Practical Considerations in Valuing Premium Liabilities

Elaine Collins and Samantha Hu

Institute of Actuaries of Australia

Outline of presentation

- **Introduction**
- **Components of premium liabilities**
- **Determination of central estimate**
- **Issues arising**
- **Future developments, including IFRS**
- **Premium refund numerical example**

– **Scope**

- **Focus on calculation of central estimate of premium liabilities (CEPL) as unexpired risk reserve including expense loadings**

- **Explores a number of technical and practical issues**

- **Compares treatment of premium liabilities in various countries**

– **Topics beyond the scope of this paper**

- **Outstanding claims liabilities**

- **Risk margins and diversification benefits**

Institute of Actuaries of Australia

- **Statutory regulations**
  - **Australia**
  - **Singapore**
  - **Canada**
  - **Other countries**

| Country	Financial Statements	Statutory Returns
Australia	UPR – DAC	CEPL
Singapore	UPR – DAC + PDR	Max (UPL,CEPL) *
Canada	UPR – DAC + PDR	UPR – DAC + PDR

Institute of Actuaries of Australia

Components of premium liabilities

- **Retrospective assessment (UPL)**
  - **Unearned premium liabilities (UPL) are made up of unearned premium reserve (UPR) less deferred acquisition cost (DAC)**
  - **Under the retrospective view, the written premium is split in proportion to the risk exposure before and after the valuation date**
  - **The two parts are earned premium and unearned premium respectively, with initial expenses allowed for separately**
  - **Components of UPL (in a possible set of potential sizes) are as follows:**

Components of premium liabilities


COMPONENTS OF UPL
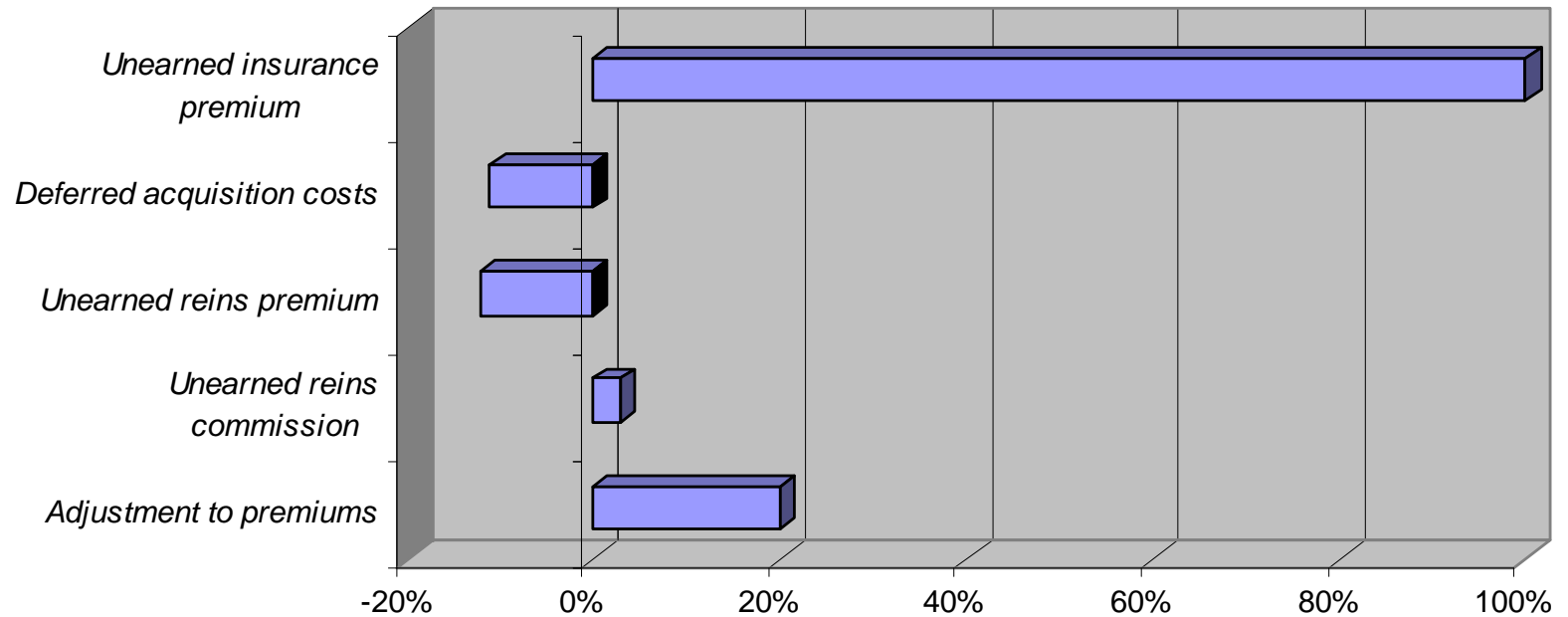
- **Prospective assessment (CEPL)**
  - **Central estimate of premium liabilities (CEPL) are made up of unexpired risk reserve (URR) plus a loading for expenses**
  - **Under the prospective view, the expected cost of future claims is assessed**
  - **These are claims that have not yet occurred and relate to incepted, but unexpired policies**
  - **Components of CEPL (in a possible set of potential sizes) are as follows:**

Components of premium liabilities

COMPONENTS OF CEPL
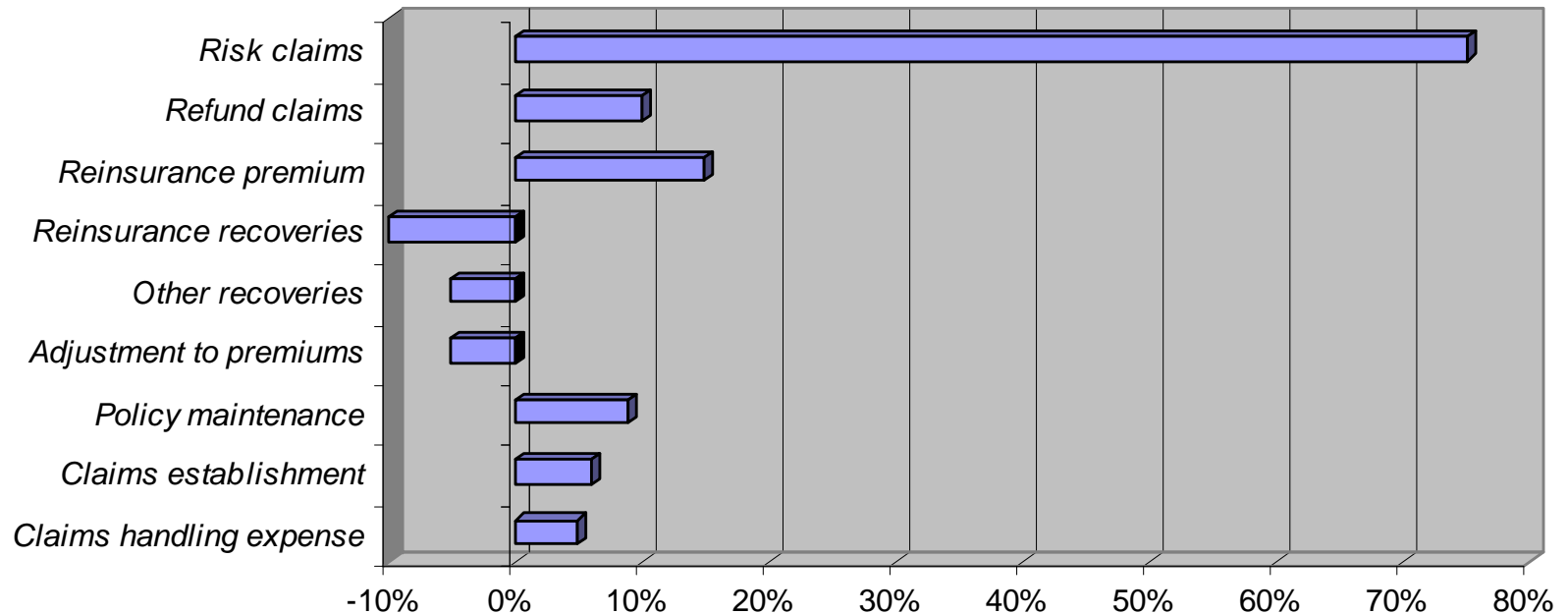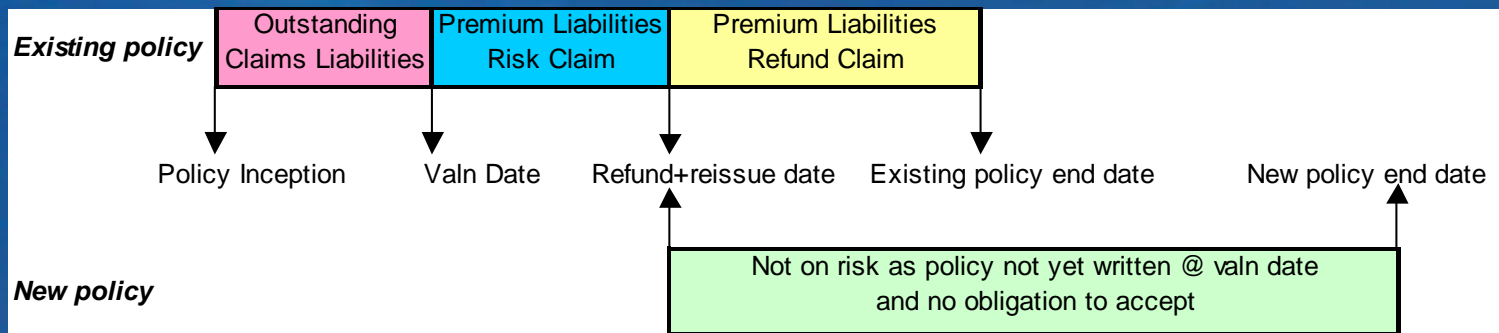
Determination of central estimate

- **Determining the central estimate**
    - **Premium approach: UPL less profit margin**
        - **CEPL < UPR - DAC**
            - **where PM is positive; and DAC is original value of initial expenses**
        - **CEPL = UPR - DAC**
            - **where PM zero or slightly negative by no more than is needed to drive DAC to zero; and DAC is entered as an appropriately reduced value**
        - **CEPL > UPR - DAC**
            - **where PM is negative by more than needed to drive DAC to zero; and DAC is entered as zero.**
    - **Claims approach: exposure x loss ratio + future expenses**

Determination of central estimate

- **Splitting risk and refund claims**
  - **Refund claims important for short tail classes (high refund rate ~ 20%)**
  - **However, any replacement policy issued is not taken into account (since unexpired at the valuation date and no obligation by insurer to accept)**

	Outstanding Claims Liabilities	Premium Liabilities Risk Claim	Premium Liabilities Refund Claim		
Existing policy					

Policy Inception   Valn Date   Refund+reissue date   Existing policy end date   New policy end date

New policy — Not on risk as policy not yet written @ valn date and no obligation to accept

  - **Future exposure at the valuation date may expire as risk claims or refund claims.**

Determination of central estimate

- **Observation of past refunds**
  - **By accident period of associated earned premium. Refund rates by accident period should be reasonably stable.**
  - **By policy or underwriting period of associated earned premium. Recent policy quarters will be undeveloped, causing the refund rate for the recent periods to appear artificially low and refund rates for older quarters to be mature.**
  - **By financial period in which the refund actually occurs, where they are an "average" mixture of developed and undeveloped periods. Refund rates should reflect this mixture.**
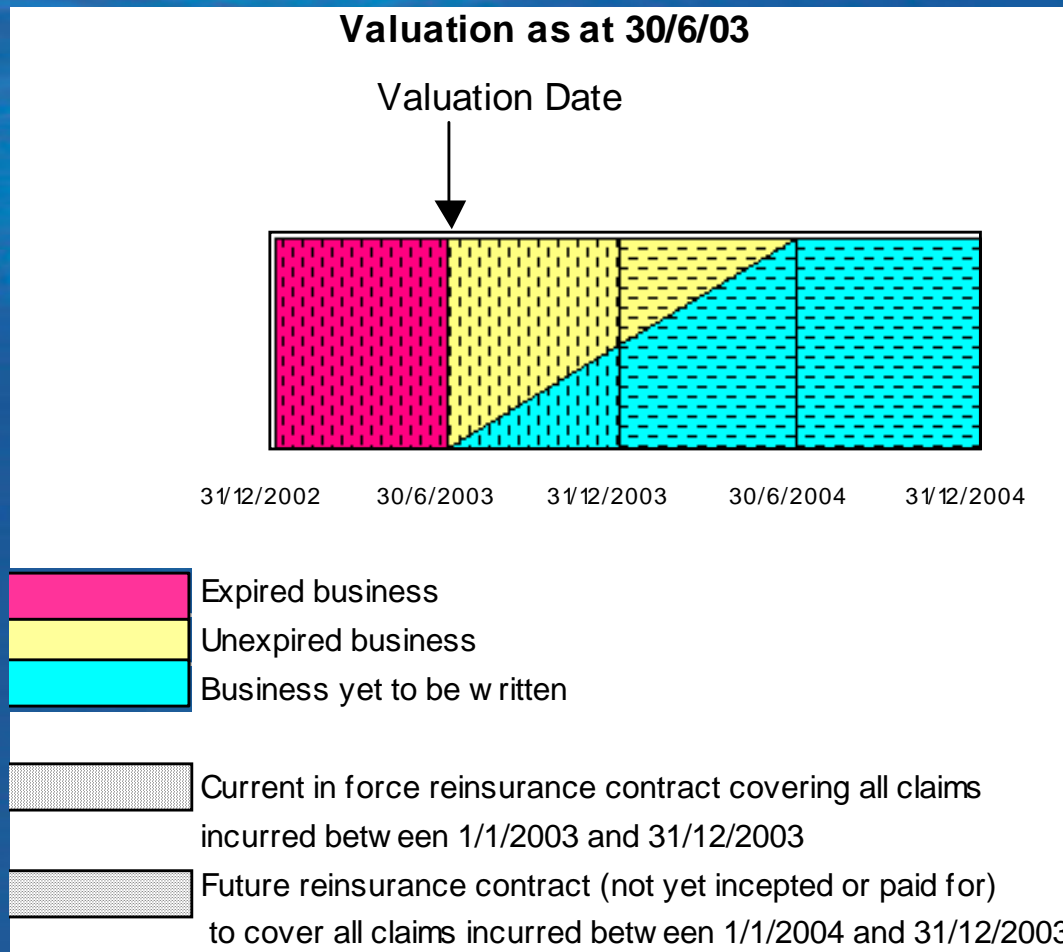
- **Problems with not explicitly taking refunds into account**

    a) Refunds can be "more expensive" than claims, so there may be underestimation if future refunds are not analysed separately.

    b) Past refunds analysed by underwriting periods are not mature. Recent refunds and loss ratios appear lower than in more mature quarters as denominators are artificially inflated leading to potential underestimation.

    – **To be revisited with a numerical example at end of presentation**

Determination of central estimate

- ## Outwards reinsurance recoveries and premiums

Valuation as at 30/6/03

Valuation Date

| 31/12/2002 | 30/6/2003 | 31/12/2003 | 30/6/2004 | 31/12/2004 |

Expired business

Unexpired business

Business yet to be written

Current in force reinsurance contract covering all claims incurred between 1/1/2003 and 31/12/2003

Future reinsurance contract (not yet incepted or paid for) to cover all claims incurred between 1/1/2004 and 31/12/2003

Determination of central estimate

- **Adjustment to premiums**
  - **Need to estimate and account for the ultimate premium in retrospectively rated policies**
- **Expenses**
  - **Policy management expenses**
  - **Claim establishment expenses**
  - **Claims handling expenses**
- **Discounting**
  - **A longer mean term than corresponding outstanding claims liabilities**
  - **Evaluated by:**
    - **Period by period cashflow table (explicitly)**
    - **Applying discounted loss ratios (implicitly)**

Determination of central estimate

- **Other factors to consider**
  - **Changes in adequacy of premium rates**
  - **Changes in underwriting standards**
  - **Compliance with underwriting and pricing standards**
  - **Changes in mix of business**
  - **Changes in exposure**
  - **Changes in reinsurance cover and rates**
  - **Changes in expenses**
  - **Changes in environmental factors**
  - **Known unusual events in latest accident year e.g. catastrophe**
  - **Inflation of claim amounts**

Institute of Actuaries of Australia

Issues arising

- **Seasonality & trends**
- **Multi-year policies**
  - **Examples are builders warranty, consumer credit, mortgage insurance, financial guarantees and tail cover**
  - **Unexpired risk evaluation needs to consider:**
    - **Period of risk, e.g. builders warranty**
    - **Pattern of risk, e.g. mortgage insurance**
    - **Materiality of premium liabilities, e.g. consumer credit**

- **Closed/unclosed business**
  - **Premium liabilities includes all unearned business, whether closed or unclosed**
  - **Evaluation by underwriting year needs to split into earned/unearned and closed/unclosed**
  - **Sources of unclosed business**
    - **New business written, but not yet processed**
    - **Renewals with a date of attachment before the balance date, which have neither been paid nor cancelled**
    - **Broker business, where latest information has not been provided**
  - **In Singapore financial statements, we believe there is allowance for varying levels of unclosed business, leading to varying levels of future profits being immediately realised.**

Institute of Actuaries of Australia

- **Inwards reinsurance premium liability recognition**
  - **Must recognise business written by the cedant prior to the balance date, which has not yet expired plus future underlying policies yet to be written between the balance date and the next renewal date of the treaty ("future unexpired portion")**
  - **Issues with the approach:**
    - **EPI highly variable**
    - **Immediate realisation of profit, as well as losses**
    - **Increased capital charges for reinsurer**
    - **Inconsistent with cedant recognition of premium liabilities**

Future developments

- **Actual vs Expected Analysis**
  - **At present, AvE analysis for premium liabilities not usually undertaken**
  - **Claims occurring after the previous valuation date need to be separated into those unexpired and not yet written**
  - **AvE analysis help evaluate suitability of current premium liability valuation basis**
  - **Particularly important when premium liabilities are comparatively large, e.g. consumer credit multi-year policies.**

Institute of Actuaries of Australia

- ## Comparison of UPL and CEPL

  - **Currently no requirement to compare UPL to CEPL in Australian statutory returns**

  - **In Singapore, if premium liabilities at 75% sufficiency are lower than SUM(Max(UPL,CEPL)), future profits are immediately realised only up to UPL**

  - **In Australia, if premium liability at 75% sufficiency is lower than UPL, returns to the regulator imply higher immediate realisation of profit than in financial statements**

  - **In the future we may see premium deficiency reserves (PDR) in company financial statements, since:**

    - **Premium liabilities are now required to be calculated**

    - **ED5/122A stating that "…the entire deficiency must be recognised…"**

Institute of Actuaries of Australia

- **International Financial Reporting Standards (IFRS)**
  - **For reporting periods on or after 1 January 2005 (may be delayed to 2007)**
  - **AASB1023 to require prospective calculation of premium liabilities consistent with GPS210 with exception that profit is to be carried forward (not realised immediately).**
  - **Explicit instruction to include risk margins with reference to that calculated under GPS210**

Premium refund numerical example

- ## Method 1
  - **Uses policy record premium before past refunds, then explicit consideration for refunds separately**

- ## Method 2
  - **Uses policy record premium after past refunds, then no explicit consideration for refunds**

Premium refund numerical example

	Method 1	Method 2	Difference
Description	Uses policy record premium before all (past and future) refunds to calculate risk claims; refund claims explicitly calculated	Uses policy record premium after past refunds to calculate risk claims; no explicit consideration of refund claims	
CE_PL	45,646,180	41,560,645	-4,085,534
% of Method 1	100%	91%	-9%

Institute of Actuaries of Australia

Premium refund numerical example

- ## We contend:

  - ### Method 1
    - **Obtains the most accurate answer.**

  - ### Method 2
    - **Likely to be underestimated, since it does not take the full cost of refunds into account. In our example, results for Method 2 were 9% below those for Method 1.**

Practical Considerations in Valuing Premium Liabilities

Elaine Collins and Samantha Hu

Institute of Actuaries of Australia