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My Perspective

My Perspective is a guest column where we invite professionals from a broad range of financial engineering and risk management fields to share their views and perspectives. While edited by *FEN*, these do not necessarily represent the views of the publisher.

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Actuaries: *The Best Kept Secret in Business*

By Charles L. Gilbert, FSA, FCIA, CFA

One of the more common reactions heard after an actuary introduces themselves is "What's an actuary?" Actuaries have been practicing their profession and existing largely undetected by the general public for more than a century. So when someone meets a live actuary for the first time, the question is not entirely unexpected. Historically, the actuarial profession has not done a good job of marketing itself, even in areas where actuaries have substantial expertise. That's a shame because actuaries have much to contribute to any field that deals with risk. This is particularly true of the world of finance.

Actuaries are professionals who have been rigorously tested and trained in the pricing, valuation, analysis and management of risk. Actuarial exams have been described as the most difficult professional exams in the world. No other profession demands as rigorous a qualification process. Pass percentages are kept low to ensure that the highest standards for entry into the profession are maintained. In North America, actuaries will spend up to 10 years or more after university studying risk-related topics founded on probability and statistics, financial economics and life contingencies to gain the coveted "Fellowship" designation. But as if the exams were not enough, prospective entrants into the profession must pass a Fellowship Admission Course and fulfill Professional Development qualifications. Once successfully completed, fully qualified actuaries or "Fellows" must fulfill ongoing Continuing Professional Development and Education requirements. The majority of actuaries have traditionally specialized in insurance or pensions and many people who think of actuaries tend to associate actuaries with the insurance or pension industries. While that is certainly true, many actuaries focus their skills on finance, investments and risk practice. In fact, fully qualified actuaries who have successfully completed all of the exams in the Investment, Finance or Enterprise Risk Management (ERM) tracks have covered most of the material required to become a Chartered Financial Analyst (CFA), Financial Risk Manager (FRM) and Professional Risk Manager (PRM) and have been tested at a far more rigorous and higher cognitive skill level. In fact, many actuaries decide to write these exams to obtain these other designations since they have already mastered most of the syllabi.

The majority of actuaries find themselves working for financial institutions, mainly insurance companies and pension funds but a growing number are working for commercial and invest-

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ment banks. That is no coincidence. Financial institutions (along with many corporations) are in the business of assuming risk provided they are fairly compensated for taking those risks. Actuaries typically understand the risks and the rewards better than any other professional. They are uniquely qualified to help companies make more effective risk decisions. Bred with strong quantitative backgrounds – most actuaries are mathematicians turned risk professionals – actuaries find themselves in their element when faced with complex financial risk problems. These are some of the reasons actuaries are being sought by rating agencies and regulators looking to beef up their risk assessment capabilities. Actuaries are also being tapped for Chief Risk Officer (CRO) positions. In Canada, the CRO of every major life insurance company is an actuary.

Actuaries have made valuable contributions to financial economic theory and risk practice. Sophisticated techniques and approaches have been developed that greatly improve how risks are quantified and enhance financial decision making. Actuaries such as Frederick Macaulay, Frank Redington and Robert Reitano introduced the financial world to duration, immunization theory and partial duration; Harry Panjer published definitive references on financial economics and loss models; James Tilley, David Wilkie and Mary Hardy – among many others – have made great advances in the stochastic modeling of risk. Several actuaries along with the Society of Actuaries and the Casualty Actuarial Society have been pioneers in the emerging field of Enterprise Risk Management (ERM).

Actuaries have been at the forefront of risk practice, solving sophisticated valuation problems involving dynamic hedging of complex embedded options where no close form or analytic solution exists.

Risk practice encompasses more than risk mitigation or risk management. Risk practice also involves selecting and taking risk. The key is making sure the organization is fairly compensated for taking those risks and is comfortable with the amount of risk exposure assumed.

By determining which risks provide an attractive risk/return profile and identifying which risks should be avoided or hedged, actuaries can help companies exploit risk opportunities. One area in particular where actuaries have been at the forefront is in helping companies implement Asset Liability Management (ALM) to gain competitive advantage. While many financial institutions have been effective at implementing ALM at a tactical level, the focus has tended to be on risk mitigation. The Society of Actuaries Task Force on ALM Principles provides the following definition of modern ALM:

"ALM is the on-going process of formulating, implementing, monitoring and revising strategies related to assets and liabilities to achieve the financial objectives for a given set of risk tolerances and constraints."

When using ALM as a strategic decision-making tool, the goal of ALM is not necessarily to eliminate or even minimize risk. ALM is viewed as a framework to achieve the financial objectives of the organization subject to its risk tolerances and constraints. Within this framework innovative strategies are formulated for optimizing financial results. One such strategy is to exploit the term structure of interest rates by rebalancing the asset portfolio backing liabilities in such a way that reduces the interest rate risk exposure of the company and increases portfolio yield, future investment income, and achieves the company's financial objectives. The key to formulating and executing effective strategies is to have an in-depth understanding of both the assets and liabilities and how they interrelate. Trying to specify objectives for each side of the balance sheet separately will not necessarily ensure that the overall financial objectives are achieved.

To see this more clearly, let's say you wanted to maximize risk adjusted return on capital. Under the traditional approach the assets and liabilities might be managed separately. The liability manager would be asked to state what the investment objectives for the liabilities were and come up with a suitable benchmark for the liabilities. The asset manager would then try to beat the liability benchmark while staying within some specified risk limit. Typically, in order to give the asset manager the maximum flexibility, the risk limits are kept relatively simple and might be stated in terms of a Macaulay or Modified Duration target. However, beating the benchmark within the specified duration target and/or maximizing portfolio yield may not necessarily ensure that risk adjusted return on capital will be maximized. That will depend on the actual interest rate risk exposure, the impact on reserves, capital and accounting treatment. This is where a risk professional who understands both sides of the balance sheet can help. By formulating Asset Liability Management strategies to achieve the financial objectives subject to risk tolerances and constraints, this can be set up as an optimization problem. A strategy can then be executed that will select the best risk/reward profile for the company. Actuaries are uniquely positioned to formulate such strategies and determine the impact on reserves, accounting results and capital requirements, then decide whether the organization is being fairly compensated for the risks assumed and whether the strategy achieves the organization's overall financial objectives. Under the traditional approach, the asset manager would typically execute the trades and find out the impact on the overall financial objectives after the fact.

There are many practicing actuaries with investment experience who understand both the assets and liabilities. By working closely with an asset manager, an actuary can provide valuable insights into whether the strategies being contemplated achieve the financial objectives or whether they are optimal from a risk/reward perspective.

Regulators, rating agencies and analysts have discovered the value that actuaries can add to finance and risk management and engage these risk professionals on staff. Actuaries have trained regulators, rating agency and investment analysts on asset liability management and have worked together with them to establish approaches for determining appropriate levels of capital for various risk exposures, and developing more a meaningful valuation metric for investment analysts to measure insurance companies.

While actuaries are uniquely trained risk professionals with a lot to contribute to the world of finance, they may just be the best kept secret in business! ■

For more information, contact the Society of Actuaries, http://www.soa.org