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You Could Lose Your Shirt if You Don't Mind Your P's and Qs!

A summary of the SOA research report "Mortality Comparisons and Risk Exposures in the Older Age U.S. Financial Services Market"

By Roger N. Freeman and William H. Bowman

The Society of Actuaries' Reinsurance Section proposed a research study in the fall of 2010 to examine mortality assumptions in the older age U.S. financial services market. It questioned whether some older age individuals might gain an advantage from arbitraging one product against another. If individuals are able to select against the financial services industry, then widespread use of this practice may cause financial harm to individual companies or to the industry as a whole.

The objective of this project was threefold:

1. To educate actuaries and other interested parties on the relative differences in older age mortality expectations in insurance, annuity and pension products.
2. To identify possible reasons for the difference in mortality expectations between the financial service products at the older ages.
3. To increase awareness of implications that any differences in mortality expectations can have on managing mortality risks for older age financial services products.

BEWARE THE LARGE SPIA

For the purpose of this article, we will concentrate here on a situation that would be of particular interest to reinsurers—an individual may purchase a Single Premium Immediate Annuity (SPIA) and use its annual income to pay the gross annual premiums of a life insurance policy. If the individual can do this at a lesser cost than paying a lump sum to the life insurance company, then the companies involved are exposed to arbitrage. Clearly the larger the case size, the more likely arbitrage may be sought and found as such cases are frequently "shopped around."

Based on the contributing companies, in an extreme case, an 80-year-old male may expect to gain as much as 35 percent of the lump sum he might pay to the life insurance company.

Since the degree of arbitrage decreases as issue ages decrease, there are lower exposures at younger ages, but the degree of arbitrage is still significant.

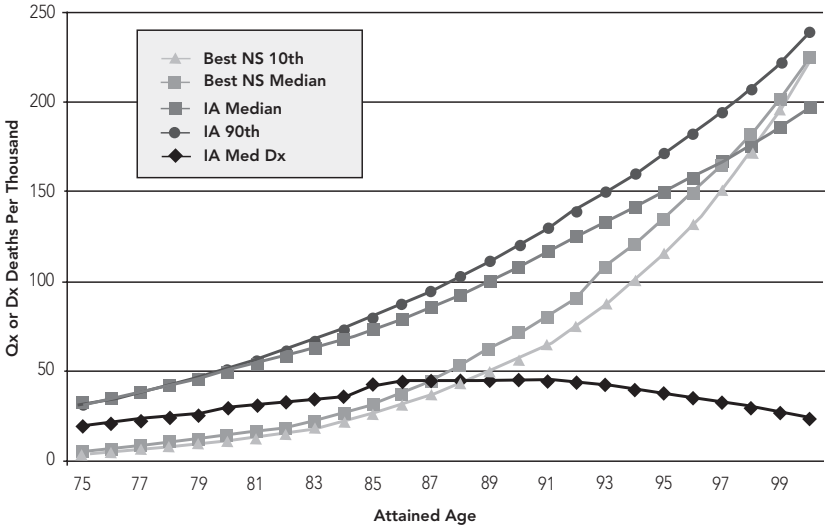
NOT A NEW PROBLEM!

In the Annuity Market News of October 2003, Vol IX, No. 10, an article titled "Underwriting Creeps Onto the Radar" focused on a new market developing for substandard SPIAs. This article pointed out that by "buying the higher payout lifetime annuity to fund the better priced life insurance policy of another [company], an investor can maximize wealth transfer." Roger Freeman was quoted in that article regarding a case where a $10 million SPIA was purchased using standard mortality and the income used to purchase life insurance at super-preferred rates. The implied arbitrage was 15 percent and one side had to eat that bullet—again, probably the annuity carrier.

LET'S LOOK AT A 75-YEAR-OLD MALE FROM THE STUDY

Start by comparing the median curve for the Best Nonsmoker life insurance to the median Single Premium Immediate Annuity (light gray vs. dark gray). The Dx curve is shown to illustrate relative "pricing weight." Interestingly, the SPIA assumes much higher mortality! This is really no surprise as the SPIA mor-

Issue to Male age 75--mortality assumptions



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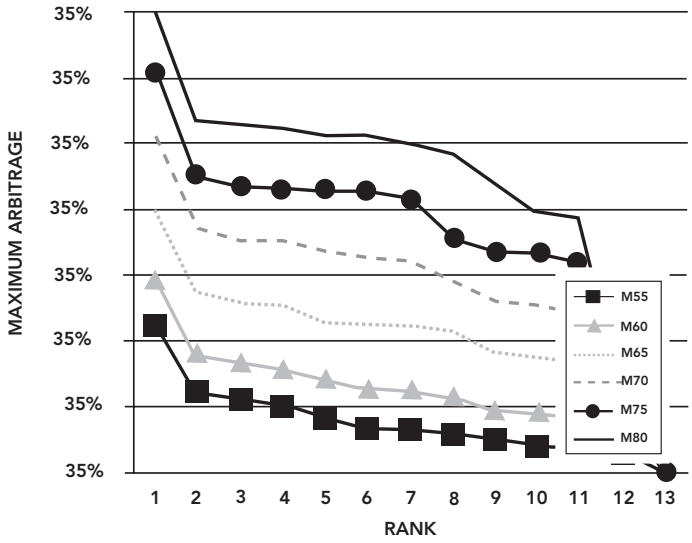
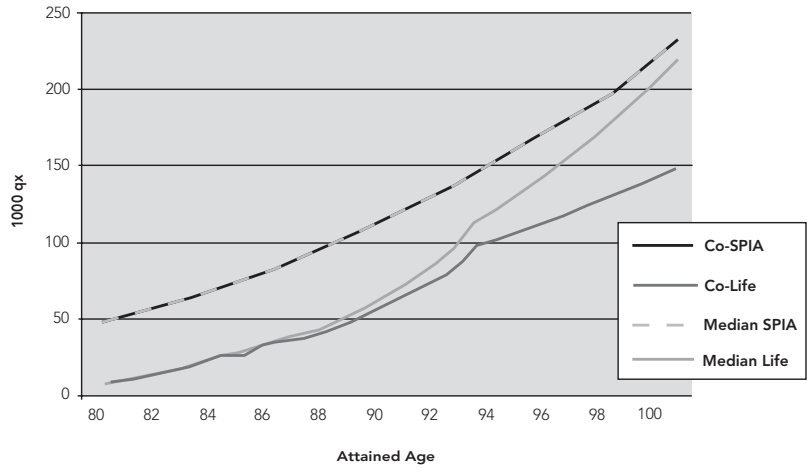
tality is derived from a very different population. In reality, an arbitrage broker is going to seek out the best pricing for both products, not the median—this is illustrated in the above chart by the yellow and red lines (10th percentile life company and 90th percentile SPIA company). You will see quite a gap!

ARBITRAGE—HOW MUCH DOES IT HURT?

The report goes on to show how much arbitrage exposure exists. You can examine the report to see the methodology used, but the results are illustrated below. We are looking at 13 SPIA companies ranked one to 13 along the bottom of the chart by the level of arbitrage. Most companies are exposed substantially—with a male aged 80 being the worst-case arbitrage scenario of more than 35 percent. This means that for a $1 million investment, either the SPIA company (most likely) or the life company (unlikely) could lose as much as $350,000! Or they are both out part of this!

Arbitrage - Spia Company Perspective Males - Maximum





WHO GETS HURT THE MOST?

Thus, we are looking at a situation that maximizes the arbitrage exposure for these companies, and the question is: Which company's mortality expectations for the purchaser are more likely to be realized? Since the life insurance company has underwritten the risk to classify the insured in the Best Nonsmoker class, and the SPIA company has not likely done that, it seems that the SPIA company's mortality assumptions will more often not be realized, and it will see losses from this transaction.

SELF-INFLICTED WOUNDS

Another situation, but no less disturbing, comes when a single company prices its life insurance and annuity products in "silos," where neither side realizes what assumptions the other is making. This can be demonstrated by looking at the calculations (again, for males at age 80) for a different company (not used in the arbitrage calculations above). In this case, the company's Net Single Premium (NSP) for Whole Life in the Best Nonsmoker class is $489.00 for a $1,000 policy, which is 96 percent of the median value on that measure. Its NSP for its SPIA at that age is $628.00, equal to the median value. The mortality rates themselves show the potential problem.

Although this company's SPIA rates are the median rates for all companies, its own life insurance mortality assumptions are far below the median life insurance company assumption. In addition, it has not recognized that its assumptions are inconsistent internally. (See chart, left, bottom)

Unfortunately, this company may realize too late that its mortality assumptions in the two product lines are inconsistent, so it may suffer financial losses before it can correct the situation.

The entire report, discussing methods, calculations, and results, is available on the Society of Actuaries website. In addition, an Excel spreadsheet accompanying the report gives the reader the opportunity to examine different issue ages, both sexes, and different underwriting classes to examine results under multiple scenarios. ■