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End-to-End Assumption Documentation Practices

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On Oct. 30, 2015, the SOA Assumption Development and Governance Group, an informal discussion group consisting of nearly 200 actuaries interested in topics pertaining to actuarial assumption development and governance, organized an industry discussion call on end-to-end assumption documentation practices. The purpose of this call was to generate a large list of ideas for best-practice assumption documentation. More than 30 companies were represented in the call, including direct insurers, reinsurers and consulting firms.

During the one-hour discussion, the group touched upon eight components of assumption documentation, which could provide insights on building best practices. These components represented a collection of current industry assumption documentation practices. They touched on various areas of assumption management including the process, organizational structure, and governance. The eight components include:

- General assumption document standards,
- Assumption review planning,
- Internal experience studies,
- External experience,
- Assumption proposal,
- Approved assumptions,
- Communication of approved assumptions to the modeling team, and
- Assumption implementation.

Trends show increased scrutiny on assumption development and governance, which requires documentation for evidence of peer review of experience studies and assumption development, ongoing monitoring of emerging experience, and documentation of assumptions that are not changing.

GENERAL ASSUMPTION DOCUMENT STANDARDS

This section addresses general requirements not discussed in the other seven documentation components. A process flow chart can link all assumption development and governance information together: from data source, to experience studies and assumption development and the governance process. The ap-

proval date and implementation date for the assumption should be documented.

Assumption Purpose

For each assumption the documentation should identify the applicable business unit, product group and type, and actuarial intended uses. The business unit definition would depend on the company's organizational structure. Examples of business units include Property, Casualty, Life, Annuities, Health and Group Insurance. Examples of product groups and types within the Annuities business unit can be variable annuity, fixed annuity, and indexed annuity. Examples of actuarial intended uses are GAAP financial reporting, statutory financial reporting and pricing.

Organizational Structure

Organizational structure is an important aspect of assumption management within insurance companies. The assumption developer and owner should be identified, their roles should be clearly defined and they must be held accountable for their respective responsibilities. The developer and the owner may not be the same person. The owner should understand the underlying business and have relevant expertise in the assumption development process.

Data Source

The data source should be identified in the documentation, and the relevant experience study used for assumption development should be noted. Experience monitoring methods should be specified and relationships to other assumptions should be disclosed. This section of documentation should answer questions such as:

- Is the data extracted from an internal administrative system, obtained from a third party administrator, or purchased from external vendors?
- Is there an internal experience study performed or is there reliance on an industry experience study?
- Is there any ongoing monitoring for the emerging experience?
- Does the resulting assumption have any interaction or dependency on other sets of assumptions?

Storage Location

The supporting file location should be included in the relevant experience study and assumption development documentation. Large companies may have separate storage places for experience study and assumption development documents, especially if a centralized team performs experience studies that are used for various actuarial purposes.

The access rights to the storage place of approved assumptions need to be carefully controlled. Generally people should be given read only access; read/write access should only be given to storage gatekeepers.

ASSUMPTION REVIEW PLANNING

The planning stage scopes, prioritizes, and categorizes assumptions to facilitate effective and efficient review processes. The documentation would lay out the process roadmap and ensure a successful assumption review process.

A comprehensive inventory of all assumptions intended to be reviewed is essential for planning. Each year, the inventory should be updated by adding new assumptions and removing expiring assumptions. Other information may indicate the assigned assumption developer and owner, last review date, review frequency, source of update, a brief description of experience study methodology, key drivers of the assumption and materiality levels.

The review frequency should be set for each set of assumptions and will vary with the materiality of the assumption, credibility of the block and other factors. The criteria for determining the review frequency should be documented. Assumption updates may be triggered either by the internal study results or developments in external experience. The materiality of assumption levels can be low, medium and high. A key assumption should be categorized as high materiality even if no change would be made.

Past assumption development processes should be reviewed in order to develop a review plan for the current year. The current year plan should be communicated to management and any concerns should be addressed prior to starting the development process. To help keep the work on track and hit all the key milestones, a 12-month rolling prospective calendar may be established. The planned calendar may be compared with the actual process to inform the priorities for the next year's review.

Additional items may be included in plans for some of the more complex assumptions. For example, sensitivity tests may be planned for highly variable assumptions, such as the dynamic lapse assumption for variable annuity products.

Testing of resulting assumptions should also be included as part of the plan. The documentation should identify the impacted models and applications, as well as indicating the estimated effort to implement the assumption.

INTERNAL EXPERIENCE STUDIES

Well documented internal experience studies cover two major aspects of the process. The first aspect is the study methodology, which includes items like data preparation, data segmentation and methodology for development of expected figures. The other aspect of experience study documentation is the related validation and controls pertaining to the relevant studies.

Among other items, the study methodology documentation should include:

- Any business segments that are excluded,
- How the data is prepared for the intended use,
- The boundaries of the study period,
- How the exposure basis is defined,
- Whether the claims are on a paid basis or an incurred basis,
- The study tools and methods that are used, and
- Experience study results.

Examples of excluded business may be sub-standard classes, closed blocks or large cases. These blocks may not be relevant to the assumption basis in question or may cause unwanted skewness of results. Data preparation processes should comply with ASOP 23 (Data Quality). The exposure basis can be account value, face amount, premiums, or other indicators of the size or count of the studied policies. The methods used for smoothing and trending should also be documented, as should the method used to determine the experience credibility. The study results may be grouped at a high level to allow for efficient management review with supporting data files with more granular output for detailed investigation.

Documentation of controls and validation processes for internal studies is a critical aspect of the experience study documentation. Generally, a well-established assumption with credible experience may have tighter controls than a first-attempt assumption development. This part of the document should answer the following questions:

- Is the data reconciled with a recognized source within tolerance, such as the claim amounts being within a certain percentage of reported claims in the financial statement?
- How do the study results compare to results from the last study?
- Are the study process and results peer reviewed and signed off on?
- Is the 'E' of the A/E analysis still valid, and are the study results within a reasonable range of expectation?
- What are the low credibility experience segments and how were results different for these?

EXTERNAL EXPERIENCE

Whether for benchmarking purposes, or to back-fill low credibility areas in experience, the assumption development process and its documentation should also consider and reflect the applicable external experience. The external experience may be in the shape of generally accepted industry tables, relevant reinsurance data or population statistics. Even if company data is fully credible, it's recommended that the applicable external data still be considered for possible emerging trends and potential

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adjustments. The relevance of the external experience needs to be assessed, and similarities and differences should be explained.

When participating in an industry study, controls consistent with internal experience studies should be in place and documented to ensure accuracy. When preparing the data for the industry study, refer to ASOP 23 for data quality compliance. Due diligence questions should be asked; the data submitted to the industry study should be reconciled with the summarized company data received after the industry study; and reasonableness checks should be performed against relevant internal or other external studies.

ASSUMPTION PROPOSAL

Clear and streamlined assumption proposal documentation can facilitate effective review and efficient final management approval processes.

The assumption proposal documentation would highlight:

- Proposed assumptions,
- Major changes in the proposed assumptions from the current assumptions,
- Comparison of proposed assumptions to those of similar products, and
- Relevant implementation considerations.

The proposal would include the actual values of the assumption, illustrate the assumption development process, explain relevant trends and justify the actuarial judgment used. Examples of trends are those in claims practices, sales practices, and underwriting practices.

Major drivers of assumption changes should be explained and impacts should be assessed. The experience credibility, the impact of assumption changes and the assumption sensitivity should be considered together holistically to determine the materiality of an assumption.

Comparison of the proposed assumptions to those of similar products would be especially important if the underlying product experience is new and not credible. Credible experience

from similar products could provide useful insight into setting the new product's assumption in a consistent manner.

Implementation complexity should be considered early in the assumption development process to minimize downstream surprises. Implementation and testing timelines should be established and followed once the proposal is approved.

The level of details for the assumption proposal can vary by the level and needs of the approvers. For the business unit level review, the proposal should be comprehensive enough to answer detailed questions about the assumption development process and results. For senior management review, a high-level presentation is preferred, that would walk them through the highlights on the proposal background, high-level process description and major drivers and materiality of assumption changes.

The assumption development and proposal should comply with applicable ASOPs. For instance, ASOP 41 (Actuarial Communications) and ASOP 10 (GAAP Methods & Assumptions) should be considered.

APPROVED ASSUMPTIONS

The documentation for approved assumptions requires special care given its importance to downstream modeling implementation and its impact on financial reporting, product development and other intended uses.

The core documentation of approved assumptions can be a memo including related experience study results, assumption development adjustments, justification and impact summary on the business. Additional supporting documentation, in the form of appendices, can include meeting minutes recording assumption review discussions and decisions, certification of assumption working group or committee, evidence of peer review for the assumption development, detailed assumption tables and other supporting information.

Even if there are no proposed changes to assumptions, the documentation should justify the reason for keeping assumptions unchanged. This is done to keep the documentation comprehensive as well as to fulfill control and audit requirements.

COMMUNICATION OF APPROVED ASSUMPTIONS TO MODELING TEAM

The modeling team should play an active role in the assumption development process. It should be part of the assumption review meetings, which would ensure that the assumptions are developed and implemented in a manner that will allow for easy and consistent implementation into the models. Alternatively, although not recommended, assumption owners may meet with the modeling team to hand off the assumptions once they have

been approved and are ready for implementation. It is preferable to have a single point of contact on the assumption development team that would communicate with the modeling team throughout the process. This would ensure seamless communication and minimize inconsistency and errors.

For complex assumptions, assumption owners should work with the modeling team throughout the coding and model testing process. Assumption owners would write the business requirements for intended implementation and the modelers would send back the sample policies for review. Proper controls for seriatim level policy testing should be established.

Before the assumption gets coded into the model and tested, a high-level assessment of the assumption impact would be helpful to judge the reasonableness of results.

ASSUMPTION IMPLEMENTATION

The modeling team should ensure proper documentation of assumption implementation into the models. This documentation would summarize the process and controls around it. Model documentation should answer the following questions:

- Is there evidence of comparison between model inputs and approved assumptions?
- Is there evidence of validation for accurate implementation?
- Is there appropriate management through the modeling change control process?

It may not be feasible to implement the proposed assumptions into every model. Any approximation or simplification of assumptions for the purpose of implementation should be thoroughly documented.

An automated process may be established to format and transfer the approved assumptions into the models to enhance the consistency and accuracy of assumption implementation.

CLOSING REMARKS

This industry discussion call covered an extensive list of ideas for best-practice assumption documentation, including eight main components: general assumption document standards, assumption review planning, internal experience studies, external experience, assumption proposal, approved assumptions, communication of approved assumptions to the modeling team, and assumption implementation.

One thing to highlight is the documentation for evidence of fulfilling controls, which may include baseline and peer review of experience study methodology, peer review of assumption development, and proper assumption governance with sign offs.

Consistent and comprehensive assumption controls documentation will minimize the risks of the assumption development, governance and implementation process. ■

SOA ASSUMPTION DEVELOPMENT AND GOVERNANCE GROUP

- Is an informal discussion group with topics around actuarial assumption development and governance
- Consists of nearly 200 interested actuaries
- Received endorsed support from the SOA Financial Reporting Section and SOA Product Development Section
- LinkedIn group: SOA Assumption Development and Governance Group
- For more information or to get involved, please contact us



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