Value-Added Reserving

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Casualty Loss Reserve Seminar
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Consultants and Actuaries

Agenda

1. Changing Environment for Actuaries
2. Input From Other Departments is Critical to the Actuarial Reserving Process
3. Actuarial Analyses Can Be Improved Based on Input From Claims and Underwriting Reviews
4. Output From the Actuarial Review can be Used as Input to Asset Managers
5. Questions

Changing Environment for Actuaries

- Increased regulatory scrutiny of actuarial work indicates a need for actuaries to develop techniques, practices, and communication tools relating to loss reserve ranges and uncertainty.
- Actuaries need to support disclosures made in SEC filings regarding reserve ranges, underlying assumptions, and uncertainty.
- Investors and clients are looking to better understand the risks associated with all elements of the insurance sector – underwriting, claims, actuarial, etc. – and how these disciplines interact.

Input From Other Departments is Critical to the Actuarial Reserving Process

Interaction With Claims Department

Need to identify any changes in:

- Claim handling and/or case reserving philosophy
- Claim settlement philosophy
- Use of outside adjusters
- Average adjuster caseload
- See Appendix B in Berquist-Sherman paper (PCAS 1977).

Interaction With Claims Department - Example

- New head of WC claims department expressed concern about a report showing 1,000 claims open 4+ years, but not coded as Permanent Total (PT).
- He told claim handlers they would have to explain any claims remaining on that report at the end of the month.
- Miraculously, there were about 1,000 new PT claims at the end of the month, each with a significant increase in case reserves.

Interaction With Underwriting Department

Need to identify any changes in:

- Underwriting guidelines
- Book of business (e.g., class mix, coverages, average policy limit, use of deductibles)
- Primary vs. excess business
- See Appendix B in Berquist-Sherman paper (PCAS 1977).

Interaction With Underwriting Department - Example

- Company had been assuming the first $250,000 of each Auto Liability claim.
- On July 1st the company began writing the business on a direct basis, at full policy limits.
- The average policy limit tripled, which had a sizeable impact on LDF's and claim severity.

Actuarial Analyses Can Be Improved Based on Input From Claims and Underwriting Reviews

Examples of Claims and Underwriting Reviews

- Product/Business Review
- Underwriting Operations Review
- Market Assessment/Outlook
- Risk Management Assessment
- Due Diligence
- Commutation Decisions
- Case Reserving Practices

What is a Product/Business Review?

Key Factors Include:

- Coverage
- Price
- Marketing
- Underwriting
- Service
- Controls

Product/Business Review - Example

- Unique product designed to control GL losses & LAE for construction exposures
- Review suggested by actuary
- Carrier wanted to confirm A-OK before proceeding with growth
- Review focused on product, including design of coverage, controls, etc.

Product/Business Review - Outcome

- Product found to be solid and well controlled
- Made recommendations for improvements in policy form
- Actuary left with greater comfort level about reserve ranges

What is an Underwriting Operations Review?

Key Factors Include:

- Business strategy and underwriting policy
- Evaluation of risk operations and exposures
- Loss control/risk management
- Risk selection within class
- Application of rates and rating plans
- Coverage (policy forms, endorsements, exclusions, limits, sub-limits)

What is an Underwriting Operations Review (cont'd.)?

Key Factors Include (cont'd):

- Controls (e.g., authority and referral)
- Distribution management
- Portfolio management
- Use of reinsurance
- Performance monitoring
- Regulatory compliance

Underwriting Operations Review – Example

- Start-up Bermuda reinsurer desired second opinion on loss reserves
- Actuarial objective was to incorporate business analysis of portfolio exposures
- Review done jointly by actuary and underwriter, focused on sample of higher risk contracts

Underwriting Operations Review Outcomes

- Need for improved pricing benchmarks
- Failure to price for some catastrophic exposures
- No formal means to manage exposure accumulations
- Explicit risk charge needed for certain risks (e.g., MGAs, start-ups)
- No underwriting audits to verify worthiness of risks assumed
- Underwriting input enabled actuary to better assess needed reserve levels

What is a Claim Review?

- Understanding management philosophies and stated practices
- Determining whether claim practices conform to management goals
- Review of claim files and interview of key personnel to evaluate claim handling (e.g., experience, workload, intake, investigation, reserving, mitigation, negotiation, resolution)
- Individual case reserving
- Comparison to industry or best practices
- Assistance with financial strategies

Claim Review – Examples of Individual Case Reserving

- Particular Claims - few open claims, questionable values, unique claims
- Changes in claims handling in general, or case reserving practices in particular
- Comparison to industry
- Changes in legislation

Individual Case Reserving – Outcomes

- Additional (and possibly more accurate) approach to traditional methods
- Produce a range
- Add perspective; reasonableness test of LDF selections
- Explicit adjustments for large or unusual claim experience
- Educate end-users regarding the assumptions and uncertainties inherent in reserve estimates
- Uncover mistakes/mishandling
- Advise and suggest improvements to increase efficiency, increase effectiveness, add value

Claim Review - Examples of Assistance with Financial Strategies

- Commutations
- Novations
- Impacts of changes in claim practices

Financial Strategies – Outcomes

- Determining ranges upon which to base effective negotiations
- Identify “outliers” and enable bifurcated agreements
- Educate carriers on creative alternative resolution strategies
- Look ahead – examine the potential impacts of decisions

What is Due Diligence?

- Intensive multi-disciplinary review – beyond the numbers
- Involves underwriting, operational, claims, actuarial, reinsurance, and systems
- Addresses key issues: balance sheet, operating profitability, viability of franchise
- Each deal is unique; need to tailor resources and approach
- All potential deals have skeletons; need to find and address the critical ones

Skeletons

- Underwriting of problematic exposures
- Inadequately priced business
- Mass torts or emerging claim trends
- Lack of control over claims
- Changes in claims handling or reserving
- Lack of compliance with filed rates and underwriting programs
- Improper loss ratio and reserve assumptions
- Lack of franchise product (vs. commodity)
- Uncollectible reinsurance
- Over-reliance on key personnel

Due Diligence – Example 1

- Represented potential buyer of an insurance company writing business through MGA programs.
- Review consisted of actuarial, underwriting and claims.
- From prior experience…MGAs / programs must be managed closely.
- Findings were mixed: reserve review appeared favorable, but could not reflect weaknesses in underwriting/claims practices and controls.

Due Diligence – Example 1

- Most senior management appeared strong, with a good strategy
- Underwriting review indicated prior weaknesses and ongoing concerns with growth management, control over MGAs, performance monitoring, and needed junior staff
- Claims review indicated a lack of controls over TPAs and overall claims management practices, inconsistencies among data sources and data collection/maintenance concerns
- General lack of management information and systems controls

Due Diligence – Outcome 1

- Buyer qualified bid based on the qualitative findings
- Educated buyer about the potential risks and the impact the findings had on the value of the acquisition

Due Diligence – Example 2

- The target company had recently been formed as the merger of two insurance companies (ABC and XYZ).
- Prior to that merger, ABC's case reserving philosophy was to set the case reserves at the probable ultimate as soon as possible.
- XYZ's case reserving approach was to stair step.
- The target company claimed that they had implemented the ABC case reserving philosophy (i.e., probable ultimate) throughout the organization.

Due Diligence – Example 2

- The chief actuary of the target company assumed that the case reserving change had been implemented and applied the old ABC development factors to the combined data.
- A claim review discovered that the former XYZ claims offices were still stair stepping (i.e., the probable ultimate philosophy had not actually been implemented).

Due Diligence – Outcome 2

- The old stair stepping (slower) development factors needed to be applied to the losses handled by the old XYZ claim offices.
- The implied reserve deficiency was significant.

Due Diligence – Example 3

- Target company claimed to have completely stopped writing coverage for Contractors - due to Construction Defect (CD) claims.
- They produced a memo that had gone out to all underwriting departments instructing them to cease writing Contractor business.
- As part of the underwriting due diligence, it was discovered that an office in one state was still writing a significant amount of Contractor business from an MGA in that state.

Due Diligence – Example 3

- The Home Office underwriting manager was not aware that this business was still being written.
- The target company's actuary had assumed that the future claim emergence on CD would fall off quickly, due to the change in underwriting.

Due Diligence – Outcome 3

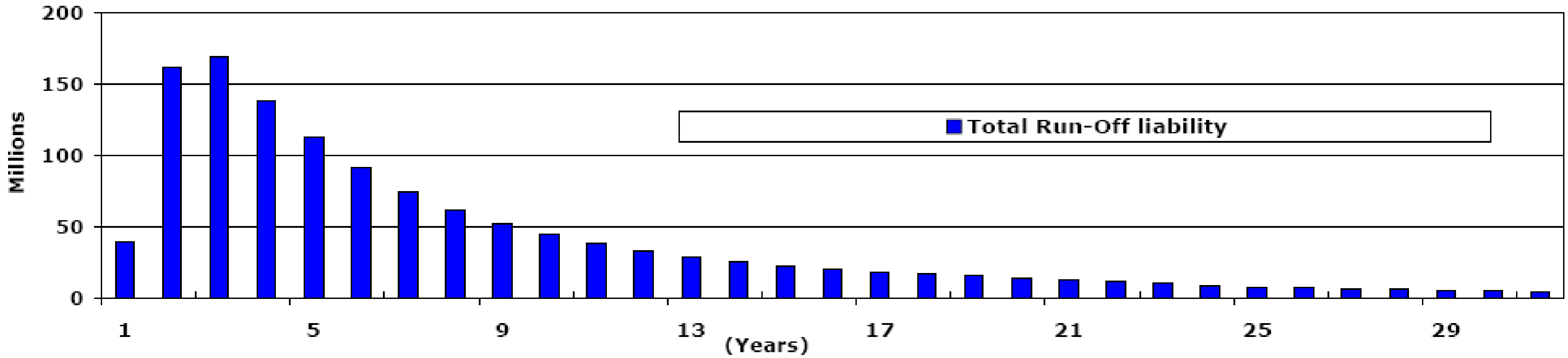
- There was a sizeable reserve deficiency implied for CD claims.
- Buyer lowered its offer.

Non-Actuarial Services Enhance the Role and Status of the Actuary

- Improve quality of actuarial product
- Reduce variability of results
- Increase ability to effectively communicate findings, assumptions, and limitations

Output From the Actuarial Review can be Used as Input to Asset Managers

XYZ Insurance Company
Term Structure Of Total Run-Off Liabilities
May 31, 2007



Market Value Statistics							
Liability Years	**Short (0 - 0.5)**	**Limited (0.51 - 5.5)**	**Intermediate (5.51 - 10.5)**	**Long (10.51 - 20.5)**	**Very Long (20.51 - 30.5)**	**Ultra (30.51+)**	**Total**
Total %	1.83%	54.54%	20.71%	15.71%	5.38%	1.82%	100.00%
Yield	4.54%	4.84%	4.96%	5.20%	5.08%	4.99%	4.93%
Mduration$^{(1)}$	0.28	2.60	7.51	14.31	24.03	34.80	7.15
Convexity$^{(2)}$	0.00	0.10	0.62	2.20	5.97	12.46	1.08
Total $	20,714,360	618,895,112	234,994,567	178,260,182	61,091,283	20,700,016	1,134,655,520
Total % of Assets	1.18%	35.38%	13.43%	10.19%	3.49%	1.18%	64.86%

Note(s):

Projected Total Run-Off
Liability Valuation at Treasury STRIP Curve
(1) Modified duration measures the interest rate sensitivity in years
(2) Convexity is a measure of how the duration of a bond changes as the interest rate changes

XYZ Insurance Company
Total Run-Off Liability (+ 1yr Premium) Structure Report
May 31, 2007

Cell	%	Future Value	Market Value	Price	YTW	Term	Modified Duration	Conv	$ Duration	% $Duration
Short (0.0 - 0.5)	1.83%	20,988,791	20,714,360	98.70	4.54	0.29	0.28	0.00	5,862,164	0.07%
0.51 - 01.5	15.17%	181,239,438	172,076,016	94.96	4.90	1.07	1.04	0.02	179,303,209	2.21%
01.51 - 02.5	13.09%	163,862,994	148,515,434	90.65	4.91	2.03	1.98	0.05	293,912,044	3.62%
02.51 - 03.5	10.64%	139,595,166	120,726,816	86.50	4.85	3.03	2.96	0.10	356,989,195	4.40%
03.51 - 04.5	8.64%	118,174,460	98,081,775	83.01	4.69	4.03	3.94	0.18	386,147,948	4.76%
04.51 - 05.5	7.01%	100,829,361	79,495,071	78.87	4.78	5.03	4.91	0.27	390,320,799	4.81%
Limited (0.51 - 5.5)	54.55%	703,701,420	618,895,112	88.31	4.84	2.66	2.60	0.10	1,606,673,194	19.81%
05.51 - 06.5	5.70%	86,559,099	64,676,823	74.74	4.89	6.03	5.89	0.38	380,623,103	4.69%
06.51 - 07.5	4.71%	75,365,956	53,449,610	70.94	4.95	7.03	6.86	0.51	366,610,875	4.52%
07.51 - 08.5	3.99%	67,141,502	45,224,655	67.37	4.98	8.03	7.84	0.65	354,335,172	4.37%
08.51 - 09.5	3.39%	60,123,847	38,456,366	63.98	5.01	9.03	8.81	0.82	338,762,128	4.18%
09.51 - 10.5	2.93%	54,759,354	33,187,113	60.62	5.05	10.03	9.78	1.01	324,702,714	4.00%
Intermediate (5.51 - 10.5)	20.71%	343,949,759	234,994,567	68.70	4.96	7.70	7.51	0.62	1,765,033,992	21.76%
10.51 - 11.5	2.50%	49,534,396	28,408,008	57.36	5.10	11.03	10.76	1.21	305,556,534	3.77%
11.51 - 12.5	2.18%	45,630,019	24,726,224	54.20	5.16	12.03	11.73	1.44	290,013,881	3.58%
12.51 - 13.5	1.92%	42,477,003	21,739,095	51.19	5.21	13.03	12.70	1.68	276,108,246	3.40%
13.51 - 14.5	1.70%	39,925,465	19,314,368	48.39	5.24	14.03	13.67	1.94	264,104,668	3.26%
14.51 - 15.5	1.52%	37,522,300	17,205,363	45.86	5.25	15.03	14.65	2.22	252,024,157	3.11%
15.51 - 16.5	1.40%	36,321,022	15,834,895	43.61	5.25	16.03	15.62	2.52	247,404,399	3.05%
16.51 - 17.5	1.28%	35,221,169	14,573,649	41.39	5.25	17.04	16.60	2.84	241,893,426	2.98%
17.51 - 18.5	1.18%	33,994,778	13,371,047	39.34	5.24	18.03	17.57	3.18	234,969,409	2.90%
18.51 - 19.5	1.07%	32,378,652	12,137,014	37.49	5.22	19.03	18.55	3.53	225,129,473	2.78%
19.51 - 20.5	0.97%	30,649,195	10,950,520	35.74	5.20	20.03	19.53	3.91	213,808,903	2.64%
Long (10.51 - 20.5)	15.71%	383,653,999	178,260,182	47.53	5.20	14.68	14.31	2.20	2,551,013,096	31.45%
20.51 - 21.5	0.86%	28,682,023	9,793,024	34.15	5.18	21.03	20.50	4.30	200,776,578	2.48%
21.51 - 22.5	0.77%	26,614,932	8,680,858	32.62	5.15	22.03	21.48	4.72	186,456,149	2.30%
22.51 - 23.5	0.67%	24,447,475	7,619,697	31.17	5.13	23.03	22.46	5.15	171,107,916	2.11%
23.51 - 24.5	0.57%	21,557,354	6,463,376	29.99	5.08	24.03	23.44	5.61	151,475,680	1.87%
24.51 - 25.5	0.53%	20,879,318	5,998,617	28.74	5.04	25.04	24.42	6.08	146,474,230	1.81%
25.51 - 26.5	0.48%	19,982,248	5,474,056	27.40	5.04	26.03	25.39	6.58	139,008,178	1.71%
26.51 - 27.5	0.44%	19,013,770	4,968,108	26.13	5.03	27.03	26.37	7.09	131,009,008	1.62%
27.51 - 28.5	0.39%	18,008,995	4,476,169	24.86	5.03	28.03	27.35	7.62	122,400,841	1.51%
28.51 - 29.5	0.35%	16,907,850	4,022,043	23.79	5.01	29.04	28.32	8.19	113,920,346	1.40%
29.51 - 30.5	0.32%	15,780,208	3,595,333	22.79	4.99	30.03	29.30	8.78	105,350,448	1.30%
Very Long (20.51 - 30.5)	5.38%	211,874,172	61,091,283	29.30	5.08	24.64	24.03	5.97	1,467,979,374	18.10%
Ultra Long (30.51 +)	1.82%	122,713,713	20,700,016	17.62	4.99	35.67	34.80	12.46	720,360,557	8.88%
Total	100.00%	1,786,881,855	1,134,655,520	73.57	4.93	7.33	7.15	1.08	8,111,060,213	100.00%

Assumptions: Projected Total Run-Off
Liability Valuation at Treasury STRIP Curve

XYZ-NTRO

Note: Report Available Daily via XYZ Insurance Company Internet Manifold

XYZ Insurance Company
Total Assets Vs. Total Liabilities (By Term Structure)
May 31, 2007

	Total Assets			Total Liabilities			Difference		
Interest Rate Risk	**Weight (%)**	**Present Value**	**Return Since 06/98**	**Weight (%)**	**Present Value**	**Return Since 06/98**	**Weight (%)**	**Present Value**	**Return Since 06/98**
SHORT	2.08%	36,370,366		1.83%	20,714,360		0.25%	15,656,006	
LMTD	30.54%	534,309,648		54.54%	618,895,112		-24.00%	(84,585,464)	
INT	42.47%	742,925,381		20.71%	234,994,567		21.76%	507,930,814	
LONG	7.64%	133,679,685		15.71%	178,260,182		-8.07%	(44,580,497)	
VLONG	0.00%	0		5.38%	61,091,283		-5.38%	(61,091,283)	
ULTRA	0.00%	0		1.82%	20,700,016		-1.82%	(20,700,016)	
TOTAL	**82.74%**	**1,447,285,081**		**100.00%**	**1,134,655,520**		**-17.26%**	**312,629,561**	
R / C	**17.26%**	**301,971,880**					**17.26%**	**301,971,880**	
TOTAL	**100.00%**	**1,749,256,961**	**5.92%**	**100.00%**	**1,134,655,520**	**5.91%**	**0.00%**	**614,601,441**	**0.01%**

	Modified Duration Cells		
Short	(0.00 to 00.50)	Years	=Cash and Short Assets
Limited	(0.51 to 05.50)	Years	=Limited Fixed Income
Intermediate	(5.51 to 10.50)	Years	=Intermediate Fixed Income
Long	(10.51 to 20.50)	Years	=Long Fixed Income
Very Long	(20.51 to 30.50)	Years	=Very Long Fixed Income
Ultra	(30.51+)	Years	=Ultra Long Fixed Income

R / C Risk Cushion =

($) Weighted Return Difference =185,219,140

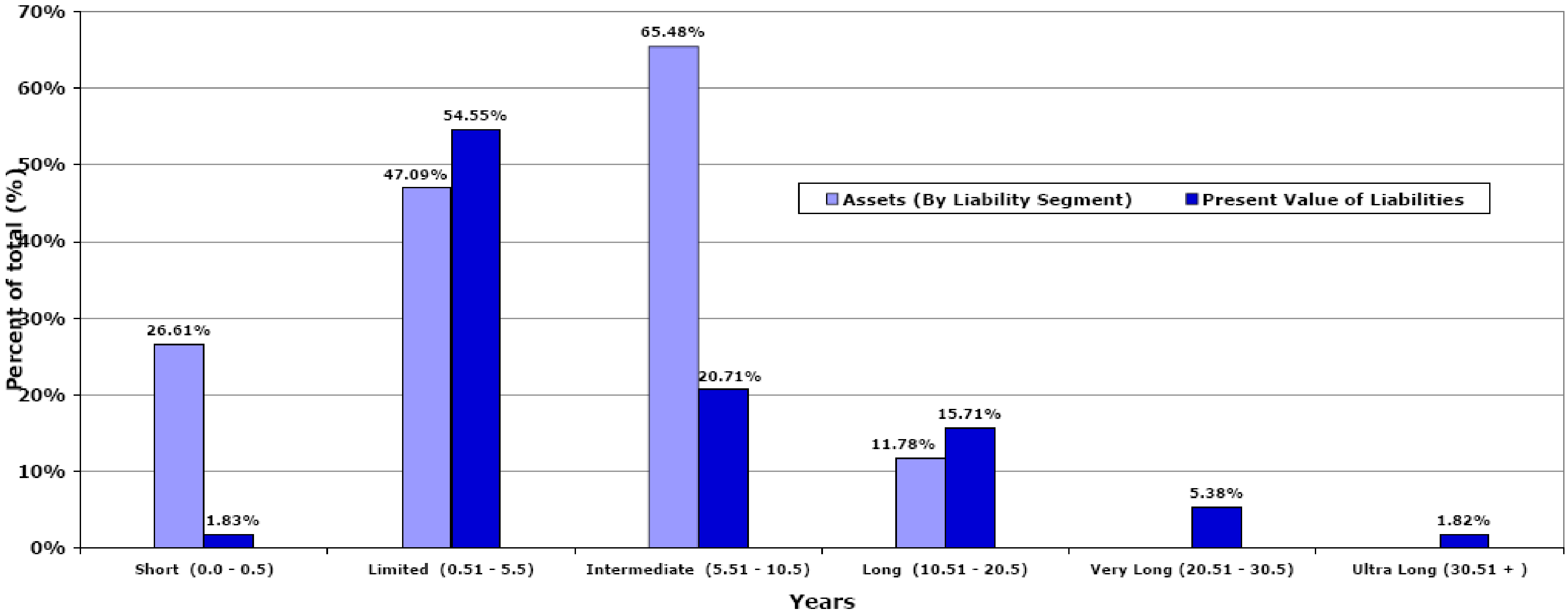
Observation(s): Liability Valuation at Treasury STRIP Curve

Asset Duration (years) = 5.68

Liability Duration (years) = 7.15

($) Weighted Return Difference = (Monthly Value of Assets x Monthly Return - Monthly Value of Liabilities x Monthly Return)

XYZ Insurance Company
Assets vs Liabilities (By Liability Segment)
May 31, 2007



Assets	
Assets Market Value ($)	1,749,256,961
Assets Modified Duration (years)	5.68
Assets Dollar Duration	9,941,355,141

Liabilities	
Liabilities Market Value	1,134,655,520
Liabilities Modified Duration (years)	7.15
Liabilities Dollar Duration	8,117,325,590

Interest Rate Hedge = 123%

Note: Assets Durations ending 3/31/2007

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Questions?