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Beyond Loss Reserves: A P&C Actuarial Perspective on Prospective and Other than Financial Statement Risks

By Lisa Chanzit

Introduction

When financial examiners think of actuaries, it is natural to associate the profession with the estimation of insurance company loss reserves[1]. While loss reserving activity has traditionally been a major role of actuaries in insurance companies and is itself important, it is also an input to and/or otherwise interconnected with many other key insurer activities, such as pricing, planning and monitoring of results, capital management, and reinsurance structuring. Company actuaries[2] are (or should be) involved in these key activities, as well as other prospective activities, such as new product development, and providing input for entering/exiting lines of business and acquisitions and divestitures.

Therefore, it makes sense that examination actuaries should be involved in the assessment and testing related to key functional areas other than loss reserving when these are significant potential risk areas that are uncovered in Phase 1 of a financial examination. Actuaries are familiar with companies' typical and best practices in these other risk areas, in addition to loss reserving. This is particularly helpful to the examination team in implementing the Critical Risk Category (CRC) framework developed by the NAIC.

In this article, we use the phrase "actuarial risks" as shorthand for "risks actuaries can help with". We do not mean to imply that examination actuaries necessarily "own" these risks. On the contrary, many of these risk areas are best addressed using a coordinated approach between the financial and actuarial examiners. While life and health insurers will be briefly addressed in this article, we will primarily focus on property and casualty (P&C) insurers.

Which non-loss-reserving risks are relevant will vary considerably by type of company. One obvious example would be the risk of not having sufficient liquidity to pay claims due to one or a series of natural catastrophes. This is unlikely to be an issue to an insurer writing high-layer excess liability coverage (although that insurer might be subject to a totally different type of aggregation risk), but likely to be an inherent risk for a personal lines insurer writing homeowners coverage. In fact, the loss reserving risks for the homeowners company may be assessed to be inherently lower than pricing risks, if that company is operating in an extremely competitive market.

We believe that there are many potential situations where the inherent risk assessment may be higher for the non-loss-reserving actuarial risks than for the loss reserve-related risks. This could be confusing to financial examiners who may be accustomed to thinking of loss reserving risks as always being inherently higher than, for example, pricing risks or catastrophe risks.

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1 Throughout this article, "loss reserves" means "loss and loss adjustment expense reserves".

2 A "company actuary" may be a consulting actuary in this context, especially for a small company – this has Phase 3 versus Phase 5 implications.

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Notice that I have said "nonreserving" actuarial risks. That is completely intentional, because, while not the focus of this article, there are categories of reserves that are not loss reserves, including:

- Unearned premium reserves for short-duration contracts (less than 13 months), such as Death, Disability & Retirement (DDR) reserves for medical professional liability;
- Unearned premium reserves for long-duration contracts (greater than 13 months), such as surety, title, mortgage, credit, and warranty coverages;
- Premium deficiency reserves;
- Ceded premium reserves for loss-sensitive reinsurance contracts; and
- Contingency reserves for mortgage insurers.

Depending on the type of insurer and considerations such as materiality, these are all subject to actuarial examination.

Own Risk and Solvency Assessment (ORSA) AND CRC'S

The extent of actuarial involvement in risk-focused exams will likely increase with the implementation of ORSA and Critical Risk Categories. The European version of ORSA, within Solvency II[3], has been anticipated for years, and is finally on the verge of implementation. A key component of Solvency II is capital modeling, which is anticipated in Europe to be an exercise primarily led by actuaries. Likewise, the expectation is that similar modeling as an input to the assessment of prospective solvency and capital needs will be a major component of the ORSA reports that will be filed in the US starting this year. Actuarial review of the prospective solvency assessment will identify potential prospective capital management risks. Since many actuaries are experts regarding calculations of required capital for intended uses and capital determination and allocation, actuarial examiners will be useful for understanding the company's overall framework and plans for capital management, and making sure that the plans for capital raising and capital use are aligned.

3 We use "ORSA" to refer to the American version of ORSA, which was based on the internal assessment provisions of Solvency II, which are also known as ORSA.

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Examination procedures around most of the Critical Risk Categories other than Reserve Data and Reserve Adequacy would also benefit from actuarial input. We offer a few examples below:

- ***Liquidity:*** In addition to the natural catastrophe example described earlier, actuarial projections of the future cash flows of the actuarial liabilities (loss, policy, and other reserves) are necessary to ensure that the asset cash flows are sufficient to meet those demands. This cash flow testing and asset liability matching are more commonly examined in life companies but can be important for P&C insurers as well, especially troubled companies.

- ***Investment Strategy:*** This is another area more often examined by life actuaries than by P&C actuaries. This is tied in with the Liquidity area, and involves confirming that the investment mix will provide the cash flows needed for the liability flows, but also confirming that the investment mix will allow policyholder guarantees (e.g., crediting a certain rate of return) can be met.

- ***Reinsurance Program Structure:*** In addition to reviewing the structure in light of potential loss exposure (both per claim and in the aggregate), other areas ripe for actuarial involvement are assessment of risk transfer and reserve credit.

- ***Underwriting/Pricing Strategy/Quality:*** Crucial questions in this area will vary by the type of company, but the examination of the corresponding risks often has an actuarial component, such as:

    - Are product and pricing strategies realistic and viable?
    - Is there substantive actuarial input in product development and pricing?
    - How does company management react to actuarial pricing indications?
    - Are there regulatory constraints that restrict price adequacy?
    - Has robust competitive analysis been performed and considered?
    - Can (life) price guarantees be met in base and stressed scenarios?

- ***Related party/holding company considerations:*** A "hot topic" here is the viability of the use of life captives in light of looming regulatory changes. Will the hoped-for impact on capital still be achieved?

- ***Capital management:*** See the ORSA comments above

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Risk Areas and Statements

Let's delve a bit into how some of the non-loss-reserving risks might translate into risk statements.

In the **pricing** area, depending on the Phase 1 reconnaissance, a risk statement might be general, such as:

> Pricing is not adequate for the risks assumed by the company[4].

Alternatively, the risk statement can be written to be more specific, such as:

> Premium is not appropriate for the risk being assumed due to a lack of discipline and/or desire to maintain market share.

In some cases, the risk statement may be limited to a line of business or other business segment where the inherent risk is assessed to be more significant than for other lines of business or segments. As alluded to earlier, some companies may have a higher overall inherent pricing risk than others, due to their specific lines of business, types of insureds, or operating model. One relatively new category of products where pricing may be inherently riskier due to a lack of loss history would be cyber-security and other cyber-risks.

In addition to overall price adequacy, price monitoring/pricing guidelines is another potential risk area, depending on the company specifics (see sidebar, "PRICE MONITORING VERSUS LOSS RATIO MONITORING").

Examples of risk statements addressing pricing guidelines and monitoring would be:

- Pricing is not effectively monitored by jurisdiction, profit center or class.
- The company is not effectively monitoring its pricing, particularly for the newer business segments.
- The insurer has not established appropriate underwriting and pricing guidelines/processes, resulting in inadequate or excessive base premium rates.
- Policies are not priced in accordance with previously established company guidelines.
- The insurer is not complying with or monitoring the overall pricing and underwriting strategy.

4 All of the risk statements, to be technically complete, should contain an additional phrase at the end, such as "which could result in a loss of surplus".

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There are many other variations in use. The variations in these risk statements reflect nuances in the underlying concern being addressed in the case of a particular company.

When companies grow rapidly, expand into new business segments or products, or make acquisitions, greater inherent risk is likely to be introduced. Earlier, it was mentioned that there should be actuarial input considered in the implementation of these types of operational changes. So, in addition to the more general risk, "The company does not have the experience or infrastructure to support entry into new lines of business", for example, you might write the following risk statements:

- Rapid growth in new product lines results in inadequate reserving and pricing, or
- The company's frequent entry into and exit from business segments minimizes the volume of company-specific actuarial data available for reserving and pricing, resulting in inaccurate reserving and pricing indications, or
- The company has not considered actuarial input in its acquisition due diligence processes.

The risks in the interrelated areas of catastrophes, liquidity, and reinsurance are reflected in risk statements that vary in their specificity and area of focus, such as:

- The company's process for managing exposure to catastrophes is not effective.
- The company's concentration of risk potentially exposes it to events that could impair solvency.
- The company has not established and maintained appropriate risk exposure limits, including those for catastrophes.
- The company's catastrophe model is not appropriate or used effectively.
- A significant loss event or series of loss events could occur that would trigger increased reinsurance utilization and strain assets.

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Controls

In the pricing area, company controls should and do vary a great deal according to the type of business written (personal lines versus small commercial lines versus large commercial accounts) and the degree to which their pricing is subject to rate regulation (which is highly correlated with the type of business written). Regardless of these factors, however, there should be established controls for ensuring the quality of pricing data and version controls for the programs/software used for ratemaking or pricing.

For the companies where pricing is primarily determined by filed rates and rating plans, you might want to look at a comparison of the actuarially indicated rate changes with the rate changes filed by the company and with the approved rate changes. There should be documented communication of actuarially indicated rate changes to management. Best practices call for companies to have an established, and documented, schedule for reviewing pricing by line of business and/or other business segments. In the highly regulated case, the pricing would include not just rates by state, but also class plans, territorial relativities, and other rating factors. Rates and rating factors should be supported by an actuarial analysis. The model, methodology and factors used in individual risk rating should be actuarially based and documented as well. Differences between the actuarial pricing indications and the final pricing for individual accounts should be rationalized and documented. Finally, the actuarial input into the structure and pricing of new products and programs should be documented.

In terms of monitoring of prices and pricing guidelines, documented controls that companies use include:

- Fully automated rating systems without judgmental inputs.
- Monthly price change reports that adjust for changes in exposure, policy terms, limits and deductibles, as well as loss development, trend, rate changes, etc.
- Monitoring of the aggregate level and changes in schedule rating debits and credits.
- Competitive analysis and other monitoring of other marketplace changes, such as regulatory pricing and product structure requirements.
- Regular management level committee meetings to discuss and approve pricing, product, and underwriting changes in light of the competitive and regulatory environments.

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For a company that is rapidly changing its business profile through organic growth, acquisitions, or shifting business segment focus, key controls might include:

• Growth: monitoring of loss experience and pricing on new accounts, comparison of loss experience and pricing on new versus renewal business, monitoring of the underwriting characteristics of new business.

• New Business Segments, Products, or Acquisitions: A prospective control would be an analytical due diligence process including a business plan with documented robust actuarial input and consideration by management before entry into new markets or before the acquisition.

Company controls used to mitigate catastrophe exposure risk include:

- The determination of probable maximum loss (PMLs);
- The establishment and monitoring of risk exposure limits by geography;
- Periodic catastrophe modeling and/or scenario testing, including using multiple models, version control testing, and the comparison of model assumptions with the company's book of business; and
- Management consideration of catastrophes or other potential large losses in its capital modeling and/or scenario testing.

Examples of controls relevant to structuring a company's reinsurance program are:

- Management consideration of models and testing of the results in structuring the reinsurance program;
- Implementation of models to reflect reinsurance costs in pricing by geography; and
- Risk transfer testing for complex reinsurance treaties that contain provisions requiring actuarial modeling to determine risk transfer.

Finally, other liquidity controls not falling into the catastrophe or reinsurance risk areas are often cash flow related, i.e., a McCauley (or other measure) duration analysis of both investments and loss liabilities, and a cash flow analysis of incoming premium and investment flows and outgoing flows of losses, benefits, and expenses. For certain lines of business, such as mortgage insurance, the length of the forecast period can have a significant impact on the results.

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Challenges

In some respects, the control and substantive testing can be more problematic for non-reserving risks than for reserving risks. In the reserving arena, if all else fails, an actuary can always independently recalculate the reserves. This is not always feasible or cost-effective for pricing and other non-reserving actuarial risks. What constitutes a strong control is often highly judgmental and not well-established.

The quality of company documentation varies widely. The complex models currently used for pricing and risk segmentation (e.g., generalized linear models, or GLM, and predictive modeling), catastrophe modeling (usually AIR, RMS, or EQECAT models, but sometimes specialized internal models for specific types of risks), and capital management (such as stochastic modeling for ORSA) present particular challenges. Controls will vary depending on whether the model at hand is an internal model or a "canned" external model. Best practices surrounding company use of these models include:

- Documentation of the process used to derive the model form and assumptions
- Documentation of the current model form and parameters
- The use of back testing and/or testing the model on holdout data
- Controls to ensure the quality of input data
- Reasonableness checks of the model form and parameters (i.e., not just whether the model is a good statistical fit, but does it make sense?)
- Regular schedule for model updates
- Controls specific to user-developed applications, including spreadsheets and databases, such as version controls (e.g., who can make changes, documented change process) and prevention of accidental changes to formulas and data that could cause erroneous results
- Documented communication of model results to management
- Controls to ensure that the model results are used appropriately
- Use of staff and/or outside consultants with the requisite training and experience to formulate, update, and interpret these models. A single staff member who is the sole "keeper" of a "black box" model understood in its technical details by no one else at the company presents a potential risk.

The extent of testing in this area, as in others, will be governed by the corresponding inherent risk assessments as well as budget considerations.

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Finally, the integration of the actuarial specialist into the exam team is crucial. Unlike loss reserves, many of the other actuarial risks are non-financial statement and/or prospective in nature, e.g., liquidity and capital. As alluded to earlier, some of these risks may have both actuarial and non-actuarial components, e.g., pricing versus underwriting (although some actuaries have underwriting backgrounds, not all do). For these non-reserve risks, it is sometimes difficult to delineate control testing versus substantive testing (i.e., Phase 3 versus Phase 5). Also, the examiners' understanding of the company's processes and controls may evolve as the exam progresses. Some financial examiners call this "peeling back the layers of the onion". Two-way communication and coordination between the actuarial specialist and the financial examiners is particularly critical for the non-reserving risks. This begins in Phase 1, when it is especially important to follow up on issues raised in the C-level interviews.

Conclusion

The intention of this article is to raise awareness of the types of risks with which actuarial specialists can assist the financial examination team in high inherent risk areas other than loss reserves. Some of these risks may be as significant as, or even more significant, than loss reserving risks for some companies.

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"Price Monitoring Versus Loss Ratio Monitoring"

Let's discuss the difference between "price monitoring" and "loss ratio monitoring". In our exam work, we have encountered companies whose management teams are convinced that their pricing must be adequate because they monitor loss ratios and act accordingly in terms of pricing and/ or underwriting actions. This monitoring may appear to be robust in that it is quite segmented and frequent. There are various reasons why a company may be achieving its target loss ratios, but not be achieving adequate pricing (or the opposite, resulting in unknowingly overpricing):

- Since loss ratios may reported on a calendar year, accident year, policy year, underwriting year, or other basis, it is important to know the basis of presentation and see if appropriate conversions or adjustments have been made for pricing purposes. Pricing loss ratios generally should be on a policy year or underwriting year basis, or use appropriately adjusted accident year loss ratios.

- Historical loss ratios need to be adjusted to an ultimate, rather than paid or reported, basis.

- Historical loss ratios need to be adjusted for expenses and investment income to be used for pricing purposes. Alternatively, the target loss ratio may incorporate these considerations.

- Historical loss ratios need to be adjusted for changes in claims frequency and severity to be used for pricing purposes ("trend adjustments"). Also, workers compensation loss ratios should be adjusted for benefit level changes between the historical loss occurrence period and the midpoint of the future pricing period.

- Similarly, historical loss ratios should be adjusted for price changes that have been implemented between the experience period and the future pricing period. This would include not only filed rate changes, but changes in average modifiers, such as those for experience and schedule rating.

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