Article from
Long-Term Care News
April 2020

Setting LTC Assumptions in the Times of Targeted Improvements

By Bob Yee

Statements and opinions expressed in this article are that of the author alone and not of his employer, PwC.

The forthcoming Targeted Improvements (FASB Accounting Standards Update No. 2018-12) for accounting of long-duration insurance contracts presents an opportunity for insurance companies to improve the financial management of their long-term care insurance (LTC) business. The LTC industry has been plagued by intermittent sizable reserve strengthening due to changes in assumptions with respect to future liabilities. With concerted efforts, companies can leverage Targeted Improvements' directives on reserving to set better assumptions. These efforts can lead to fewer assumption changes, more stable earnings and greater confidence in the adequacy of the reserves.

This article discusses the challenges and practices in assumption management for estimating future LTC liabilities. The discussions herein are applicable for other long-duration contracts as well.

APPROPRIATE ASSUMPTIONS

LTC reserves under Generally Accepted Accounting Principles (GAAP) are formulated to offset the effect of rising claims on income. When done properly, the reserving mechanism will generate relatively stable earnings as a percentage of premiums. A company's LTC earnings are the net result of the experience factors[1] that drive reported premiums, benefits, expenses and investment returns. When the reserve assumptions misalign with the underlying experience, financial results in the income statement will not be as expected based on these assumptions. In the past, material period-to-period variances between actual and anticipated results, together with reserve strengthening due to assumption changes, caused instability in earnings.

The key to stable earnings is to determine a set of appropriate assumptions that tracks well with future experience. Such a set of assumptions has been elusive for many companies. Because of unpredictable earnings, management faces constant uneasiness that has a ripple effect on other stakeholders—shareholders, policyholders, and regulators. When there is confidence in the assumptions, management can rely on financial projections to quantify the extent of the company's LTC liability shortfall. This can lead to effective responses such as timely premium rate filings and risk transfer transactions that serve the best interest of the stakeholders. Instead of uncertain rate increases due to future changes in assumptions, for example, company and policyholders are better off if there is high level of assurance on the amount of the necessary rate increase.

Trust in the assumptions can only be earned over time. Management only needs to look at the trend of its actual experience

> "The thing that overwhelms me about the pricing of long-term care is the uncertainty of the claims level . . . I'm also not convinced we have any real sense of what claims levels are going to be 5, 10 or 15 years from now."
>
> Tom Foley, North Dakota, former Florida and Kansas Insurance Department Actuary, "Long-Term Care: 4 experts offer insights into one of the industry's new products," *The Actuary*, 1997.

against assumptions in recent years in order to gauge how close they are to a set of appropriate assumptions.

At any time, there are three probable reasons for actual financial results to be different than those anticipated from a set of assumptions:

1. **Statistical fluctuation**

   Even if the assumptions reflect true experience, actual experience will vary from the expected due to randomness of events. A large block of business will generally have less random fluctuation than a small block, and fluctuations tend to offset each other over time.

2. **Unforeseeable events**

   The underlying experience may be evolving, causing historical experience data to be unreliable for estimating the future. Past examples include improvement in mortality experience, shift in incidence of claim from nursing facility care to assisted living facility care, and that from facility care to home health care. Early product development did not foresee these trends. As experience analysis becomes more sophisticated and granular, new types of assumptions may emerge. Examples include total lives split into active and disabled lives and total claim termination rates replaced by distinct disabled mortality, claim recovery and benefit exhaustion rates.

   Future LTC experience is also subject to catastrophic events. A hyperendemic disease can occur that renders a large segment of the population chronically ill. This would drastically increase the incidence of claim. On the other hand, new treatments for Alzheimer's disease can dramatically reduce incidence.

3. **Inappropriate Assumptions**

   Trends may be hidden until an adequate amount of experience data is available. Even when data is credible, assumptions may not capture the full impact of trends on future events. Inexperience, incomplete data, incorrect calculations and other deficiencies in experience analysis and assumption setting[2] can also result in inappropriate assumptions.

Statistical fluctuation, emerging trends and catastrophic events are unavoidable. Over the span of multiple reporting periods, the impact of statistical fluctuation on earnings will likely balance out. In recent years, identifiable claim and persistency trends appear to be stabilizing as blocks of LTC business mature. Yet the frequency of assumption changes has not diminished. A number of industry experts suspect that large reserve increases are mostly driven by inappropriate assumptions, rather than worsening experience.

CHALLENGES IN ASSUMPTION SETTING

Most individuals purchase LTC insurance in their 50s and 60s, but claims do not materialize appreciably until they reach their late 70s. Credible claims experience takes a relatively long time to develop. Moreover, even with 40 years of industry experience, claims experience is not well understood due to changes in policy features, policyholders' demographic profile and their behavior. Earlier policies tend to be issued to older policyholders covering mostly facility care and under less stringent underwriting standards. Accordingly, credible experience from earlier policies may not be applicable to the majority of the in-force business that were issued later.

Experience at late policy durations and old attained ages are increasingly relevant in estimating future liabilities since they are precursors of future experience as the business matures. Yet this segment of experience data is precisely the least credible. Data credibility has always been an impediment to critical experience analysis.

Companies have generally been slow to recognize the many factors that affect LTC experience. For example, actual claim incidence rates vary materially by care setting (nursing home, assisted living facility, or home care). If incidence is not separately identified by care setting, the resulting assumption may not reflect the changing preference of care setting over time. In addition, correlation among assumptions has not been universally appreciated. For example, some companies doubt-count the improving trend in incidence over time by assuming both improvement in incidence rates and lower attained age incidence rates in younger issue age groups relative to those for the same attained ages in older issue age groups.

Despite these challenges, appropriate assumptions are becoming more attainable for the following reasons:

- Relevant data is more credible than before
- Previously hidden experience factors are now better understood
- Most of the major mistakes in assumption setting have been recognized
- Analytical methods have advanced

Appropriate assumptions generate estimates of future events that are most likely to occur. They are unbiased in that they are neither conservative nor aggressive.[3] Certain favorable outcomes may well offset unfavorable outcomes elsewhere. Thus, in some circumstances, assumptions can be improved without a significant impact on reserves.

Nevertheless, appropriate assumptions are not immutable. They are moving targets because of hidden trends and new developments. Cost of care inflation has become an important assumption for policies with inflation protection features. Companies are assessing the need for an assumption to account for improvement in mortality for the disabled lives. Premium rate increases and the associated shock lapses were rare 20 years ago but are

now prevalent. The increasing application of statistical learning in experience analysis together with new data source may identify new factors for assumptions. Management should anticipate future changes in appropriate assumptions in response to developing trends.

For various reasons, assumption changes in LTC occur frequently for many companies. Because of the long-tailed nature of LTC liabilities, a minor change in assumption can result in a significant change in reserves. Targeted Improvements require, at minimum, an annual review of assumptions with reserves promptly reflecting any assumption change. If companies maintain status quo, Targeted Improvements will likely exacerbate earnings volatility. However, by minimizing future assumption changes through improvement in assumption development, earnings volatility can actually be tempered under Targeted Improvements.

> "Extrapolation is a very basic method of prediction – usually, much too basic."
>
> Nate Silver, *The Signal and The Noise: Why So Many Predictions Fail – But Some Don't*

PRACTICAL CONSIDERATIONS FOR SETTING ASSUMPTIONS

To improve the assumption setting process effectively, there are two fundamental issues to ponder:

I. Assumption setting criteria

In recent years, several companies established the following criteria for setting assumptions:

1. Assumptions should reasonably reproduce the past
   - for example, expected claims should reproduce actual incurred claims for the past five calendar years

2. Assumptions should closely match the present
   - for example, assumptions for projection model are calibrated to actual premiums and new claim counts for the past two calendar years)

3. Assumptions should fittingly represent the future
   - for example, expected active life mortality beyond the 15th policy year for attained ages 80 and over should track with the corresponding actual mortality rates)

Some companies are satisfied with only fulfilling the first criterion. Concerned with data credibility, they rely primarily on actual to expected comparisons of experience data aggregated over a 10-year study period or longer. However, many of LTC assumptions vary by policy duration and attained age. As the in-force block matures, future experience will likely deviate from aggregate pattern of the past based on all durations or all ages.

Past experience provides innumerable paths for estimating future events. As suggested by the second criterion, it is important to understand how the chosen assumption path explains financial results for the most recent years. Even so, many paths remain that can reasonably match recent results. The third criterion advocates focusing only on experience data that are relevant for the future. This approach would concentrate on experience of late policy durations and high attained ages. Because data are typically scarce for these segments, developing assumptions from these segments of the experience data would require sound choice on minimum credibility standards.[4]

Management often underestimates the amount of resources and attention required to develop a set of appropriate assumptions. Management that is committed to meet all three criteria will find that their efforts are well worthwhile.

II. Judgment

The data necessary for setting critical assumptions are almost never fully credible. Increasingly granular analysis and continuous refinement in methodology invariably lead to places where data are limited. It follows that management often selects assumptions derived from partially credible data together with professional judgment. By nature, judgment is hazardous. However, several practices can reduce the level of judgment needed or provide additional information for a more informed decision.

1. Aggregating data is the most common method to booster credibility and reduce the reliance on judgment. Some details will be lost, but generally the resulting assumptions are sufficiently reliable.

2. Combining internal data with comparable external data can enhance credibility.

3. Exploring the interrelationship among various assumptions and performing stress tests on assumptions can provide greater insight.

4. Adhering to a triangulation approach where two or more independent methods are employed in order to form a consensus. For example, the use of predictive analytics to verify assumptions derived from the traditional method of fitting expected outcomes to the actual experience.

In general, the less credible the data, the more latitude for judgment. Future premium rate increases, mortality improvement and morbidity improvements are examples of assumptions that require considerable judgment. These are the areas where careful deliberation is warranted.

The above practices can reduce, but not eliminate, the use of judgment. Accordingly, it is important to recognize the human element in setting assumptions. Often, appropriate assumptions are known but not selected due to judgment, which may be influenced by self-interest, commitment and attitude towards risk averseness. In addition, the following leadership dimensions of the decision-maker come into play:

- The level of LTC expertise
- Able to make a balanced and objective assessment of all alternatives
- Mindful of the difference between reality and his or her mental model which is a perception of reality

ASSUMPTION MANAGEMENT PROCESS

Appropriate assumptions are the end-products of a well-designed and robust assumption management process.

Figure 1 illustrates the framework of a quality process for LTC assumption management.

Figure 1
Framework of a Quality Process for LTC Assumption Management
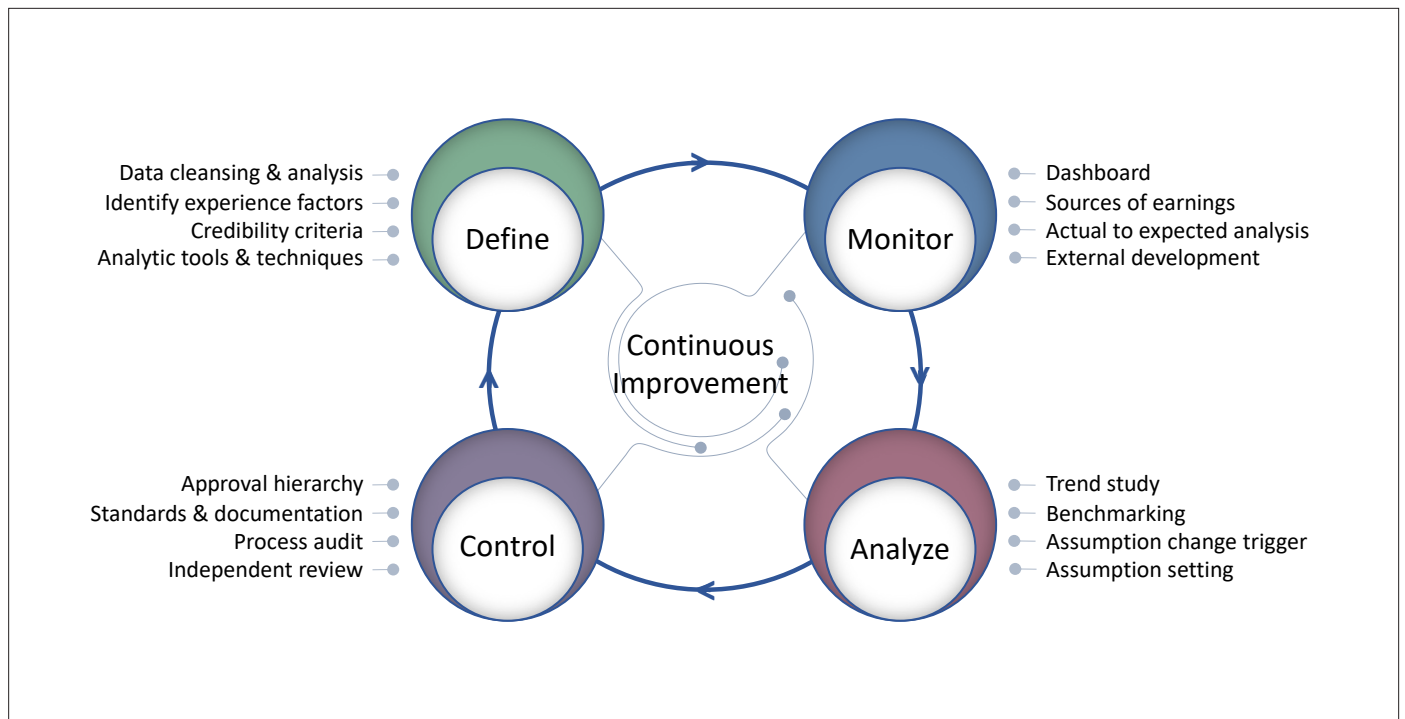
"The essence of risk management lies in maximizing the areas where we have some control over the outcome while minimizing the areas where we have absolutely no control over the outcome and the linkage between effect and cause is hidden from us."

Peter L. Bernstein, *Against the Gods: The Remarkable Story of Risk*

Due to the complexity of the data and analysis, process defects in assumption management are major risk concerns. Defect detection relies on diligent auditing procedures and independent validation. Validation can be made through either internal or external review of data and methodologies. Benchmarking of industrywide experience is frequently used to confirm internally developed assumptions.

Assumption management is necessarily dynamic to be in step with evolving LTC experience. A process improvement plan should be devised to ensure continuous refinements in data analysis and analytical techniques. Strategies aiming at knowledge retention, in the form of research, documentation, training and succession planning, should also be articulated.

CONCLUSION

Targeted Improvements provides a strong impetus for commitment by management to develop and maintain a set of appropriate assumptions. As even the best of assumptions will take time to season, the sooner the improvements in assumptions are made, the quicker the goal of stabilized earnings can be realized. ■

Robert K. Yee, FSA, MAAA, is a director at PricewaterhouseCoopers. He can be reached at *robert.yee@pwc.com.*

ENDNOTES

1 Assumptions are commonly established for the following experience factors:

Claim incidence	Claim recovery
Incidence improvement	Benefit utilization
Voluntary lapse	Cost of care inflation
Healthy life mortality	Future premium rate increase
Disabled life mortality	Shock lapse rate due to rate increase
Mortality improvement	Investment return
	Expense

2 In this example we can imagine creating an RBO that maintains the lifetime loss ratio as well, though it would not be cash flow neutral as we've defined it.

3 Statutory reserve assumptions generally started from appropriate assumptions with explicit margins for conservatism or based on implicit margins when setting assumptions.

4 For rate determination, (incidence rates, mortality rates, etc.), a rate derived from 1,082 or more data points has generally been recognized as fully credible in that there is a 90 percent probability that the observed rate is within 5 percent of the true underlying result. Some practitioners would accept as low as 200 data points as minimally credible (approximately 40 percent partial credibility).