REINSURANCE PRICING FOR THE NEW TRANSITIONAL CLAIMS-MADE GL PRODUCT

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Biographical Sketch

Mr. Asch is currently Vice President and Actuary for SCOR Reinsurance Company with responsibility for both Loss Reserving and pricing. Mr. Asch holds a 1971 BS Degree from Columbia University and a 1973 MBA from Tulane.

From 1973-1979 he held a variety of actuarial positions with CG/Aetna (CIGNA). From 1979-1982 he was Center Pricing Officer for Sentry Insurance Group. From 1982-1984 he was Vice President - Worldwide Casualty Underwriting for AFIA Worldwide Insurance.

Abstract

The losses that impact Casualty Excess of Loss Reinsurers are far different in nature and size than the losses that confront primary companies.

The new claims-made ISO GL policy forces new data requirements for accurate pricing of these new covers. Data is sparse and difficult to obtain. This is particularly true for reinsurers who cannot directly control their ceding company's data base.

An analysis was performed on the 329 individual reinsurance claims in this sample whose average individual loss size was $1.1 million.

These results are compared to the results ISO obtained from average primary claims experience.

The Marker-Mohl Backward Recursive method was applied to develop ultimate estimated losses by report lag subset.

Surprising results are obtained that may allow reinsurers to avoid seriously under pricing reinsurance for these new products in their first years of existence.

Some observations are also made about accurately assessing levels of exposure in pricing risks under a claims-made system, as well as discussion of what exposures would be covered in varying situations.

Effective January 1, 1986, ISO plans to introduce an updated edition of its standard CGL policy. It will introduce a claims-made coverage option for all insureds as well as the traditional coverage form based on the date of loss occurrence.

The purpose of this paper is to discuss several important transitional pricing implications for those firms that reinsure the new claims-made coverage option on an excess-of-loss basis. It is assumed throughout this paper that the reader is familiar with standard actuarial pricing techniques covered thoroughly elsewhere.

THE PROPOSED CLAIMS MADE FORM

The new coverage option covers the insured against the ultimate losses arising out of written claims for damages first made during the policy period, no matter when losses occur.

This paper concerns pricing procedures and quirks during the transition from an "occurrence-year" coverage to a "claims-made" coverage system.

A retroactive date limits coverage under a claims-made policy to occurrences only after that retroactive date. When the insured has had occurrence-year coverage previously, the retroactive date can be set to the policy inception date. All "prior acts" have been covered by previous policies.

There also can be an option for purchasing an Extended Reporting Period Endorsement or "Tail Coverage" with any new claims-made form.

The extended reporting option deems losses reported after the policy expiration date to still be covered by the earlier claims-made policy. The following chart may help illustrate the differences between the two forms in the initial transition years since it is valuable to easily examine exactly which exposures are actually covered under various possible permutations of claims-made coverage, retroactive dates and extended reporting periods. For ease of discussion, we assume here that all losses are reported after only two years. In practice, there are a potentially infinite number of "rows" corresponding to various loss reporting lags. Let us define this type of array as a Loss Reporting Matrix. Each row of this matrix corresponds to losses associated with a particular claim reporting time lag. Henceforth, we will refer to them as "lag n" losses. The first year of transitional pricing will only involve "lag 0" losses. The second year involves "lag 0" and "lag 1" only. This is a new dimension that comes with a claims-made policy.

	DATE OF LOSS OCCURRENCE				
CLAIM REPORTING TIME LAG	1984	1985	1986	1987	1988
0	A	B	C	D	E
1	F	G	H	I	J
2	K	L	M	N	O

POLICY COVERAGE	EXPOSURES COVERED
A. A claims-made overage for 1986 with a 1/1/86 retroactive date and no extended reporting period	C
A. With 1/1/85 Retroactive date	C + G
A. With 1/1/84 retroactive date	C + G + K
A. With extended reporting until 12/31/87	C + H
A. With extended reporting until 12/31/88	C + H + M
A. With extended reporting until 12/31/88 and A 1/1/84 retroactive date	C + H + M + G + K + L
A traditional 1986 occ. yr. policy	C + H + M

1988 claims-made policy	E + I + M
1988 occurrence policy	E + J + O
1988 claims made policy with unlimited extended reporting option and 1/1/86 retroactive date	E + I + M + J + O + N

The mature 1988 claims-made policy contains pieces that would have been covered by 1986 (M) and 1987 (I) and 1988 (E) occurrence basis policies at varying limits of liability and levels of exposure. All this is incorporated into the 1988 mature claims-made coverage. Note that each individual cell will vary with respect to average severity and its unique Loss Emergence Pattern. Generally, the later reported claims are larger and more complex. With the extended reporting option, a claims-made policy could cover far more exposures than an occurrence policy for the same year.

THE TRANSITIONAL PRICING PROBLEM

What percentage of the prior occurrence year premium should be charged for the claims-made option during each year of the initial transition period? That is perhaps the central question this study addresses. Each column of our Loss Reporting Matrix represents 100% of the former occurrence basis pure premium. We assume that no extended reporting period is being priced. That should be handled elsewhere. We also assume that if a risk begins the transition from an occurrence coverage to a claims-made coverage on January 1, 1986, then the retroactive date for the claims-made policy series will always be January 1, 1986. These are reasonable assumptions.

For the first year of claims-made coverage, the pure premium should only cover losses which occurred in 1986 and were reported in 1986. We will name these losses "lag 0" losses since the claim reporting lag is zero years. Also we define the former 100% occurrence basis pure premium as follows:

$$\text{OccPP} = \sum_{\forall i} \text{lag } i \text{ ultimate pure premium}$$

Then, in all cases, the first year transitional fraction (or pure premium incremental multiplier) to be charged is clearly: T(1) = (lag 0 ultimate pure prem)/OccPP.

For any lag n, therefore, the transitional claims-made multiplier (Tn) is defined as ($\sum_{i=1}^{n}$ lag i ult pure prem)/OccPP, or $\sum_{i=1}^{n} T(i)$.

OccPP clearly can always be alternatively expressed as 100%.

As more years transpire under a claims-made system, the fraction that is appropriate will increase. We can visualize this as more and more loss reporting lag "rows" within our Loss Reporting Matrix being exposed. The longer the loss reporting lag for the covered portfolio, the lower the initial transitional pure premium multipliers. Reinsurance portfolios evidence different characteristics than primary portfolios. A special type of loss data base is necessary to evaluate these transitional claims-made multipliers.

THE DATA PROBLEM

Industry and company statistics have historically been kept on an accident year basis. This is perfectly appropriate for occurrence based policies. Statutory Reporting also has stressed accident year loss development. Nowhere has there been an organized statistical data base congenial to the claims-made form or the transaction period between an occurrence based policy and a claims-made policy.

What we are saying is totally invisible in this data is the distribution between pure IBNR losses on late reported claims (IBNYR) and changes in the claims values related to known claims already reported (IBNER).

This additional dimension is absolutely crucial for accurate pricing of the claims made coverage in its first few years of existence.

This is precisely the dimension that is missing from the standard ISO, BESTS, NAII, RAA or Annual Statement data bases. These data bases track incurred losses by accident year as they are reported and later settled. There is currently no way to extract any data by reporting lag subset from any of these sources.

A concrete example should illustrate the point. Let us postulate a simple liability product with a uniform three year ultimate life span (or tail) for loss development. Data for this line in the traditional format is readily available.

TYPICAL YEAR OF OCCURRENCE	CUM. INCURRED LOSSES AS OF: 1980	1981	1982	Ult.
1980	1/3	2/3	1	1

Let us heroically assume that we know in advance how the loss development for this line ultimately distributes itself. We are starting the transition to claims-made system from an occurrence system.

The following chart shows a view of the coverage from an accident year perspective. One third of the ultimate incurred losses for this occurrence policy emerges in each of its three years of loss development. In reality, we never know in advance precisely what this pattern will be.

The columns to the right of the solid line analyze these losses from one year's occurrences by report lag. The first calendar year's one-third emergence relates completely to losses with no loss reporting lag by definition. The second calendar year's one third of the occurrence years ultimate losses relates 50% to late case loss reserve developments on claims immediately reported, and 50% to losses first reported with a one year loss reporting lag. We call the second subset lag 1 losses.

We see clearly here that any and all traditional accident year industry standard loss development data is of very little value in establishing the proper fraction of "occurrence coverage" rates to charge for transitional claims-made coverage.

The proper incremental allocation, in retrospect, would be 1/2 for the first year claims made policy, 1/3 for the second year and 1/6 for the third year. The traditional data bases may have indicated to the casual analyst that the three years should each have been charged one-third.

TRADITIONAL ACC. YEAR I.L. AFTER N YEARS DEVELOPMENT	LOSS COST % OF ULT. ACC. YEAR LOSSES	ULTIMATE AMOUNT RELATED TO REPORTING LAG YEARS			
		LAG YR 0		LAG YR 1	LAG YR 2
0	1/3	1/3			
1	1/3	1/6	+	1/6	
2	1/3			1/6	1/6
TOTALS	1	1/2		1/3	1/6

This short exercise tells us that for the first year transitional claims-made pricing, naive use of traditional data and analysis might lead you to feel a rate of 1/3 is adequate when actually 1/2 should be used. It also could lead people to naively analyze results one year after implementation and feel 1/3 was an adequate rate, when actually 1/2 is the needed rate. If only the exercise were that simple.

Let us create another Loss Reporting Matrix:

CLAIM REPORTING TIME LAG	LOSS OCCURRENCE DATES 1980	1981	1982	1983
0	A	B	C	D
1	E	F	G	H
2	I	J	K	L

We have assumed throughout that initial case claim reserves turn out to be exactly correct. Debate rages, but the general consensus is that the industry is 10% or more under-reserved. If you are under-reserved, it will be easy to feel you are profitable in this environment when you easily may not be.

Each entry on the above Loss Reporting Matrix represents initial losses. These amounts are not ultimate or static. Each cell of the matrix will have a loss development pattern of its own, which I will label a Loss Emergence Pattern.

(ie) Incurred Losses for Cell A as of:	1980	1981	1982	1983	1984	"Ultimate"
	70	70	70	70	100	100

There appeared no more intuitively appealing way to describe this three-dimensional phenomenon to me.

Let us assume that initial incurred loss estimates are 3/7 inadequate.

At the end of calendar year 0 our intrepid insurer does not see the ultimate 1/2 in losses or even the ultimate 1/3 related to matrix element A. One half would be precisely the appropriate percentage multiplier for the first year transitional claims-made coverage. He sees only (.333) (.7) = .2331 in losses. He has charged a rate of .33330 times the prior occurrence rate for the cover. He has "claims-made coverage". He believes he has no IBNR at all. Instead of feeling that his first year transitional rates were only (.50/.33) = 2/3 of being adequate, he feels they were redundant by .333/.2331 = 43%. There will be firms who will behave in this manner. Depending upon the level of inadequacy of their case reserves, and the time they take to develop, they may live in a fool's paradise for some time. This may be particularly true for certain excess-of-loss reinsurers in the coming transitional environment.

Next we will be dealing with hard actual data as opposed to the theoretical data we have used thusfar. We hope to introduce a dose of caution here to those who are naive enough to believe that the claims-made form will eliminate all concerns about adverse and unanticipated late loss development or IBNR for them after January 1, 1986.

A "REAL WORLD" EXAMPLE

The statistics shown in Exhibit 7 are drawn from a large, homogenous, mature claims-made program. Although we do not have statistics in occurrence date by report date detail, the nature of the exposures (building collapses, water damage, tiles falling, etc...) intrinsically keeps the lag time between date of loss occurrence and date of first claims notice minimal. The program was handled continuously by the same association - broker - underwriting company combination for many years prior to our observation of its loss experience. It has had a large and stable individual risk population. It is included here for emphasis. Let all primary and reinsurance firms note the serious incurred loss deterioration over 18 calendar months on a a series of old claims-made underwriting years. All those who feel "claims-made" has solved all their "IBNR" problems for GL business need to study this Exhibit more closely. The claims-made program will do nothing to mitigate late development of losses on old policy years arising from individual, case-basis, claim under-reserving.

This data shows how a mature claims-made program can still develop major increases in incurred losses many years after a claims made policy expires.

THE ISO APPROACH TO TRANSITIONAL CLAIMS MADE MULTIPLIERS

As stated before, no appropriate industry data base exists for claims-made pricing. ISO has done an excellent job of using limited data to estimate these percentages. ISO made one standard industrywide assumption regarding case claims reserve adequacy. They assumed that current case reserves turn out ultimately to be exactly correct. Later, I will have much to say regarding the sensitivity of rate adequacy to case claim reserve adequacy in this new environment. Their approach is described fully in ISO Circular GL-85-64. That is the ISO data continually referred to in the next section.(1)

A firm should not attempt to independently price these transitional covers unless it has access to a large data base of homogenous risks and is willing to commit a great deal of time and effort to this analysis.

After having said this, there probably will be instances where firms feel the industry average factors are not appropriate for their use.

A reinsurer in particular often faces a far different loss exposure profile than a primary company. The reinsurer also does not have direct control of his ceding company's claims handling, coding and reinsurance loss reporting systems. For these reasons, I felt it would be valuable to assemble the appropriate data base from a sample of GL excess-of-loss treaty submissions. After reviewing over 100 casualty treaty submissions, only four treaties contained the detailed individual claim data to perform the analysis I desired to make. This requires a data base of large GL claims where occurrence year and report year are available in individual claims detail. Also available is the gradual case reserve loss development in individual claim detail. This type of data was unavailable to ISO on any industrywide basis also.

Please remember this sample is heavily biased toward the very large claims a reinsurer will face. This should be interesting since experience tells us that these claims should take longer to report and to settle, on average, than normal primary claims.

A SAMPLE OF REINSURANCE DATA

The data base contains 329 individual GL claims from four large primary company's treaty submissions. In light of the extreme difficulty in assembling this sort of large loss data, credibility issues have been ignored. When trended to a common date of 1986, these claims have an average severity of $3.016 million each. Exhibit 1 gives some pertinent statistics relating to the sample.

My first objective was to duplicate, as closely as possible, the ISO Methodology to compare immature claims-made transitional "year-in-program" factors. My decision was to use the Products subline for comparison purposes since most of these reinsurance claims were products claims and products liability most closely resembles the "long-tail" large-loss reinsurance data base we are working with.

Therefore, the same annual trend factors ISO used for products were used to trend the losses in Exhibit 1 to a 1986 Calendar level. At this point, the same assumption that ISO made about subsequent case claims development is made for this sample: all case reserve estimates are exactly correct. More will be said and exhibited later regarding this point.

Exhibit 2 presents the pure premium multipliers from the reinsurance data base and the ISO products liability pure premium multipliers. No adjustments to gross rates for expenses are made since expense provisions can vary widely between reinsurers and primary firms. Neither was there any adjustment for any prior acts coverage. This allows for a simple and direct comparison.

Both Exhibits 1 and 2 contained a large number of surprises to me versus my intuitive a priori expectations. It was shocking to find that consistently derived pure premium multipliers for massive reinsurance claims were so very close to those for primary products-liability business. My expectations included both lots of reinsurance claims with very large reporting lags and 10% or 15% indicated first year pure premium multipliers. The data shattered both these intuitive assumptions. The reinsurer who believes that he writes only "long-tail" business, and therefore can heavily discount the initial ISO immature claims-made multipliers profitably, is probably going to receive a very expensive surprise. The intuitive belief that larger claims tend to be reported later is somewhat borne out by this data sample. It would seemingly break severity into subsets of lag 0 to lag 2 and "all others".

My initial expectation was that large reinsurance losses would show serious case reserve inadequacies over time. Although the new claims-made program does eliminate true late-reported IBNR, the lingering uncertainty surrounding errors in case claim reserve estimates remains.

The case reserve margins might also show different patterns between the various reporting lag subsets. Exhibit 4 displays the data over the longer loss development time horizon reinsurers must concern themselves with. To give a feeling for loss development, all final reserve estimates per claim are carried forward to the final evaluation point in the study. We show lag 0 subsequent case loss development out to a maximum of 15 years. It is amazing to see that, assuming outstanding case reserves are accurate, the case development to date on these massive claims has approached its "ultimate" 15 year value after only 5 years for lag 0. There are no obvious and massive case reserve deteriorations as we have seen in Exhibit 7. Exhibit 5 shows the percentage of assumed "ultimate" incurred losses that have emerged after each year of development. It is surprising to see the consistency of these patterns between the various lag subsets for lag 0 to lag 4. The patterns in higher lags are erratic due to the very small sample sizes involved.

The foregoing would lead one to believe that a firm could quickly predict its ultimate liabilities in a claims-made environment. The crucial assumption still being that the last set of case claim reserve estimates is perfectly accurate.

DEALING WITH POTENTIAL CASE RESERVE INACCURACIES

Up to this point, both ISO and this study have assumed that all case claim reserve estimates are final and perfectly adequate. This assumption needs to be emphasized and tested. It was for this reason that we insisted that every claim in this data base show annual updates of all case reserves as long as they remained outstanding.

At this point it was decided to test that assumption using techniques published by Marker & Mohl.(2) Factors for future case reserve development are applied only to the outstanding reserve portion of losses at each step of development. Using this sample, one large loss or some strange late development is always possible. My approach was to develop Marker-Mohl factors separately for each lag using a subset of already closed claims within that lag. This avoids any assumption being made about future loss development. Then these factors would be applied to all the loss data to predict ultimate losses. The method would yield perfectly stable ultimate loss projections from year 1 to the final year for the closed claims subset. To use them on data partially containing that data subset is to bias your result toward accurate ultimate loss projections from the first year.

The author realizes the many valid objections actuaries have raised to the use of closed claims data for performing IBNR studies. It was felt that, if ultimate losses could be early and accurately predicted, even with a flawed methodology, then the argument that claims-made reinsurance IBNR in a new claims-made environment is virtually zero would be very strong indeed.

The author could not think of any other satisfying test that did not somehow involve assuming your final ultimate incurred loss level. That would not be a test of any practical value to me.

Exhibit 6 shows the various Marker-Mohl ultimate estimates by lag subset as they develop. Another surprise was delivered. After all the above transpired my expectation was a very narrow range of ultimate forecasts forced by the data subset the factors were based on. What we find is the potential for ultimate loss estimates that are both too high and too low by wide margins. That is with the benefit of factors derived from the actual final development of a large subset of each data component. There are three possible explanations:

1. Reinsurance, casualty, excess-of-loss, loss development is simply too unstable to accurately predict.

2. The concept of using closed-claims data here is flawed, so the experiment fails.

3. Credibility issues.

Any and all of the above explanations may well apply.

However, we have, for this sample of data, tended to disprove the allegation that ultimate loss costs can be early and easily predicted in a claims-made environment.

SOME COMMENTS ON EVALUATING EXPOSURE LEVELS

$$\frac{1988}{400}$$

In the past, this was sufficient information to establish the level of exposure units to price a 1988 occurrence year coverage for most subclasses of GL. We realize that products liability exposures levels also bear a relationship to all past year exposures, where the product is still being used. In the coming mature claims-made environment, you will need much more information. You will need to know how many years of reporting lags are associated with this risk and the distribution of ultimate incurred losses by all elements in a loss emergence matrix.

Let us assume a simple 3 year loss pattern with ultimate losses distributed 50% to the first lag year, 30% to the second, and 20% to the third. Let us now compare the true exposure level for a 1988 mature claims-made policy in a growth mode versus a shrinkage mode.

	1986	1987	1988	1988 MATURE CLAIMS-MADE EXPOSURES
GROWTH MODE	200	300	400	200 + 90 + 40 = 330
SHRINKAGE MODE	600	500	400	200 + 150 + 120 = 470

	1988 CLAIMS-MADE POLICY GROWTH MODE	1988 OCCURRENCE POLICY	1988 CLAIMS-MADE POLICY SHRINKAGE MODE
1988 EXPOSURE LEVEL	330	400	470

Note that true exposure levels would always be higher in the shrinkage mode than the growth mode under a claims-made system. This is a pricing variable that will be important and can easily be underestimated. This variable clearly is sensitive to the historic rate of exposure growth or shrinkage as it relates to the loss reporting emergence pattern of the risk.

We can now see why the issue of extended reporting periods and E + O Coverage extensions for retired professionals have always been difficult problems for a claims-made insurance coverage system.

SUMMARY

The following are the key points that I have tried to emphasize:

1. All common historical industry data bases do not prepare any firm to price properly claims-made coverage neither do they guide you to assess properly the calendar year results arising from the early years of the transition to claims-made coverage from occurrence coverage.

2. The data-base that is crucial is a combination of the Loss Reporting Matrix and Loss Emergence Pattern described in this paper.

3. The IBNR exposure under a claims-made system totally excludes the true IBNR associated with late reported claims. You still are exposed to loss reserve developments. The practices of your own claims department here are paramount. An example shows how very major late loss development is possible in some situations.

4. A sample of very large historic GL claims does not show the expected greater loss-reporting lag than small claims exhibit.

Surprisingly, there is little evidence in this sample to support the belief that larger claims exhibit greater "late" loss development. Also, the comparison of ISO and Reinsurance sample immature pure premium multipliers showed small differences only.

5. When pricing mature or traditional claims-made covers, the calculation of the risks level of exposure will not be trivial. It theoretically is the historic number of calendar exposure units weighted by ultimate losses distributed by report lag periods or $\sum_{\forall i} \left[P(i) \text{ times } E(x-i) \right]$ where P(i) is the proportion of all ultimate losses with report lag i and E(x-i) is defined as the exposure level in Year x-i where we are pricing the risk for Calendar Year x. This is the solution to the problem as raised in the Marker and Mohl article.(2)

6. With differing retroactive dates and extended reporting periods available, the scope of coverage for a particular risks claims-made coverage can vary widely.

7. There are many non-trivial issues raised on retroactive date choices in later renewals when an insured may change carriers.

I realize more questions have been raised than answered. This topic needs a great deal of study and discussion in light of its easily growing importance to the entire industry. Hopefully, those facing new issues like these will not rely totally on intuition and assumption. There is merit to assembling a data base appropriate for your use, when possible, and testing any assumptions you may have.

Please remember that this study is restricted to only one sample of data. If anyone has another similar data base, the author would be pleased to compare evidence. To the author's knowledge, there is no data base of this kind in existence at the present time. If claims-made becomes a major CGL policy form, perhaps such a data base will become necessary on an industrywide basis.

EXHIBIT 1

Summary of Reinsurance Claims Data

Category	Number of Claims	($000) Total Loss* Values Trended To 1986	($000) Average Trended Size of Loss	Percentage Lag Factors
Lag 0	133	$310,453	$2334	31.3%
Lag 1	82	$192,444	$2347	19.4%
Lag 2	40	$101,085	$2527	10.2%
Lag 3	29	$118,836	$4098	12.0%
Lag 4	13	$ 67,525	$5194	6.8%
Lag 5	12	$ 87,747	$7312	8.5%
Lag 6	4	$ 18,217	$4554	1.8%
Lag 7	8	$ 41,296	$5162	4.1%
Lag 8	4	$ 34,247	$8562	3.4%
Lag 9	3	$ 18,831	$6277	1.9%
Lag 11	1	$ 4,650	$4650	0.5%
TOTAL	329	$995,331	$3025	100%

*The same 11% annual trend that ISO used for pricing its Products - Claims-Made Pure Premium multipliers is used here.

EXHIBIT 2

	Sample Reinsurance Data Lag Factor	11% Annual Trend Adjustment	Adjusted Lag Factor
Lag 0	.313	1.00	.313
Lag 1	.194	.901	.175
Lag 2	.102	.812	.083
Lag 3	.120	.732	.088
Lag 4	.068	.660	.045
Lag 5	.085	.595	.051
Lag 6	.018	.537	.010
Lag 7 & Rmdr	.100	.484	.048

YEAR-IN-PROGRAM

Adjusted	1st	2nd	3rd	4th	5th	6th	7th	Mature
Lag 0	.313	.313	.313	.313	.313	.313	.313	.313
1		.175	.175	.175	.175	.175	.175	.175
2			.083	.083	.083	.083	.083	.083
3				.088	.088	.088	.088	.088
4					.045	.045	.045	.045
5						.051	.051	.051
6							.010	.010
7								.048
SUM	.313	.488	.571	.659	.704	.755	.765	.813

EXHIBIT 3

Comparison of Pure Premium Multipliers For Transitional Claims-Made Pricing

CLAIMS-MADE Year-In-Program	REINSURANCE Data Sample	Multipliers For ISO Primary Products Liability
1	.313	.442
2	.488	.574
3	.571	.671
4	.659	.723
5	.704	.756
6	.755	.780
7	.765	.794
Mature	.813	.844

EXHIBIT 4

Untrended Incurred Loss Development by Report Lag Subset

Incurred Losses as of	($000) Lag 0	Lag 1	Lag 2	Lag 3	Lag 4	Lag 5	Lag 6	Lag 7
1 YR	$71,890	44,407	20,096	38,849	10,898	16,691	2921	9347
2 YR	99,623	53,202	28,702	41,023	11,785	17,102	4253	7893
3 YR	117,523	53,874	30,061	42,122	14,712	17,611	4137	5806
4 YR	127,274	59,936	32,109	44,763	14,951	18,212	2822	6824
5 YR	133,066	61,110	33,999	48,134	14,994	16,286	2883	8324
6 YR	133,761	61,876	34,841	48,089	14,997	17,049	3097	8475
7 YR	138,368	61,318	36,157	48,227	14,997	19,514	3097	8475
8 YR	138,440	61,703	36,118	48,944	16,435	15,260	3209	8493
9 YR	139,380	62,135	36,186	50,121	17,649	-	1950	-
10 YR	139,129	71,529	36,221	49,759	17,963	-	-	-
11 YR	139,366	-	-	-	-	-	-	-
12 YR	139,366	-	-	-	-	-	-	-
13 YR	138,705	-	-	-	-	-	-	-
14 YR	136,860	-	-	-	-	-	-	-
15 YR	136,860	-	-	-	-	-	-	-

There is no need to apply trend to analyze loss development within each lag subset since each subset has one constant and unique average accident date. (The Last Case Reserve estimate is assumed to be perfectly accurate and is always carried forward)

EXHIBIT 5

Untrended Insured Loss as a Percentage of Mature Incurred Loss Levels

Incurred Losses as of	% Lag 0	% Lag 1	% Lag 2	% Lag 3	% Lag 4	% Lag 5	% Lag 6	% Lag 7
1 year	53	62	55	78	61	109	150	110
2 years	73	74	79	82	66	112	218	93
3 years	86	75	83	85	82	115	212	68
4 years	93	84	89	90	83	119	145	80
5 years	97	85	94	97	83	107	148	98
6 years	98	87	96	97	83	112	159	100
7 years	101	86	100	97	83	128	159	100
8 years	101	86	100	98	91	100	165	100
9 years	102	87	100	101	98	-	100	-
10 years	102	100	100	100	100	-	-	-
11 years	102	-	-	-	-	-	-	-
12 years	102	-	-	-	-	-	-	-
13 years	101	-	-	-	-	-	-	-
14 years	100	-	-	-	-	-	-	-
15 years	100	-	-	-	-	-	-	-

EXHIBIT 6

Evolving Ultimate Loss Estimates - Marker-Mohl Method Applied Only To Closed Claim Subset by Lag Subset

Ultimate Incurred Loss Estimate as of	Lag 0	Lag 1	Lag 2	Lag 3	Lag 4
1 YR	$206,896	66,004	40,142	63,339	12,131
2 YR	193,932	62,885	33,578	56,693	12,283
3 YR	188,322	65,182	35,904	58,031	13,923
4 YR	164,220	58,811	37,671	48,624	16,390
5 YR	147,150	62,404	40,425	48,203	17,697
6 YR	154,290	61,321	41,070	48,700	17,697
7 YR	139,803	62,499	37,788	48,571	17,697
Volume of Closed Claims Used	65,006	36,325	25,579	19,892	11,868
Latest Evaluation of Total Insured Losses	136,860	71,529	36,221	49,759	17,963
Closed Claims as a Percentage of Total Claims	47.5%	50.8%	70.6%	40.0%	66.1%

EXHIBIT 7

U/W YEAR	AS OF JUNE 1980			AS OF DEC 1981			% LOSS DEVELOPMENT OVER 18 MONTHS		
	Paid Losses	% Losses $000	Inc. Losses $000	Paid Losses $000	O/S Losses $000	Inc. Losses $000	Paid Losses $000	Q/S Losses $000	Inc. Losses $000
1973/74	868	316	1184	1271	626	1897	+ 46 %	+ 98 %	+ 60%
1974/75	419	671	1090	800	479	1279	+ 91 %	- 29 %	+ 17%
1975/76	336	762	1098	766	1164	1930	+ 128 %	+ 53 %	+ 76%
1976/77	417	1485	1902	1993	2257	4250	+ 378 %	+ 52 %	+ 123%
1977/78	128	985	1113	967	2955	3922	+ 655 %	+ 200 %	+ 252%
1978/79 *	65	599	664	868	2858	3726	+1235 %	+ 377 %	+ 461%

* Theorically, this u/w year has just expired. By one argument, there is absolutely no more potential for any true IBNR after this date (on that u/w year and all the prior years listed above) since no more new claims can be reported after this date. Theorically true - but wait.

(The local currency units actually are more valuable than dollars).

REFERENCES

(1) ISO Circular GL-85-64, New Commercial General Liability Claims-Made Pricing Announced, Copyrighted material - used with permission of Insurance Services Office

(2) Marker, James and Mohl, James, Rating Claims-Made Insurance Policies, 1980 CAS Discussion Paper Program