



SOCIETY OF ACTUARIES

Article from:

# Actuary of the Future

November 2007 – Issue No. 23

# ACTUARY OF THE FUTURE

Published by the Society of Actuaries, Schaumburg, Illinois

## Is the Actuary of the Future the Enterprise Risk Manager?

by Timothy Essaye



*Tim Essaye explores an emerging career opportunity for actuaries.*

Over the last two decades the world's business schools have been teaching a new crop of managers to be more quantitative in their decision making. As managers become increasingly numbers-savvy, they need more and more quantitative information from those supporting them in the organization. The simple MS Excel static budgeting process just will not do anymore. The bar has been raised, and it is up to the firm's quantitative staff to deliver high-quality, meaningful information to senior management to support decision making.

Actuaries have long been tasked with tackling difficult quantitative problems. Loss estimates, reserves requirements, and other quantities have been their traditional domain, but the actuary of the future has an opportunity to broaden his/her scope of knowledge to include other risks facing corporations around the globe. While this may seem like a daunting task at first, the reality is that the skills required to analyze business risks are not a significant stretch of the traditional actuary's background.

### Risks Facing the Typical Enterprise

While all organizations are different, they have many risks in common, including financial, credit, operational and hazard. Financial risks include risks arising from treasury operations (capital structure, interest rate risk, hedging, pension contributions and cash management) as well as risks arising from global economic activity and procurement policies (e.g. rising raw materials costs). Credit risks include risks of customer defaults as well as management of the firm's accounts receivable and payable. Operational risks include things like IT failures, supply chain breakdowns, fraud and mechanical break-

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downs at plants. Hazard risks can include traditional insurable risks like catastrophe and product liability, as well as risks like stakeholder litigation.

What do all these risks have in common? They can be evaluated using quantitative methods, and their impact on firm profitability is understood when evaluated appropriately. Many of these risks are currently analyzed on a stand-alone basis by specific groups, and evaluated using some variation of probability/severity framework. Only a few organizations that I am aware of actually aggregate this information up to the enterprise level to measure the impact of interrelationships between risks, but this is changing as more quantitatively minded managers ask more difficult questions. Actuaries usually have experience with a subset of the risks mentioned above, but with a little work and some creative thinking actuaries can broaden their scope of responsibilities to include many of the other risks and also create a role for themselves in the interpretation of this information at the enterprise, or portfolio, level.

### The “Typical” Enterprise Risk Manager

The typical risk manager in many non-financial corporations comes from one of three backgrounds: the insurance sector, the financial sector (e.g. corporate treasury), or industry (e.g. engineers). It should be no surprise that all three are quantitative disciplines, as these are quantitative problems. These backgrounds share a detail-oriented approach to solving problems that makes them well-suited for the role. Actuaries share these skills, but often lack the experience elsewhere in the organization to convince others that they would make a good enterprise risk manager.

### Potential Roles for Actuaries

Much of enterprise risk management has its roots in portfolio management and corporate finance. The concepts of trading off risk and return and benefits of diversification are well understood and articulated in both the actuarial and economics fields, so I don’t believe there are significant knowledge gaps preventing actuaries from contributing to the field. In fact, actuaries may have an advantage in many situations where a large part of a firm’s overall risk arises from pension activities or other more typical actuarial risks. A few areas where actuaries could immediately contribute to an ERM process include:

1. Statistical analysis and modeling of historical market prices: Actuaries should be quite comfortable in this area given their quantitative training, but the application may be slightly different. Rather than just estimating potential variation in market conditions and how they impact pension financials, modeling here would likely be broader and include time series from both the revenue and cost side of the business. Correlation between risk factors is important, so it is necessary to do the analysis jointly and consistently.
2. Analysis of operational risk events: Actuaries are used to analyzing events that occur infrequently but have a high potential impact. The goal of this work is often to estimate the appropriate price for insuring against these events or to calculate reserve requirements to protect against losses. Actuaries have an opportunity to leverage these same skills throughout corporations by analyzing similar risks and determining their potential impact on corporate profitability. Obvious examples include some of the operational risks mentioned above, but there are likely many more in the average corporation.
3. Forward-looking estimates of business risks using stochastic modeling: This is where the previous work is brought together in a common language—dollars at risk. The concept here is that corporations are limited in their ability to take risk, and that in order to optimally allocate risk-taking capacity, one must know how each risk contributes to the company’s overall risk profile. For example, one company might choose to evaluate all risks in the context of earnings per share (EPS). In this example, each risk factor would have some expected contribution to EPS and would also contribute to potential EPS volatility if that expectation were not realized. The amount that the different risk factor contributes to EPS volatility would be its contribution to EPS at risk. Bringing together the risks identified above into a common denominator allows management to make proactive decisions about risk taking. Imagine the value created by giving a CFO the ability to choose between increasing his P&C insurance coverage, contributing more to the pension plan, or hedging his raw materials

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costs. Most CFOs don't have all of the information they need to make that decision now, but if ERM practitioners are correct, that will soon change.

### **An Actuary's Next Steps**

The most common complaint that many corporate managers have about actuaries is that they don't understand the business itself. Most banks had the same complaint about finance quants in the 1980s, and now these same folks drive most of the innovation in the financial markets. That being said, it is incumbent upon the actuary to get involved in the business as best he/she can. Continuing education also provides an opportunity for actuaries to broaden their knowledge base. MBAs from quantitative programs or Masters degrees in financial engineering or financial mathematics are some of the most common degrees in the field, and either one will provide the actuary with additional skills and practical experience in the field.

If continuing education is not an option, try courses to improve communication and presentation skills. Many of the topics we deal with are

quantitative and difficult to explain to non-experts, so communication skills are invaluable if the work is to be taken seriously by senior management.

Higher standards of corporate governance coupled with a quantitative focus in MBA programs are forcing corporations to become more rigorous in their decision-making processes. Corporate finance practitioners have firmly held beliefs about how best to deal with uncertainty in capital budgeting, but they are not the only ones who know risk. The actuary of the future must close the gap between the actuarial and quantitative finance fields, and earn himself/herself a broader mandate than currently exists. The emergence of enterprise risk management provides an excellent opportunity for actuaries to do just that. It will require some work, but the rewards are potentially well worth the price. 🏠

