

What Is Actuarial Judgment?

EVERY ACTUARY IS USED TO THE QUESTION “What is an actuary?” I have yet to adequately explain my job to my wife, Peggy, who still isn’t sure how to describe to her friends what her husband does. But here I plan to focus on actuarial science. Is it a science, an art, or a craft?

First some terms might help:

- ▶ **Science** is a system of acquiring an organized body of knowledge through the scientific method of observation and research. This sounds like what I do; the basis for my findings regularly evolves as new information is obtained.
- ▶ **Art** is a vehicle for communicating ideas or emotions. Traditionally, it’s been used to refer to any skill or mastery, a special faculty of the human mind along with religion and science. Actuarial science certainly has its artistic elements. Where there’s inadequate experience about the past or significant uncertainty about the future, actuarial estimation can be more “art than science,” although the end result is usually decision-oriented.
- ▶ **Craft** is a skill, especially involving practical arts, representing proficiency in doing or making something. I think of actuarial science as a field that emphasizes useful findings as a means to solve problems.

So, which is it? I believe actuarial science is a blend of the three. Science when we gather relevant information and develop hypotheses, art when we design models representative of the expected future or future scenarios and programs to manage uncertainty, and craft when we derive practical solutions.

The glue that binds these together is professional actuarial judgment. But what is this? Does it represent personal opinion, independent of the facts? Is it an unscientific ingredient? Can it be properly assessed by someone else? Actuarial judgment must incorporate relevant knowledge, experience, willingness to learn, skill, sound reasoning, and integrity, based on scientific methods that hold up to the scrutiny of others with an appropriate background.

It is more than just the application of someone else’s pre-canned models or reading from a Bloomberg screen. It’s not just filling out a checklist of best practices someone else compiled, although that can serve as a useful tool and a reminder of relevant considerations to be taken into account.

In the emerging environment of financial reporting, for instance, actuaries no longer use predetermined

factors in pricing and valuation. Instead, they apply actuarial judgment to assess future experience based on a current actuarial analysis and risk management skills. The auditor rightly may be concerned that claiming to apply professional judgment is a way to justify possible manipulation by avoiding an adequate audit trail (those who have had to defend actuarial decisions in the context of Sarbanes-Oxley have experienced the challenge of overcoming this concern).

But the application of actuarial judgment can’t be a fudge or trust-me factor, used to derive a desired set of results. Even when professional judgment is exercised, an audit trail is needed to serve as a basis for accountability. In the same way that actuarial calculations typically consist of the math needed to turn a model and assumptions into findings and practical recommendations, actuarial science and embedded professional actuarial judgment form a sound and transparent framework for selecting models and assumptions developed and applied by means of a rigorous process.

According to “Principles Underlying Actuarial Science,” a paper that I co-authored with eight other actuaries (currently available online in the new working paper section of the Casualty Actuarial Association’s website, <http://www.casact.org/research/wp/index.cfm?fa=workingpapers> and in the actuarial practice forum section of the Society of Actuaries website, www.soa.org/library/journals/actuarial-practice-forum/2008/august/apf-2008-08-toc.aspx), actuarial science deals with the application of principles and concepts grounded in observations. Possibly surprisingly, relatively few absolutes are included in the paper; those included are based on key ideas borrowed from fields such as statistics and behavioral and financial economics. In reality, most real-world problems don’t conform to neat academic boundaries that define and separate different bodies of knowledge.

I encourage you to read this paper and provide the authors with your comments. The stakes are high. If our science is only applied by means of opaque black-box models whose findings aren’t or can’t be questioned, actuarial jobs will go the way of those bank loan officers whose once well-paid, respected, and responsible jobs are now often handled by call-center operatives.

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