Price Monitoring - Benchmarking & Related Issues

CAS 2009 Underwriting Cycle Seminar
Rate Monitoring through Benchmarking

Brian A. Hughes
SVP & Chief Actuary
Arch Insurance Group

Disclaimer

- The views expressed here are those of the speaker and not necessarily the views of this panel, Arch Insurance Group, the CAS or any other sponsor of this seminar

Introduction

- Price Monitoring – Renewal vs. New Business
- A refresher on renewal rate change calculations
- Monitoring New Business through Benchmarking
- Specialty Business – challenges & issues
- Observations on Specialty Lines Benchmarking
- Impact of cycle dynamics on results
- Summary

Price Monitoring – What is it?

- My definition: a measurement of the change in effective rate levels from one period to another
- It does not take into account loss trend
- When loss trend is factored in, it allows a projection of historical loss ratios to a future period

Price Monitoring – Purpose & Uses

- To understand how rate levels are changing over time while attempting to adjust for exposure changes
- Allows for the projection of historical loss ratios to a future period for profitability and forecasting purposes
- Allows for measuring whether target rate changes are being achieved
- Allows for measuring whether target returns on equity are being achieved

Renewal Rate Change Calculation

- For each renewal policy, you calculate an effective rate change for that policy.
- Available data needed – both renewal and expiring: policy effective period, premium, the company's policy limit, the 100% policy limit, attachment point or deductible, exposure and policy term

Renewal Rate Change Calculation Example

Renewal	Co Prem	Company Limit (000)	100% Limit (000)	Total Attach (000)	Underlying Exposures (000)	Policy Term	Layer Expos	Rate per $1,000 of Layer Exposure	Rate Chg	Expiring Prem at current terms
Policy #1	75,000	15,000	25,000	25,000	26,000	12	1.599	3.007	9.4%	68,569
Policy #2	217,000	25,000	25,000	15,000	57,000	12	2.121	1.795	3.7%	209,226
Policy #3	156,000	20,000	50,000	50,000	55,000	10	1.725	4.932	-12.9%	179,205
	448,000	60,000	100,000	90,000	138,000	34	1.774	3.230	-2.0%	457,000
Expiring								3.230 / 3.311 =	-2.4%	
Policy #1	67,000	15,000	30,000	20,000	23,500	12	2.074	2.749		
Policy #2	185,000	20,000	25,000	15,000	63,000	12	2.121	1.730		
Policy #3	193,000	22,000	44,000	56,000	47,000	12	1.450	5.666		
	445,000	57,000	99,000	91,000	133,500	36	1.749	3.311		

Renewal Rate Change - Example

Calculation of Rate per $1,000 of Layer Exposure

$$\frac{\text{Co premium / (co limit/100\% limit) x (12/term)}}{\text{Underlying exposures x layer exposure}}$$

Where layer exposure reflects the amount of exposure within the subject layer (using ILFs or size of loss curves)

Renewal Rate Change - Advantages

- An effective rate change is calculated for each and every renewal
- The results by policy can be easily aggregated at any desired level
- Additional adjustments can be added on a per policy basis. For example, if a coverage was eliminated at renewal, an estimated effect of that coverage change could be reflected

Renewal Rate Change - Drawbacks

- While this is the ideal calculation to be done for renewals, it does not reflect new business rate levels
- Reflecting terms and conditions changes can be difficult to estimate and capture on books of business with large numbers of policy counts

Benchmarking

- This method requires a standardized or “benchmark” set of rates and rating factors to be used to calculate a “benchmark premium” for each policy
- The benchmark rating plan should attempt to reflect all exposures
- The “benchmark” can be a set of manual rates or some other set of standardized rates that are equally adequate, redundant or deficient.
- Changes to the benchmark rates must be tracked over time; alternatively, they can be set and “locked” for a few years but at some point they need to be re-calibrated.
- The ratio of actual premium to benchmark premium across a book of business is tracked over time.

Benchmarking (continued)

- The ratio of actual-to-benchmark for new business can then be compared to the ratio of actual-to-benchmark for renewal business to measure how new business pricing is changing compared to renewal business.

- The change in this ratio over time can then be applied to renewal rate changes to estimate the new business rate change.

- If your benchmark is accurate and consistent with the renewal rate change methodology, you should get the same renewal rate change results by calculating the change in the ratio of actual to benchmark for renewal business.

Benchmarking – continued

- Comparison Metrics

  => <u>New Business Actual / Benchmark</u>
  Renewal Business Actual / Benchmark

  =>Change in above ratio x renewal rate change = new business rate change

Benchmarking - continued

- ***<u>For rate monitoring purposes</u>,***

- What the “benchmark” is……….
  => It is a measuring stick, and it is often fixed over time.

- What the “benchmark” is not……….
  => It is not necessarily the correct rate, the actuarially sound rate, or the technical rate. It may not be useful on an individual policy level basis.

  T**he pure value of the actual-to-benchmark ratio is irrelevant.**

Benchmarking Example

	New/ Ren	Company Premium	Company Limit (000)	100% Limit (000)	Attach Point (000)	Underlying Exposures (000)	Policy Term	Bench-mark Rate	Layer Exposure	Bench-mark Premium	Actual/ Benchmark
Policy #1	Ren	75,000	15,000	25,000	25,000	26,000	12	3.000	1.599	74,832	1.002
Policy #2	Ren	217,000	25,000	25,000	15,000	57,000	12	2.000	2.121	241,830	0.897
Policy #3	Ren	156,000	20,000	50,000	50,000	55,000	10	3.456	1.725	109,312	1.427
Policy #4	New	123,000	10,000	20,000	10,000	37,000	12	3.500	2.207	142,890	0.861
Policy #5	New	89,000	5,000	10,000	10,000	19,000	12	6.000	1.328	75,672	1.176
Policy #6	New	45,000	15,000	50,000	50,000	45,000	12	2.200	1.725	51,240	0.878
Total	Ren	448,000								425,974	1.052
Total	New	257,000								269,802	0.953
Grand	Total	705,000								695,776	1.013

Benchmarking - Example

Calculation of Benchmark Premium

Benchmark rate x exposures x layer exposure x (Company limit/100% limit) x (term/12)

Benchmarking - Advantages

- Benchmarking allows for tracking both new and renewal business, or more importantly, whether one is priced stronger or weaker than the other
- Many standard lines of business already have a well established benchmark – manual rates

Benchmarking - Drawbacks

- This method can produce misleading results if the relative rate adequacy of the benchmark rates varies for different classes, territories and coverage
- This can be difficult to ensure for Specialty lines where there is a lot of judgment in developing rates and rating factors.
- Tracking benchmark rates that are changed frequently over time can be cumbersome

Benchmarking – Roles of Actuaries & Underwriters

- The underwriting department should be very involved in the benchmarking process as follows:
  - Knowledgeable about how the Benchmark was developed
  - Involved in coding/capturing the data used to calculate the benchmark premium
  - Be able to provide insight into the results being produced

Benchmarking – Roles of Actuaries & Underwriters

- The actuarial department should be involved in the following:
  - Development of the benchmark
  - Testing the benchmark to be sure it doesn't have any inherent biases (you will likely not be able to do this until you start to collect data from the initially established benchmark)
  - Produce the results and interpret them. Identify any anomalies and determine whether there are flaws in benchmark rating structure
  - Present the results to senior management & the Board.

Benchmarking – Standard vs. Specialty Lines

- Standard lines already have a built-in, well established benchmark – the manual rates & rating plan. While all rated risks may not have equally adequate, redundant, or inadequate rates, there is probably a high level of credibility – if not with independent company manual rating plans, but at least with bureau promulgated rates and rating plans.
- This makes for a straightforward calculation and stable results.

Benchmarking – Standard vs. Specialty Lines

- Specialty lines create a number of challenges including:
  - Credible base rates
  - Accurate increased limits factors & deductible credits
  - Issues related to territory and coverage relativities
  - Terms & condition changes impacting the results
  - Issues related to large vs. small accounts

A Specialty Line Example

- A book of public D & O policies comprised of mostly excess policies on large, Fortune 500 accounts
- The initial benchmark rates & rating plan are being reviewed for the first time based on 15 months of data.

Specialty Lines Example

	New Business				Renewal Business				New to
Quarter	Policy	Premium		A to B	Policy	Premium		A to B	Renewal
& Year	Count	Benchmark	Actual	Ratio	Count	Benchmark	Actual	Ratio	A to B
1Q 2008	33	2,279,332	3,572,527	1.567	81	6,162,825	12,518,639	2.031	0.772
2Q 2008	30	2,912,791	3,173,320	1.089	136	10,531,171	21,092,095	2.003	0.544
3Q 2008	40	3,375,114	4,269,141	1.265	116	8,941,899	16,946,358	1.895	0.667
4Q 2008	42	3,137,472	4,879,626	1.555	135	10,918,476	22,419,162	2.053	0.757
1Q 2009	39	3,342,398	4,384,209	1.312	95	9,449,074	15,446,913	1.635	0.802

Specialty Lines Example

- The ratios imply that new business pricing is materially weaker than renewal business pricing.
- In comparing actual to benchmark ratios by size of account, larger accounts have lower ratios than smaller accounts.
- The new business book has more smaller accounts than the renewal book.

Specialty Lines Example

- It was determined there are issues with the analysis due to inconsistent results.
- The renewal rate change calculation shows a single digit positive rate change, while the change in A/B for renewal business from 1Q 2008 to 1Q 2009 implies a -19.5% rate change (1.635/2.031).

Specialty Lines - Example

- Investigating the difference, it is found:
  - Data integrity is a significant issue.
  - The rating exercise does not always match up with the final bound policy terms.
  - Rating variables from expiring to renewal sometimes have changes that are inconsistent.
  - Automation of the rating, binding, and reporting processes are key to accurate data.

Specialty Lines - Example

- In the renewal rate change calculation, adjustments are made for changes in coverage type, limit, attachment point & commission.
- In the benchmarking calculation, additional factors had been included such as “years in business”, “time since most recent SEC offering”, “D&O litigation”, as well as other rating criteria that were not considered judgmental in nature.

Specialty Lines - Example

- It was determined that the responses to those additional criteria were unable to be verified against policywriting system data such as coverage type, limit, attachment point, and commission.
- Even with accurate data, the rating factors used to “adjust” for differences in these criteria are themselves judgmental and could be largely inaccurate.

Specialty Lines - Example

- Based on the above results, it was decided to move toward full automation of the rating/benchmarking process and to simplify the benchmark calculation. While not a perfect solution, it eliminated a number of areas where inaccurate benchmarking could drive the results. It does, however, expose the calculations to changes in mix of business that are not sufficiently captured in the simplified benchmark.

Observations on Specialty Lines Benchmarking

- While D & O presented the issues just discussed, most other lines had consistent results with the renewal rate change calculation and were fairly stable over time.
- Benchmarking has been established for all major lines of business.

Observations on Specialty Lines Benchmarking

- The benchmarks are unique to each line based on rating criteria and available data.
- The credibility and stability of results increase dramatically as the policy counts increase.
- Valuable insights are gained into the books of business – especially differences between new and renewal business.

Observations on Specialty Lines Benchmarking

- Senior management & the Board has given benchmarking a very high priority and high marks for adding value to the rate monitoring effort.
- The knowledge that new business rates are being monitored keep underwriting departments diligent in their underwriting/pricing of new business.

Impact of Cycle Dynamics

- Monitoring of new business becomes even more important during soft markets since underwriting/pricing tends to get more “relaxed”.
- My expectation is that regardless of the cycle, underwriting discipline will determine whether new business is priced better than renewal business.

Impact of Cycle Dynamics

- Beware of “distressed” accounts having very high A/B ratios driving overall results. This raises the question of whether to use loss rating in your benchmark.
- Results for Specialty business should be more volatile than Standard lines business. Larger accounts should be more volatile than smaller accounts.
- Books of business with high turnover is more prevalent in Specialty (E & S) lines making new business monitoring all the more important.

Summary

- Rate monitoring is crucial for managing and understanding the books of business being written.
- As the coverages and exposures become less homogenous and more complex, the challenges in monitoring the business become greater.
- However, while the monitoring methods may be less exact and not completely accurate for Specialty lines, a great deal can be learned about the business – how it is underwritten and how the book is changing over time.