LOSS SIMULATION MODEL CALL PAPER PROGRAM
Open Source Loss Simulation Model
2011 Casualty Loss Reserve Seminar

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Loss Simulation Model Working Party

- Sponsored by the CAS Dynamic Risk Modeling Committee (DRMC) in 2005, the LSMWP began work in 2006.
- Purpose: creation of a simulation model that will generate claims that can be summarized into loss development triangles and complete rectangles.
- Deliverables: Open source program available to CAS members, seminars, and a CAS Working Party paper documenting work.
- Time Frame: (a) Completed when model and paper were uploaded after the 2010 CLRS.
  (b) Enhanced with the 2011 CLRS Call Paper Program

LSMWP Paper

- Introduction provides overview of project.
- Survey of existing literature
- Statistical tests of simulated model output: general discussion
- Basic features in the prototype model.
- Documentation of the open source model.
- Testing detailed output and fitting the model.
- Potential applications and model enhancements.
- Appendices: User instructions including parameterization of all distributions included in the model, a bibliography, and technical details on statistical tests performed.

Where can we access Loss Simulation Model and documentation?

- The help files in the new open source Loss Simulation Model document all model features.
- The Loss Simulation Model, together with all model documentation, related papers and seminars, will be located on LSMWP web page: www.casact.org/research/lsmwp
- Program instructions are provided in Appendix A, and are also included within the model and on the LSMWP web page.

Reserve Variability

- If you run at least 100 iterations, the model will generate reserve percentile tables and customary statistics from the simulation results (e.g., mean, standard deviation, minimum and maximum).
- These tables are distributions of payments made subsequent to the assumed valuation date, both by accident year and by calendar year and for all years combined.
- This key model feature enables users to test their models for estimating reserve variability.
- Important application: estimating capital needed to support reserves.

Future Work

- The documentation within the model and on the CAS web site will be kept up to date as this open source software is enhanced. For example, the model was updated to work on a Windows 7 operating system.
- The DRMC will work with Kailan Shang to implement the model enhancement he developed as well as his recommendations for improving the model arising from testing he performed and documented in his paper.
- Contact DRMC Chairperson if the instructions need clarification or if program bugs are discovered.

Why develop and use a simulation tool?

- "Mistakes are a part of being human. Appreciate your mistakes for what they are: precious life lessons that can only be learned the hard way. Unless it's a fatal mistake, which, at least, others can learn from."

-- Al Franken

Summary

- The LSMWP developed and fully documented a model that we hope will become a valuable tool in researching loss reserving methods and models.
- We encourage actuaries to develop and document model enhancements through call paper programs.
- We hope that actuaries will use this model to:
  - Better understand the underlying loss development process.
  - Determine which methods and models work best in different reserving situations.
  - Reflect this knowledge in evolving loss reserving practices.

Panel Presentation

- Hai You, Vice President Technology, Goouon Actuarial Solutions, will present the Loss Simulation Model through examples.
- Joseph O. Marker, President, Marker Actuarial Services LLC, will discuss testing detailed model output and fitting the model.
- Kailan Shang, Associate Actuary, Manulife Financial, will present his paper on "Loss Simulation Model Testing and Enhancement."