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Blazing the Path for a Unified Valuation System

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Editor's Note: There is a Robert Frost poem about two paths diverging in the woods and a choice being made that "made all the difference." The following describes a path that is and has been pioneered by many diverse individuals in order to see if it might make a difference. I think appreciation is appropriate to all those who have traveled thus far.

Initial Background

Building a Mission Statement

In January 1997, the Life Health Actuarial Task Force (LHATF) of the NAIC requested that the American Academy of Actuaries (AAA) initiate a thorough study regarding current approaches to reserving for life insurance, annuities, and health insurance, and make recommendations on any needed changes. The study began by addressing the broad objectives of a revised valuation system and was instructed by LHATF to not be constrained by past valuation practices. While starting with a clean sheet of paper it would also be important to consider practicality, the current state and direction of actuarial science and the impact on other elements of the regulatory framework. At the end of 1997, the Academy report provided the following:

- A review of the current system in the U.S.
- A review of current systems around the world
- A statement of Objectives and Desired Characteristics for a Valuation Framework

The Current System

The task force established a subgroup to report on advantages and disadvantages of the existing valuation requirements. The subgroup identified as advantages of the existing formula approach its focus on standardization and simplicity and the realization that it has produced adequate

reserves and risk based capital (based on those reserves) for many years. It is also the basis for tax reserves and facilitates automation of calculations and thus, the audit and examination process. In addition, asset adequacy testing has added a second perspective and discipline to the reserve setting process.

Disadvantages include the following five items:

- 1) Emerging experience is not reflected in the valuation process (except for some health claim reserves). Expenses are implicit; valuation interest rates are not based on actual earned rates; there are no lapses or company specific modifications (except when reserves are deemed inadequate in total); there has also been no assessment of the actual degree of mismatch between assets and liabilities; future flexible premiums are ignored; and finally, the process ignores all non-guaranteed elements. This severely limits the usefulness of the current valuation system for forward-looking kinds of information and for relating pricing expectations to current financial results.
- 2) The second disadvantage is an undefined commitment to conservatism. There are implicit margins in assumptions and in methodologies to provide for expenses and guaranteed and non-guaranteed elements, but no ability or framework to describe the level of adequacy in aggregate or between product lines. This creates inconsistencies and uncertainties across product lines, between primary and secondary benefits, and in reserving for multiple benefit products. In addition, this has undoubtedly reinforced the IRS belief that assumptions are too conservative and reserves are too high.
- 3) The system has led to a proliferation of requirements that do not adequately address emerging product designs. The current system requires increasing

amounts of manpower from both the Academy and regulatory resources for new product designs. These products require 1) research to define and measure the key risks of these products and 2) an even more complex process to translate the research into the current formula-driven, factor-based reserving structure. Consider the following stacking of requirements to fix past specific problems or new products:

- a) Asset Adequacy Testing
 - b) AVR, IMR & RBC
 - c) Universal Life, Variable Life, XXX
 - d) Actuarial Guidelines 33 & 35
 - e) Specific risks or concerns by individual states, sometimes as general bulletins and sometimes only expressed verbally, or in a product filing response written by staff preceding the current state regulators
 - f) Possible FASB 133 & Codification Developments
- 4) The focus on specific formulas and rules, in the absence of principles and professionalism, can reinforce an adversarial regulatory role and a focus on industry and regulatory legalism.
 - 5) There is no expectation for any kind of overall risk overview and assessment.

International Report

The task force decided that it would be appropriate to explore how other countries approach valuation and established the International Subgroup. The subgroup selected 14 countries to study, based upon their significance in world markets, geographic diversification, historical development, and approach to valuation. Key conclusions reached by the work group included:

- Reserve requirements fall into three categories: formula based with methods and assumptions prescribed by regulation; net premium based where some discretion is given the actuary in setting assumptions; and gross premium based.

- There is a growing trend toward more flexibility and discretion and less reliance on prescribed formula reserves.
- Emphasis on capital adequacy and financial condition are becoming increasingly important in a number of the countries studied.
- In all countries studied (other than the UK), there is only one reporting system. This compares with at least three systems in the US (GAAP, Statutory, Tax and increasingly, reports for a foreign country owner).
- In most countries, assets and liabilities are valued consistently.
- A focus of recent changes is to create regulations that provide flexibility to adapt to changes in the markets.
- Systems in Australia, Canada, South Africa and the LTK emphasize strong working relationships between actuaries and accountants.

The valuation systems of three countries (Australia, Canada and Singapore) exhibited characteristics that were worth noting. These countries have revised their valuation systems in the past 3 to 5 years and those revisions addressed many of the same issues that the task force later determined were important objectives to be captured in a new U.S. statutory valuation system. Each of these three countries now have capital adequacy standards that consider business plans, recognize the need for increased actuarial judgment, and continue to actively regulate valuation aspects of insurance.

Framework of the Unified Valuation System

In light of the above findings, the task force recommended that a revised valuation approach be considered. The broad topic of valuation was felt to be best viewed in the context of its purpose and use. To do this, the task force set out a framework for the Unified Valuation System:

1. Provide information to policyholders, regulators, and others to assist them in making informed judgments about insurers' financial condition
2. Support financial analysis both at points in time and over time
3. Be built upon best estimate assumptions with explicit determinable margins
4. Address overall solvency, not just contract reserves; in particular, address resources consistently with obligations
5. Produce auditable and verifiable results and incorporate an actuarial "feed-back loop" in which assumptions and projected results are compared to emerging experience
6. Cover all insurance activities. Be holistic and consider the entire enterprise, rather than merely representing a sum of independent parts
7. Balance practicality, cost, and resource effectiveness in relation to the value of the information to the audience
8. Be consistent for all companies and among regulatory jurisdictions
9. Be flexible; e.g., be able to accommodate unidentified future needs
10. Utilize actuarial judgment in the development and interpretation of results in preference to prescribed methods and assumptions
11. Accommodate materiality issues

Objectives of the Unified Valuation System

In responding to the spirit of the NAIC request, the task force wanted to approach valuation in the next century from the broadest perspective, not solely as a reserve calculation. The task force concluded that the determination of reserves met only some of the purposes of valuation. It identified three objectives of

valuation. These objectives derive in part from the Society of Actuaries' "Statement of Principles Regarding Provisions for Life Risks" that can be found in Volume XLVII of the *Transactions of the Society of Actuaries*. The focus of these objectives is on the policyholders and the viability of the company. Each objective had its own set of regulatory purposes and each addressed the needs of various audiences. Although each objective had some mechanisms currently available, additional mechanisms still needed to be considered.

One objective was the measurement of an insurer's viability by calling for an evaluation of the ability of a company to execute various business alternatives in terms of its available resources. Questions included:

- Can the company meet obligations as they become due?
- Are resources adequate to meet obligations of both existing business and new business in a variety of risk scenarios?
- Can resources support the business plan?

Another objective called for an early warning system with respect to solvency concerns. In other words, evaluate the adequacy of an insurer's resources relative to obligations by determining whether obligations, with respect to existing business, can be met when due with at least some defined (say 95%) probability of survival.

A last objective called for measurement of an insurer's financial condition and performance in terms of changes in resources relative to changes in obligations. The goal would be to show the change in resources since the end of the last fiscal period relative to changes in existing obligations related to existing business during the same period.

In summary, the valuation system should support a broad range of financial reporting needs and meet the following objectives:

1. Analyze the company's capacity to execute its plan of operations, monitor risk and maintain its ability to do business

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- Evaluate the adequacy of resources relative to obligations
- Measure changes in resources relative to obligations.

These objectives provided the basis for the task force report and future directions. They were intended to be broad enough that various approaches would work under each of them. Having defined the broad vision, the next steps moved towards clarifying practical questions and concerns.

1998 & 1999 — Next Steps, Moving to the Pragmatic

Draft Model Law

Dealing with principles and concepts early on helped achieve early consensus, but many were aware that the “devil would be in the details.” In order to get to the devil efficiently, the request was made by the LHATF to draft a model law. The objective was not to recommend a specific law, but to provide an example of the kinds of issues a model law would need to consider. Thus placeholders or options were included in the model law draft. Placeholders were included for setting the required level of capital adequacy, and options were provided for such items as the appointment of the reviewing actuary (whose role is to verify the work is complete and in compliance with the law and Actuarial Standards of Practice). A copy of this draft “chinese menu” version of a model law can be found at the Academy Web site www.actuary.org/pubsta.htm under Public Policy, Public Statements for 1998.

Numerical Examples — “Show Me the Numbers”

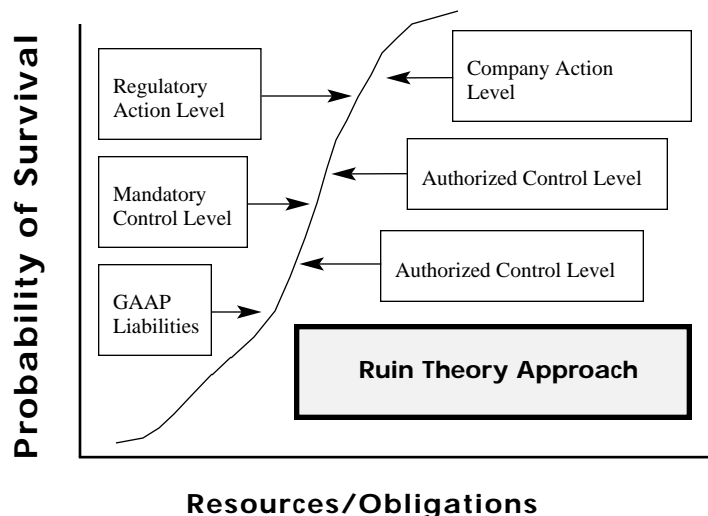
The next area of devilish details lay in the numbers themselves and the practical question of how an actuary would or could fulfill a required regulatory role. Beginning in 1998, a sub-group of the task force focused on illustrating how an individual product line could approach setting a capital adequacy level. Examples were prepared and reviewed for a 20-year level term product, a participating whole life product, a universal life product, a

group major medical block and a long-term care product. The term life example was presented at last year’s Fair Value Seminar and the UL and participating products were shared at last summer’s Actuarial Research Conference.

Actuaries Role in a Principle-Based Valuation Framework

As work progressed, the role of the actuary was built and articulated around the following concepts:

- The heart of insurance is to accept risk and to meet obligations. This is different than gambling or a zero sum game due to the value of diversification. The actuary’s role is to determine resources needed to accept risk and to meet obligations. In other words, how much capital does it take to maintain and accept new insurance risks? To answer this question, an approach based on ruin theory is used where the modeling approach tests if the assets are adequate at some level of defined level of probability such as 95 or 98%. This has also been described at times as an S-curve approach by the task force, as seen by the shape of the curve. (One minor point, the S-curve chart on this page shows GAAP reserves near a 50% probability of survival as a “best estimate” or “expected value.” This would certainly not be the case if the distribution were not normal, but more importantly confuses an average price with a 50% probability of failure as an enterprise).
- Insurance risk is based on events with probability distributions of varying degrees of credibility. Why not have the valuation process directly feed into and report on this process so that over time, the valuation data builds and evaluates



the credibility of the ruin theory framework?

- Evaluation of company risk needs to be forward-looking to assess traditional solvency at a point in time and to assess viability of the direction of future continuing business operations.
- The focus is on evaluating and projecting cashflows. This leads to what is called an indirect valuation approach for the liabilities and means the UVS process is independent of the accounting treatment of the assets. Whatever value is assigned to the set of assets backing the liabilities becomes the value of the liabilities funded by those assets.
- In essence, this expands the valuation actuary concept to include non-guaranteed elements and required capital and links the original pricing expectations into the valuation process.

Simplifying the Change Process — Deferring the Earnings Question

The introduction of the Risk Based Capital concept in the past 15 years has meant that reserves only affect required capital when the RBC levels are a function of the reserves. Thus, early in 1999, the task force decided to first focus on determination of capital adequacy levels and leave the earnings discussions for a later phase of the project. Earnings have both tax and performance implications that are complex and involve both accounting and legal considerations better addressed with more usage and greater familiarity with a ruin

theory approach to defining risk based capital. The current work has proceeded by assuming that current statutory formula reserves would continue as is. However, new and innovative products not currently defined by formula and the required capital determinations would be done through the UVS approach.

Roadblocks, Shortcomings & Criticisms of UVS

The following concepts are the major criticisms that have been expressed:

- **Complexity** - Some feel that it cannot be done. Either the calculations are too extensive or the theoretical issues too unknown. Some key theoretical issues include covariance determinations, perhaps needing 1000*1000*100*100 ... sizes for scenario matrices, statistical credibility issues for assumed distributions behind company data, and assessing a risk charge for modeling error and for mis-estimating the parameters of the underlying distributions.
- **Discipline** -What is to prevent the actuary from bowing to company pressure to lower required capital by playing with assumptions without the safeguards of minimum standards?
- **Too costly** - Some would say the current process is working well enough and that the additional work would add little, if any value, while being much more expensive.
- **Actuary** - is not qualified to address risks, or at best should only address some or most of the C-1 to C-3 range of risks.
- **Regulators** will not accept it.
- **Communication challenges** - Some call this a need for more precise language. Others view it as ignoring value-added marketing and for many, it is the reality of dealing in a political and agenda-driven world. This is meant generically, but it is a key roadblock to any project.

Consider a current challenge today: Statutory reserves are conservative. All of our professional literature uses

statements similar to this and so outside bodies see this as evidence that insurance must be underreporting tax revenues. Yet, the reserves are based on guaranteed elements only. In addition, what the reserves (and additional RBC) represent are a "fee" to the insurance company, charged by the regulators for the right to be an insurance organization and to ensure it will remain solvent. Thus, in reality, it represents an assurance of future taxable income streams that are less likely to disappear due to insolvency. Yet, the preponderance of "conservative statutory reserves" phraseology communicates a very different message.

1999-2000 Current Developments

Broadening the Involvement

More recently the following steps have been taken to broaden the discussion and development of the UVS concepts and to address the perceived shortcomings:

- Presentations on UVS at the 1999 Fair Value Seminar and the 1999 Actuarial Research Conference, in addition to SOA meeting presentations.
- Discussions with the SOA leadership on how to best coordinate the work and roles of the actuarial bodies to develop and implement a UVS risk-based methodology. The SOA's role in research and developing tools for assessing risk is vital for supporting an ongoing UVS framework, is fundamentally consistent with the SOA mission, and is certainly consistent with the "big tent" directions recently initiated by the SOA. Therefore, modelers from the Academy and researchers involved with the SOA met in January to lay out the general concepts and approach for a UVS modeling seminar later in the year to be sponsored by both the Academy and the SOA. The seminar will focus on the quantification of risk to determine required capital for a multi-line company. The modeling project plan and approach will be shared with the SOA research coordination group to coordinate additional research topics and a theoretical critique of the modeling demonstration.

- The task force has continued to involve

health perspectives in developing both modeling and the viability principles. While the P&C practice has been invited to participate, they already have a framework which allows actuarial judgment in the determination of reserves and are focusing their capital assessment on developing additional dynamic financial analysis tools and methodologies. In fact, the modeling for the seminar will be based, in part, on a platform built for a P&C dynamic financial analysis model.

- A viability subcommittee has been formed to present to and discuss with LHATF in 2000 viability concepts and examples to illustrate the value of a comprehensive overview on company risks. In Canada, a similar concept has been in place for over 10 years. In addition, external events have served to broaden the discussion in the following ways:
 - The increasing awareness of companies that may have risks that are unlikely to occur, yet would have a material financial impact if they do occur. These high impact, low frequency risks could be such elements as seven day puts, or minimum death benefit guarantees. How should these risks be monitored and should they be reflected in the balance sheet or a disclosure statement? These risks need to be addressed and could certainly be addressed in a viability report or through some other disclosure process.
 - Nationally, the passage of the financial services reform bill has led to the Federal Reserve Board requesting background information on insurance solvency regulation. The ability to dialogue with banks and others about risk from a ruin theory perspective is very useful and increasingly necessary.
 - Internationally, there is a desire to formulate international capital standards for insurance and for other financial services industries. Some are concerned that companies might take advantage of capital differences through arbitraging national differences. This development

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is just as real as, though perhaps less prominent than the fair value discussions that are also taking place within the International Actuarial Association (IAA) and the International Accounting Standards Committee (IASC).

- Interestingly enough, many of the UVS participants feel that a ruin theory or S-curve approach will also be required to implement a fair value methodology (and has in fact been suggested by the IAA, linking the methodology to determine capital with that used to determine earnings). The seminar modelers expect that the next development from the fall seminar would be to extend the modeling concepts to fair value. Whether correct or not, external events are accelerating the interest in performance or income measurement and in linking it to the required capital framework.
- The increasing acquisition of U.S. insurance organizations by large European multinational insurers has led to extensive internal research to determine how to more objectively assess capital requirements across countries and lines of business.

Personal Observations Going Forward Into the Next Millennium

First, some comments on criticisms of UVS.

- **Complexity.** It is important to sort out valid criticisms of the concept from criticisms that are really based on resistance to change or the uncertainty introduced by it. Imagine imposing our current statutory framework onto another country without reserve and capital requirements. Assume all agree it is the right decision. It would still be overwhelming and very complex because all of it is new. Yet to us, our familiarity with the current system takes much of the current work for granted,

and we are used to implementing marginal changes to an already familiar system. Certainly as we spend more time researching and becoming familiar with the concepts, more of the complexity can be dealt with on a marginal basis. What if only 60% of the risks can be modeled with effective tools and the rest is too complex? Fine, then make a safe, simple guideline for the 40%. This will focus attention on the missing areas and allow the profession to add additional refinement and sophistication on a marginal basis.

- **Discipline.** There are two tools to discipline the process. One is a professional standard along with the reviewing actuary concept. Actuaries are able to set professional standards and impose discipline on its members. The other tool is the use of the feedback loop via public disclosure. When a company prices a new product, those expectations are then built into the valuation process and the public financial results reflect the impact of emerging experience (as happens for FAS97 type products).
- **Too Costly.** First, some of today's work will no longer be necessary. In addition, while additional work is always more costly, what are the benefits? Ten years from now, whether UVS is implemented or not, valuation will still be complex and often involve significant overtime at year-end and additional resources throughout the year. But the key comparison will be how much value could or would have been added by a different valuation framework. In the business of making assumptions about risk and human behavior, data and robust models are invaluable. Finally, this has ignored the cost of capital to the consumer. If insurers are holding too much capital, both owners and policyholders return is lessened. If too little capital is being held, the return is reduced to owners and policyholders of other companies.

- **Other.** If actuaries are not qualified, then who is? A vibrant industry will not flourish without a trained professional body. Regulators want that resource and were the ones that came to the Academy asking for recommendations.

Finally, some final principles to consider:

- Staying focused on principles has made the UVS concept relevant to increasingly wider and diverse audiences. Its intent is to more fully establish the scientific and professional foundations of actuaries.
- This may suggest a change in focus from the "right" formula answer to understanding and communicating trends and estimates over a period of years. In other words valuation reveals not just how one is doing, but also reveals what one is learning about prior pricing expectations.
- UVS need not and will not be perfect, but its forward-looking focus should be more robust than the current system. I believe it is about pointing the rudder of our professional direction to a more valuable, growing, and dynamic role and it is about substituting facts and demonstrations for appearances and impressions of conservatism.

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