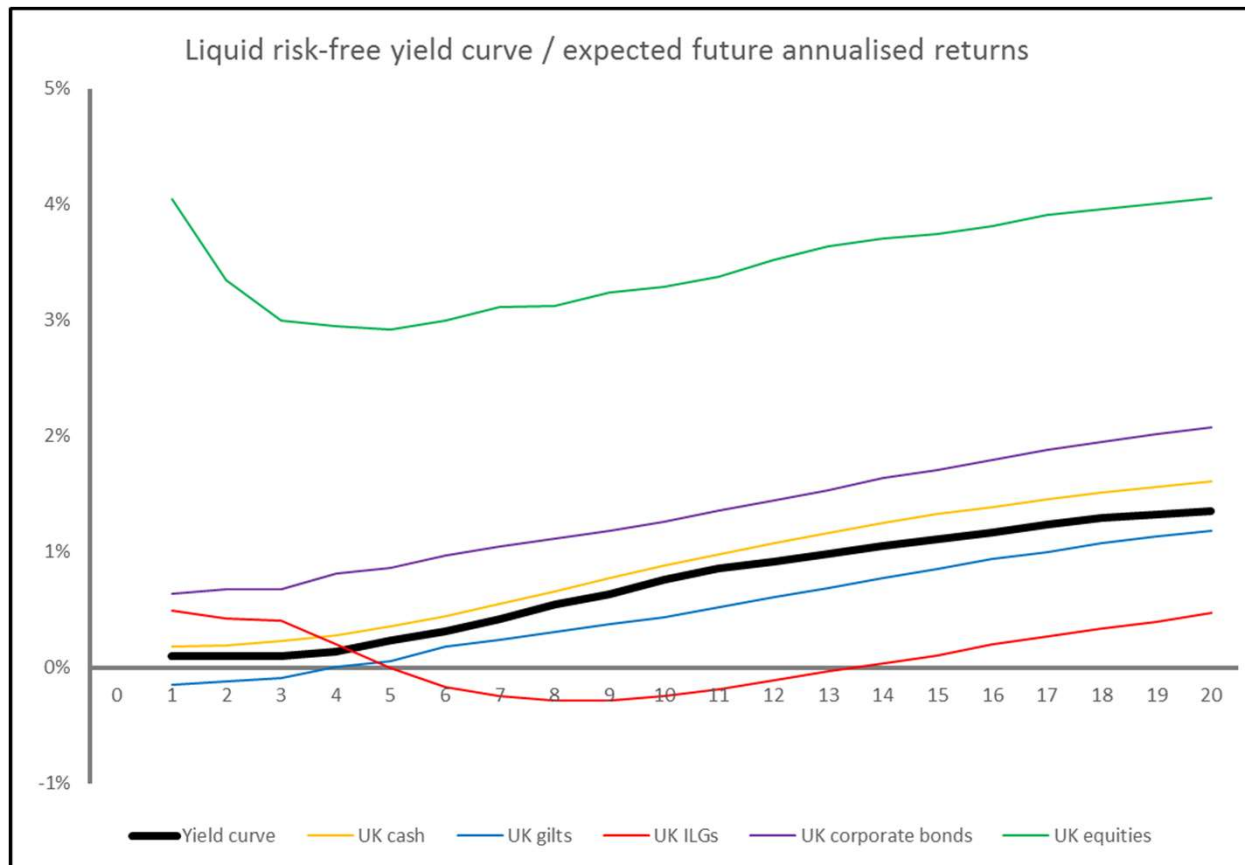
- Potential mismatch with Solvency II contract boundaries, which recognise premium when the insurer is bound
- Potential mismatch between dates of recognition of insurance contracts and corresponding reinsurance contracts
- The assessment of whether a contract or set of contracts is onerous is made without consideration of the impact of reinsurance. Therefore a contract which is onerous on a gross basis but not onerous net of reinsurance is considered onerous for the purposes of IFRS 17

# Discounting (1)





## Discounting (2)



- Material judgment required to estimate illiquidity premium (bottom-up method) or adjustment to allow for difference in asset / liability cash flows (top-down method)
- Bottom-up approach is likely to achieve maximum synergy with Solvency II
- Top-down approach may produce higher discount rates
- Top-down approach may produce a higher degree of stability and smoothing over time, and therefore a more stable pattern of emergence of profit

# Reinsurance

## **IFRS 17 requirements**

- Reinsurance contracts written are accounted for in the same way as insurance contracts, subject to the same conditions and assessment criteria
- Reinsurance contracts held are recognised, measured and presented separately
- Fulfilment cash flows need to reflect the risk of non-performance by the reinsurer
- Presentational changes affecting commissions

## **Implications**

- Potentially significant mismatch where measurement model (BBA/PAA) is not applied consistently for underlying insurance contracts and corresponding reinsurance contracts
- Potential mismatch between treatment of reinsurance contracts held and underlying insurance contracts in a large number of areas including best estimate, risk adjustment, contractual service margin, onerous contract test, portfolio definitions, contract boundaries
- Unlike current accounting practice, reinsurance amounts should be independently and explicitly measured and not approximated by use of ratios
- Measurement of non-performance by reinsurers on a probability rather than incurred basis represents departure from current practice



Institute  
and Faculty  
of Actuaries

# Risk Adjustment

Peter England

May 2017

IFRS® Standards

## IFRS 17 Insurance Contracts



The Curate's Egg  
(good in parts!)



Exposure Draft

Educational Monograph

**Risk Adjustments for Financial  
Reporting of Insurance Contracts  
under International Financial  
Reporting Standards No. X**

Comments to be received by February 5, 2017

November 7, 2016

© 2016 International Actuarial Association / Association Actuarielle Internationale  
Exposure Draft, not to be copied or quoted. All rights reserved.

Page 1



# Summary

## What needs to be done

*“An entity shall adjust the estimate of the present value of the future cash flows to reflect the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk.” (Para 37)*

## What needs to be disclosed

*“An entity shall disclose the confidence level used to determine the risk adjustment for non-financial risk. If the entity uses a technique other than the confidence level technique for determining the risk adjustment for non-financial risk, it shall disclose the technique used and the confidence level corresponding to the results of that technique.” (Para 119)*

# Questions

- Lifetime view or one-year view of Solvency II?
- IFRS 17 mentions a risk measure (confidence level), but what is the risk profile?
- Net or Gross discounted future cash flows (or both)?
- How will reinsurance programmes be taken into account?
- Include cash-inflows (eg premiums) and other cash-outflows (eg expenses) explicitly in a single distribution, or adjust for deterministically?
  - If included in a single distribution, how will they be included? With a separate distribution and combined with dependencies?
- If the BBA is used for legally bound unearned business, how will the distributions be included, and how will dependencies be imposed?
- What level of aggregation will be used? Portfolio/legal entity/holding company?
- If calculated at a higher level, how will risk adjustments be allocated back (if required). Will equivalent “confidence levels” be required at a lower level?
- If calculated at a lower level and summed, how will diversification be taken into account in a sensible way, and how will the equivalent “confidence level” be ascertained?
- If using simulation, what exactly is the dependency being imposed between? (Total outstanding fulfilment cash-flows by reserving class?)
- What dependency structure (copula) will be used?
- How will dependency parameters be estimated?
- How will dependencies and their associated parameters be validated?

# Considerations for the Risk Adjustment

- Core principles
- Techniques
- What's In and What's Out
- Level of Aggregation
- Reinsurance and Other Risk Mitigation
- Contract Boundaries/Legally Bound Business
- Disclosure
- Validation
- Re-measurement (roll forward)

# Core principles

- It's fulfilment cash-flows, which implies **the traditional lifetime view of risk**, not the one-year view of Solvency II
- *"An entity shall estimate the expected value (ie the probability-weighted mean) of the full range of possible outcomes", plus "a risk adjustment for non-financial risk"*
  - Stochastic reserving for everything?
- ***"IFRS 17 does not specify the estimation technique(s) used to determine the risk adjustment for non-financial risk."* (B91)**
- *"The risk adjustment for non-financial risk for insurance contracts measures the compensation that the entity would require to make the entity indifferent between:*
  - (a) fulfilling a liability that has a range of possible outcomes arising from non-financial risk; and
  - (b) fulfilling a liability that will generate fixed cash flows with the same expected present value as the insurance contracts."
  - Looks like the risk adjustment is an attempt to obtain a "market value" of the liabilities
  - Since the "confidence level" of the results of the technique is required, **a distribution of the discounted fulfilment cash-flows is required**



# Techniques

***“IFRS 17 does not specify the estimation technique(s) used to determine the risk adjustment for non-financial risk.” (B91)***

- Four general methods have been proposed \*:
  - Confidence level (Value at Risk)
  - Conditional Tail Expectation (Tail Value at Risk)
  - Proportional Hazards Transform
  - Cost-of-Capital
- Specific implementation details are lacking, for example, what is the risk profile?
  - Let’s assume it is the distribution of discounted fulfilment cash-flows
- *See Workshop F6 at 10:30 tomorrow for further details*
- VaR, TVaR and PHT are related and all require the same risk profile (distribution). Once that risk profile is obtained, all can be calculated easily (in a simulation environment)
  - All 3 can be expressed as a weighted average of the simulations, but with different weights
  - Just need to select the risk tolerance level
- Bootstrapping/MCMC techniques (with copulae for applying dependencies) are useful for obtaining the distributions
- The CoC method requires additional assumptions. A CoC risk adjustment for IFRS 17 will not be the same as a CoC risk margin for Solvency II
- The equivalent “confidence level” must be calculated anyway, so why bother with CoC?

\* For example, see the IAA Monograph

# What's In and What's Out?

*“...the risk adjustment for non-financial risk shall reflect all non-financial risks associated with the insurance contracts. It shall not reflect the risks that do not arise from the insurance contracts, such as general operational risk” (B89)*

- **Included:**
  - Claims, benefits, services etc
  - Expenses associated directly with fulfilling the contracts
  - Premiums, fees etc receivable
- **Excluded:**
  - Investment income
  - Overhead and other expenses
  - Asset risk
  - Operational risk
- Note risks excluded if a cost-of-capital risk adjustment is used, compared to Solvency II

- Note also that traditional approaches to reserve risk usually consider paid or incurred amounts only (eg bootstrapping a paid loss triangle). For IFRS 17, it is necessary to consider all fulfilment cash flows

- How to allow for premiums and expenses?

**Method 1: Use traditional stochastic approaches for loss amounts then adjust simply for premium/expenses**

**Method 2: Obtain a single triangle of all fulfilment cash flows, then apply traditional stochastic reserving techniques**

**Method 3: Obtain distributions of all component cash flows, then combine using an appropriate dependency structure (copula).**

# Level of Aggregation

*(B88) Because the risk adjustment for non-financial risk reflects the compensation the entity would require for bearing the non-financial risk arising from the uncertain amount and timing of the cash flows, the risk adjustment for non-financial risk also reflects:*

*(a) the degree of diversification benefit the entity includes when determining the compensation it requires for bearing that risk; and*

*(b) both favourable and unfavourable outcomes, in a way that reflects the entity's degree of risk aversion.*

**Note that diversification benefits should be reflected, but neither the level of aggregation nor the methods used for quantifying diversification are specified.**

**Note also that “risk” correctly considers favourable and unfavourable outcomes. That is, we need a risk profile of all outcomes around the “probability weighted mean”.**

**It is important to remember that a risk adjustment is required for “groups of contracts” (Paras 29 and 32), although it is unclear at what level disclosure is required.**

# Level of Aggregation

## Method 1: Create aggregate distribution at the highest reporting level, then apply risk measure

- Given (simulated) distributions of fulfilment cash flows at lower levels, combine the distributions with dependencies (using copulae) to provide an overall aggregate distribution
- Apply a risk measure (VaR, TVaR or PHT) to the aggregate distribution, and obtain the risk adjustment (or use CoC) at the aggregate level
- Allocate the risk adjustment back to lower levels
  - Different allocation methods will give different results
  - It is possible to apply methods that are naturally additive

**This approach is logical, statistically sound, and obeys the principles behind insurance. It is the aggregate distribution that is important.**

## Method 2: Create risk adjustments at lower levels, then sum the risk adjustments and apply a “diversification benefit”

- Given (simulated) distributions of fulfilment cash flows at the lowest level, apply the given risk measure to give risk adjustments at the lowest level
- Sum the risk adjustments to give an overall risk adjustment before diversification
- Attempt to allow for “diversification” in some arbitrary way, and allocate back

**Although this approach is popular, it is unsatisfactory and lacks statistical rigour (except in some contrived examples)**

# Level of Aggregation

## Consider the following:

### 1. A monoline insurer operating in a single country

Straightforward. Create an aggregate distribution of fulfilment cash flows and apply risk measure

### 2. An insurer writing many lines of business operating in a single country

Straightforward. Create an aggregate distribution of fulfilment cash flows (with dependencies) and apply risk measure. Allocate to line of business/portfolio/group.

### 3. An insurance group with multiple legal entities, but operating in a single country

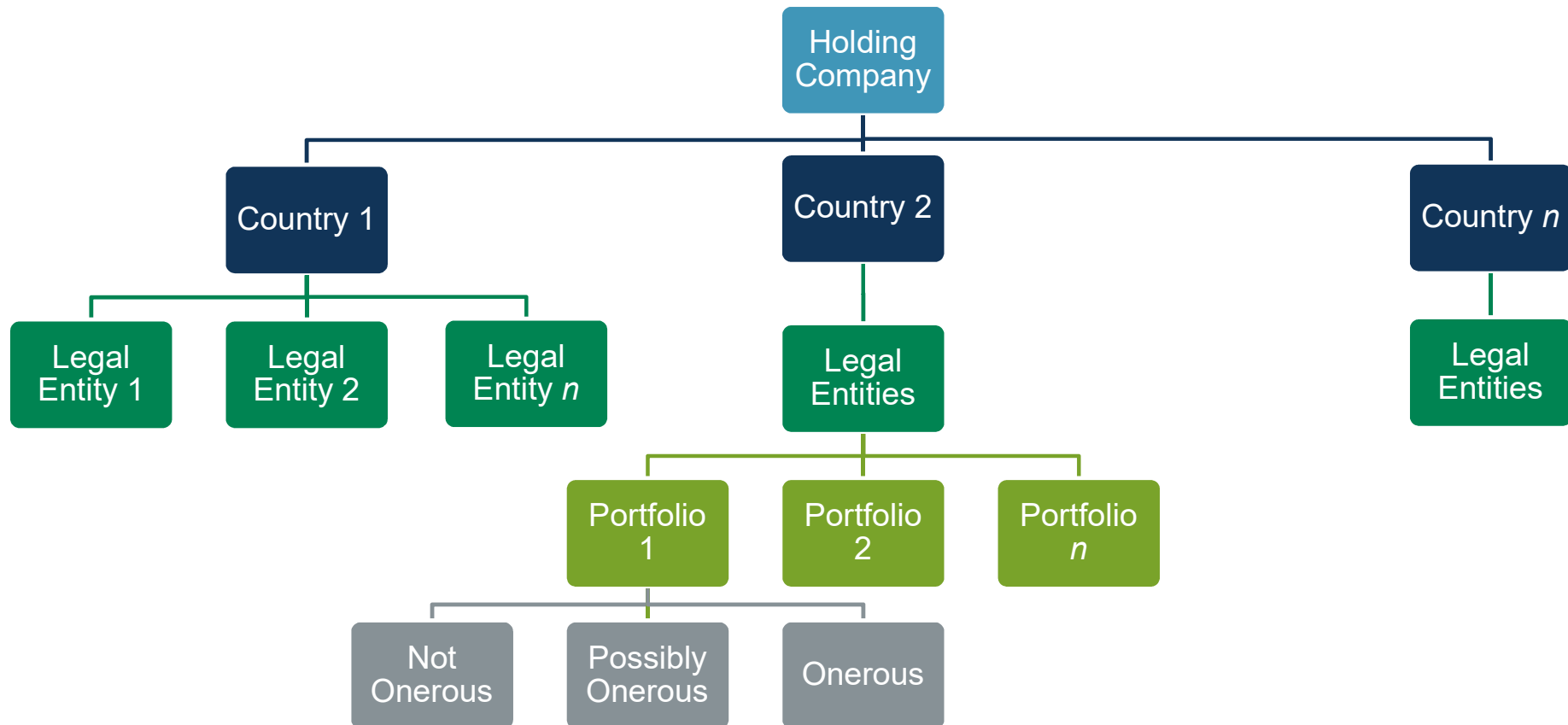
Slightly harder since each legal entity will need its own accounts. Create an aggregate distribution of fulfilment cash flows (with dependencies) at the holding company level and apply risk measure. Allocate to legal entity level in a way that takes account of diversification at the holding company level.

Could also create aggregate distributions and apply risk measure at legal entity level, then sum risk adjustments, ignoring further diversification, depending on beliefs.

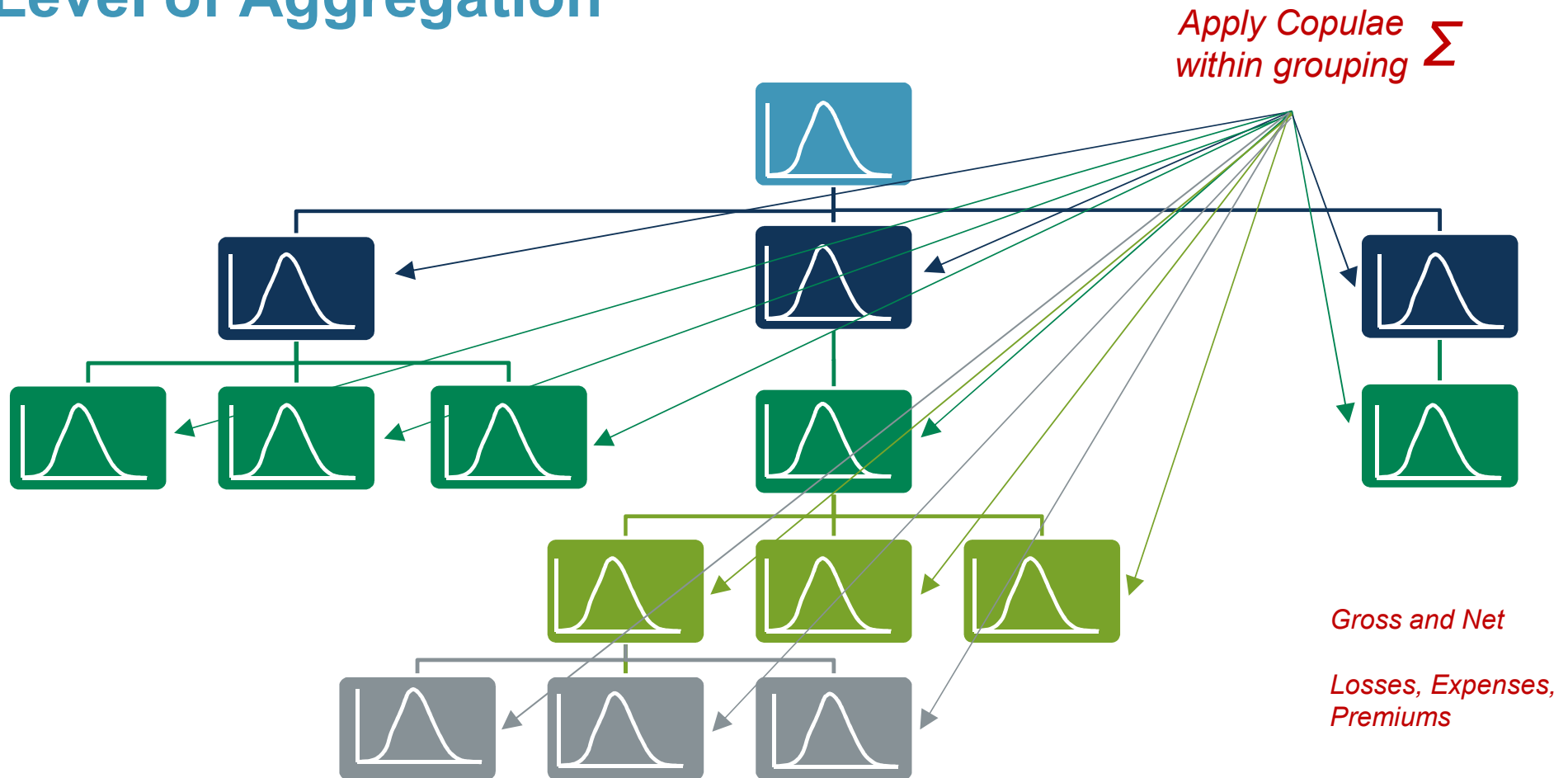
### 4. A multi-national insurance group, with many legal entities

Like (3), but more complicated. Different jurisdictions may have different accounting regimes (not IFRS 17), or local interpretations. There may be rules around fungibility of “capital”, implying that diversification across legal entities/countries is not possible.

# Level of Aggregation



# Level of Aggregation



# Reinsurance

- An explicit risk adjustment for reinsurance is required
  - Calculate using distribution of reinsurance cash-flows, or use gross and net distributions of the underlying and take the difference?
  - Either way, a distribution of the reinsurance cash-flows is required
- This hints at modelling the reinsurance programmes, contract by contract, year of account by year of account
- Modelling all reinsurance programmes could be a lot of work, and requires individual claims data
- **The traditional approach of using aggregate gross triangles and simulating an approximate net to gross ratio looks increasingly inadequate**

## Reinsurance modelling for risk adjustments?

- Use triangle approaches (eg bootstrapping) for attritional claims
- Develop open large claims (and claims that could become large) to their ultimate position stochastically
- Obtain cash-flows for the development of large claims
- Pass simulated large claims through the non-proportional reinsurance programmes (quota share is easy) and net down
- Take care over aggregates etc for which knowledge of the sum of existing closed claims is required
- Remember re-instatement premiums
- Obtain total reinsurance cashflows across all contracts and years of account, and subtract from gross cash-flow distributions to obtain a net distribution



# Contract Boundaries

- For business that has been written but not yet earned, the situation could become complicated
- If the PAA approach is used, it is straightforward. A risk adjustment is not explicitly calculated – it is assumed to be included in the market premium
  - Note that it will therefore be excluded from the risk adjustment at the aggregate level
- If the BBA approach is used, it is complicated.
  - A distribution of discounted fulfilment cash flows is required
  - Loss amounts, premiums, expenses etc
  - Calculations at contract, group or portfolio level?
  - For the risk measure, what risk tolerance level should be used when taking account of diversification?
  - Dependencies between earned and unearned elements?
  - Catastrophe exposed business?
- With claims reserving triangles, an additional origin period (or periods) could be added, then:
  - Simulate fulfilment cash flows for the additional period(s)
  - Apply a dependency between the additional year(s) and prior years
  - Combine with other groups/reserving classes/portfolios in the usual way
  - Reinsurance could get complicated

# Disclosure

*(B92) An entity shall apply judgement when determining an appropriate estimation technique for the risk adjustment for non-financial risk.*

*When applying that judgement, an entity shall also consider whether the technique provides concise and informative disclosure so that users of financial statements can benchmark the entity's performance against the performance of other entities.*

*Paragraph 119 requires an entity that uses a technique other than the confidence level technique for determining the risk adjustment for non-financial risk to disclose the technique used and the confidence level corresponding to the results of that technique.*

This is fairly clear in principle.

However, it is unclear how the “*confidence level corresponding to the results of [any] technique*” will be obtained without a distribution of the total discounted outstanding future cash flows.

It will be necessary to disclose how such a distribution has been derived (and if it hasn't, how it is possible to estimate the “confidence level”).

If the PAA has been used for unearned business, it will not be possible to estimate the risk adjustment implicitly embedded within the PAA (unless the BBA has also been used), and as such, the risk adjustment will exclude this element, which will need to be disclosed.

# Validation and Re-Measurement

## Validation

- General: Validation of data, assumptions, process, model and results
- Process: documentation, management, company policy, controls and audit trail
- Validation of “cost of capital” assumptions, if used
- Validation through:
  - Sensitivities
  - Analysis of change
  - Benchmarks
- (See IAA Monograph Chapter 7)

## Re-measurement (Roll Forward)

- It is obvious that the risk adjustment will change year on year due to emerging experience and data alone (see Validation: Analysis of Change). In addition, methodologies might change
- *“An entity’s view of the uncertainty related to the fulfilment cash flows can change significantly over time.”*

*“All insurers will need to consider and update their policies and procedures to establish and monitor the criteria used to determine when a component of the risk adjustment calculation should be updated ... companies will also need to conform to various disclosure requirements under IFRS X Insurance Contracts related to the re-measurement of the risk adjustment.” - IAA Monograph Chapter 8*

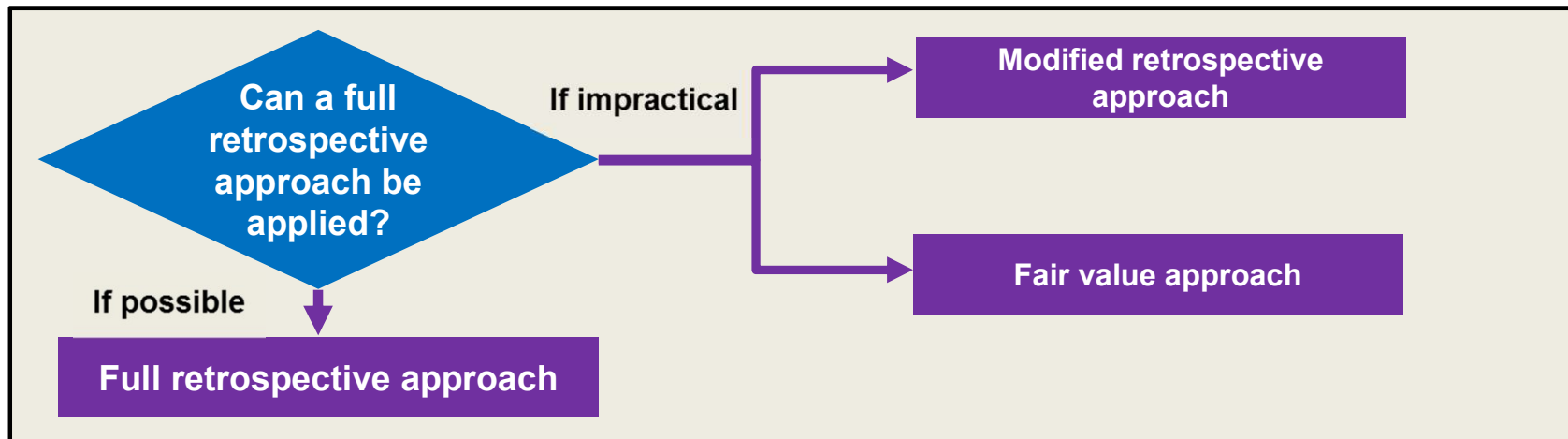


Institute  
and Faculty  
of Actuaries

# Transition rules and conclusions

# Transition to IFRS 17 – three possible approaches

- Assess on a group-by-group basis



- Modified retrospective approach achieve closest outcome to the retrospective approach that is possible using reasonable and supportable information available **without undue cost or effort**
- Fair value approach - calculate CSM at either inception of a contract or the beginning of the earliest period presented as the difference between the fair value of the insurance contract and the fulfilment cash flows measured at that date

## Implications

- For P&C business measured using PAA, retrospective application should not be an issue
- Potentially material issue for long-term contracts (such as construction liability)
- Restatement of opening equity may have significant impact on (non)emergence of profits, since any excess provisions will be released to opening equity

# Conclusions

- IFRS 17 is important – affects emergence of reported profit and therefore affects discussions with shareholders, investment analysts and rating agencies
- High degree of disclosure
- Material data-gathering and systems implications
- Maximise synergies with Solvency II
- Start preparing now!!



# Questions



# Comments

The views expressed in this presentation are the current views of the authors and not necessarily those of the IFoA. The IFoA do not endorse any of the views stated, nor any claims or representations made in this presentation and accept no responsibility or liability to any person for loss or damage suffered as a consequence of their placing reliance upon any view, claim or representation made in this presentation.

The information and expressions of opinion contained in this presentation are not intended to be a comprehensive study, nor to provide actuarial advice or advice of any nature and should not be treated as a substitute for specific advice concerning individual situations. On no account may any part of this presentation be reproduced without the written permission of the authors.

The authors reserve the right to change their minds at a future date.

## Contact Details

**Richard Bulmer**  
**Willis Towers Watson**

**[Richard.Bulmer@willistowerswatson.com](mailto:Richard.Bulmer@willistowerswatson.com)**

**Peter England**  
**EMC Actuarial and Analytics**

**[Peter@emc-actuarial.com](mailto:Peter@emc-actuarial.com)**