Executive Summary

Findings
Our findings are based solely on the results of our testing using the specified data sets for three lines of business, the selected experience period, and the selected models, for the sample of companies that we selected. Our findings are based on a limited sample of companies and a specified collection of scenarios (e.g., sets of assumptions), and thus may not be appropriate or extendable for all companies.

We also emphasize to the reader that our findings are heavily dependent upon the calibration of the key parameters used within each model. The issues related to model calibration will be discussed in detail in a later section of this paper.

Discounting Methods
In our opinion, there are currently a number of well-defined approaches to discount loss reserves for the time value of money. The CAS proposal required only one approach to selecting the risk-free interest rate(s) to apply to the estimated payment pattern and future cash flows, but we decided to test the results using both a duration-based approach and a yield curve approach.

In general, we found there to be no significant differences in the results in terms of the impacts on a company’s balance sheet or income statement under the two different approaches. We caution, however, that any time period of severe interest rate fluctuations and/or changes in the shape of the yield curve over time may indeed cause the results under these two approaches to diverge. We did not, however, observe this in the historical time period we studied (1998-2002).

MVM Methods
There are a variety of approaches available to calculate the MVM, with no single approach currently being universally preferred. The CAS White Paper on Fair Valuing Property/Casualty Insurance Liabilities (CAS, 2) contains thorough descriptions of many of the approaches available. We examined four different models to calculate the MVM and they will be discussed in more detail later in this paper. We applied the four models to the various sets of data in a manner so as to be responsive to the data as presented. We tried to minimize the degree of professional judgment in reacting to specific results for a particular company, line, or accident year, in this research, to allow the CAS and the reader to gain an appreciation for the practical issues that may emerge from applying such models to real data sets.

Our main findings after studying these four models include:

- For a given company and a given year-end, the MVM calculated by the four different models varied, sometimes significantly.
- For a given company and a given MVM model, the MVM varied over the time period studied, sometimes significantly.
• For a given company, the MVM calculated under each of the four different models over the time period studied did not always move in parallel (i.e. one MVM model did not always result in the highest MVM over time, etc.), adding further uncertainty and variation in the results.

• For smaller companies, the MVM tended to be larger (measured as a percentage of the loss reserves).

While these observations suggest a degree of volatility in the results generated by an MVM model applied to particular sets of data, we note that traditional actuarial methods for estimating ultimate losses and the associated reserves can also generate a dispersion of estimates. A degree of actuarial judgment is commonly applied in the application of reserving methods, and likewise, we would expect that judgment would be appropriate in the application of methods that evaluate the MVM component of fair value reserves.

**Balance Sheet (Loss Reserves)**
Our main findings regarding the potential impact of fair value accounting for the loss reserve component of a company's balance sheet are the following:

• For personal auto liability, based on the model calibrations in our testing, and based on interest rates prevailing during the experience period in our testing, the estimated fair value reserves (i.e. reserves after applying the discounting and MVM amounts) were generally greater than U.S. GAAP reserves.

• For workers’ compensation, the estimated fair value reserves were generally less than or close to the U.S. GAAP reserves.

• For medical malpractice claims-made, we are unable to provide any credible findings, due to the approach taken of strictly applying the methods to the data, which were less credible than for the other two lines.

• When comparing across companies, there was greater variability of the fair value loss reserves around the actuarial best estimate for long-tail lines of business than short tail lines.

• The impact of moving to a fair value loss reserve tended to be greater for smaller companies, largely due to greater volatility in the loss reserves leading to a higher MVM requirement (on a percentage basis) than for larger companies.

• Any changing shape of the yield curve will impact the amount of reserve discounting. The period we analyzed (1998-2002) was generally a period of low interest rates. If the analysis was re-performed in a period of higher interest rates then our findings above could change as the impact of discounting would be more significant.

As a reminder, we did not consider the associated impact fair value accounting would have on any asset or other liability values.

**Income Statement (Incurred Losses)**
We evaluated the potential impacts of fair value loss reserves on a company’s income statement. Our main findings are the following:
• In general, fair value incurred losses from the current accident year were greater than the U.S. GAAP current accident year incurred losses. Higher fair value current accident year incurred losses implies a deferred recognition of any profits.

• On a fair value basis, the contribution to calendar year incurred losses from prior accident years is not necessarily benchmarked to zero. By this we mean that under U.S. GAAP, there is no impact on future calendar year results if prior year undiscounted loss reserve estimates were perfectly estimated. Under fair value, a company can generate a non-zero impact on future calendar year results even if the undiscounted loss reserve estimate does not change. The amount of the impact would be based on the relative changes to the amounts of the discount and the MVM. These fair value adjustments will tend to vary by company, line of business, accident year, and over time.

We note the leveraged impact that reserve changes have on the income statement, and thus even minor reserve swings that are due solely to changes in the discount and/or MVM amounts may generate significant impacts in the income statement.
**Significant Issues**

We identified the following areas as having significant issues in terms of practical application of the various methods and techniques utilized in evaluating fair value reserves.

**Discounting and MVM Modeling Issues**

- Estimated loss payment patterns
  - Estimating reasonable loss reserve payment patterns can be difficult with incomplete historical paid triangles, changes in the mix of business, significant growth or reductions in business levels, etc.
  - Professional judgment and relevant benchmark patterns may be required for evaluating reasonable patterns when the strict data contain apparent reversals in the payment pattern or unusual data points.

- Measures of loss reserve variation
  - For our analysis we accepted the booked reserves as the mean of the loss reserve distribution; in practice, this may not be the case. This assumption had an impact on the evaluation of expected payment and reporting patterns, and thus indirectly had an impact on the measure of variability of the actual historical loss experience in relation to expected amounts.
  - Variation associated with loss reserves from accident periods beyond the oldest period in the loss development triangle (i.e., Schedule P loss reserve amounts for the all prior accident years bucket), may be difficult to estimate and incorporate into some MVM models.
  - Certain property/casualty loss reserves (e.g. asbestos & environmental loss reserves) are not amenable to traditional statistical analysis, and therefore evaluating MVM’s for such liabilities may be particularly challenging.

**MVM Estimation Issues**

- A single industry guideline for the calculation of the MVM is probably not reasonable for all companies, as variations by company may be meaningful and relevant depending on company size, types of business written, etc. For example, in our opinion, using historical industry payment experience to measure reserve variability would likely lead to an understatement of the variability of reserves as compared to evaluating company specific payment experience. As such, standards setters should consider if flexible guidelines that allow for reflection of individual company attributes should be issued.

- The actuarial and/or accounting literature may need to contain guidance on what are acceptable methods and calibration procedures for calculating MVM’s in order to gain consistency in practice across the industry.

- The calibration of MVM models, which is discussed in more detail later in this paper, can be a challenging process and significantly affects the results. Standard setters and practitioners should consider the basis and frequency of calibration (e.g., performed on a quarterly, annual, or other basis).
Financial Statement Presentation Issues

We offer the following observations regarding the presentation of fair value reserves in a company’s financial statements, including the notes to financial statements:

- Presenting fair value calendar year incurred losses split by current accident year and all prior accident year amounts may cause significant challenges. MVM’s are statistically non-additive in nature, so any financial statement presentation that separates current and prior accident years will probably require allocation judgments across different accident years to be made.

Further, the level of disclosure for the impact of prior accident year development on the calendar year incurred losses can influence the usefulness of the information to the financial statement reader. This important area highlights the significant disclosure issues surrounding the presentation of fair value insurance liabilities in the financial statements. If comprehensive, detailed disclosures are required, the disclosures might include the impacts from:

  o Changes in undiscounted (mean) loss reserve best estimate in comparison to the recorded loss reserve
  o The natural unwinding of the discount amount
  o The natural unwinding of the MVM as payments are made
  o Changes in effective interest rate
  o Changes in payout pattern
  o Changes in the measure of MVM variation
  o Changes in the MVM model calibration

While most of these items might be useful to the financial statement reader, some are not currently disclosed and would likely meet resistance from companies if required in the future (e.g., discussion of the changes in the relationship of the undiscounted best estimate underlying the fair value reserve to the undiscounted mean value of the distribution). It is also questionable as to how useful these disclosures might be due to their complexity and the number of items involved.