Commercial Lines – *A Potpourri of Reserving Issues*

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Construction Defect Liability Reviews

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What are construction defect liabilities?

- Liabilities related to work done by insureds such as general contractors, subcontractors, suppliers, homebuilders, etc.
- Liabilities are not for defective work done by insureds (not warranty losses) but rather damage resulting from defects.
- Typical claims seek damages for faulty wiring or drainage, improper materials, ground settlement and movement, etc.
- Usually high ALAE due to coverage litigation and cross complaints.

Why are they so hard to estimate?

- Constantly changing environment – law changes, policy changes (term and conditions), exposure changes, coding/data changes
- Long incremental reporting pattern
- Differences in jurisdictions – statutes of limitation
- Difficulty in establishing accident date

What do we need to do this right?

- Concise definition of a construction defect claim
- Clear understanding of changes impacting book
  - Policy terms and conditions
  - Exposure mix
  - Claims handling
- Flexible data – loss and exposure
- Non-standard actuarial approach
  - Counts and averages
  - Report lag method

Why not just use standard accident year development method?

- Accident date may not be clearly identified or consistent (continuous trigger)
- Litigation and legislation may affect triangles on the diagonal
- Changes to book distort patterns
- Lack of history and benchmark patterns

Non-Standard Approach

1. Bifurcate review of liability into analysis of (1) development on known claims and (2) pure IBNR
2. Report year/quarter development analysis of known claims – surprising how much development on mostly property damage type claims
3. Pure IBNR based on Counts & Averages or Report Lag Methods

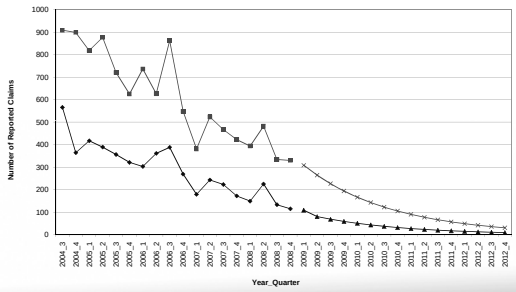
Counts and Averages Method (1)

- Methods attempt to estimate future liability by projecting the number of future claims and the average severity amounts related to these claims
- To develop estimate of future reported claims (counts) can use:
  - Triangle methods;
  - Relation to outstanding exposure;
  - Decay methods.
- Need to distinguish CWIPs and CWOPs! They vary over time as well as in relation to total closed claims.
- May have to split patterns or projections based on years if changes can be isolated

Counts and Averages Method (2)

- To develop estimates of claim severity:
  - Look at recent closed claims
  - Prefer quarterly data (monthly if credible)
  - Make sure to account for ALAE – especially for CWOP
  - Loss trends often erratic
- Advantages of method – Assumptions are transparent; easy to test projections vs. actual results

Construction Defect



Contractors - Construction Defect Only
Net of Reinsurance
As of June 30, 2008
(000's)

	(1)	(2)	(3) (2) / (1)	(4)	(5) (4) / (2)	(6) (1) - (2)	(7)	(8) (7) / (6)
Report Period	Closed Claims	Claims Closed w/ Indemnity Payment (CWIP)	CWIP Ratio	Paid Indemnity & ALAE on CWIP	CWIP Severity	Claims Closed w/o Indemnity Payment (CWOP)	Paid ALAE on CWOP	CWOP Severity
2006_3Q	29	0	0%	9		29	3	106
2006_4Q	37	5	14%	183	36,612	32	17	534
2007_1Q	48	6	13%	152	25,334	42	15	349
2007_2Q	65	5	8%	281	56,122	60	10	167
2007_3Q	78	11	14%	568	51,616	67	29	435
2007_4Q	73	10	14%	319	31,902	63	11	168
2008_1Q	79	17	22%	784	46,143	62	11	181
2008_2Q	87	15	17%	742	49,452	72	23	314
Total	496	69	14%	3,038	44,028	427	118	277

Report Lag Method (1)

- Method used in long-tail lines (med mal, extended warranty, etc.)
- Attempts to break down future loss development into two components:
  1) development from loss occurrence to loss reportings; and
  2) development from loss reporting to claim closing.
- Development related to second component can be quantified using report year/quarterly development patterns
- Need to determine development related to first component

Report Lag Method (2)

Outline of Method:

1. Arrange incurred loss and ALAE into layers – each layer represents number of months from beginning of accident year until end of month loss was reported.
2. Apply selected report year development factors to develop report layer triangles to reflect development on reported claims.
3. Accumulate developed reported losses and arrange them in triangle form.
4. Calculate, select and apply development factors from this triangle – indicative of development on unreported claims only.

Accident Year Report Lag Method

As of June 30, 2008
(000's)

Accident A) Incurred Indemnity & ALAE by Report Layer

Year	6	18	30	42	54	66	78	90	102	*Total*
2000	0	3	7	0	144	11	78	100	24	366
2001	0	20	101	105	318	165	442	23		1,174
2002	19	38	43	89	22	48	23			281
2003	354	16	65	141	28	70				674
2004	662	248	558	272	152					1,892
2005	12	458	1,352	291						2,114
2006	296	424	140							860
2007	244	306								551
2008	1									1
										7,912

Accident B) Report Year Development Factors

Year	6	18	30	42	54	66	78	90	102	
2000	1.000	1.005	1.020	1.050	1.097	1.185	1.404	2.186	4.517	
2001	1.005	1.020	1.050	1.097	1.185	1.404	2.186	4.517		
2002	1.020	1.050	1.097	1.185	1.404	2.186	4.517			
2003	1.050	1.097	1.185	1.404	2.186	4.517				
2004	1.097	1.185	1.404	2.186	4.517					
2005	1.185	1.404	2.186	4.517						
2006	1.404	2.186	4.517							
2007	2.186	4.517								
2008	4.517									

Accident Year Report Lag Method

As of June 30, 2008
(000's)

Accident C) Incurred Indemnity & ALAE by Report Layer as of June 30, 2008 - Reflecting Reported Claim Development = (A) x (B)

Year	6	18	30	42	54	66	78	90	102	*Total*
2000	0	3	7	0	158	13	110	219	106	615
2001	0	20	107	115	376	232	967	102		1,918
2002	19	40	47	105	31	105	105			452
2003	372	17	78	197	61	317				1,042
2004	727	293	783	594	686					3,084
2005	15	644	2,956	1,314						4,927
2006	415	927	633							1,976
2007	534	1,384								1,918
2008	4									4
										15,935

Accident D) Incurred Indemnity & ALAE by Report Layer as of June 30, 2008 - Reflecting Reported Claim Development - Cumulative

Year	6	18	30	42	54	66	78	90	102	*Cumulative*
2000	0	3	9	9	167	180	290	509	615	615
2001	0	20	127	242	618	850	1,817	1,918		1,918
2002	19	59	106	211	242	347	452			452
2003	372	389	467	664	724	1,042				1,042
2004	727	1,020	1,804	2,397	3,084					3,084
2005	15	658	3,614	4,927						4,927
2006	415	1,343	1,976							1,976
2007	534	1,918								1,918
2008	4									4
										15,935

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Accident Year Report Lag Method

As of June 30, 2008
(000's)

Historical Data Development Schedule
Accident

Year	6	18	30	42	54	66	78	90	102
2000	0	3	9	9	167	180	290	509	615
2001	0	20	127	242	618	850	1,817	1,918	
2002	19	59	106	211	242	347	452		
2003	372	389	467	664	724	1,042			
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2005	15	658	3,614	4,927					
2006	415	1,343	1,976						
2007	534	1,918							
2008	4								

Historical Data Development Schedule
Accident

Year	18:6	30:18	42:30	54:42	66:54	78:66	90:78	102:90	Ult:102
2000		3.479	1.000	17.989	1.075	1.612	1.754	1.209	
2001		6.277	1.906	2.557	1.375	2.137	1.056		
2002	3.079	1.806	1.992	1.147	1.434	1.302			
2003	1.047	1.199	1.423	1.091	1.438				
2004	1.404	1.768	1.329	1.286					
2005	45.275	5.492	1.363						
2006	3.233	1.472							
2007	3.592								

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Current Issues in CD

- Chinese Dry-Wall
  - Still difficult to determine ultimate impact
  - Recent court decisions may have raised the bar on damages
- Homebuilding Market
  - Exposure drop – premium volume 25%-33% of peak
  - Limited new construction – who is doing the building?
  - Early reports – claim frequency up in AYs 2007-2009

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Reference Items

- Past CLRS presentations
- Mealey's Claims Report
- *Reserving for Construction Defect* – Green, Lassich, et. al – 2000 CAS Forum
- *Extended Service Contracts* – Hayne, CAS Proceedings

Cape Cod Method

It's Like Bornhuetter-Ferguson

Indicated ultimate losses = (Losses-to-date) + (1 – 1/LDF) × (expected ultimate losses)

- B-F: ELR × premium
- CC: algorithm using company's data

So, what are the algorithm inputs?

- Exposure base
- Relationship between exposure base and losses to be projected
- Development factors
- Company's loss data

Basic Example

AY	(1) Exposures	(2) Reported Losses	(3) Trend at 7% per year	(4) = (2) × (3) Trended Reported Losses
1997	7,000	3,600	1.311	4,720
1998	8,000	4,000	1.225	4,900
1999	9,000	4,800	1.145	5,496
2000	10,000	3,600	1.070	3,852
2001	11,000	2,800	1.000	2,800
Total	45,000	18,800		21,768

AY	(5) Percent Reported	(6) (1) × (5) Reported Exposure	(7) (1) - (6) Unreported Exposure	(8) (4) ÷ (6) Trended Developed Loss Ratio
1997	85%	5,950	1,050	79.3%
1998	75%	6,000	2,000	81.7%
1999	60%	5,400	3,600	101.8%
2000	45%	4,500	5,500	85.6%
2001	25%	2,750	8,250	101.8%
Total		24,600	20,400	88.5%

Basic Example - Continued

"Two-way" weighting scheme

AY	Trended Developed Loss Ratio		Percent Reported		Exposures		Weighted Loss Ratios
1997	79.3%	×	85.0%	×	7,000	=	4,720
1998	81.7%	×	75.0%	×	8,000	=	4,900
1999	101.8%	×	60.0%	×	9,000	=	5,496
2000	85.6%	×	45.0%	×	10,000	=	3,852
2001	101.8%	×	25.0%	×	11,000	=	2,800
Total				24,600			21,768
Weighted Average Loss Ratio			21,768	÷	24,600	=	**88.5%**

Basic Example – Final Step

AY	(9) Expected Ultimate Loss Ratio	(10) Expected Loss Ratio Detrended at 7%	(11) Unreported Exposure	(12) IBNR Reserve	(13) (2) + (12) Ultimate Losses
1997	88.5%	67.5%	1,050	709	4,309
1998	88.5%	72.2%	2,000	1,445	5,445
1999	88.5%	77.3%	3,600	2,782	7,582
2000	88.5%	82.7%	5,500	4,548	8,148
2001	88.5%	88.5%	8,250	7,300	10,100
Total				16,785	35,585

Column (11) = (1.0 - 1/LDF) × Exposure. AY2000 = 55% × 10,000 = 5,500

Column (12) completes B-F IBNR Calculation: Col (10) × Col (11)

Basic Example with Decay

AY	Trended Developed Loss Ratio		"Three-way" weighting scheme: Percent Reported		Exposures		Decay = 0.75		Weighted Loss Ratios
1997	79.3%	×	85.0%	×	7,000	×	0.422	=	1,991
1998	81.7%	×	75.0%	×	8,000	×	0.563	=	2,756
1999	101.8%	×	60.0%	×	9,000	×	0.750	=	4,122
2000	85.6%	×	45.0%	×	10,000	×	1.000	=	3,852
2001	101.8%	×	25.0%	×	11,000	×	0.750	=	2,100
Total									14,822
					16,498				
Weighted Average Loss Ratio					14,822	÷	16,498	=	89.8%

Basic Example with Decay – Final Step

AY	(9) Expected Ultimate Loss Ratio	(10) Detrended Expected Loss Ratio	(11) Unreported Exposure	(12) IBNR Reserve	(13) Ultimate Losses
1997	86.1%	65.7%	1,050	690	4,290
1998	87.4%	71.3%	2,000	1,427	5,427
1999	89.7%	78.3%	3,600	2,819	7,619
2000	89.8%	84.0%	5,500	4,618	8,218
2001	90.9%	90.9%	8,250	7,499	10,299
Total				17,053	35,853

What does the decay process add to the calculation of expected losses?

Why do we like the Cape Cod Method?

- Statistical: minimize variance
- Makes “common actuarial sense”
- It’s programmed, not ad hoc
- Method is robust

Special Reserving Issues

- Speedup/slowdown, case reserve strengthening/weakening
- Mix of business changes
- Changes in limits, retentions
- Large losses

Special Reserving Issues

Cape Cod results are only as good as their inputs

Development factors will always be the key

When should the Cape Cod Method be used and selected?

Reference

- Struzzieri – "Using Best Practices to Determine a Best Reserve Estimate", CAS Forum, Fall 1998 – very practical; a good starting point for the actuary who is unfamiliar with the method
- Gluck – "Balancing Development and Trend in Loss Reserve Analyses", PCAS LXXXIV (1997) – thorough, technical discussion of the "Generalized" Cape Cod method; introduces the "decay" concept
- Stanard - "A Simulation Test of Prediction Errors of Loss Reserve Estimation Techniques", PCAS LXXII (1985) – theoretical and technical, includes an important discussion of why "blended" methods are less biased

Miscellaneous

Beware the Soft Market!

- Expected Loss Ratios:
  - How well is rate change monitored?
  - Terms and Conditions changes amplify rate changes
  - AY 2009 likely will turn out worse than expected – be careful if pegging 2010 to this year
- New Business:
  - Attempt to quantify amount of new business – should have higher ELRs than renewals

Benchmarking

- Used prominently by investment advisors (comparison of returns to S&P 500, Barclays Aggregate Bond Index), we should do more of this to put results in context
- Comparison of individual line results to industry from Schedule P can to lead to interesting discussions on differences and better understanding of book
- Comparison of directional (up/down) movements in loss ratios across accident years may tell more than comparison of absolute loss ratios

