



Asset/Liability Management
***Understanding how investments (assets) match up
with claims (liabilities)***

**A presentation to: AGRIP and the National League of
Cities Risk Information Sharing Consortium**

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Agenda

- Understanding insurance entity/pool ratios and financial metrics
- Reserve levels vary by coverage
- Things to consider around equity levels
- Wrap-up and Discussion

Understanding insurance entity/pool ratios and financial metrics

Interpreting insurer financial statements

- Financial ratios are used for comparing entities than provide insurance coverage
- There are three main categories of ratios

Main Categories of Insurer Financial Ratios	
Ratio	Measurement
Leverage ratios	insurer's operating stability and the ability to write new business
Profitability ratios	results of operations
Liquidity ratios	insurer's ability to meet short-term claim obligations

Introducing leverage ratios

- ***Change in net premiums written***
 - Indicates growth in underwriting exposure
- ***Net premiums written to members equity ratio***
 - Indicates net exposure to pricing errors in current book of business
- ***Net liabilities to members equity ratio***
 - Indicates exposure to errors in estimating reserves (primarily loss and LAE)
- ***Net leverage ratio***
 - Combination of premium-to-members equity and liabilities-to-members equity ratios
 - Indicates net exposure to members equity deterioration

Current coverage year's results are in ... 10% underpriced, what is the impact?

- Members equity is available to absorb mispriced business, the extent is dependant on the ***premium-to-members equity ratio***
 - Pool B's premium-to-members equity ratio equals 5.0
 - Pool A's premium-to-members equity ratio equals 0.5
- Relative impact on pool's members equity is directly comparable to leverage ratio

	Pool A	Pool B
Equity	\$100 million	\$10 million
Net written premiums	\$50 million	\$50 million
Expected Combined Ratio	100%	100%
Premium to Equity Ratio	0.50	5.00
Pricing Error	10%	10%
Loss of Equity	5%	50%
Restated Figures (same net written premium levels)		
Equity	\$95 million	\$5 million
Premium to Equity Ratio	0.53	10.00

Liability-to-members equity ratios

- ***Net liabilities to members equity ratio***
 - Indicates exposure to errors in estimating reserves
- ***Loss reserve development to members equity***
 - Indicates what effect the latest calendar year's reserve development had on members equity

Year-end reserve results are in ... 10% inadequate, what is the impact?

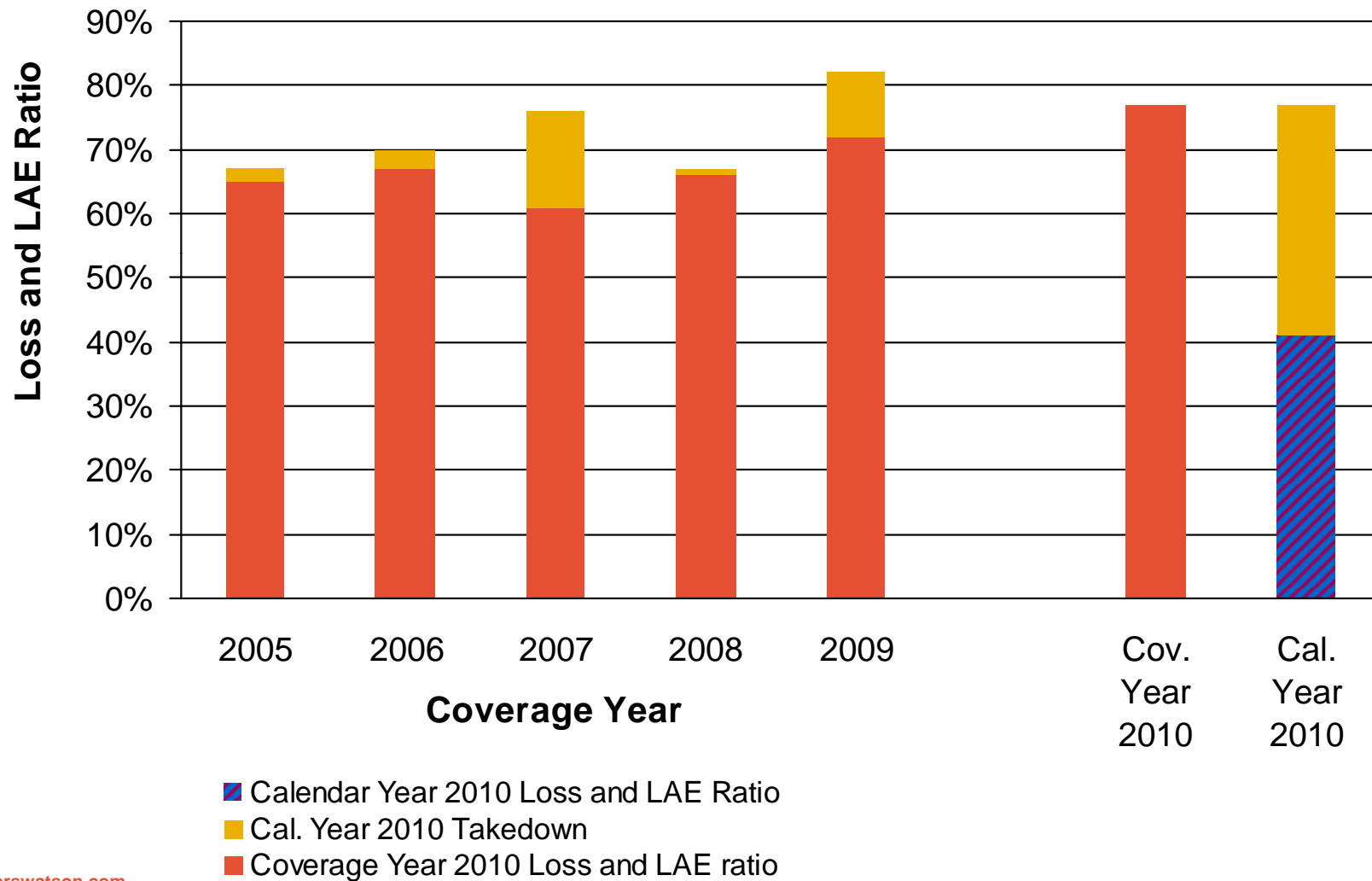
- Members equity is available to absorb inadequate reserves, the extent is dependant on the **liability-to-members equity ratio**
 - Pool B's liabilities-to-members equity ratio equals 5.0
 - Pool A's liabilities-to-members equity ratio equals 1.0
- Relative impact on members equity is directly comparable to leverage ratio

	Pool A	Pool B
Equity	\$300 million	\$60 million
Net liabilities	\$300 million	\$300 million
Liabilities to Equity Ratio	1.00	5.00
Reserve Error	10%	10%
Loss of Equity	10%	50%
Restated Figures		
Equity	\$270 million	\$30 million
Liabilities to Equity Ratio	1.22	11.00

Profitability ratios

- **Loss and LAE ratio** = Incurred losses and LAE / Earned premiums
- **Expense ratio** = Expenses incurred / Written premiums
- **Combined ratio** = Loss and LAE ratio + Expense ratio
- **Investment income ratio** = Net investment income / Earned premiums
- **Operating ratio** = Combined ratio – Investment income ratio

Distortions in calendar year loss and LAE ratio can be caused by loss reserve changes on prior coverage years



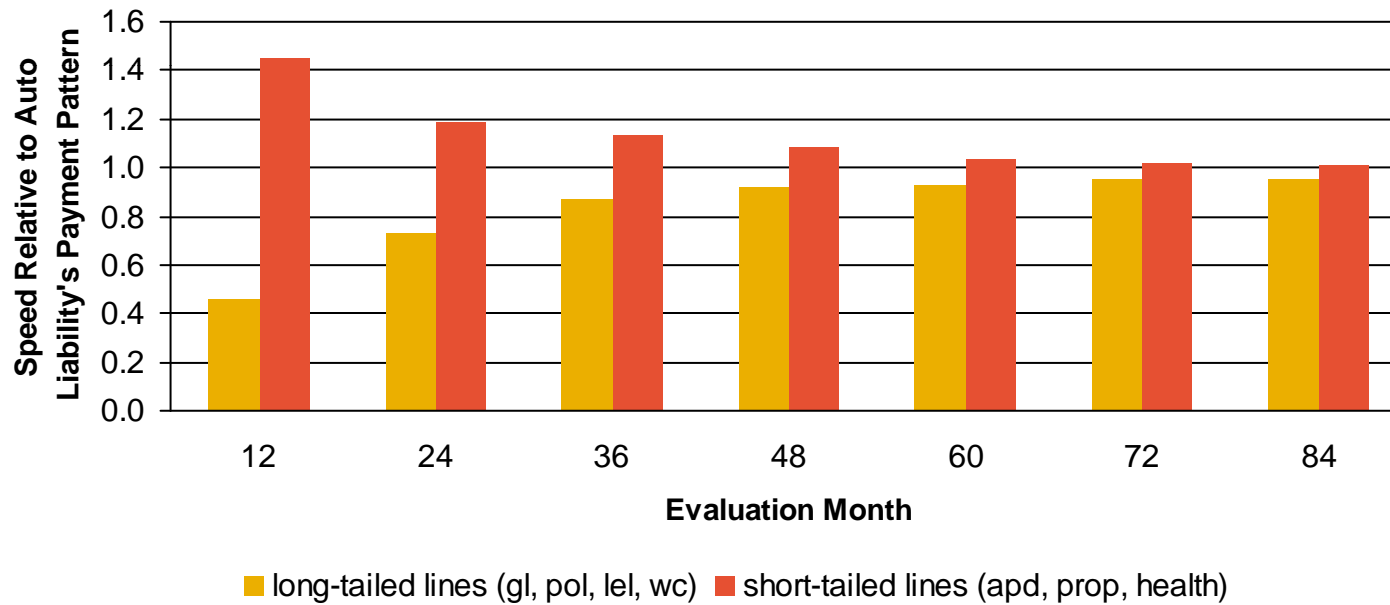
Reserve levels vary by coverage

The actuarial analysis estimates the timing of future payments of the currently outstanding loss

- Historical payments made by an entity by line of coverage are reviewed
- Triangles of paid loss data, by coverage year and line of coverage, are used
 - Short-tailed lines of coverage
 - Examples include health, property, auto physical damage
 - Long-tailed lines of coverage
 - Examples include workers compensation, law enforcement liability, public officials liability

Speed of loss payment varies by type of coverage

Relative Speed of Payment Patterns Compared to Auto Liability



The investment vehicle choice could depend on payment timing of the line of coverage

- There is a variation on the time it takes for a coverage to be closed out

Coverage	Estimated Years to Closed
al	7-10
apd	1-3
gl	7-10
pol	8-15
lel	7-10
prop	3-5
wc	20-35
health	2-5

- Entities that write predominantly short tailed coverages (e.g., property, apd and health) likely have a lower reserves to members equity level
 - compared to pools that write mostly long tailed coverages (e.g., workers compensation, professional lines, etc.)

The investment vehicle choice depends on maturity and risk appetite of the investment

- Choice of the investment vehicle should consider length of claim payment, structure of the payment and riskiness of investment
 - Example includes the following, displaying present value factors and expected investment returns
 - A coverage with expected duration of 4 years

Discount Factors and Examples of Returns by Investment Rate of Return						
			Bonds by Investment Grade			
	No Discount	T-bill	High	Medium	Low	Equity
Return	0.00%	0.75%	1.00%	2.50%	5.00%	9.00%
Discount Factor	1.00	0.98	0.98	0.95	0.90	0.83
Loss Component of Rate	\$100.0	\$98.4	\$97.8	\$94.7	\$89.9	\$83.0
Expected Investment Return		\$1.6	\$2.2	\$5.3	\$10.1	\$17.0

Alignment of a target for members equity

What is the insurance industry doing to measure members equity adequacy?

- Evaluation of economic capital
 - Highly sophisticated risk models of assets and liabilities
 - **Economic capital** - The capital required to ensure a specified probability (level of confidence) that the firm can achieve a specified objective over a given time horizon
- Rating agency evaluation (A.M. Best, Standard and Poors, etc.)
 - Quantitative and qualitative evaluation of insurer

How can public entity pools establish members equity adequacy thresholds?

- Understanding pools' leverage position
 - Lower leverage can reduce a pool's riskiness
- Confidence level analysis of pools' liabilities
- Peer analysis of rating agency capital calculations
 - One factor in this calculation is investment risk

Understanding the pool's leverage position is only the first step in evaluating members' equity

- Setting members equity requirements using target leverage ratios may fail to react to a changing environment
- Allows for a simplified “snapshot” assessment
- Evaluating leverage using benchmark leverage ratios
 - Premium-to-members equity
 - Kenney rule
 - Early warning test
 - Towers Watson benchmark
 - Reserve-to-members equity
 - Reflects multi-year nature of an insurers' obligations
 - Towers Watson benchmark

Confidence level analysis of pool's members equity

- Confidence level analysis measures the probability of members equity NOT providing adequate protection against adverse events
- Advantages
 - Data readily available from reserving analysis
 - Considers reserving and/or pricing risk
 - Reflects managements' appetite for risk
 - Based on simulations
- Disadvantage
 - Does not explicitly reflect asset risk

The rating agency procedure provides an analytical process that goes beyond leverage ratios and simulations

- It examines
 - Various sources of risk to a pool's financial condition
 - Interrelations (+/- correlations) between different sources of risk
 - Qualitative as well as quantitative factors

Pool can compare its comparative position versus its “peers”

The Rating Agency, A.M. Best, uses their proprietary model called Best's Capital Adequacy Ratio (BCAR)

- BCAR ratio is the major quantitative statistic for an A.M. Best financial strength rating
 - Measures balance sheet strength
 - Considers both sides of the balance sheet

$$\text{BCAR ratio} = \frac{\text{Adjusted members equity}}{\text{Net required capital}}$$

Things to consider around equity levels

- Investment decisions should be evaluated/considered when setting target member equity levels
- Target member equity levels may change over time
 - Methods
 - Reflect current financial environment and external factors
 - are available to quantify consistent target ranges across various environments
- Target member equity levels goals should include
 - Clear aim of management
 - Quantifiable process for determining target member equity levels
 - Time frame for re-evaluation

Wrap-up and Discussion