ERISA Advisory Council
U.S. Department of Labor

Hearing on:

Lifetime Income Solutions as a Qualified Default Investment Alternative (QDIA) – Focus on Decumulation and Rollovers

August 15, 2018

C5521 Room 4 at the U.S. Department of Labor

Statement for the Record by
Jack VanDerhei, Ph.D.
EBRI Research Director
Employee Benefit Research Institute (EBRI)

Deferred Income Annuity Purchases: Optimal Levels for Retirement Income Adequacy

Deferred Income Annuity Purchases: Optimal Levels for Retirement Income Adequacy

By Jack VanDerhei, Ph.D.
Research Director, Employee Benefit Research Institute (EBRI)

Introduction

Modeling retirement income adequacy for non-retired U.S. households has often been split into an analysis of the accumulation phase (current age until retirement age) and the decumulation phase (retirement age until the age of death). In the last 15 years, the Employee Benefit Research Institute (EBRI) has conducted a significant amount of research on the impact of various accumulation-phase scenarios;[1] however, only recently has an attempt been made to quantify the impact of the primary decumulation-phase risks: longevity risk, long-term-care and home-health costs, and investment risk.

As part of the assessment of the impact of longevity on retirement income adequacy, EBRI[2] used its Retirement Security Projection Model® (RSPM)[3] to establish relative-longevity quartiles based on family status, gender, and age cohort. For the Early Baby Boomers[4] simulated to die in the earliest relative quartile, the Retirement Readiness Rating (RRR)[5] of 75.8 percent was 19.1 percentage points larger than the overall average for this age cohort. The RRR decreased to 63.1 percent in the second relative-longevity quartile and 44.9 percent in the third relative-longevity quartile. For the Early Boomer cohort with the longest relative longevity, the RRR fell all the way to 37.9 percent. Similar influences were found for the younger age cohorts, but there was a noticeable increase in the RRR range between the earliest and latest longevity quartiles: 37.9 percentage points for Early Boomers, 41.3 percentage points for Late Boomers,[6] and 49.2 percentage points for Gen Xers.[7]

While previous EBRI research has attempted to model single-premium immediate annuities (SPIAs) as at least a partial hedge against the longevity risk,[8] given that only a very small percentage of defined contribution (DC) and individual retirement account (IRA) balances have been annuitized (and that an increasing percentage of defined benefit (DB) accruals have been taken as lump-sum distributions when the option was available), the prospect of "out-living" this portion of retirement wealth is a very real risk for many Baby Boomers and Gen Xers. In recent years, the prospect of increasing individual interest in annuitizing retirement savings at retirement has been enhanced through an insurance product that has been designed to provide monthly benefits only after a significant deferral period in retirement. These products could be offered for a small fraction of the cost for a similar monthly benefit through a SPIA and many believe that the lower cost would at least partially mitigate retirees' reluctance to give up control over a large portion of their DC and/or IRA balances at retirement age.

In 2014, one of the major constraints of using this type of product was eliminated when the U.S. Treasury Department and the Internal Revenue Service (IRS) issued final rules for creating a qualifying longevity annuity contract (QLAC) that would be exempt from the required minimum distribution rules that dictate distributions from DC plans and IRAs must typically begin by age 70-½ (significantly earlier than the age at which payments commence for these products).[9]

While it is still too early to know how individuals' demand for these products and the insurance industry's supply of QLAC options will eventually modify the market for longevity annuities,[10] it is useful to model the degree to which QLACs can improve retirement security. A 2015 EBRI article[11] models two scenarios under

which QLACs are utilized as part of a 401(k) plan, and finds that, even at today's historically low interest rates, the transfer of longevity risk provides a significant increase in retirement readiness for the longest-lived quartile, compared with only a small reduction for the general population. Sensitivity analysis on the QLAC premia resulting from likely increases in future interest rates provides even more favorable results.

New research was prepared for this testimony to explore how the probability of a "successful" retirement varies with the percentage of the 401(k) balance that is used to purchase a deferred income annuity (DIA). Results are provided for all households (with a 401(k) balance) combined as well as by simulated age of death. The results are also provided by age-specific wage quartiles.

Previous Research on Longevity Annuities

The concept of longevity annuities as a longevity hedge has been discussed for at least 10 years. In 2005, Milevsky[12] published a paper analyzing an inflation-adjusted, deferred-annuity contract that would begin payouts not at retirement age but at an advanced age (e.g., 80 or 85). In essence, this contract would attempt to apply basic risk-management principles to retirement planning and would carve out the high-probability/low-severity costs (e.g., retirement income from 65–85) that could be budgeted relatively easily from the typical retirement scenario before transferring the low-probability/high-severity costs (e.g., retirement costs from 85 through the remainder of the retiree's life) to the insurance company. This would be analogous to accepting a deductible on automobile insurance collision coverage and considered a more efficient method of choosing which risks (or portions thereof) should be transferred to an insurance company.[13]

In 2007, Gong and Webb[14] attempted to deal with the fact that rates of voluntary annuitization remained extremely low by analyzing what would happen if longevity annuities were used as a 401(k) plan default. Realizing this had the potential to harm high-mortality households (relative to taking the 401(k) balances in unannuitized form), the authors used numerical-optimization techniques to show that few households would suffer significant losses under this type of default (as measured by the authors' methodology).

In 2013, Pfau[15] demonstrated how deferred income annuities (DIAs) expanded the retiree's "efficient frontier" and provided a case example of how these products could be more effective than a single-premium immediate annuity (SPIA) for a particular objective function.

In 2014, Blanchett[16] used a utility-based, annuity-preference model to analyze the optimal form of guaranteed income and found that it varied substantially as a function of model assumptions and retiree preferences. He found that nominal SPIAs tended to be the most efficient of the eight annuity types analyzed; however, if nominal DIA-payout rates increased by just 5 percent, they became the most attractive option on average. In a 2015 article, Blanchett[17] used regression analysis on the optimal DIA allocation for each investor and found evidence that higher allocations would tend to be associated with those who were younger and those who had less existing guaranteed retirement income.

Employee Interest in Purchasing a QLAC

As part of the 2015 Retirement Confidence Survey (RCS), workers were asked how interested they thought they would be at retirement in purchasing an insurance product with a portion of their savings that would begin providing guaranteed monthly income for the rest of the worker's (or their spouse's) life at some point in the future, such as age 80 or 85. Eight percent of workers indicated they were very interested and 30 percent reported they were somewhat interested, while 21 percent said they were not too interested and 38 percent said they were not at all interested. Figure 1 in VanDerhei (2015) demonstrates that the level of interest in purchasing a QLAC-type product is strongly associated with the respondent's perceived likelihood of living to age 85. Nearly one-half (47 percent) of those who believed it was "very likely" that

they would live until at least age 85 were either somewhat interested or very interested in purchasing such a product; however, this percentage dropped to 41 percent for those who believed it was "somewhat likely" that they would live until at least age 85. One-quarter (25 percent) of those who believed that they were either "not too likely" or "not at all likely" to live until at least age 85 reported that they were interested in purchasing this type of product at retirement.

Figure 2 in VanDerhei (2015) shows a similar relationship between the level of interest in purchasing a QLAC-type product and the respondent's perceived likelihood of living to age 95. In this case, more than one-half (53 percent) of those who believed it was "very likely" or "somewhat likely" that they would live until at least age 95 were either somewhat interested or very interested in purchasing such a product. This percentage dropped to 35 percent for those who believed it was "not too likely" that they would live until at least age 95 and 30 percent for those who believed that they were "not at all likely" to live until at least age 95.

Figure 3 in VanDerhei (2015) shows the percentage of workers in the RCS who were either somewhat interested or very interested in purchasing such a QLAC-type product as a function of household income and age. Regardless of household income, workers ages 45 or under were much more likely to be interested in purchasing such a product. At least some of this age discrepancy could be attributable to public perceptions of the future solvency of Social Security. Retirement benefits paid by Social Security represent a major portion of the longevity protection for many retirees and the prospects of this benefit being modified when the Social Security Trust Fund is expected to be depleted may provide an incentive for younger workers to consider a QLAC-type product as part of their individual risk management. Figure 4 in VanDerhei (2015) shows that the percentage of workers 45 or younger interested in a QLAC-type product is 40 percent for those who believed Social Security would be a major source of income in retirement; however, it increased to 47 percent for those who believed it would be only a minor source of retirement income. The portion of those who expressed interest in a QLAC-type product increased to 59 percent for younger workers who believed Social Security will not be a source of income in retirement at all.[18]

Previous EBRI Research on QLAC Scenarios

Several publications on QLACs have appeared recently with particular emphasis on financial planning for retirement. From a public policy perspective however, the question of how to increase demand for this product to a point where a significant percentage of new retirees will have this type of longevity hedge remains largely unanswered.

Two potential scenarios that have been discussed involve adding in-plan QLAC purchases to 401(k) plans.[19] The first scenario would attempt to convert 15 percent of the 401(k) balance with the current employer (subject to the appropriate dollar limitation) to a QLAC premium and would simultaneously attempt to partially mitigate the risk of purchasing the product when interest rates would be low. This would be accomplished by using a 10-year ladder of purchases based on 1.5 percent of the 401(k) balance each year from ages 55–64.[20]

The second proposal assumes (some) plan sponsors would be willing to convert the accumulated value of their 401(k) contributions (subject to the applicable dollar and percentage limits) in each employee's plan to a QLAC purchase when the employee reaches retirement age on either an opt-in or opt-out basis for the employee. Of course, there could be several variations on this basic theme including those involving purchase of the QLACs on an annual basis.[21] However, for purposes of the 2015 EBRI research, the simulations under the second option were performed assuming that the purchases would take place with a one-time QLAC purchase at age 65. It is important to note that this type of QLAC purchase would apply only to account balances attributable to the current employer's contributions. Any amounts attributable to employer contributions with a previous employer are not included in the simulation results

Figure 1 shows the percentage change in Retirement Readiness Ratings that result from purchasing a 10-year laddered QLAC of 1.5 percent of 401(k) account balances with the current employer from ages 55–64 for households in the longest relative-longevity quartile with a QLAC as well as the impact on all households with a QLAC.[22]

The increase in the EBRI Retirement Readiness Ratings (RRR) -- essentially the probability of NOT running short of money in retirement -- for Early Boomers in the longest relative-longevity quartile with a QLAC is only 1.9 percent but it increases to 2.9 percent for Late Boomers and 3.5 percent for Gen Xers.[23] The larger percentage increases for the younger cohorts are largely a function of their larger 401(k) balances as a multiple of earnings.

One problem with performing the simulations using only current annuity purchase prices is the impact of historically low discount rates. In 2014, Moody's annual "Yield on Seasoned Corporate Bonds—All Industries, AAA" was only 4.16 percent—more than 370 basis points below the average dating back to 1976. The 2012 Individual Annuity Mortality (IAM) Basic Table and observed market prices were used to interpolate for the interest rate that, when combined with the cash flow and mortality assumptions, reproduced the original premium. Using those parameters, a 100-basis-point increase in the interest rate would produce an approximate 21 percent decrease in the premium rate (and a 200-basis-point increase would produce approximately a 37 percent decrease in the premium rate). Sensitivity analysis for this likely reduction in premium rates if interest rates increase at least partially to historical norms was undertaken by repeating the analysis using premium rate decreases of 10, 20 and 30 percent.

When the premium rates are decreased by 10 percent, the percent increase in the RRRs (compared to the baseline of no QLACs) vary from 2.5 percent for Early Boomers to 4.6 percent for Gen Xers. A 20 percent decrease in premium rates increases the range of RRR increases to 3.2 percent for Early Boomers to 5.3 percent for Gen Xers. A 30 percent decrease in premium rates increases the range of RRR increases to 4.5 percent for Early Boomers to 6.7 percent for Gen Xers.

Figure 1 also tracks the change in RRR for all households (including those who do not live to age 85 and thus do not receive any income benefits for their QLAC premiums). The results are typically small (all less than 1 percent in absolute value). Assuming current QLAC premiums, the changes in RRR vary from a decrease of 0.8 percent for Early Boomers to a decrease of 0.5 percent for Gen Xers. At a premium decrease of 30 percent, RRR changes vary from a decrease of 0.1 percent for Early Boomers to an increase of 0.4 percent for Gen Xers.

Figure 2 shows the percentage change in Retirement Readiness Ratings that result from using 401(k) account balances attributable to employer contributions with the current employer at age 65 to purchase a QLAC. The increase in RRR (compared to the baseline of no QLACs) for Early Boomers in the longest relative-longevity quartile with a QLAC is 6.7 percent but it increases to 7.3 percent for Late Boomers and 8.7 percent for Gen Xers.

When the premium rates are decreased by 10 percent, the increase in the RRRs varies from 8.4 percent for Early Boomers to 11.0 percent for Gen Xers. A 20 percent decrease in premium rates further impacts the range of RRR increases, which vary from 10.7 percent for Early Boomers to 13.5 percent for Gen Xers, while a 30 percent decrease in premium rates leads to RRR increases ranging from 13.3 percent for Early Boomers to 16.2 percent for Gen Xers.

When the change in RRR for all households with a QLAC is simulated in this scenario under the current QLAC premiums, they vary from a decrease of 1.5 percent for Early Boomers to a decrease of 1.1 percent for Gen Xers. At a 30 percent decrease in premiums, RRR values vary from an increase of 0.2 percent for Early Boomers to an increase of 0.7 percent for Gen Xers.

Optimal Levels of Deferred Income Annuity Purchases for Retirement Income Adequacy

The objective of the new research for this testimony was to explore how the probability of a "successful" retirement varies with the percentage of the 401(k) balance that is used to purchase a deferred income annuity (DIA) where the probability of success is measured by the EBRI Retirement Readiness Ratings (RRR) from the EBRI Retirement Security Projection Model®. For purposes of these simulations, we use existing RSPM accumulation modules to simulate retirement income/wealth at age 65 for all US households between 35 and 64. Households with no 401(k) balances at retirement age are filtered out of the analysis and a retirement age of 65 is assumed.

The baseline stochastic decumulation module is run with an assumption of no annuitization (either SPIA or DIA) and sensitivity analysis on DIA annuitization by assuming various percentages (5, 10, 15, 20, 25, and 30 percent) of the 401(k) balance at retirement are used to purchase a DIA with 20 year deferral and no death benefit.[24] We assume the percent and dollar constraints for current QLACs are not binding.

Figure 3 shows the percentage change in RRR from various DIA purchases at retirement by age at simulated death. As expected, anyone dying prior to age 85 (the end of the 20 year deferral period) would actually have their RRR decreased since they would have had a portion of their 401(k) balance used to purchase the DIA but had not lived long enough to benefit from it. For those dying before 85 and using only 5 percent of their 401(k) balance to purchase the DIA, the RRR would decrease by 0.3 percent. As expected, the RRR decrease is monotonically increasing as the percentage of the 401(k) balance used to purchase a DIA increases. At a 25 percent level the RRR decrease reaches 1.7 percent and at a 30 percent level it is 2.1 percent.

For those dying at ages 85-89, the difference between the cost of the DIA and the present value of the eventual benefits results in a decrease in RRR regardless of the percentage of 401(k) balance used but the decrease is less than that experienced for those dying prior to 85 for a 5 or 10 percent purchase but the decrease is greater than that experienced for those dying prior to 85 for 20, 25 and 30 percent due to the interaction with long-term care costs.

For those dying at ages 90-94, the increase in RRR is positive for all DIA purchases and the larger purchases have larger increases. This trend is repeated for those dying at ages 95-99. For those dying at ages greater than 99, the increase in RRR ranges from 4.0 percent for a DIA purchase equal to 5 percent of the 401(k) balance to 16.2 percent for a DIA purchase of 30 percent of the 401(k) balance.

When the results are aggregated across all ages at death (the last column in Figure 3), there is an increase in RRR for DIA purchases of 5, 10, 15 and 20 percent of the 401(k) balance but purchases of 25 or 30 percent result in a decrease in RRR.

Given the large proportion of overall retirement income/wealth generated by Social Security (which provides protection against longevity risk) for the lowest age-specific wage quartiles, one would expect that a DIA purchase would be less beneficial for this group inter alia. This hypothesis is supported by the results in Figure 4 which shows the impact of DIA purchases by age-specific wage quartiles. Similar to the last column in Figure 3, this aggregates across all ages at death but categorizes each household by age-specific (current) wage quartiles.

All the DIA purchase scenarios where at least 10 percent of the 401(k) balance is used result in a decrease in RRR for the lowest age-specific wage quartile. The second age-specific wage quartile has an increase in RRR for the 5, 10, 15 and 20 percent DIA purchases before turning into a decrease. The third age-specific wage quartile has an increase in RRR for all DIA purchases except the one at 30 percent of the 401(k) balance. All

of the simulated DIA purchases result in an RRR increase for the highest age-specific wage quartile.

Summary and Future Research

This testimony reviews previous analysis of the ability of QLACs to provide an effective longevity hedge for those Boomers and Gen Xers who are simulated to participate in an in-plan offering either through a 10-year series of laddered purchases or as a one-time purchase based on the accumulated value of employer contributions from the current employer. The analysis finds that even at the historically low interest rates in 2015, the transfer of longevity risk provides a significant increase in retirement readiness for the longest-lived quartile, compared with only a small reduction for the general population. Sensitivity analysis on the QLAC premiums resulting from likely increases in future interest rates provides even more favorable results.

New analysis is then provided on what might be considered the optimal percentage of a 401(k) balance that should be converted to a DIA if the objective is to maximize the probability of a successful retirement (as measured by the EBRI Retirement Readiness Ratings). We find that at current rates, purchases of a DIA deferring 20 years with no death benefits results in an overall improvement in RRR (for all ages of death combined) for DIA purchases equal to 5, 10, 15 and 20 percent of the 401(k) balance. However, there is an overall decrease in RRR for DIA purchases equal to 25 and 30 percent.

When the results are broken out by age at simulated death, we find overall decreases in RRR for those dying before benefits begin (ages 65-84) as well as for those dying between 85 and 89. For each of the groups living beyond age 90 we find an increase in RRR and, as expected, the larger the percentage of 401(k) balance used to purchase a DIA, the larger the percentage increase in RRR.

The need for longevity protection is arguably less for those in the lowest wage quartile given their greater reliance on Social Security. We broke out the overall RRR changes by age-specific wage quartiles and found that in all but the smallest DIA purchase (5 percent of the 401(k) balance), households in the lowest age-specific wage quartiles experienced a decrease in RRR from the purchase of the DIA. However, households with higher wages had a much more positive experience with those in the second age-specific wage quartile experiencing an increase in RRR for all purchases through the 20 percent value. Households in the third age-specific wage quartile experienced an increase in RRR for all purchases through the 25 percent value and those in the highest age-specific wage quartile experienced an increase in RRR for all purchases simulated (though the 30 percent level).

Future EBRI analysis will offer additional breakouts of the impact of DIA purchases on the probability of retirement success as a function of alternative demographic categories. We will also include scenarios that include DIA purchases based on IRA balances as well 401(k) balances and will attempt to reprice DIAs if discount rates approach “normal” levels.

It is difficult to predict the extent to which individual demand for QLACs will increase without an in-plan offering. However, limitations to another approach were eased in October 2014 when the Treasury Department issued Notice 2014-66 (*Lifetime Income Provided Through Target Date Funds in Section 401(k) Plans and Other Qualified Defined Contribution Plans*) that enables qualified defined contribution plans to provide lifetime income by offering, as investment options, a series of target-date funds (TDFs) that include deferred annuities among their assets.[25] It appears that this will allow 401(k) plan sponsors to offer deferred annuities as part of the non-equity component of the TDF. EBRI has already performed preliminary analysis on the potential impact of such a TDF on overall retirement readiness and will include the results in a forthcoming publication.

References

Abraham, K. G., & Harris, B. H. "Better Financial Security in Retirement? Realizing the Promise of Longevity Annuities." *Economic Studies at Brookings* (November 2014).

Blanchett, D. "Allocating to a Deferred Income Annuity in a Defined Contribution Plan." *The Journal of Retirement*, 54-68 (Spring 2015, Vol. 2, No. 4).

Blanchett, D. "Determining the Optimal Fixed Annuity for Retires: Immediate versus Deferred." *Journal of Financial Planning,* 27 (8), 36-44 (2014).

Defined Contribution Institutional Investment Association. *Qualifying Longevity Annuity Contracts: Frequently Asked Questions (FAQs)* (December 2014).

Gong, G., & Webb, A. *Evaluating the Advanced Life Deferred Annuity—An Annuity People Might Actually Buy* (September 2007). Retrieved August 17, 2015, from http://crr.bc.edu/wp-content/uploads/2007/09/wp_2007-151-508.pdf

Helman, R., Copeland, C., & VanDerhei, J. "The 2015 Retirement Confidence Survey: Having a Retirement Savings Plan a Key Factor in Americans' Retirement Confidence." *EBRI Issue Brief,* no. 413 (Employee Benefit Research Institute, April 2015).

Milevsky, M. A. "Real Longevity Insurance with a Deductible: Introduction to Advanced-Life Delayed Annuities (ALDA)." *North American Actuarial Journal* (2005). 9 (4), 109-122.

Park, Y. "Retirement Income Adequacy With Immediate and Longevity Annuities." *EBRI Issue Brief,* no. 357 (Employee Benefit Research Institute, May 2011).

Pfau, W. "Why Retirees Should Choose DIAs over SPIAs." *Advisor Perspectives Newsletter* (September 24, 2013).

Scott, J. S. "The Longevity Annuity: An Annuity for Everyone?" *Financial Analysts Journal,* 64, 40-48 (2008).

Turner, J. A., & McCarthy, D. D. "Longevity Insurance Annuities in 401(k) Plans and IRAs." *Benefits Quarterly* (First Quarter 2013): 58-62.

VanDerhei, J., 'How Much Can Qualifying Longevity Annuity Contracts Improve Retirement Security?' EBRI Notes (August 2015)

_____. Bipartisan Policy Center's Commission on Retirement Security and Personal Savings and Long-Term Care Initiative event on Threats to Retirement Security: *Longevity, Long-Term Care and Leakage* (2014, November 20). Retrieved from http://bipartisanpolicy.org/events/threats-to-retirement-security-longevity-long-term-care-and-leakage/

_____. Defined Benefit Plan Freezes: "Who's Affected, How Much, and Replacing Lost Accruals." *EBRI Issue Brief,* no. 291 (Employee Benefit Research Institute, March 2006).

_____. "Increasing Default Deferral Rates in Automatic Enrollment 401(k) Plans: The Impact on Retirement Savings Success in Plans with Automatic Escalation." *EBRI Notes,* Vol. 33 no. 9 (Employee Benefit Research Institute, September 2012).

_____. "Measuring Retirement Income Adequacy: Calculating Realistic Income Replacement Rates." *EBRI Issue Brief,* no. 297 (Employee Benefit Research Institute, September 2006).

_____. Reality Checks: “A Comparative Analysis of Future Benefits from Private-Sector, Voluntary-Enrollment 401(k) Plans vs. Stylized, Final-Average-Pay Defined Benefit and Cash Balance Plans.” *EBRI Issue Brief*, no. 387 (Employee Benefit Research Institute, June 2013).

_____. “Retirement Savings Shortfalls: Evidence from EBRI’s Retirement Security Projection Model.®” *EBRI Issue Brief,* no. 410 (Employee Benefit Research Institute, February 2015).

_____. “The Impact of Automatic Enrollment in 401(k) Plans on Future Retirement Accumulations: A Simulation Study Based on Plan Design Modifications of Large Plan Sponsors.” *EBRI Issue Brief,* no. 341 (Employee Benefit Research Institute, April 2010).

_____. “Why Does Retirement Readiness Vary: Results from EBRI’s 2014 Retirement Security Projection Model.®” *Journal of Retirement* (Spring 2014).

VanDerhei, J., and Copeland, C. “ERISA At 30: The Decline of Private-Sector Defined Benefit Promises and Annuity Payments? What Will It Mean?” *EBRI Issue Brief,* no. 269 (Employee Benefit Research Institute, May 2004).

_____. “The EBRI Retirement Readiness Rating:™ Retirement Income Preparation and Future Prospects.” *EBRI Issue Brief,* no. 344 (Employee Benefit Research Institute, July 2010).

_____. “The Impact of PPA on Retirement Savings for 401(k) Participants.” *EBRI Issue Brief,* no. 318 (Employee Benefit Research Institute, June 2008).

VanDerhei, J., and Lucas, L. “The Impact of Auto-enrollment and Automatic Contribution Escalation on Retirement Income Adequacy.” *EBRI Issue Brief,* no. 349 (Employee Benefit Research Institute, November 2010).

Appendix A: Brief Description of EBRI's Retirement Security Projection Model®

EBRI launched a major project to provide retirement income adequacy measurement in the late 1990s for several states concerned whether their residents would have sufficient income when they reached retirement age. After conducting studies for Oregon, Kansas, and Massachusetts, EBRI developed a national model in 2003—EBRI's Retirement Security Projection Model® (RSPM)—and in 2010 it was updated to incorporate several significant changes, including the impacts of DB plan freezes, automatic enrollment provisions for 401(k) plans, and the crises in the financial and housing markets.[26] EBRI has updated RSPM® on an annual basis since then for changes in financial and real estate market conditions as well as for underlying demographic changes and changes in 401(k) participant behavior (based on a database of the actual account activity of some 24 million 401(k) participants).

One of the basic objectives of RSPM® is to simulate the percentage of the population at risk of not having retirement income adequate to cover average expenses and uninsured health care costs (including long-term-care costs) at age 65 or older throughout retirement in specific income and age groupings. RSPM® also provides information on the distribution of the likely number of years before those at risk run short of money, as well as the percentage of preretirement compensation they would need in terms of additional savings in order to have a 50, 70, or 90 percent probability of retirement income adequacy.

A previous EBRI publication[27] describes how households are tracked through retirement age and how their retirement income/wealth is simulated for the following components:

- Social Security.
- DC balances.
- IRA balances.
- DB annuities and/or lump-sum distributions.
- Net housing equity.

A household is considered to run short of money in this model if aggregate resources in retirement are not sufficient to meet average retirement expenditures, defined as a combination of deterministic expenses from the Consumer Expenditure Survey (as a function of age and income) and some health insurance and out-of-pocket, health-related expenses, plus stochastic expenses from nursing-home and home-health care (at least until the point such expenses are covered by Medicaid). This version of the model is constructed to simulate retirement income adequacy, as noted above. Alternative versions of the model allow similar analysis for replacement rates, standard-of-living calculations, and other ad hoc thresholds.

The baseline version of the model that has been used for this analysis assumes all workers retire at age 65, that they immediately begin drawing benefits from Social Security and defined benefit plans (if any), and, to the extent that the sum of their expenses and uninsured medical expenses exceed the projected, after-tax annual income from those sources, immediately begin to withdraw money from their individual accounts (defined contribution and cash balance plans, as well as IRAs). If there is sufficient money to pay expenses without tapping into the tax-qualified individual accounts, those balances are assumed to be invested in a non-tax-advantaged account where the investment income is taxed as ordinary income. Individual accounts are tracked until the point at which they are depleted. At that point, any net housing equity is assumed to be added to retirement savings in the form of a lump-sum distribution (not a reverse annuity mortgage (RAM)). If all the retirement savings are exhausted and if the Social Security and defined-benefit payments are not sufficient to pay expenses, the individual is designated as having run short of money at that point.

Endnotes

[1] This includes studies on the impact of freezing of defined benefit accruals (VanDerhei, 2006); the transition from defined benefit to defined contribution plans (VanDerhei, June 2013); a comparative analysis of automatic enrollment 401(k) plans relative to voluntary enrollment plans (VanDerhei and Copeland, June 2008); employer contributions when converting from voluntary enrollment to automatic enrollment and its implications for retirement income (VanDerhei, April 2010); plan design and employee behavior for automatic escalation provisions in automatic enrollment plans (VanDerhei and Lucas, November 2010); and increasing default contributions for automatic enrollment plans (VanDerhei, September 2012).

[2] VanDerhei (Spring 2014).

[3] See Appendix A for a brief description of EBRI's Retirement Security Projection Model®.

[4] Individuals born from 1948–1954.

[5] One of the primary outputs of RSPM is the production of Retirement Readiness Ratings (RRRs) for various subgroups of the population. The RRR is defined as the percentage of simulated life-paths that do not run short of money in retirement.

[6] Individuals born from 1955–1964.

[7] Individuals born from 1965–1974.

[8] VanDerhei (September 2006), Park (May 2011) and VanDerhei and Copeland (May 2004).

[9] The final rules on QLACs were published in the July 2, 2012 *Federal Register*: http://www.gpo.gov/fdsys/pkg/FR-2014-07-02/pdf/2014-15524.pdf For a detailed summary of the rules, see Defined Contribution Institutional Investment Association (December 2014).

[10] For an excellent analysis of the market for longevity annuities, see Abraham and Harris (November 2014).

[11] VanDerhei (2015)

[12] Milevsky (2005).

[13] Scott (2008) demonstrates under a number of scenarios that longevity annuities maximize guaranteed retirement spending per dollar annuitized.

[14] Gong and Webb (2007).

[15] Pfau (September 2013).

[16] Blanchett (2014).

[17] Blanchett, (Spring 2015).

[18] Whether workers responding to the RCS currently have a defined benefit plan is also a factor associated with their interest in purchasing a QLAC-type product: 45 percent of those without a defined benefit plan were interested in purchasing a QLAC-type product whereas only 35 percent of those with a defined benefit plan were indicated they were interested.

[19] These scenarios typically include a modification of the current employer liability exposures involved with offering in-plan annuities.

[20] In reality, such a proposal would undoubtedly need to be modified to deal with minimum premium requirements from the QLAC providers. More than 20 percent of the 401(k) participants ages 55–64 in the EBRI/ICI 401(k) database would have annual premiums less than $100 (largely due to short tenure and the ability to start taking in-plan withdrawals without a penalty tax after age 59-½).

[21] This would involve several additional considerations including the status of the QLAC contracts at the time of preretirement job change. Some have suggested that a lack of cash values for QLACs would have a valuable side effect of helping to reduce leakages at job change.

[22] The annuity purchase prices were based on the best rates available at age 65 for a deferred annuity starting at age 85 from

immediateannuities.com. The rates were within 1.1 percent of those used by Blanchett (Spring 2015) based on quotes obtained from CANNEX. Gender-specific rates were used in the analysis even though unisex rates would be used for in-plan offerings. Consistent results were obtained when the simulations were repeated using a 50/50 gender mixture. Turner and McCarthy (2013) evaluate the impact of the need to calculate benefits on a unisex basis when offered in a 401(k) plan.

[23] The annuity purchase price currently charged for an applicant age 65 is used for all individuals, regardless of age. To the extent that future mortality improvements are reflected in the QLAC premia for Late Boomers and Gen Xers, the improvements in RRR would likely decrease from those produced by the current simulations.

[24] Payouts were calculated based on illustrative quotes provided by MetLife as of July 1, 2018.

[25] This special rule provides that, if certain conditions are satisfied, a series of target date funds (TDFs) in a defined contribution plan is treated as a single right or feature for purposes of the nondiscrimination requirements of §401(a)(4) of the Internal Revenue Code.

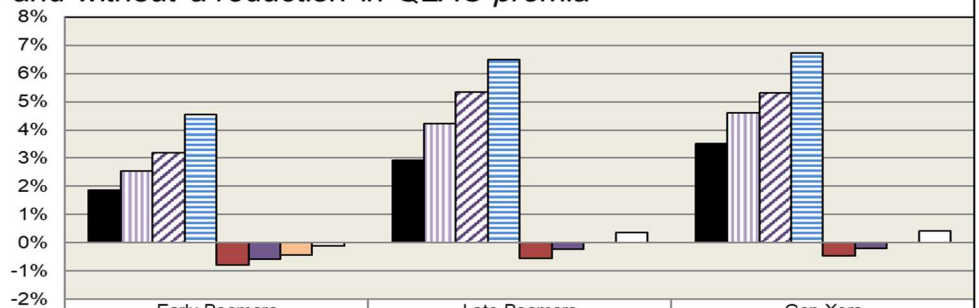
[26] A brief chronology of RSPM is provided in Appendix A of VanDerhei (February 2015).

[27] VanDerhei and Copeland (July 2010).

Figure 1

Impact of purchasing a 10-Year Laddered QLAC* of 1.5 % of 401(k) Account Balances From Ages 55–64 on Retirement Readiness Ratings, by Age Cohort (Percent Change).

With and without a reduction in QLAC premia



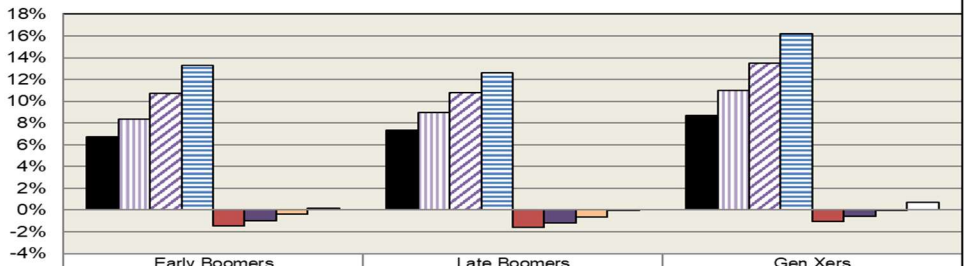
	Early Boomers	Late Boomers	Gen Xers
Household in Longest Relative Longevity Quartile With a QLAC	1.9%	2.9%	3.5%
Household in Longest Relative Longevity Quartile With a QLAC, 10% Reduction in Premia	2.5%	4.2%	4.6%
Household in Longest Relative Longevity Quartile With a QLAC, 20% Reduction in Premia	3.2%	5.3%	5.3%
Households in Longest Relative Longevity Quartile With a QLAC, 30% Reduction in Premia	4.5%	6.5%	6.7%
All Households With QLAC	-0.8%	-0.6%	-0.5%
All Households With QLAC, 10% Reduction in Premia	-0.6%	-0.2%	-0.2%
All Households With QLAC, 20% Reduction in Premia	-0.4%	0.0%	0.0%
All Households With QLAC, 30% Reduction in Premia	-0.1%	0.4%	0.4%

Source: EBRI Retirement Security Projection Model® Versions 2305, 2307, 2317, 2319 and 2321.
* Qualifying longevity annuity contract.
Gender specific QLAC APP is used.
Source of app = best rates from immediateannuity.com on August 10, 2015.

Figure 2

Impact of Using 401(k) Account Balances Attributable to Employer Contributions With the Current Employer at Retirement Age to Purchase a QLAC* at Age 65 on Retirement Readiness Ratings, by Age Cohort (Percentage Change)

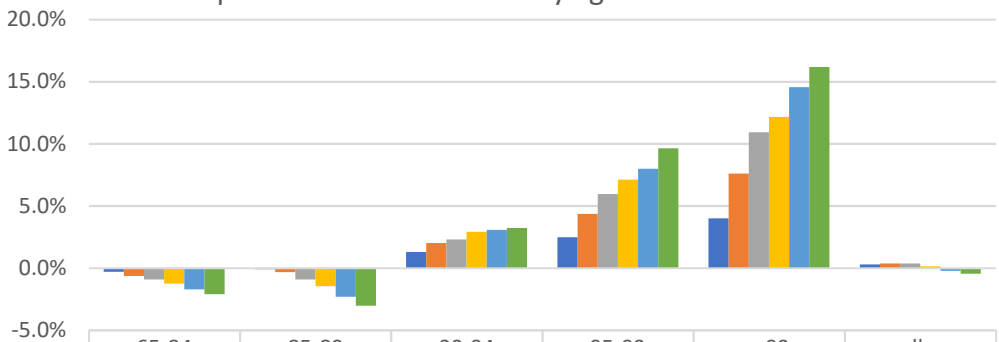
With and without a reduction in QLAC premia



	Early Boomers	Late Boomers	Gen Xers
Household in Longest Relative Longevity Quartile With a QLAC	6.7%	7.3%	8.7%
Household in Longest Relative Longevity Quartile With a QLAC, 10% Reduction in Premia	8.4%	9.0%	11.0%
Household in Longest Relative Longevity Quartile With a QLAC, 20% Reduction in Premia	10.7%	10.8%	13.5%
Households in Longest Relative Longevity Quartile With a QLAC, 30% Reduction in Premia	13.3%	12.6%	16.2%
All Households With QLAC	-1.5%	-1.6%	-1.1%
All Households With QLAC, 10% Reduction in Premia	-1.0%	-1.2%	-0.6%
All Households With QLAC, 20% Reduction in Premia	-0.4%	-0.6%	0.0%
All Households With QLAC, 30% Reduction in Premia	0.2%	-0.1%	0.7%

Source: EBRI Retirement Security Projection Model® Versions 2305, 2309, 2311, 2313, and 2315
* Qualifying longevity annuity contract.
Gender specific QLAC APP is used.
Source of app = best rates from immediateannuity.com on August 10, 2015.

Figure 3: Percentage change in EBRI Retirement Readiness Ratings from various DIA purchases at retirement by age at death*

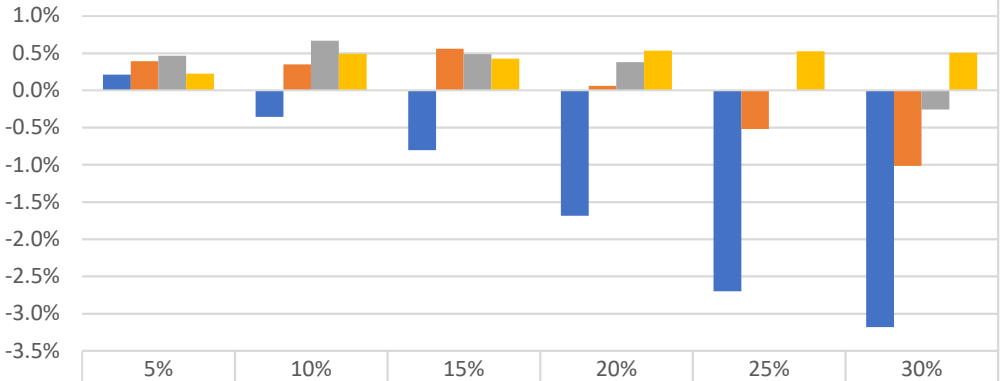


Percentage of 401(k) balance at age 65 used to purchase a DIA deferring 20 years (no death benefit)

	65-84	85-89	90-94	95-99	> 99	all
5%	-0.3%	-0.1%	1.3%	2.5%	4.0%	0.3%
10%	-0.6%	-0.3%	2.0%	4.4%	7.6%	0.4%
15%	-0.9%	-0.9%	2.3%	6.0%	10.9%	0.4%
20%	-1.3%	-1.5%	2.9%	7.1%	12.2%	0.1%
25%	-1.7%	-2.3%	3.1%	8.0%	14.6%	-0.2%
30%	-2.1%	-3.0%	3.2%	9.6%	16.2%	-0.4%

For households currently ages 35-64 who have a 401(k) balance at retirement age (65).
Source: EBRI Retirement Security Projection Model® Version 3427
* second death for couples

Figure 4: Percentage change in EBRI Retirement Readiness Ratings from various DIA purchases at retirement by age-specific wage quartiles



	5%	10%	15%	20%	25%	30%
lowest age-specific wage quartile	0.2%	-0.4%	-0.8%	-1.7%	-2.7%	-3.2%
second	0.4%	0.3%	0.6%	0.1%	-0.5%	-1.0%
third	0.5%	0.7%	0.5%	0.4%	0.0%	-0.3%
highest age-specific wage quartile	0.2%	0.5%	0.4%	0.5%	0.5%	0.5%

Percentage of 401(k) balance at age 65 used to purchase a DIA deferring 20 years (no death benefit)

For households currently ages 35-64 who have a 401(k) balance at retirement age (65).
Source: EBRI Retirement Security Projection Model® Version 3427