UNDERSTANDING ANNUITY MORTALITY CREDITS

BY MICHAEL FINKE, PROFESSOR, FRANK M. ENGLE CHAIR OF ECONOMIC SECURITY, THE AMERICAN COLLEGE OF FINANCIAL SERVICES

This paper examines how retirees can spend more money each year in retirement by pooling the risk of an unknown lifespan with other retirees through an annuity – a benefit that is often described as a **mortality credit**. Obtaining mortality credits through the purchase of an annuity allows retirees to improve their lifestyle and worry less about the risk of outliving savings.

A 65-year-old healthy male retiree decides to invest today to fund $15,000 of income each year until the age of 100, when he has only a 5% chance of still being alive. He invests in bonds that mature in the future and provide exactly $15,000 of spending each year. For example, at today's Treasury bond rates he can set aside $7,783 to buy $15,000 of income at age 80 and $5,227 to buy $15,000 of income at age 90.[1]

Each bond that he buys sits in an investment account, but he can't touch this money because doing so will take away his future income. If he spends the $5,227 he invested to buy $15,000 of income at age 90, this will leave the 90-year-old version of himself with nothing to spend other than Social Security. In other words, the money he sets aside today to fund $15,000 of spending to age 100 must sit untouched in an investment account to fulfill its goal of providing $15,000 of future spending each year.

To fund $15,000 of spending at age 95, he needs to invest $4,381 today. A glance at the mortality tables for a healthy 65-year man shows that he has about a 20% chance of living to the age of 95.

Instead of setting aside $4,381 of savings today to fund future spending at an age when he has only a 20% chance of being alive, what if he instead created a long-life income club. He and four other healthy, 65-year-old men can simply each chip in 1/5 of $4,381, or $876 and use the proceeds to buy a bond that matures at age 95. On average, four of the men will die and the fifth will spend the $15,000.

By joining the long-life income club and chipping in only $876 instead of setting aside $4,381, he will spend just as much at the age of 95 and have an extra $3,505 to spend on another vacation, dinners with friends, or even a gift to a favorite grandchild. Retirees can spend more each year by joining the long-life income club and also worry less about running out of savings in old age.

What about the four men who died before the age of 95? Since they set aside less of their savings to fund future income, each was free to spend more every year and worry less about outliving savings. Those who don't live to old age didn't lose the long-life income club game. They are happier each year they're alive in retirement, especially since it is difficult to feel much regret when you're dead.

MORTALITY CREDITS INCREASE SPENDING

The improvement in lifestyle that could be generated from funding retirement spending

1. Treasury bond yields on July 7, 2023.

Table 1: Cost of Funding Income with Bonds and Lifestyle Bonus from an Annuity

AGE	CHANCE OF OUTLIVING SAVINGS	BOND INCOME*	ANNUITY INCOME	SAVINGS NEEDED TO FUND $15,000	ANNUITY LIFESTYLE BONUS
88	50%	$15,000	$15,000	$229,111	$27,478
93	25%	$15,000	$15,000	$255,756	$54,123
95	15%	$15,000	$15,000	$258,208	$56,575
97	10%	$15,000	$15,000	$266,465	$64,832
100	**5%**	**$15,000**	**$15,000**	**$277,684**	**$76,051**
104	1%	$15,000	$15,000	$290,709	$89,076

through an income club rather than doing it on one's own depends on a retiree's willingness to run out of money in old age. Moshe Milevsky coined the term "mortality credit" when describing this scenario in an academic article (Milevsky, 1998[2]). A retiree who wants to make sure he doesn't run out of savings will receive a bigger improvement in lifestyle by joining the long-life income club through an annuity.

Why can substituting an annuity for a comparable bond investment be viewed as a mortality credit? If the healthy male retiree is willing to accept a 19% chance of running out of savings, he can spread out his savings to the age of 95. A risk-averse retiree who spreads out his savings to age 100 has only a 5% chance of running out.

A 65-year-old man who invested in Treasury bonds to fund $15,000 of income to an age where he has a 5% chance of failure (running out before death) would need to set aside $277,684 of his retirement savings today.

The same 65-year-old retiree could receive a $15,000 of annual income on July 7, 2023, from an A+-rated insurer for $201,633.[3] In other words, buying an annuity instead of trying to fund $15,000 of spending from savings allows a retiree to spend (or gift during their lifetime) an additional $76,051 during retirement.

Consider Table 1, that compares the cost of buying an annuity to the cost of funding one's retirement spending using Treasury bonds.

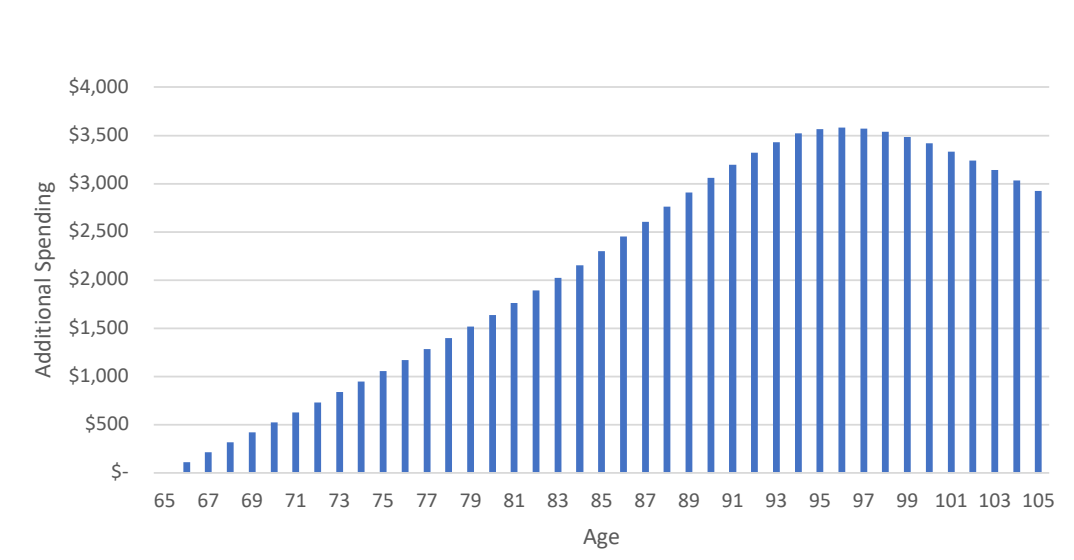
Another way to view the mortality credit is an increase in the rate of return an investor could receive when funding income from savings. An investor could spend 7.44% of their savings by purchasing an income annuity. The same investor could spend 5.40% of their savings if they invested in Treasury bonds and spent $15,000 a year to age 100, where they still have a 5% chance of outliving savings.

It is also important to note that a so-called actuarially fair price for an income annuity would offer a $0 lifestyle bonus at the 50th percentile of longevity. The price of an annuity would be equal to the savings needed to fund $15,000 to the average longevity. One would expect the price of the annuity to be somewhat higher since the insurance company incurs some expense when creating the annuity.

Annuity pricing today reflects the inclusion of a credit risk premium since the insurance company expects that their portfolio of corporate bonds will provide a higher return over time than Treasury bonds. This credit risk premium is not guaranteed and there are numerous historical periods where corporate bonds did not outperform Treasury bonds (Asvanunt and Richardson, 2017[4]). If the retiree were to invest in a portfolio of corporate bonds, no institution would guarantee a higher return than they could receive on a portfolio of government bonds. However, the income promised to retirees is guaranteed by the insurer. An additional advantage of an income annuity at today's

2. Moshe Milevsky (1998). Optimal asset allocation towards the end of the life cycle: To annuitize or not to annuitize? The Journal of Risk and Insurance, 65(3), 401-426.
3. Quote taken on July 7, 2023 from Blueprintincome.com
4. Attakrit Asvanunt and Scott Richardson (2017), The Credit Risk Premium, The Journal of Fixed Income, 26(3), 6-24.

Figure 1: Increased Retirement Spending by Age when Funding $15,000/Year through Annuitization



prices is that retirees receive a certain credit risk premium on the portion of their investment portfolio used to fund lifetime income.

Because a retiree can spend more from their savings with less worry of depleting them, the failure to annuitize is referred to as "the annuity puzzle" (Thaler, 2011). If a retiree's goal is to fund a consistent amount of spending every year, they could live better by annuitizing than if they withdrew money every year from a savings account.

MORTALITY CREDITS BY AGE

In the first example, the investor was able to spend more in retirement because he chose to pool longevity risk with others at age 95. His extra spending, or mortality credit, would have been significantly less if he had instead chosen to pool income to fund spending 5 years into retirement at age 70.

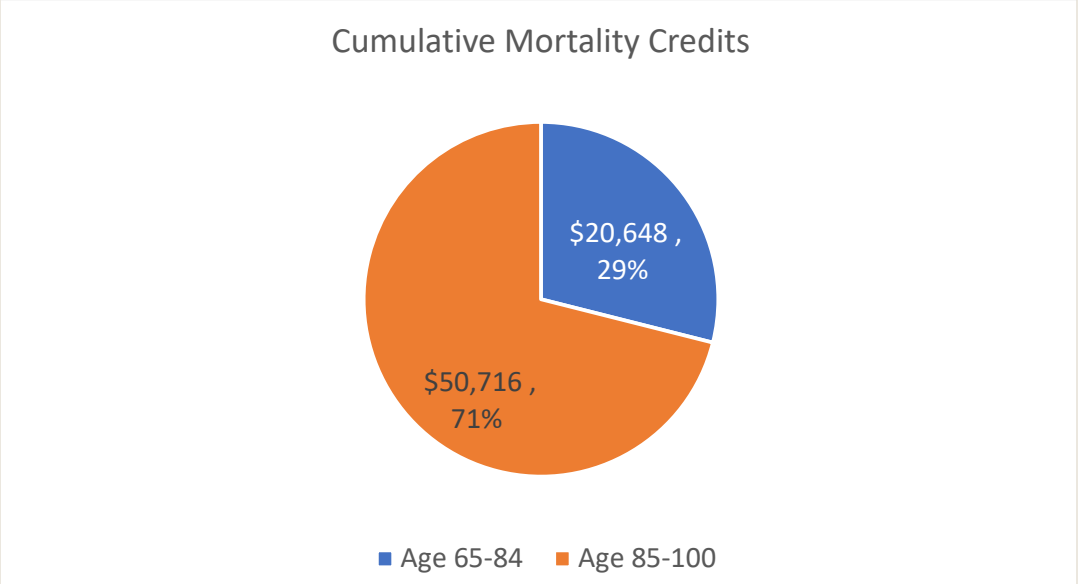
This is because he has a 95.5% chance of still being alive up to his 71st birthday. If he found 1,000 friends to pitch in savings to fund $15,000 of spending in 5 years, each man would need to set aside $11,133. If each man funded $15,000 of future spending on his own without joining the club, he'd need to set aside $11,658. In other words, joining the long-life income club to fund spending earlier in retirement yields a smaller mortality credit of additional retirement spending – in this case just $525.

The increase in mortality credits by age occurs because the percentage of retirees who pool savings to fund income who will remain alive for another year declines over time. This means that the difference between the amount of savings a retiree would need to set aside to fund $15,000 of spending versus the amount a single participant would need to set aside within a pool of retirees to fund spending at the same age will widen as age increases.

Purchasing an annuity early in retirement allows a retiree to capture the sum total of each line in Figure 1 that can be used to increase spending. It is also possible to capture a significant amount of the mortality credits available to a retiree by purchasing a deferred income annuity that begins making lifetime income payments at an older age. For example, a retiree who would have spread out his savings to age 100 from bond investments could receive 71% of the total mortality credits by funding $15,000 of spending through age 84 through bonds, and then using an income annuity that pays $15,000 a year for life starting at age 85. This is illustrated in Figure 2.

Mortality credits can exist both from traditional income annuities and annuities that provide a lifetime income withdrawal benefit. The primary difference between the two types of products is the preservation of liquidity within an annuity that offers a lifetime income benefit. A simple product known as a fixed annuity with a guaranteed lifetime withdrawal benefit (GLWB) allows

Figure 2: Percentage of Mortality Credits from Funding a Deferred Annuity at Age 85



a retiree to withdraw a fixed amount per year from the annuity for a lifetime, and this fixed amount is greater than the amount that the retiree could spend if they funded lifetime spending using bond investments to an age that exceeds their expected average lifespan.

CONCLUSIONS

Retirees could spend more money each year in retirement by pooling the risk of an unknown lifespan with other retirees through an annuity. This increase in potential spending is referred to as a mortality credit. Mortality credits are simply the difference between the amount of money that a retiree could spend each year up to an age that represents an acceptable risk of outliving savings, and the amount they could spend from pooling longevity risk through an annuity.

Mortality credits offer the potential of greater spending and less worry about outliving savings. The failure to take advantage of mortality credits has been termed the "annuity puzzle." Even if the retiree has a charitable goal, they can increase giving during their lifetime rather than giving after death because they don't have to worry that by doing so they risk running out of money.

The benefit from pooling longevity risk rises with age. Retirees can either capture all of the potential mortality credits available by annuitizing immediately, or they can choose to capture a sizeable percentage of mortality credits through a deferred income annuity. The dramatic reduction in the cost of funding later-life income from deferred annuitization represents a significant potential improvement in retiree welfare that is often overlooked.