

1995 CASUALTY LOSS RESERVE SEMINAR

2D: Reinsurance Reserving I

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1995 Casualty Loss Reserve Seminar 2D: Reinsurance Reserving I

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a professional services firm

Reinsurance Reserving Agenda

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- **Types of Reinsurance Contracts**
 - Facultative vs. Treaty
 - Proportional vs. Non-Proportional
 - Working Layer vs. Clash Covers
- **Major technical problems making Loss Reserving more difficult for reinsurers**
- **Components of Reinsurance Reserves**
- **Steps to Reinsurance Loss Reserving**
- **Special Considerations in Reinsurance Reserving**
 - Commutations
 - Aggregate Deductibles or Limits
 - Cancellations - Cutoff vs. Runoff
 - Sliding Scale and Profit Commissions
 - Financial Covers
 - Claims - Made vs. Occurrence Covers
- **Glossary of Reinsurance Terms**
- **References**

Types of Reinsurance Contracts

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Facultative vs. Treaty Contracts

Facultative

Coverage for specific risks, often as an individual insurance policy. Typically used to cover part of a certain large, especially hazardous or unusual exposure to limit impact on cedant's results.

Treaty

Coverage of a broad group of risks, typically all of an insurer's policies in a given area that meet certain standards.

Types of Reinsurance Contracts

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Proportional vs. Non-proportional

Proportional - Quota share:

Reinsurance covers fixed percentage of each loss and ALAE in return for some percentage of subject premiums. Percentage predefined and fixed .

Proportional - Surplus share:

Proportion retained and proportion reinsured varies from risk to risk depending on the policy limit and type of risk. For a given type of risk, the ceding company determines the maximum retention, or “line” it wishes to keep. Risks with policy limits within retention are retained 100%. Cession percentage is determined by calculating ratio of lines ceded to policy limit. Once cession percentage is determined, fixed percentage of losses ceded.

Non-Proportional (or excess of loss):

Reinsurance coverage excess of a fixed pre-determined amount (retention), up to a pre-determined limit (Limit). Coverage provided per risk, per occurrence or excess of loss aggregate.

Types of Reinsurance Contracts

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Proportional vs. Non-proportional

Example:

- Ceding company insures Trump Tower for \$1 million limits
- A hurricane causes \$500,000 of damage

Under a 50% quota share treaty with a reinsurer:

- Reinsurer is liable for \$250,000 of loss

Under a surplus share treaty with maximum retained line of \$100,000 and 9 lines of reinsurance coverage

- Reinsurer covers 9/10 or 90% of each loss, or \$450,000

Under a \$500,000 xs \$500,000 per risk excess of loss coverage

- Reinsurer pays nothing

Types of Reinsurance Contracts

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Types of excess of loss contracts

Working layer

Excess of loss contracts that have relatively low attachment points (i.e., retention) and relatively small limits of liability for the reinsurer. Therefore, high frequency and low severity of losses experienced by reinsurer.

Clash covers:

Excess of loss treaties which are written on an occurrence basis, but are not exposed by any one policy issued by ceding company.

Major Technical Problems Making Loss Reserving More Difficult for Reinsurers

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Claim report lags are generally longer, especially for casualty excess losses

Due to:

1. Longer reporting pipeline
2. Under evaluation of serious claims by cedant
3. Certain kinds of mass tort claims (e.g., asbestosis) may have extreme delays

Major Technical Problems Making Loss Reserving More Difficult for Reinsurers

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Persistent upward development of most claim reserves

Due to:

1. Economic and social inflation
2. Tendency of claims people to reserve at average values
3. Tendency of claims people to under-reserve ALAE

Major Technical Problems Making Loss Reserving More Difficult for Reinsurers

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Claims reporting patterns differ greatly by reinsurers line of business, type of contract, contract terms, cedant and intermediary

Effect of this heterogeneity of reinsurance covers:

1. Difficult for law of large numbers to apply
2. Difficult to determine true exposure to loss
3. Difficult to use industry statistics
4. May have data coding and EDP system problems

Major Technical Problems Making Loss Reserving More Difficult for Reinsurers

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Report received by reinsurer may be lacking certain information

Examples of this are:

1. Most proportional covers require only summary claim information to be sent, often not even split by accident year, but only by calendar year or underwriting year.
2. Reinsurance premium by Annual Statement line is often assigned based on percentages determined at beginning of contract period based on Annual Statement distribution of subject premium.
3. Premiums and losses reported quarterly in arrears, and may not be reported until some time in the following quarter.

Major Technical Problems Making Loss Reserving More Difficult for Reinsurers

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The size of adequate loss reserves is larger for a reinsurer

Due to: All of the previously stated problems:

1. Report lag delays
2. Persistent upward development of claims reserves
3. Heterogeneity of reinsurance contracts, and therefore more uncertainty in numbers
4. Information received by reinsurer lacking information

Components of Loss Reserves

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- CSR:** (Case Reserves) May be individual case or bulk. Most excess of loss contracts require individual case reserves. Most proportional contracts have bulk reserves.
- PAR or ACR:** (Additional Case Reserves) Reinsurer's additional reserves on individual claims.
- IBNER:** (Incurred but not enough reserves) Actuarial estimate of future development on known claims (i.e., CSR & ACR).
- PURE IBNR:** (Incurred but not reported) Actuarial estimate of claims that have occurred, but are not yet known.
- RISK LOAD:** To keep reserves at conservative level, and so profits don't grow too quickly. Theoretically more important for reinsurers.

Steps to Reinsurance Loss Reserving

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Step 1: Partition reinsurance portfolio into reasonably homogeneous exposure groups

Segregation by:

1. Type of contract - Facultative, Treaty
2. Line of business - Property, Casualty; Fire, Inland Marine, General Liability, etc.
3. Type of Reinsurance Cover - Quota Share, Surplus Shares, Excess of loss, etc.
4. Layer - Primary, working layer, clash
5. Contract Terms - Flat-rated, retro-rated, sunset clauses, etc.
6. Type of cedant - Small, Large, Excess & Surplus
7. Annual Statement Line of Business
8. Intermediary

Steps to Reinsurance Loss Reserving

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Step 2: Analyze historical development patterns; if possible, case and IBNR development separately

- Compare expected development to actual development
- Scrutinize development patterns for changes in claims handling practices, significant changes in mix in business, etc.

CASUALTY LOSS RESERVE SEMINAR

As of December 31, 1993
 (Amount Arrays in Thousands of Dollars)
 Actual versus Expected
 Based on Incurred loss development
 (Direct/Assumed)

Accident Year	Incurred Loss as of 12/31/92	Loss Development Factor	Expected Incurred as of 12/31/93	Actual Incurred as of 12/31/93	Difference (actual-exp.)	% Difference
	(1)	(2)	(3)	(4)	(5)	(6)
1987	\$1,000	1.010	\$1,010	\$1,000	\$(10)	(0.990)%
1988	1,050	1.000	1,050	1,090	40	3.810
1989	1,040	1.030	1,071	1,090	19	1.774
1990	1,140	1.036	1,181	1,240	59	4.996
1991	1,050	1.080	1,134	1,230	96	8.466
1992	900	1.190	1,071	1,200	129	12.045
1993	-	1.330	-	-	-	-
Total	\$6,180		\$6,517	\$6,850	\$ 333	5.110 %

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Report: ACT_EXP; 09-17-94

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Steps to Reinsurance Loss Reserving

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Step 3: Estimate future development; if possible, analyze cases and IBNR development separately

Methods for setting reserves for Short-tailed lines of business

Examples of short-tailed lines of business:

- Treaty Property excess of loss
- Treaty Property proportional
- Facultative Property

Method 1: Set IBNR equal to some percentage of latest earned premium

Method 2: Reserve to selected loss ratio

Method 3: Use loss development factors based on historical experience

Paid losses or incurred losses, since short-tail and don't need to worry about selecting tail factors.

Cautions:

1. Catastrophe losses should be removed from data and reserve separately.
2. For proportional treaties, data reported on summary basis, reported claims by underwriting year.

Steps to Reinsurance Loss Reserving

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Step 3: Estimate future development

Methods for setting reserves for medium-tailed lines of business

Example of medium-tailed lines of business:

- Construction Risks
- Severity
- International Property

Method 1: Use loss development factors based on historical experience

Method 2: Bornhuetter-Ferguson Method

Method 3: Standard-Buhlmann Method

STEPS TO REINSURANCE LOSS RESERVING

Step 3: Estimate future development

STANDARD-BUHLMANN METHOD

Information needed:

1. Earned premium by accident year
2. Reported losses by accident year
3. Selected cumulative loss development factors (CDF)

Steps to Calculation:

1. Multiply the earned premium for each accident year by the corresponding unreported lag $(1 - 1/\text{CDF})$
2. B-F: $\text{IBNR est.} = \text{Est. Loss Ratio} \times \text{Sum of \#1}$
3. $\text{Est. Loss Ratio} = (\text{Total Reported losses plus IBNR est.}) / (\text{Total Earned Premium})$
4. Two equations (#2 and #3) and two unknowns (Est. Loss Ratio and IBNR est.) can be solved to calculate IBNR estimate.

Example:

Accident Year	Earned Premium	Reported Losses	Cumulative Loss dev. Factor (CDF)	Unreported Loss Lag $(1 - 1/\text{CDF})$
1986	3,300	2,800	1.538	35.00%
1987	2,700	2,200	2.222	55.00%
1988	2,400	1,800	3.333	70.00%
1989	2,100	1,500	5.000	80.00%
TOTAL	10,500	8,300		

$$\begin{aligned}
 \text{Equation \#2 IBNR est.} &= \text{L/R est.} \times \text{sum}(\text{premium} \times \text{unreported lag}) \\
 &= \text{L/R est.} \times [(3,300 \times .35) + (2,700 \times .55) + (2,400 \times .7) + (2,100 \times .8)] \\
 &= \text{L/R est.} \times (6,000)
 \end{aligned}$$

$$\begin{aligned}
 \text{Equation \#3 L/R est.} &= (\text{Total reported losses} + \text{IBNR est.}) / (\text{Total earned prem.}) \\
 &= (8,300 + \text{IBNR est.}) / (10,500)
 \end{aligned}$$

$$\begin{aligned}
 \text{\#2 and \#3 IBNR est.} &= (8,300 + \text{IBNR est.}) / (10,500) \times (6,000) \\
 &= \boxed{11,040}
 \end{aligned}$$

Steps to Reinsurance Loss Reserving

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Step 3: Estimate future development

Methods for setting serves for long-tailed lines of business

Examples of long-tailed lines of business:

- Treaty Casualty excess of loss
- Facultative Casualty
- Treaty Casualty Proportional

Three methods described for medium-tailed lines

Method 4: Report lag techniques

Cautions

1. May need to separate certain types of losses; e.g., asbestosis, environmental, etc.
2. Exclude commuted contracts, since development artificially cut-off.
3. May want to limit claims at certain limit to smooth experience, then add excess of limit back.

STEPS TO REINSURANCE LOSS RESERVING

Step 3: Estimate future development

REPORT LAG TECHNIQUES

Information needed:

1. Claim count triangles
2. Average severity triangles

STEPS:

1. Plot the claims for each accident year by the length of time until first reported.
2. Based on the accident year report lag pattern, project the ultimate number claims expected in the future. (Could do this judgementally or fit curve to a mathematical distribution)
3. Multiply the expected remaining claims by the average severity of known claims to get the expected amount of pure IBNR.
4. Add to #3 the development on known claims to get total pure IBNR and IBNER.

Steps to Reinsurance Loss Reserving

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Step 4: Monitoring and Testing Predictions

Test methodology by testing predictions against actual future experience.

Should monitor and test:

- claim count and severity predictions
- report emergence and claim settlements

Special Considerations in Reinsurance Reserving

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Commutations

Definition

When the reinsurer and primary company decide to end the contract, evaluate the IBNR and outstanding losses, and all remaining liabilities are returned to the primary company for an agreed upon price.

Effect on the data

Since at some point in time the loss history of this contract will artificially be cutoff, the historical loss development method will not reflect an accurate development pattern. These commuted contracts should be removed from the data before the Loss Development Method is used.

Special Considerations in Reinsurance Reserving

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Aggregate Deductibles or Limits

Definition

(Aggregate Deductible) When the ceding company must first retain a specified amount before the reinsurer will begin assuming liability. This is similar to a deductible provision in a primary policy.

Effect on the data

(Aggregate Deductible) Since losses are reported to the reinsurer will after the aggregate deductible is exhausted, this increases the report lag. These contracts should be segregated into its own group and analyzed separately.

Definition

(Aggregate Limit) The maximum sum of recoveries payable under a reinsurance agreement, as specified in the reinsurance contract.

Effect on the data

Once the aggregate limit is reached, the loss development pattern will show no further development, since the reinsurer is no longer liable for losses excess the aggregate limit. This distorts the loss development pattern. These contracts should be segregated into its own group and analyzed separately.

Special Considerations in Reinsurance Reserving

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Cancellations - Cutoff or Runoff

Definition

Contracts which are either ended prematurely, or are not renewed. Contracts can be cancelled on a runoff basis (any remaining liabilities, which are associated with the period of the policy before it was cancelled, and become known after the policy is cancelled is still the responsibility of the reinsurer) or on a cutoff basis (no further liabilities remain once the contract is cancelled)

Effect on the data

Contracts cancelled on a cutoff basis prevents any additional IBNR claims . May effect loss development factors.

Special Considerations in Reinsurance Reserving

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Sliding Scale and Profit Commissions

Definition

These are special contract provisions which adjust the amount of commission paid by the reinsurer to the ceding company based on the loss history of the contract. If the contract experience is favorable, and there are few losses, then the amount of commission paid will be increased (sliding scale) or a set percentage of the profits will be paid the the ceding company (profit commissions). If, however, the loss experience is adverse, then the amount of commission paid will be reduced (sliding scale), or no profits returned to the cedant (profit commission).

Effect on the analysis

If a significant number of these types of contracts are written, an adjustment to calculate the expected additional commission or return commissions, based on a calculation of ultimate losses, may be warranted. This will not effect the loss reserve figures, but may effect the overall funds needed by group.

Special Considerations in Reinsurance Reserving

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Financial Covers

Definition

Reinsurance whose purpose is to improve the financial appearance of the ceding company.

Effect on the data

These contracts should be removed from the data.

Special Considerations in Reinsurance Reserving

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Claims-made vs. Occurrence Covers

Definition

(Claims-made Basis) A form of reinsurance under which the date of the claim report is deemed to be the date of the loss event. Claims reported during the term of the reinsurance agreement are therefore covered, regardless of when they occurred. A claims-made agreement essentially cuts off the “tail” on the reporting of new claims.

Definition

(Occurrence Basis) A form of reinsurance under which the date of the loss event is deemed to be the date of the occurrence, regardless of when reported.

Effect on the data

Development from IBNR claims will be much greater for claims-made covers than for occurrence covers. The two types of covers should be segregated and analyzed separately.

References

- * Reinsurance, ed. Strain, Chapter 9, 12
- * Patrik, Gary, Foundations of Casualty Actuarial Science, Chapter 6
- * Reinartz, Schloss et al, Reinsurance Practices, Chapters 9,10 and 11

Any questions or comments

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Casualty Loss Reserve Seminar

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Session 2D: Reinsurance Reserving I
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Parallels to Methods of Loss Reserving

***Eugene McGovern
Swiss Re America***

Parallel #1

A friend who follows a German soccer league tells you before the season that the Hamburg Hornets are a good team and he thinks their record for the season will be 14-6 (14 wins, 6 losses; ties are avoided by penalty kicks). You respect your friend's opinion, and you have no other source of information.

After 10 games (half the season), the Hornets are 8-2. What is your prediction of the Hornets' record for the second half of the season?

- i. Loss Development: “The Hornets have played half the games, so I think they probably have half the wins and half the losses they will have for the whole season. I think they will be 16-4 for the whole season, so I think they will be 8-2 for the second half.”
- ii. Loss Ratio: “I still think they will be 14-6 for the whole season, so I think they will be 6-4 for the second half.”
- iii. Bornhuetter-Ferguson: “Before the season began, the prediction was that the Hornets would win 70% (14 of 20) of their games. I ignore their record for the first half, and predict they will win 70% (7 of 10) in the second half. So I think they will be 7-3 for the rest of the season.”

	Actual Performance In 1st Half	Prediction of Performance In 2nd Half	New Prediction of Performance for Whole Season
Loss Development	8-2	8-2	16-4
Loss Ratio	8-2	6-4	14-6
Bornhuetter-Ferguson	8-2	7-3	15-5

Parallel #2

In October, the Weather Bureau tells you that the most likely amount of snow in NYC is:

- a. none before December or after March;
- b. 4" for December;
- c. 20" for the whole winter.

By 12-31-94, a total of 3" of snow has fallen. What is your prediction for the amount of snow for the rest of the winter?

- i. Loss Development: "The Weather Bureau said the whole winter will have 5 times as much snow as December. Since December had 3", I think the whole winter will have 15". So my estimate is that January, February and March will have 12" of snow."
- ii. Loss Ratio: "I still think we will get 20" for the whole winter, so I think we will get 17" in January, February and March."
- iii. Bornhuetter-Ferguson: "The original prediction was for 16" in January, February and March. I ignore the snow in December, and predict 16" for January, February and March."

	Actual Snowfall In December	Prediction of Snowfall In Jan., Feb. & March	New Prediction of Snowfall In Whole Winter
Loss Development	3"	12"	15"
Loss Ratio	3"	17"	20"
Bornhuetter-Ferguson	3"	16"	19"

Calculating 12-95 IBNR via Loss Development

30-Aug-95	[1]	[2]	[3]=[1]*[2]	[4]=[3]-[1]
Accident Year	Reported Losses @12-95	ATU LDF	Estimated Ultimate Losses	Loss Dev IBNR @12-95
1990	1,131	1.000	1,131	0
1991	778	1.050	816	39
1992	1,386	1.120	1,552	166
1993	1,867	1.650	3,081	1,214
1994	319	2.550	813	494
1995	0	3.600	0	0
Total, 1990-95:	5,481		7,394	1,913

Glossary:

"Risk" Earned Premium =

= Earned Premium - External Expenses

= EP - Commissions - Brokerage

"ATU LDF" =

= Age-to-Ultimate Loss Development Factor

<==a weakness of Loss Development Method

Calculating 12-95 IBNR via Loss Ratio

Risk Earned Premium and Expected Loss Ratios are needed. Obtaining the ELR is a problem here and in the B-F Method.

	[5]	[6]	[7]=[5]*[6]	[8]	[9]=[7]-[8]
Accident Year	Risk Earned Premium @12-95	Expected Loss Ratio	Estimated Ultimate Losses	Reported Losses @12-95	Loss Ratio IBNR @12-95
1990	1,100	110%	1,210	1,131	79
1991	1,200	95%	1,140	778	362
1992	1,400	101%	1,414	1,386	28
1993	1,700	98%	1,666	1,867	(201)
1994	1,500	105%	1,575	319	1,256
1995	900	97%	873	0	873
Total, 1990-95:	7,800		7,878	5,481	2,397

<==a weakness of Loss Ratio Method

Calculating 12-95 IBNR via Bornhuetter-Ferguson

Note that the B-F Method ignores the losses already reported.

	[10]	[11]	[12]=[10]*[11]	[13]	[14]=1 / [13]	[15]=1-[14]	[16]=[12]*[15]
Accident Year	Risk Earned Premium @12-95	Expected Loss Ratio	Estimated Ultimate Losses	ATU LDF	% of Estimd Ultimate Losses... already reported @12-95	% of Estimd Ultimate Losses... not yet reported @12-95	BF IBNR \$ of Ultimate Losses to be Reported after 12-95 (= IBNR @12-95)
1990	1,100	110%	1,210	1.000	100.0%	0.0%	0
1991	1,200	95%	1,140	1.050	95.2%	4.8%	54
1992	1,400	101%	1,414	1.120	89.3%	10.7%	152
1993	1,700	98%	1,666	1.650	60.6%	39.4%	656
1994	1,500	105%	1,575	2.550	39.2%	60.8%	957
1995	900	97%	873	3.600	27.8%	72.2%	631
Total, 1990-95:	7,800		7,878				2,450

Note: Algebra will show that, for each Accident Year, the BF IBNR is a weighted average of the Loss Development IBNR and the Loss Ratio IBNR, with the LD IBNR receiving weight equal to $1/(\text{ATU LDF})$ and the LR IBNR receiving the complement.

These weights are non-negative, so the BF IBNR is necessarily between the LD IBNR and the LR IBNR for each Accident Year. But for all Accident Years combined the BF IBNR can be larger (or smaller) than both the LD IBNR and the LR IBNR.

Parallel #3:

In a nationwide election with 3 candidates, it is possible for a particular candidate to place 2nd in each of the 50 states and yet, when the 50 states are combined, for that candidate to place 1st (or 3rd).

Determining the Expected Loss Ratio: the “Cape Cod” Method

	[1]	[2]	[3] = [1] * [2]	[4]
Accident Year	Risk Earned Premium	1/(ATU LDF)	“Used-Up” REP	Reported Losses
1990	\$1,100	100.0%	\$1,100	\$1,131
1991	1,200	95.2%	\$1,142	\$ 778
1992	1,400	89.3%	\$1,250	\$1,386
1993	1,700	60.6%	\$1,030	\$1,867
1994	1,500	39.2%	\$ 588	\$ 319
1995	900	27.8%	\$ 250	\$ 0
Total	\$7,800		\$5,360	\$5,481

$$\text{Cape Cod Loss Ratio} = \Sigma \text{Reported Losses} / \Sigma \text{“Used-Up” REP} \\ = \$5,481 / \$5,360 = 103\%.$$

“Cape Cod”: This method of determining the ratio needed in the B-F calculation receives its name from the site of an *Ecole d’été* devoted to reinsurance reserving that was conducted in August 1983. Attending were 33 actuaries from 12 countries; presentations were by Messrs Bühlmann, Straub, Bichsel, Dubey, Grünig.

A Refinement in the Cape Cod Method: Recognize Changes in Rate Adequacy by Accident Year

	[5]	[6]	[7] = [5] / [6]
Accident Year	Initial CCLR	Relative Rate Adequacy	Expected Loss Ratio
1990	103%	.94	110%
1991	103%	1.08	95%
1992	103%	1.02	101%
1993	103%	1.05	98%
1994	103%	.98	105%
1995	103%	1.06	97%

A further refinement, omitted here: adjust [7] so that the ELR, together with the REP in [1], produce 103% for Accident Years 1990-95 combined.

Strengths and Weaknesses of the Three Methods

Method	Strength of the Method	Weakness of the Method
Loss Development	The LDFs give a summary of the way relevant (?) experience has developed in the past.	The method gives a large role to randomness in reporting losses: 1. Faster reporting results in higher IBNR. 2. Delayed reporting results in lower IBNR Note that both results are the opposite of what we would like when we have a reporting pattern different from the expected reporting pattern.
Loss Ratio	Oddities in the reporting of losses have no effect on the Estimated Ultimate Loss.	Selecting the Expected Loss Ratio is difficult and arbitrary. Wishful thinking is often a temptation.
Bornhuetter-Ferguson	The LDFs summarize what past relevant (?) experience can tell us of the development we can expect in the future.	Selecting the ELR is difficult: 1. Who does the "Expecting"? 2. When an ELR is determined for an Acc Yr, does it remain unchanged in the future?
	Losses already reported have no effect on the IBNR	Losses already reported have no effect on the IBNR

Taking Advantage of the Strengths of Each Method:

Example: calculating IBNR by Accident Year at 12-31-95

Accident Year	Accuracy of Loss Development Method	Accuracy of Loss Ratio Method	Accuracy of Bornhuetter Ferguson Method	Weight Given to Loss Development	Weight Given to Bornhuetter Ferguson
1990	best	poor	fair	100%	0%
1991	best	poor	fair	80%	20%
1992	good	poor	good	60%	40%
1993	good	poor	good	35%	65%
1994	fair	fair	best	15%	85%
1995	poor	fair	best	0%	100%

Accident Year	[1] IBNR via Loss Development	[2] IBNR via Bornhuetter Ferguson	[3] Weight Given to Loss Development	[4] Weight Given to Bornhuetter Ferguson	[5] = [1]*[3]+[2]*[4] IBNR via Combining LD and BF
1990	0	0	100%	0%	0
1991	39	54	80%	20%	42
1992	166	152	60%	40%	160
1993	1,214	656	35%	65%	851
1994	494	957	15%	85%	888
1995	0	631	0%	100%	631
1990-1995:	1,913	2,450			2,572

For each Accident Year, the entry in [5] is the weighted average of the entry in [1] and the entry in [2]. As a result, the entry in [5] is necessarily between the entry in [1] and the entry in [2]. Nevertheless, the sum of [5] need not be between the sum of [1] and the sum of [2].

Some Terminology

1. Synonyms: Seven ways of saying the same thing:

1. "Casualty needs more IBNR than Property."
2. "Casualty has a longer tail than Property."
3. "Casualty has a longer lag than Property."
4. "Casualty is reported more slowly than Property."
5. "Casualty takes longer to develop than Property."
6. "Casualty takes longer to emerge than Property."
7. "Casualty matures more slowly than Property."

2. "Years"

	Used by Primary Companies?	Used by Reinsurers?
Calendar Year	yes	yes
Accident Year	yes	yes
Policy Year	yes	no
Underwriting Year	no	yes
Report Year	yes	yes

Note: Calendar Year 1995 is the name of the period of time that began on January 1, 1995 and will end on December 31, 1995. Accident Year 1995, Policy Year 1995, Underwriting Year 1995, and Report Year 1995 are not the names of periods of time. They are not the names of anything. They are not nouns, they are adjectives, and they modify nouns. (**Parallel #4:** In astronomy, a *light year* is a measure of *distance*, not a measure of *time*.) For example, a reinsurer will say that a certain claim is an "Underwriting Year 1994 claim" if (and only if) the claim is covered by a treaty that had its effective date (or renewal date) sometime in 1994.

Some Terminology (continued)

Suppose:

- i. a treaty is effective 12/1/92 and provides coverage on a "policies incepting" basis (rather than on the more common "losses occurring" basis;
- ii. a private passenger policy is effective 11/1/93 and is covered by the treaty;
- iii. an accident happens on 10/15/94 and gives rise to a claim covered by the primary policy;
- iv. the insured reports the claim to the primary company on 2/1/95;
- v. the primary company reports the claim to the reinsurer on 7/1/96.

Then this claim is:

- i. an Underwriting Year 1992 claim for the reinsurer;
- ii. a Policy Year 1993 claim for the primary company;
- iii. an Accident Year 1994 claim for both the primary company and the reinsurer;
- iv. a Report Year 1995 claim for the primary company and a Report Year 1996 claim for the reinsurer.

Rules of Thumb

Other things being equal, ... :

1. Raising the attachment point lengthens the tail.
200 xs 100 develops more slowly than 200 xs 50
2. Raising the reinsurer's limit increases the IBNR.
400 xs 100 needs more IBNR than 200 xs 100
3. Claims-made develops faster than occurrence.
*"claims-made to the primary" is familiar and routine,
but "claims-made to the reinsurer" is rare.*
4. Auto Liability develops faster than General Liability or WC.
5. Facultative develops about the same as treaty.
6. The longest development period is for Workers Comp Paid Losses.
7. Proportional reinsurance develops like total limits primary insurance, with perhaps an additional 3 months of pipeline delay.
8. Excess reinsurance and total limits primary insurance reach full maturity at the same time, but the development factors are much larger for excess reinsurance than they are for total limits primary insurance.