

Ramblings on Risk

LAST SEPTEMBER I TOOK A CAB FROM WASHINGTON REAGAN NATIONAL AIRPORT to the Valuation Actuary Symposium in Washington, D.C. The ride lasted only 15 minutes but the cab driver talked non-stop on his cell phone the whole time. The entire conversation was in Arabic (I think), except for one English phrase in the middle: “You can’t make a profit without taking risk.”

Clearly, risk is universal. People or companies can’t expect a reward without taking some type of risk. I don’t know what type of risk the cab driver was referring to, but he succinctly expressed the essence of the value an actuary can provide.

What is the actuarial view of risk? Classically, the study of risk has consisted of three basic elements: identification, assessment, and management (through control and/or financing). Each of these is important. Risk management strategies include avoidance, pooling, diversification, or hedging—all directed at the mitigation or reduction of the financial effect of risk that has been recognized.

Actuaries can play a role in each of these components. I also agree with the taxi driver; the primary reason that many financial institutions are in business is their willingness to take on risks that making a profit requires.

But first the risks have to be properly identified—a process sometimes insufficiently explored. What risks are really being undertaken? Have they been thoroughly thought through? What are their characteristics? Has a too-micro or too-macro view been taken? Are the risks interrelated or independent? How can they best be managed?

Although many categorizations of risks can be made, one that I provided in a chapter of a recently available book (*Fair Value of Insurance Business*, “The Valuation of Future Cash Flows,” Kluwer Press, 2000) is the following: credit/counterparty risk, market risk, pricing risk, liability risk, information risk, adverse-selection risk, moral hazard, asset and liability mismatch risk, liquidity risk, industry risk, contagion risk, reputation risk, foreign-currency risk, country (sov-

ereign) risk, business and operational risk, capital risk, expense and inflation risk, and tax/legal risk.

Another approach is the classical casualty actuarial categorization of risk into process risk (associated primarily with statistical fluctuations), parameter risk (uncertainty associated with recognizing the expected value or probability distribution of risks), and model risk (associated with selecting an incorrect model of the underlying processes). Although expected values are very important, the “killer” risks generally arise from the tail of the probability distributions. A financial categorization is between diversifiable risks (those that can be “sold” or hedged, including the risk of not having sufficient exposures to spread risk) and non-diversifiable risks (those risks that can’t be traded, such as not being able to estimate the risk).

Studying past “out-of-the-money” risks can provide numerous examples of not sufficiently looking at risk. United Kingdom regulators, for instance, stopped Equitable Life Insurance Company of the U.K. (the first official life insurance company) from writing any new business in late 2000. At the time the problem pension contracts were written, certain annuitization rates were guaranteed over a long period of time. At the time, these rates were below market rates for annuities, that is, below the then current expected costs; the guarantees provided on an expected value basis were out-of-the-money. Now, however, due to lengthening life expectancy and lower interest rates, the costs of annuitization in excess of now current costs and market rates have proven to be considerable. In other words, the extra cost is now “in-the-money.”



This type of situation goes beyond what Tim Russert, speaking at the fall Society of Actuaries annual meeting, characterized as being predicted by Ms. Rosie Scenario. Rather, it was the incomplete work of Ms. Expected Scenario or even Mr. Overlooked Scenario. No significant charge for the tail risk was apparently provided for. Of course, in the Equitable’s case, no one in the market was charging for either, but the Equitable paid the price due to the size of its risks taken on.

Some of these types of risks can be hedged, pooled with others, or managed in other ways. But there remain risks that are either unidentified or ignored at the time. These risks need to be thoroughly evaluated, maybe as part of a review of what is now referred to as enterprise risk assessment. Possible actions need to be recognized, as well as their mitigation costs, because mitigation and management rarely come without costs. In doing so, the firm’s decision-makers should understand and factor their risk preferences into the evaluation.

There is a role for the actuary in each of these components of risk and in the design of most risk management programs. The actuary involved has to be prepared to identify the risks involved, including currently out-of-the-money risks, and be prepared to quantify the costs associated with various approaches that could be used to manage them. Actuaries have an extensive and practical toolbox of techniques they can use. Each actuary has the challenge to keep current with financial approaches that are also used by financial engineers and others versed in quantitative analysis. If done properly, rewarding profits will come—just as the taxi driver predicted. ●