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Retirement Probability Analyzer Software Released

Wall Street Journal Article Touts its Merits

by Emily K. Kessler

The SOA recently released the Retirement Probability Analyzer Software, which can be downloaded at no charge from its Web site. Finance Professor Moshe Milevsky of York University (Ontario) and his team at the IFID Centre created the software. The software provides a unique way to analyze the probability of financial ruin during retirement. The software was sponsored by the Pension Section to develop a practical application of theoretical work by Dr. Milevsky on ways to use annuitization to optimize financial security in retirement.

The software differs from others currently available in the mathematical analysis it uses to determine the probability of a successful financial strategy and in its ability to illustrate longevity risks. Most retirement financial planning software uses Monte Carlo simulations of the portfolio to determine the probability that the financial strategy will be successful, and generally only look at life expectancy, or a single set age, in assigning those probabilities. The Retirement Probability Analyzer uses a numerical procedure based on partial differential equations in its analysis. The resulting projections, therefore, do not contain statistical sampling error. Also, it is able to project probabilities of ruin looking at four future time periods—10 years, 20 years, 30 years and lifetime.

The tool specifically factors in the power of annuities to protect against financial ruin. It allows a user to model changes in the mix of lifetime income and lump sum investable wealth and the interaction of those changes with market and longevity risk. The tool includes inputs typical to similar models: asset allocation, economic assumptions and individual information. It also includes factors not usually found in such tools but important to actuaries, such as mortality projections and assumptions for annuity valuation rates. Output items include:

- The probability that an individual's nest egg—the net investable wealth (NIW)—is some fraction of the initial NIW within a future time period (10 years, 20 years, 30 years or lifetime).
- Projected wealth (conditional on survival) in 10, 20 or 30 years.
- Projected consumption, showing changes in consumption as the NIW is depleted.
- Risk of the current strategy vis-à-vis expected lifetime (expected age at ruin and the probability of survival beyond that age).

The Retirement Probability Analyzer was the focus of a *Wall Street Journal* article on page 31 of the August 2004 edition. The article, "Tool Tells How Long Next Egg Will Last," noted the Retirement Probability Analyzer as a tool for "people who want their projections to be a bit more sophisticated than those offered by most online calculators." The article looked at the tool in light of other free software available to individuals for calculation purposes. Because the program was designed as an educational tool for a sophisticated financial professional, it does not have the slick appearance or extensive help features of other software. But, as noted, "what [it] lacks in appearance, it makes up for in content." The article acknowledged the strength the tool brings to the analysis of the balance between invested assets and annuitization.

The Retirement Probability Analyzer and accompanying documentation can be found on the SOA Web site at <http://www.soa.org/ccm/content/areas-of-practice/special-interest-sections/pension/retirement-probability-analyzer-software/>. An excerpt of the *Wall Street Journal* article is available on the SOA Web site at <http://www.soa.org/ccm/content/areas-of-practice/special-interest-sections/pension/retirement-planning-calculating-risk-of-retirement-woes/>. ♦

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