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## Enterprise-Wide Risk Management: A Summary Statement

by Lloyd Foster



The last time I wrote a summary statement in actuarial literature about what constitutes enterprise-wide risk management, I came under heavy criticism from many important quarters. That was in April 2002. Since then, I have carefully considered all the contrary opinions and am now prepared to write—the same summary statement. Make no mistake about it: I have learned a valuable lesson from these criticisms and from subsequent developments. I have learned that I was right.

### What is Risk Management?

Essentially, all risk management is model risk management. (This was the summary statement that got me in trouble the last time). But it is important to first clarify what the term “model” means in this context: A model is any representation of a real-world situation. We create models whenever the real-world situation becomes too complex or too inconvenient to address in a literal setting.

Notice that there is nothing mathematical or stochastic about this definition. Even if you only walk around with an image in your head about how the business operates, you have a model that meets the definition. Perhaps the most common and useful model is to be found, not in finance or engineering, but in geography. A map is a model of earth, or at least certain subsets of the planet.

You would probably be surprised at the things that legitimately qualify as models. A crystal ball is a genuine model, by our definition. So are tarot cards. And before you turn your nose up at such concepts, it may be a sobering and humbling reality check to realize that significant sections of the non-actuarial community still connect us with activity akin to crystal-ball-gazing. (Why else would people continue to believe the outrageous claim that we can predict when a person is going to die?)

### Model Risk Management

So far, so good. Now, what do we mean by model risk? How do we manage it?

The most meaningful perspective to use here is the analogy of the doctor-patient relationship. Think of the risk manager as the doctor and the model as the patient. As a risk manager, your first task is to clarify what a healthy, successful model should look like. Next, you identify the parts of the current model that are deficient. Finally, you develop

## CONTENTS

- 1 **Enterprise-Wide Risk Management: A Summary Statement**  
by Lloyd Foster
- 2 **A Note from the Editor... The 2005 Future of the Actuary**  
by Marc N. Altschull
- 3 **Chairperson's Corner**  
by James C. Brooks, Jr.
- 6 **Is There a Future for Personal Retirement Activities?**  
by Steve Vernon
- 8 **Actuaries Respond to Profession's Call for Improved Communication**  
by Catherine Konsky
- 9 **Sessions Galore in Store at the SOA Spring Meetings**  
by Andrew Dalton

continued on page 4

approaches that either correct (or better still) prevent the problems.

Let us see if we cannot address those issues here.

### A Successful Business Model

A business model is successful (i.e., in good health) if all the following conditions are met simultaneously:

1. The model is sufficiently comprehensive to incorporate the relevant, important risks and issues that the business faces.
2. The predictive parts of the model can be validated historically.
3. The pricing parts of the model replicate current market values.
4. The model yields consistent results.
5. Professionals in the business actually consult the model and use its results.
6. The model is sufficiently flexible to accommodate changes in the business environment.
7. The model is believed, and relied on, by senior management.

### When Models Go Wrong

Of course, by our definition, all models have to be “wrong” in some respect. They are representations, after all, not the real thing. Thus, a wall map attempts to fit a three-dimensional, spherical object onto a two-dimensional, flat surface, with inevitable geometrical problems. A globe map represents the jagged surface of the earth (with variations from the Mariana Trench at one extreme, to Mount Everest, at the other), by a flat surface crisscrossed with contour lines.

But when we talk about a model going wrong, we mean the extent to which the model violates one or more of the conditions in the preceding section. If you are a risk manager at this phase of your

analysis, you can think of yourself as a physician performing a diagnosis or conducting a health examination.

### Corrective and Preventive Action

So how do we manage the health of the business model? We start by being very fundamental, appealing to the three core risk management components: identification, measurement and monitoring/control.

#### a.) Identification

This is essential, I admit, but the tendency these days is to overdo a good thing by creating longer and longer lists of potential risk items, without ever moving on to the other two components. If you are starting out, my recommendation is that you limit the list to those few (not more than seven) very relevant risk factors that your business needs to deal with as a matter of priority. Additions can be made to the list later, as this initial list becomes understood and comes under proper management.

#### b.) Measurement

Actuaries naturally revel in the prospect of getting their hands on this. But again, be careful that you do not get caught in the trap of measuring for its own sake.

In keeping a big-picture approach, focus on the basics, such as what is being measured and the consistency in measurement units across the company. If this latter item seems trivial to you, then maybe you should have a long, hard talk with NASA.

On December 11, 1998, NASA launched the Mars Climate Orbiter, which was supposed to be a key part of their exploration of the red planet. On September 23, 1999, the spacecraft crashed onto the planet. Subsequent investigations found that the crash was due to something that can only be described as amazing. Two teams of engineers worked on the navigation system. One team measured force in English units (pounds), and the other in metric units (newtons). The spacecraft never had a chance.

All that creative design and ingenuity, all that engineering know-how, all that money spent (would you believe \$125 million?) and in the end the whole thing failed because the teams were not using consistent measurement units. Be warned.

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### c.) Monitoring/Control

Are you sure you want to be a risk manager? Your chances of winning any popularity contest are permanently shot if you do, not to mention the kinds of stereotypes they will fit you into! If an actuary is supposed to be an accountant without the personality, a risk manager is an actuary without the sex appeal.

Yet, it is a vitally important job, and if you are foolhardy enough to attempt it, here are some helpful pointers as you enter the crucial monitoring and control phase.

- **There is nothing too difficult for you to understand**—Lots of people would like you to believe otherwise. These are usually people who are unwilling to provide straightforward answers to probing questions you have about processes, calculations, procedures, etc. Never believe them. Any professional smart enough to understand a highly technical matter is smart enough to explain it to you.
- **Very few things are obvious**—People sometimes try to get away with ill-conceived assumptions by stating that the matter is “obvious.” Most likely, things are anything but obvious. Throughout history, the lazy-brained of society have used this argument as a substitute for thinking. It was obvious that the earth was flat; it was obvious that heavy objects fell faster than light ones; it was obvious that iron ships could not float; it was obvious that heavier-than-air machines could not fly, etc., ad nauseam. The truth is, nature deliberately masks reality with obscurity, probably to force us to use more than the customary 2 percent of our brains. Do not believe too much in the self-evident.
- **Maintain a healthy skepticism**—You may have heard the often-quoted phrase used by risk managers: “If your own mother tells you she loves you, check it out.” I am not sure that you have to take things to that extreme, but if you intend to be an effective risk manager, you want to maintain as low a GQ (Gullibility Quotient) as possible.
- **Keep both feet on the ground**—Should actuaries get involved (literally) with crystal balls? At least one person thinks so. She is a very well educated woman I met on the plane, flying back from a Society of Actuaries meeting. She believes the profession can gain valuable insights by broadening our scope to include parapsychology and similar nontraditional



approaches in our investigations. The alternative, she told me, is to have actuaries remain victims of linear thinking, hopelessly addicted to mathematics.

My opinion is that actuaries should stay away from paranormal considerations. But I do highly recommend that the Society of Actuaries research the history of paranormal phenomena. My reasoning is quite simple (and I am paraphrasing a Columbia University professor here, so do not give me too much credit for originality on this one): In actuarial science, it is not permitted to investigate foolishness. But the history of foolishness can be a valuable source of enlightenment.

### So What is Enterprise-Wide Risk Management?

We have come the long way round to reach this point, but now we have the payoff. If you have followed everything so far, then you will agree that: enterprise-wide risk management is management of the risks inherent in the basic model(s) used by the enterprise to represent and understand its overall operations.

That is it, in simple terms. Unfortunately, it is only the definition that is simple. The practice of enterprise-wide risk management is a risk in itself. 🗑️



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