

**American Academy of Actuaries  
VALUATION TASK FORCE**

**PRESENTATION TO THE NAIC'S LIFE AND HEALTH  
ACTUARIAL TASK FORCE ON VIABILITY ANALYSIS  
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The American Academy of Actuaries is the public policy organization for actuaries practicing in all specialties within the United States. A major purpose of the Academy is to act as the public information organization for the profession. The Academy is non-partisan and assists the public policy process through the presentation of clear and objective actuarial analysis. The Academy regularly prepares testimony for Congress, provides information to federal elected officials, comments on proposed federal regulations, and works closely with state officials on issues related to insurance. The Academy also develops and upholds actuarial standards of conduct, qualification and practice, and the Code of Professional Conduct for all actuaries practicing in the United States.

## **I. Introduction**

“Viability Analysis” is a self analysis of an insurer’s ability to identify, evaluate, and manage its risks in executing its strategic plan.

This analysis reflects the unique character of each company and the markets in which it operates or intends to enter. Insurers perform various risk analyses using a wide range of approaches and techniques. Nevertheless, there are three significant questions that might be asked about those efforts.

Completeness – are all risks with a significant potential impact on the future of the company identified?

Comparison/feedback – does the analysis evaluate the effectiveness of prior analyses and improve on them?

Communication – are the results of the analysis effectively communicated to company management and the board of directors?

This presentation is intended to assist in the examination of the value of a viability analysis, how it might be performed, and some of the relevant issues for the company, regulators, and others.

## **II. Value of Viability Analysis**

The viability analysis provides benefits to various audiences. The benefits of the viability analysis derive from:

Relying on it – to provide confidence that in depth risk analysis has been performed.

Doing it – to improve or reinforce the company’s understanding of risk.

Using it – for the company to assess and modify the company’s risk management process and, if necessary, demonstrate the validity of its strategic plan.

Each of these benefits has a different value to different audiences: consumers, the company (its board of directors, management and owners), regulators and others.

The first benefit of “relying on it,” flows to all audiences – but it is particularly significant to consumers and shareholders. Simply knowing that a thorough viability analysis has been done gives added assurance that the company is more likely to fulfill its short and long term obligations.

This benefit is also significant to the company’s board of directors and management, especially when coupled with the benefit of using it. Whether the use is general, for example by the board or senior management, or is detailed, it gives an additional level of confidence in

addressing individual liability, responsibility, and accountability.

The regulators may also benefit from the fact that a viability analysis was done. Their oversight role is supported by the identification and management of risk. In addition, should regulatory action be necessary, the viability analysis provides a starting point for the company and the regulators to take appropriate action.

Others may also take comfort that the viability analysis has been done. Further, where the company determines that it is appropriate, they may review or discuss it with rating agencies, regulators, or others.

### **III. Viability Analysis Process**

We believe that the majority of the life and health insurance industry is doing some level of viability analysis. This section outlines a comprehensive level of viability analysis and is not meant to discourage the continuation of current efforts but to provide guidance on improving the process.

Viability analysis begins with assessment of an insurer's current financial position, although with a broader scope than exists in current financial statements and an analysis of the company's current and future markets. Thus, viability analysis contemplates future new sales activity and other initiatives as well as business already written. It considers remote, but nevertheless plausible events with potential for adverse impact. It includes possible future events or plans that may not be effectively addressed in processes such as the asset adequacy analysis required by the Standard Valuation Law.

#### **A. Risk Identification**

The insurer's strategic plan documents the company's plans for the future and forms the basis for modeling the effect of the risks that are identified.

There is no single formula, prescription or list for the process of identifying risk. Each company should identify its own risks based on its unique circumstances. In order to identify risk, and in particular risk with significant adverse implications, it is necessary to identify and match resources with obligations. The risks that these resources and obligations will be of unexpected incidence or magnitude, take many forms.

Risks to be included in the viability analysis should be viewed comprehensively. No categories of risk should be excluded automatically, risk categories should include even remote events that may have a significant impact on the company. Even a company's systems and methods for processing transactions in a timely and accurate fashion should be viewed critically to ascertain hidden risk. Finally, the risk that statements from rating agencies, the media, and others may impact the public perception of an insurer's viability which may in turn have an actual adverse impact on the company should be identified.

## **B. Risk Analysis and Measurement**

Once the risks have been identified, the next step is to analyze and evaluate these risks. It should be recognized that for some risks, not enough is known to make a meaningful measurement, in such cases analysis should identify what is known about the risk. In order to evaluate the risks, one must determine:

- The measure to be used
- The basis used to determine the result
- The time frame
- The frequency of review
- The feed back loop or loops

## **C. Risk Parameters**

The measures of potential losses vary depending on whether the results are for a single event or product, for a product line or lines, or for the entire company. Possibilities include: dollars, ratios of actual to expected, trends, loss ratios, impact on return on equity, impact on risk-based capital requirements, etc. One either has to use a common measure for comparison to rank the results or establish conversion factors for each measure used. The precision of this measure will vary.

- The basis used to estimate results will depend on the availability of data. Sources include the company's own data, data from the Society of Actuaries, industry data, national data, etc.
- The time frame selected maybe a predetermined time period for all risks, or the life of the business but should be sufficient to cover the time required to detect and respond to adverse experience. The use of different time periods may make it difficult to rank the elements of risk by their significance.
- The frequency of review may vary from annually to whenever a significant event occurs.
- Feedback loops should be established to assess the reliability of estimates and the results should lead to improvements in the analysis process.

## **D. Evaluation of Risks and Establishment of Loss Exposure**

The next step is to estimate the actual exposure the company has outstanding or intends to undertake. To do this one must identify and estimate the value of various management actions already taken or planned to reduce risk. These include: hedges, reinsurance, contractual limitations, company practices, covariance of various risks, etc.

## **E. Identification of Key Risks**

Following the measurement of risks and establishment of loss exposure the risks should be summarized by net risk to assist management in determining where “the company’s major bets” are or will be.

## **F. Analysis of Risk Exposure**

The next step is to analyze each key risk, to estimate both its likely range and maximum, though unlikely, potential impact. Analysis should also be made of all risks combined, particularly those risks that are correlated. Further analysis could include comparative impact of results compared with competitors, likely response to adverse experience, possible changes in risk over time and events that could influence that change, likelihood of increasing or decreasing exposure, etc. It is important to not limit estimates to recent past experience or even historic trends if analysis indicates larger loss potential.

## **G. Possible Recommended Changes**

The final developmental phase of the analysis is to develop recommendations for possible future changes in risk management or other actions that will or could mitigate the outstanding loss exposure. Careful creative analysis of risks and loss exposure may suggest various possible changes or alternative courses of action. Some considerations could be to identify options, revise strategy, improve cost/benefits, practicality, availability, etc.

## **H. Viability Analysis Report**

The final step in the viability analysis is the development of a report. There is no standard format for a viability analysis report. It depends on the company, the issue(s) and the circumstances. The report may be written or delivered orally to management or other audience. Both oral and written reports should meet the needs and style of those receiving the report.

However presented, it should identify where one is “betting the company.” Usually, but not necessarily, this will include: identifying the key risks, an evaluation of the risk exposure, management actions to reduce risks, commentary on remaining exposure and possible actions, if any, to consider to mitigate these risks.

#### **IV. Examples of Viability Analyses for Life and Health Insurance Companies**

Because each viability analysis reflects the unique characteristics of the company and its management, there is not a single approach to performing the analysis or communicating the results. Some examples of how this is currently approached by a few companies are attached. These examples are only intended to be illustrative of the process and do not include sample reports. It should be expected that each company would develop an approach to the analysis that would be their own. While these illustrations are drawn from actual companies, details have been altered to avoid the possibility of disclosing any specific information about the companies. Much like these current examples, initial efforts to perform viability analyses may not be comprehensive but may be expected to become more robust over time.

Appendix A includes a description currently being done by a large mutual insurance company.

Appendix B includes a description currently being done by a small stock insurance company.

Appendix C shows work being planned for a fraternal organization.

Appendix D is one company's identification of the top areas of risk management concern based on the Canadian PARC.

We plan to provide examples of viability analysis reports, or create sample reports, for the September meeting of the Life and Health Actuarial Task Force.

#### **V. Associated Risks**

Performing the analysis may expose the company and the actuary (based on the actuary's involvement in the viability analysis process) to risks of possible legal action, particularly if the company eventually enters a company action level status. Additional risks exist if the analysis is not done in a professional manner, if the insurer encounters problems associated with risks not identified in the analysis, or if risk is not properly evaluated or managed by the company. While high quality analysis may minimize the impact of such an adverse result, appropriate measures should be taken in advance to protect the company and the actuary from legal action for "good faith" efforts.

The insurer may also be at risk from its various public audiences if it does not perform a viability analysis, particularly if performing a viability analyses becomes identified with industry's "best practices." The failure to analyze risks and hence be able to better manage those risks may lead to a weakened condition.

Concerns exist about confidentiality and associated risks of disclosure of the results of the analysis. Some argue that to be most effective and useful this analysis must be completely confidential. A confidential analysis may be more likely to have the robustness that will make it an effective management tool. On the other hand, wider circulation may prompt a higher level of care. Presumably the results of the analysis would be available to regulators if the company were to enter a company action level.

The company's viability analysis may be a reasonable subject for discussion with regulators while keeping the contents of the report confidential. Others would argue for the disclosure of any written documents to the regulators with the expectation that, if kept confidential at that level, most of the robustness to the company would be retained. We recognize that some states may not be able to maintain confidentiality at that level with the result that the report would become public information with the potential that its value will be greatly diluted. There are even those that would make the information completely public. This then has its own risks that market place perception of an insurer's viability may be correlated with the documentation of these risks, resulting in the potential for material unanticipated impact on the company.

## **VI. Implementation Issues**

As we look forward, it is reasonable to expect that life and health insurance companies will further recognize that "best practices" include conducting viability analyses and the work performed will become more vigorous. This spontaneous implementation may be the most effective outcome and could provide the greatest value to each of the audiences.

Insurance regulators may consider how they might enhance the benefits that financial regulation could realize from viability analyses. As mentioned above, regulators can benefit from knowing that a viability analysis has been performed. A desire for that level of confidence on the part of regulators could result in any of a broad range of actions, from an endorsement of the viability analysis process, to requiring the submission of a formal report.

Each of the possible actions would have implications and tradeoffs for the company and the regulators that should be considered very carefully before moving forward. For example, while there would be increased value to a regulator being assured of the thoroughness of the analysis by receiving a copy of a prescribed report, the tendency to exclude from the report information that might be viewed negatively by the regulator could result in reduced value to the company and others.

We have previously discussed with regulators the possibility of a required disclosure as to whether or not a confidential report had been given to the board of directors. Only in the case of a troubled company would the report be made available to regulators.

In the case of healthy companies, there has been recent consideration of regulators routinely holding discussions with company management about the company's risks and its approach to risk management. The viability analysis would provide the appropriate background for those discussions.

There are other outstanding issues and considerations that should be discussed in the future such as the cost to perform the analysis, frequency and timeliness of updates, who within the company has responsibility for the analysis, and the need for actuarial standards of practice. As insurance regulators consider how they can encourage viability analyses, the Academy stands ready to assist in the identification of issues and clarification of understanding.

**EXAMPLE OF VIABILITY ANALYSIS CURRENTLY BEING PERFORMED  
BY A MUTUAL LIFE INSURANCE COMPANY**

The following description of a planning and projection process constitutes an example of viability analysis currently being carried out by a large mutual life and health insurance company. The numbers in the illustrative reports have been scaled to conceal the identity of the company, but are representative of typical results.

At the current time this company does not prepare a formal Viability Report. The process is ongoing and communication between the product actuaries and managers that participate in this activity and the company's top management is continual throughout the year. New scenarios are run on a frequent basis to test the current and future effect of feasible risks and opportunities that have been identified.

The main focus of this effort is not to demonstrate solvency. This company is very well capitalized and projects some level of positive earnings under all feasible scenarios. The focus is on finding the growth patterns and productivity improvements required to achieve competitive levels of the company's financial performance measures. The primary measures are GAAP earnings and GAAP ROE. However, the process does produce STAT and GAAP income statements, balance sheets and Risk Based Capital amounts for each quarter of the projection period.

After many trial runs, a financial plan is adopted for a new five-year period. The actual results for each quarter are compared to the plan for each product group. The differences and the corresponding reasons are identified and communicated to the product managers and top management on a quarterly basis. As a result of this analysis the plan may be "returned" and appropriate management action taken. On a somewhat higher level, the results compared to plan and the proposed management actions are reported to the Board of Directors.



# **LARGE MUTUAL LIFE INSURANCE COMPANY CORPORATE PROJECTION PROCESS**

## **I. OVERVIEW**

Large Mutual provides a wide range of insurance products, which are sold through varied distribution systems. Individual health insurance products sold directly by the parent company include major medical, Medicare supplement, Long Term Care, critical illness, disability, as well as supplemental health coverage. Through its life insurance subsidiary, the company sells Individual Term, Universal Life, Variable Universal Life, Flexible Premium annuities, Single Premium annuities, and variable annuities. Individual products are sold through captive agents, brokers and direct response marketing. The companies also serve the group insurance market with medical, life, LTD, pension and other insurance products.

The Corporate Planning process at Large Mutual currently supports modeling for these varied lines of business as well as incorporating a “Corporate” line. Full SAP and GAAP income statements, as well as certain balance sheet entries, are projected over a 7 year period. Scenarios are run to examine results under various production and expense levels. Additionally, results are stress tested to examine the effects of experience changes or interest rate changes.

The results of these scenarios are then used to:

- a. Set Corporate and product line profitability goals,
- b. Examine expected cash flow for investment purposes,
- c. Set strategic goals for the future growth and viability of the business. E.g. expense/production levels needed to grow to a 12.5% R.O.E.,
- d. Examine expected tax status of the companies(life versus P&C insurer) based on reserve test

## **II. PRODUCT PROFITABILITY MODELS**

Product profit models are built in various areas throughout the companies, using various systems. These may include packages such as PTS or TAS for life and annuity products or Excel for group and individual major medical. All of the base models share certain characteristics.

First, a common set of interest rate assumptions is used. Second, initial runs are performed using current best estimate assumptions. These may vary from original pricing. Third, all models produce the usual income statement and balance sheet entries along with key statistics used for expense projection purposes These include in-force counts, premium, sales levels, claim counts etc. Expense units are determined for each line based on the current level of expenses or expected budgeted expenses.

In-force models are built separately from new business models for each product line. New Business models are built assuming 1 million dollars of annualized new business premium (ANBP). After the models are built and validated, cash flow as well as income statement and balance sheet entries for the in-force and new business models are passed separately to the Corporate planning area for development of the first pass corporate projection.

### III. DEVELOPING THE FIRST PASS CORPORATE PROJECTION

Given an in force model and a million dollar ANBP new business model, it is a simple task to generate a projection based on a given ANBP target for the next 7 years. For example suppose the premium entries are as follows for a given line:

	Year 1	Year 2	Year 3	Year 4
In force	190M	185M	177M	165M
NB (1M ANBP)	0.65M	0.9M	0.8M	0.7M

If production is assumed to be 10M, 12M, 15M and 20M in years 1 through 4 respectively, then the total premium expected in year 4 is given as  $165M + (.7M * 10) + (.8M * 12) + (.9M * 15) + (.65M * 20)$ .

This process is a simple programming task and is only restricted by the number of years of data provided by the respective models. Additionally, the process can be performed for each entry to provide income statement, balance sheet entries, as well as expense drivers for a given set of production scenarios across all of the various lines of business in a timely manner. As an example, projecting 65 distinct lines of business full SAP and GAAP entries takes under 5 minutes, using a visual basic program which is not focused on efficiency.

Expense units can be added to the process to also allow for changes in expense level assumptions. Included in this variation are assumptions used to take into account step-variable nature of certain expenses using a linear approximation, as well as reflecting the impact of changes in deferred expenses on resulting GAAP amortization for a given issue year.

Changes in amortization can be modeled by introducing a variable which records the base level of deferred expenses assumed in the 1 million dollar ANBP model. Should the deferred expenses increase due to ANBP growth alone, then the resulting issue year's amortization of DAC is simply the base model's amortization ratio by ANBP as described above for premium. If there is also a change in the assumed level of expenses, then amortization needs to be additionally changed to reflect the increase in deferrals over and above volume changes. If, for example, the base deferred expense level doubles, prior to volume increases then the base model needs to amortize at twice the rate. These calculations are all performed at the individual product level.

When complete, a process is in place, which allows for a quick turnaround of various ANBP and expense unit level scenarios for the entire Company, under assumed interest rate, mortality, morbidity assumptions.

If, for example, interest rate scenarios are desired, additional runs of the base models are needed. These can be defined up front, and the resulting data flows can be saved as alternate scenarios to be calculated through the same process described above.

Mortality and morbidity scenarios are typically treated as sensitivity runs to determine some what-ifs. An example is the case of what if mortality increases x%? These runs are typically

treated as another scenario to be run through the base models and entered as another scenario in the corporate planning process described above.

#### **IV. TYPICAL SCENARIOS**

Typically scenarios which are run focus on variants of the following:

1. Production growth/ distribution and expenses based on historical trend.
2. More growth in Products of type X versus type Y, with expenses at current levels.
3. Grading expenses to “allowable” or pricing levels over 5 years.
4. Production growth needed to obtain critical mass.
5. Increase in morbidity, mortality or lapse rates.
6. Changes in interest rate levels.

Following are example reports from two scenarios varying ANBP and expenses.

Baseline: ANBP distribution based on prior year results. Growth determined by Sales and Marketing. Expense levels are at current Budgeted levels by product.

Scenario 2: ANBP distribution assumes flat medical product sales and increases in individual life / annuity.

Expense assumptions assumes individual products reach allowable expenses over 7 years.

