A.M. Best Annual Supplemental Rating Questionnaire, Inflation, Stress Scenarios and Solvency II

The following two questions are included in the A.M. Best Annual Supplemental Rating Questionnaire.

"58a. Does your rating unit estimate the potential impact of future changes in general inflation on its current net loss reserve position?

58d. In the table below, please describe 3 potential future general inflation scenarios that your rating unit has identified as stress scenarios for the rating unit. In addition, please provide the estimated overall net impact on the current net loss reserve position and the rating unit's planned mitigation strategy associated with each stress scenario, if any".

We believe that these two questions can only be answered effectively and efficiently using the Probabilistic Trend Family (PTF) and the Multiple PTF (MPTF) modelling frameworks of ICRFS-Plus™.

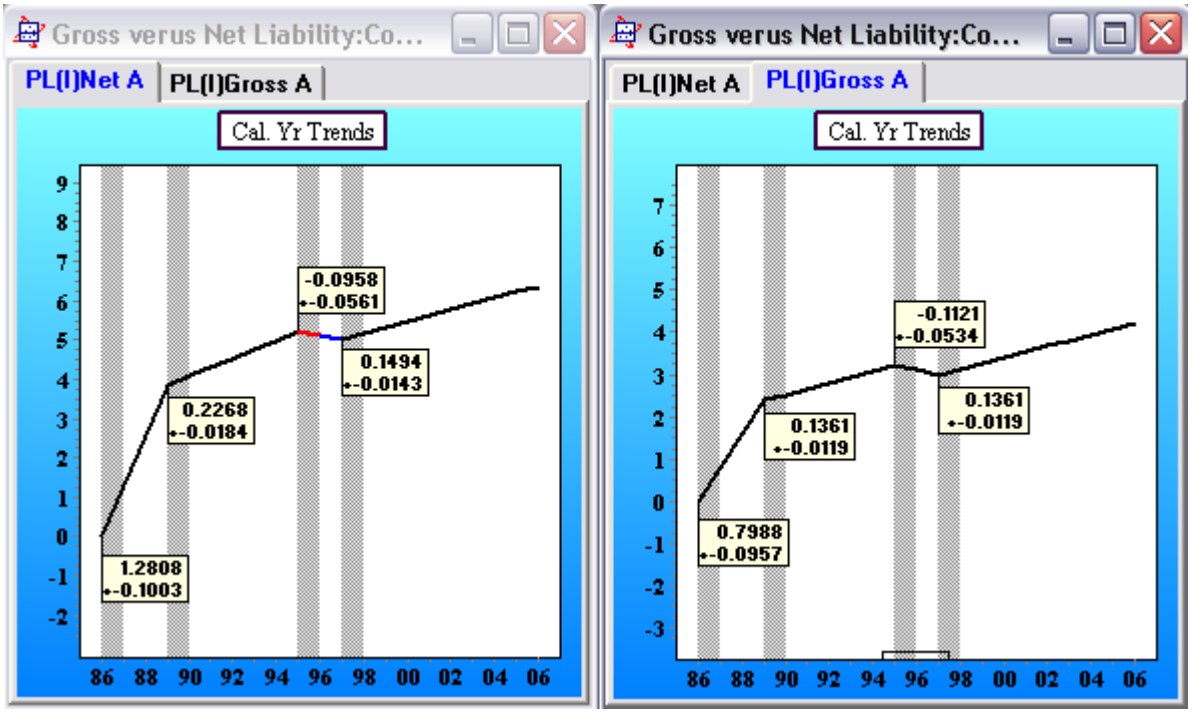
It is also important to recognize that the Mack method (equivalently, volume weighted average link ratios) and related methods adjusts for an average calendar year trend in the data, but there is no description or estimate of it (in the link ratios). This means that if you include an explicit (known) calendar year trend going forward, the actual trend going forward is the sum of two trends: one unknown, and the other known.

Inflationary trends in long tail LOBs- not economic

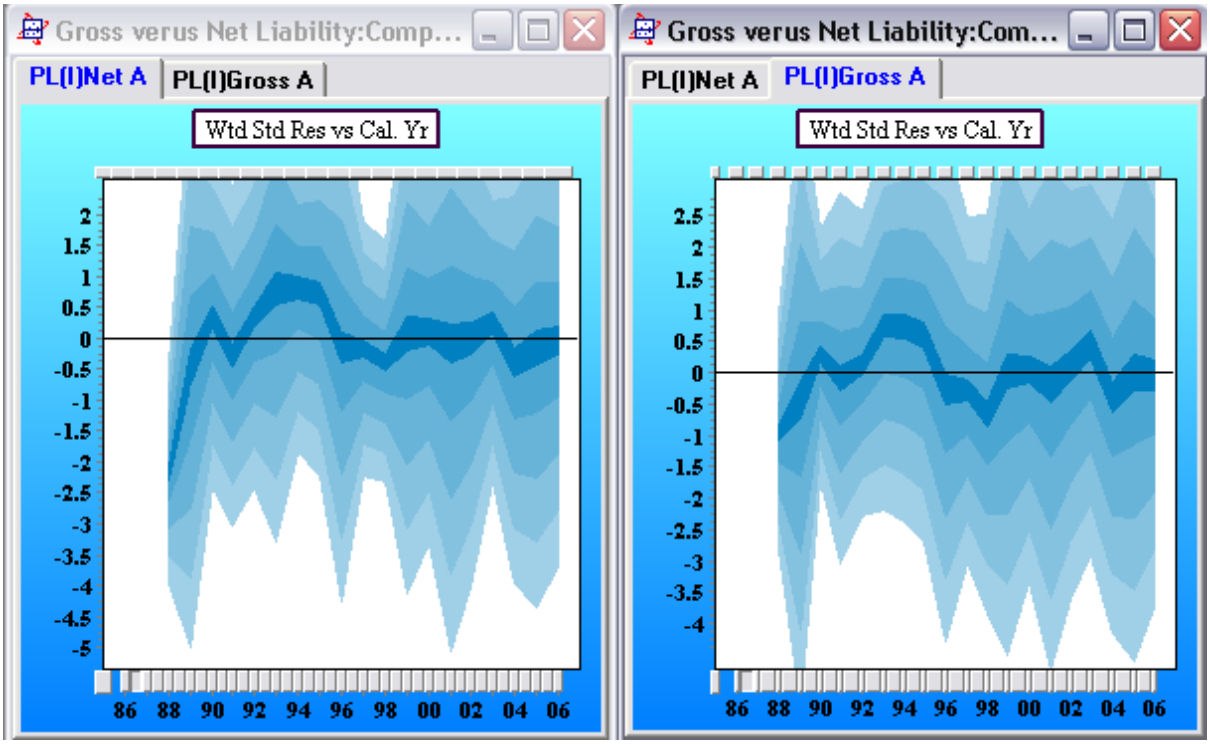
In ICRFS-Plus™ inflationary calendar year trends (iotas) are modelled from the observed data. The trends are individual to a company and to each LOB and/or Segment. It is not the case that the significant inflationary effects can be read off from published economic inflation or from industry-wide averages. Moreover, the effects of economic inflation are usually outweighed by social inflationary factors and individual effects resulting from a company's distinctive mix of risks.

The only instances that we have seen where two segments have the same calendar year drivers, equivalently trend structure, are if the two segments are part of the same LOB. For example, net of reinsurance versus gross and different layers.

Below is calendar year trend structure for net of reinsurance and gross paid losses for E&O and D&O LOB.



Subsequent to fitting the average calendar year trend we observe high correlation in trends and volatility about trend. This type of phenomenon we have never observed between two LOBs!



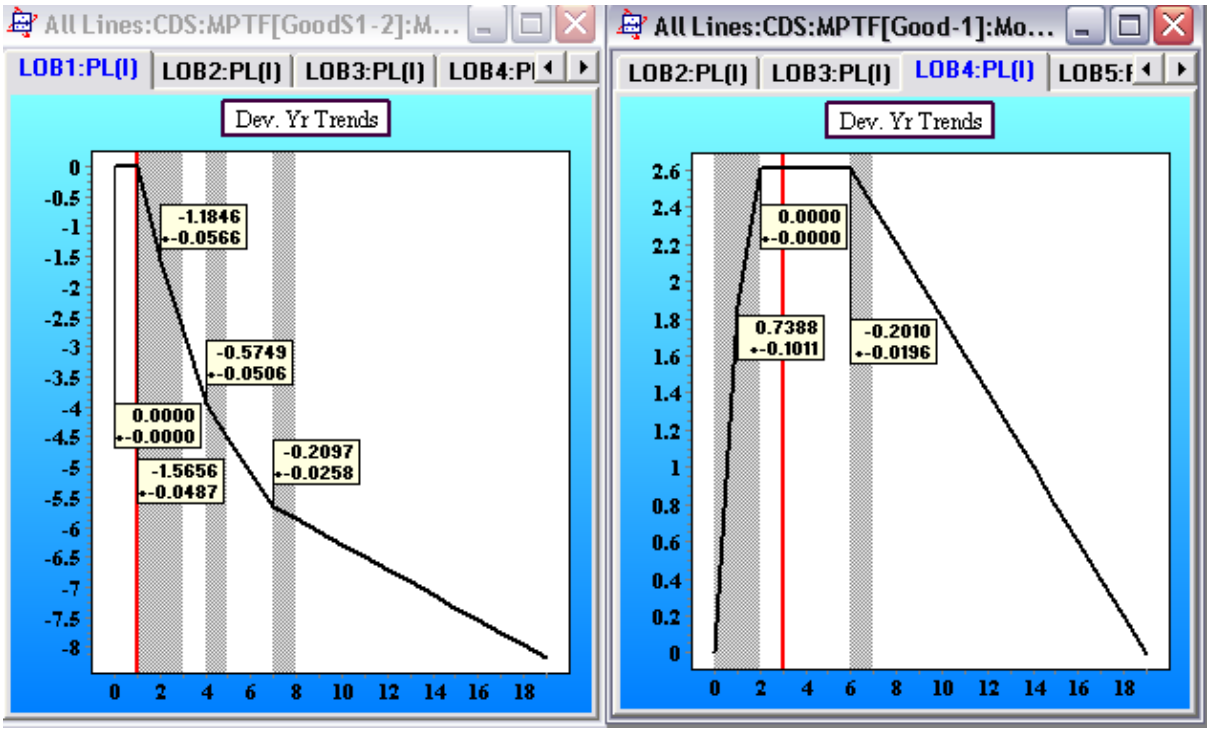
Forward forecast inflation trends are always treated in the form of a distribution of possible values. That is, parameter uncertainty is integral to the forecast assumptions. The resulting

forecast output, which is analytically computed, is equivalent to the result of a large number of simulations, in each of which the forward inflationary trend is a fresh draw from the given distribution. For example, 10%+-3% (on a log scale) is equivalent to assuming inflation is a random draw from a normal distribution with a mean of 10% and a standard deviation of 3%.

What is the effect of changing the 10%+-3% assumption to 11%+-3%?

The impact of inflation going forward on the distributions of reserves by calendar year is intimately related to the base development year trends (in the incremental paid losses).

For LOB1, 56% of reserves are paid out in the next calendar year whereas for LOB4 it takes 10 years before 50% of the reserves are paid out.



In the formulation of a future forecast scenario we generally recommend a conservative strategy. The formulation of this scenario does not necessarily depend only on the trend structure in the paid losses. Modelling of the Case Reserve Estimates and the Number of Claims Closed are also important, though the latter very rarely explains changes in trends in the paid losses.

A Conservative trend scenario often assumes the recurrence for a certain period (usually equal to the number of development periods before significant loss decay sets in) of the highest inflationary trend measured for that particular data in the last ten or more years. This forecasting strategy, suitably tailored to the individual case, provides (amongst other statistics) a conservative Best Estimate (mean of a distribution), which is already somewhat risk-proofed. In association with this we usually also compute a Reserve Release scenario for comparison. This second scenario assumes that the high inflationary trend does not eventuate in the first future year, and that the model structure is unchanged, so that the original pattern of the Conservative scenario is still maintained. In this situation a portion of the reserve set-

aside for dealing with the losses in the next year can be released while maintaining reserves at the conservative level.

The recommended strategy for dealing with losses over and above the Best Estimate number is via a special Risk Capital fund. This is dealt with differently from the reserve fund since the expectation is that in most years it will not need to be used. One needs to have access to such a fund, and the cost of this access, which depends on the required level, is called the Market Value Margin (MVM) or Risk Margin (RM).

Stress Scenarios and Solvency II

The ICRFS-Plus™ Solvency II one year risk horizon module is designed to calculate the requirements in this respect. The standard Solvency II stress scenario is that the losses in the next calendar year come in at the 99.5^{th} percentile of the loss distribution. The MVM is the projected total cost of access to a Risk Capital Fund for the duration of the run-off. The effects of a distressed year at this given level on future forecasts is also considered and factored in. (If next year turns out to be very much at the high end of the expected distribution of losses, then there is an increased chance that future years will also be at the high end, since inflationary effects, which contribute to such a result, can be expected to act over more than one year.)

ICRFS-Plus™ enables this stress testing scenario to be set up in a number of ways. Apart from variations in discount rate and cost of capital, and the choice of stress-level benchmark (e.g. 99.5%), restrictions on re-distribution of surpluses (ring-fencing) can be set up, and the stress horizon can be changed from one year risk horizon to ultimate year risk horizon