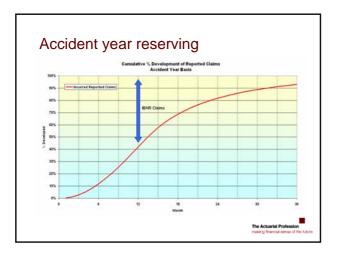
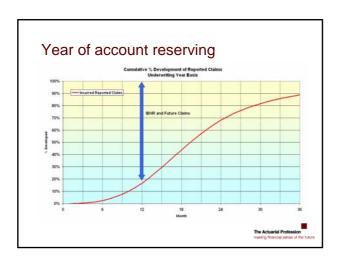


# Agenda

- Accident year basis v. year of account ("YOA") reserving
   Lloyd's annual accounting
   Methods for deriving claims IBNR estimates from YOA projections
- Our proposed method
- Next steps





# So what's the problem?

- Lloyd's syndicates operate on a YOA basis
   But are now required to
- But are now required to report on an annual accounting basis
- Not all syndicates perform actuarial projections on accident year data
- YOA projections may be used as a basis for determining annual accounting provisions
- Lack of agreed or consistent method for determining claims IBNR

# Why is this important?

Lloyd's Annual Report:

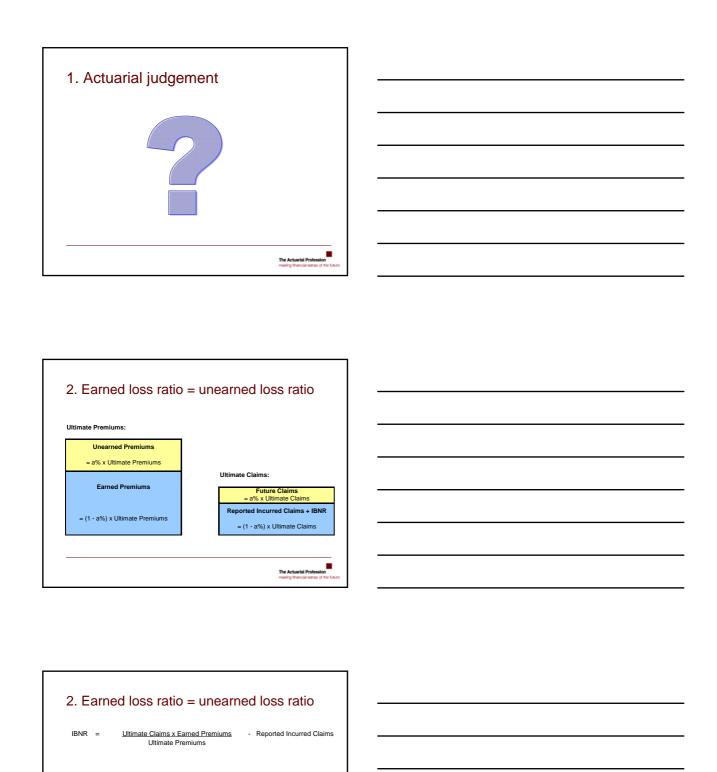
	2006	2005
Unearned premiums	7,024	6,829
Claims outstanding	30,377	37,719

Claims outstanding includes:

- Reported outstanding claimsIBNR claims

Signing actuaries may rely on the Managing Agents' assessment of unearned premiums and reported outstanding claims.

So appropriate IBNR assessment is crucial, but how is this done?



IBNR =

IBNR =

\* Earned % = Earned Premiums / Ultimate Premiums
\*\* Reported % = Reported Incurred Claims / Ultimate Claims

Ultimate Loss Ratio x Earned Premiums - Reported Incurred Claims

Reported Incurred Claims x  $\underline{\mathsf{Earned}}\ \$^*$  - Reported Incurred Claims Reported  $\$^{**}$ 

# 2. Earned loss ratio = unearned loss ratio Pros: • Very easy to apply • What happens in the event of large or catastrophic losses? Or when observed experience deviates from normal expectations? Lower than normal reported incurred claims ➡ higher than normal IBNR (and vice versa) Earnings may not be an appropriate measure of exposure e.g. premium rate changes! Can generate wildly inappropriate IBNR claims e.g. IBNR cl if e.g. IBNR <0 if (reported claims / ultimate claims) > (earned premiums / ultimate premiums) Inconsistent with accident year projections in cases where the best model is known (i.e. simulated data) 3. IBNR to outstanding claims ratio • The IBNR is independent from the estimate of ultimate claims Cons: • Possible to derive IBNR claims which are inconsistent with the actuary's estimated ultimate • Challenge of deriving the appropriate ratio Should IBNR be higher/lower just because reported outstanding claims are higher/lower than expected? Inconsistent with accident year projections in cases where the best model is known (i.e. simulated data) 4. Our proposed method ■ 1. Assessment of an appropriate exposure development pattern For claim numbers, consider the earned exposure over time For claims amounts, the earned premiums should be adjusted for premium rate movements 2. Apply the following formula: | IBNR = | Earned Exposure - Rep Inc DFM % Dev | x | Est Ult Claims - Reported Incurred Claims | Ultimate Exposure (1 - Rep Inc DFM % Dev) \*Rep Inc DFM % Dev' represents the expected percentage development for the year of account in question as at the analysis date and is usually defined from chain ladder modelling. \*Est UII Claims' represents the actuary's selected estimate of ultimate claims after all makes the properties of the control service of the control of the co

# 4. Our proposed method Pros: Easy to apply Consistent with the selected model and estimated ultimate Focuses attention on the key issues: Exposure Development factor model Initial expected loss forecast Replicates the IBNR from accident year models in cases where the best model is known (i.e. simulated data) An impossible estimate cannot be generated unless an impossible model has been selected! Cons: IBNR is dependent on the selected ultimate claims estimate Tricky to assess appropriate exposure?

### 5. Other methods

- Assessment of number of IBNR claims x average cost per claim
- Performing two analyses: one on a YOA basis and one on an accident year basis
- Any others?

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## Next steps

- Further tests against simulated and real data
- Please test and challenge our ideas
- Any other ideas in use in the market?

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34TH ANNUAL GIRO CONVENTION	
CELTIC MANOR RESORT, NEWPORT, WALES	
Estimating the IBNR from Year of Account Projections	
Robert Murray and Rob Warren	