RETIREMENT INCOME INSTITUTE
Alliance for Lifetime Income

LITERATURE REVIEW
DECEMBER 2021
Literature Review #005-2021

ABSTRACT

While all annuities provide retirees some longevity insurance, the term "longevity insurance annuity" refers specifically to deferred annuities that begin payment at an advanced age, such as age 82, which is a little less than the life expectancy at age 62 in the United States. These annuities provide insurance against running out of money at advanced older ages. The original social security programs in many countries, including Canada, Germany, and the United States, were longevity insurance programs. The relative merits of longevity insurance annuities compared to immediate annuities depend on several factors, including the person's life expectancy, their uncertainty as to their life expectancy, their degree of risk aversion, their degree of time preference, their amount of savings, whether they have an annuity from a defined benefit plan, and the amount of their Social Security benefits. The private sector can provide longevity insurance annuities in three ways: employer-provided pension and retirement savings plans, individual retirement accounts (IRAs), and individual purchases outside of a pension or retirement savings account. While ignorance and lack of rational behavior may explain why some workers do not choose to annuitize, the apparent prevalence of adverse selection is evidence of rational behavior.

UNDERSTANDING PRIVATE SECTOR LONGEVITY INSURANCE ANNUITIES

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INTRODUCTION

While all annuities provide retirees some longevity insurance, the term "longevity insurance annuity" refers specifically to deferred annuities that begin payment at an advanced age, such as age 82, which is a little less than the life expectancy at age 62 in the United States (Arias and Xu 2019). In the United States, women outnumber men by nearly two to one in the age group 82 and older (US Census Bureau 2020).

These annuities provide insurance against running out of money at advanced older ages. They may allow retirees to have riskier investment portfolios by providing a low-risk stream of income. The potential role for longevity insurance annuities is growing over time as new generations of retirees increasingly have shifted from defined benefit plans to defined contribution plans.

This paper is organized as follows. The first section provides a general review of the literature on longevity insurance annuities. The second and third sections discuss longevity insurance annuities in the private and public sectors. The fourth section discusses reasons why longevity insurance annuities have not been popular. Finally, the paper offers concluding comments.

GENERAL REVIEW OF THE LITERATURE ON LONGEVITY INSURANCE ANNUITIES

This paper builds on literature analyzing various aspects of longevity insurance annuities (e.g., Abraham and Harris 2014; Blake and Turner 2014; Horneff, Maurer, and Mitchell 2017; Iwry and Turner 2009; Turner

et al. 2017; Turner and McCarthy 2013; Webb, Gong, and Sun 2007). Longevity insurance annuities are annuities that began at an advanced age, meaning an age at which a substantial proportion of the birth cohort has died. They are deferred annuities, meaning that their receipt occurs at a later date than their purchase.

These annuities were popularized in the academic literature by Milevsky (2005), who calls them advanced-life delayed annuities (ALDAs) but date back in that literature at least to Stephenson (1978). However, the idea of these annuities predates Stephenson's paper.

Chen and Turner (2015) note that the original social security programs in many countries, including Canada, Germany, and the United States, were longevity insurance programs. The workers' rights to the benefits were acquired earlier, and, given the life expectancy at the time, roughly half or fewer of workers entering the workforce survived to receive them. At that time, most workers did not have a pension that they could use to bridge the months or years from retirement to the first payment of a deferred annuity. In those countries, longevity insurance is no longer a part of social security because benefit eligibility ages have decreased, and life expectancy has increased. Longevity insurance annuities currently are provided in the Social Security programs in Ireland and Poland (Turner et al. 2017), as well as in some regions in China (Chen and Turner 2015), and in the Kyrgyz Republic, Nepal, the Philippines, and Vietnam (Turner et al. 2020).

Longevity insurance is similar to car or home insurance with a large deductible, which optimally deals with catastrophic risk because it provides benefits only when the risk is large. Longevity insurance protects against outliving one's assets when that risk becomes substantial at advanced ages (Milevsky 2005). The annuities can be purchased with a one-time lump-sum premium or via multiple payments over time, with the payouts to the annuitant beginning at a predetermined advanced age. If the annuitant dies before or shortly after that start age—and in the absence of a death benefit or term-certain add-on feature—the annuitant's estate forfeits the premiums already paid.

Longevity insurance annuities provide a form of insurance against poverty at advanced older ages. Muller and Turner (2021) argue that traditional poverty measures at advanced older ages understate the risk of falling into poverty because people in poverty are less likely to survive to those ages, which creates a form of sample selection bias in the measurement of poverty.

The argument for longevity insurance annuities is not just that they help reduce poverty at older ages. People who do not annuitize their defined contribution retirement account balances, which is the situation for most people with such accounts in the United States (Poterba, Venti, and Wise 2013), need to manage the accounts' spend-down over a period of unknown length that ends with their death. For people who have not annuitized their defined contribution retirement accounts, a longevity insurance annuity simplifies the problem of asset decumulation with uncertain life expectancy. Longevity insurance that provides a sufficient level of benefits changes the planning problem to one with a known, fixed endpoint—the date at which longevity insurance begins providing benefits.

Scott (2015) argues that many people would optimally allocate 10 to 15 percent of their financial assets to a longevity insurance annuity, which would produce insurance benefits equivalent to allocating 60 percent of financial assets to an immediate annuity. His analysis assumes that the annuities would be price-indexed, which is rarely the case except when they are provided through social security programs.

Mackenzie (2019) discusses the choice between an immediate annuity that begins paying at retirement and a longevity insurance annuity deferred until a person is in his or her early 80s. A deferred annuity is far less costly because it usually provides payments for fewer years and might never pay at all. Thus, retirees who purchase deferred annuities still need to finance consumption until the longevity annuity begins to pay. Mackenzie also argues that the smaller the share of a portfolio devoted to either type of annuity, the more attractive the deferred annuity will be.

Wettstein et al. (2021) analyze the money's worth and utility value of immediate and deferred annuities that use gender-based pricing. They find that longevity insurance annuities pay only about 50 cents per dollar of premium. They also find that longevity insurance annuities provide greater insurance value than immediate annuities because they focus on reducing the risk of poverty during advanced ages.

Poterba and Solomon (2021) find that the money's worth of unisex annuities, as measured by the expected pres-

ent value relative to cost, is greater for immediate annuities than it is for longevity insurance annuities. They estimate that the money's worth for a man aged 65 who receives an annuity at age 85 is 77 percent, versus the money's worth of 94 percent for an immediate annuity. They speculate that the lower money's worth for longevity insurance annuities may reflect insurers' reluctance to offer long-duration policies with substantial risk of medical progress before payouts begin. It is also consistent with greater adverse selection in the market for deferred annuities. Also, insurers might face asset-liability mismatch risk because they do not have access to bonds that last as long as their liabilities.

The relative merits of longevity insurance annuities compared to immediate annuities depend on several factors, including the person's life expectancy, their uncertainty as to their life expectancy, their degree of risk aversion, their degree of time preference, their amount of savings, whether they have an annuity from a defined benefit plan, and the amount of their Social Security benefits.

Weinzierl (2014) notes that, because mortality rates fall with rising lifetime income, longevity insurance annuities disproportionately benefit people with relatively high lifetime income. He finds large differences in mortality rates by income between men and women, however: women at the bottom lifetime earnings decile have mortality rates at ages 65, 75, 85, and 95 equal to mortality rates of men in the seventh decile. Thus, the relationship between lifetime income and survivorship to advanced ages that is clear within a gender group is less pronounced for the general population because women have higher life expectancies than men but also have lower earnings.

LONGEVITY INSURANCE ANNUITIES IN THE PRIVATE SECTOR

The private sector can provide longevity insurance annuities in three ways: employer-provided pension plans (either defined benefit or defined contribution plans), individual retirement accounts (IRAs), and individual purchases outside of a pension or retirement savings account.

EMPLOYER-PROVIDED RETIREMENT SAVINGS PLANS

Annuities provided through employer-provided retirement plans in the European Union and the United States must calculate benefits on a unisex basis. The legal argument supporting this policy is that gender-based mortality tables for calculating pension or retirement savings benefits would constitute sex discrimination in compensation. McCarthy and Turner (1993) analyze that argument from an economics perspective. They note that pension compensation is not measured by annual benefits in retirement but rather by the expected present value of the accrual of future pension benefits per hour of work. That would be calculated using the worker's life expectancy when a pension or retirement savings plan provides an annuity.

The US Supreme Court's interpretation of US discrimination law in a ruling on a case is at odds with the economics perspective on compensation measurement. It requires employer-sponsored pension and retirement savings plans to use unisex mortality rates, despite women at typical retirement ages on average living 2.5 years longer than men (Arias and Xu 2019).

The difference between gender-based and unisex benefits is larger for longevity insurance annuities than it is for immediate annuities because the gender difference in life expectancy is larger at older ages. US life expectancy tables for 2017 show that 62-year-old women are 29 percent more likely than men that age to survive to age 85. At age 85, women's life expectancy is 19 percent longer than men's (Arias and Xu 2019). Thus, when priced using gender-based mortality rates, single-life longevity insurance annuities purchased at age 62 and beginning payments at age 85 would cost considerably more for women than for men. Using the Society of Actuaries (n.d.) annuity calculator, for a 4 percent discount rate the women's longevity insurance annuity would cost 20.5 percent more than the annuity for men. In comparison, it costs 5.9 percent more to provide an immediate annuity beginning at age 62 to a woman than to a man. It thus appears that single-life unisex longevity insurance annuities provided by retirement savings plans would not be a good deal for men (Turner and McCarthy 2013), which may explain why few retirement savings plans provide them as an option.

A 2021 survey of 10 life insurance companies finds that, for a gender-based annuity purchased at age 65 for $100,000 that is expected to make payments starting at age 85, the average annual benefit for women was $24,287, compared to $29,421 for men, a 21.1 percent advantage in annual benefits but no advantage in the expected present value, to men (Immediate Annuities. com 2021).

A review of the literature revealed no studies that have examined the effects of unisex pricing on longevity insurance annuities. von Gaudecker and Weber (2006) examine the effects of unisex pricing on single-life annuities at retirement after Germany abolished gender-based pricing in 2006. They found that German insurers expected few men to choose unisex annuities because of their unfavorable pricing for men and consequently priced them at almost the level of women-only annuities. Thus, women were helped only marginally, with their mean benefits rising 1.2 percent, whereas men choosing the annuities would receive benefits 7 percent lower than before the requirement took effect. The effect on longevity insurance annuities would be larger because gender differences in life expectancy are larger at older ages.

Life insurers rarely provide inflation protection for longevity insurance annuities or immediate annuities (Warshawsky 2013, 2015). The individual purchaser must bear inflation risk during the deferral period until initial payment, which could be 20 years or more in the future, and during the payout period, which could be another 15 years or more. Life insurance companies do not take on this risk, presumably because their underlying investments do not provide them with protection against inflation risk over such a long period (15 or 20 years). However, Bodie and Cotton (2020) note that Treasury Inflation-Protected Securities are available with 30-year duration. Thus, the reason insurance companies do not provide inflation-indexed longevity insurance annuities is lack of demand, perhaps because of the inflation indexing Social Security provides, rather than because of an inability to supply them. Some annuities automatically increase in value—for example, by a nominal 3 percent per year—or increase at the inflation rate, up to 3 percent per year. These annuities help protect against the eroding effect of inflation on asset value over time. They do not protect against the risk of unexpectedly high inflation, although that risk will be low in a period of stable, low inflation rates, such as has prevailed in the United States over the past two decades.

For workers who purchase an annuity through an employer-provided defined contribution plan, annuities purchased through a group policy tend to be less expensive than annuities purchased individually. The reason, in part, is that the problem of adverse selection is reduced in an employer-provided plan because the element of choice is reduced or eliminated. Thus, there is less adverse selection within the group. The unisex pricing, however, offsets the value of group purchase for men. For this reason, men may be able to purchase single-life annuities at a lower price outside of a retirement savings plan than within the plan (Turner and McCarthy 2013).

Kintzel and Turner (2020) use Monte Carlo simulations to demonstrate the need for longevity insurance annuities due to the risk that stock market downturns cause distributions from an employer-provided defined contribution plan or an individual account to fall below a minimum level. They use risk-of-ruin analysis, where the risk of ruin is the risk that the person would need to reduce the person's consumption below the planned level.

Munnell, Wettstein, and Hou (2019) compare three strategies for increased annuitization: (1) purchasing an immediate annuity through a 401(k) plan or IRA at retirement, (2) purchasing a longevity insurance annuity, or (3) drawing down a 401(k) plan or IRA from age 65 to 70 as a bridge in order to postpone claiming Social Security to age 70. They conclude that, for middle-income retirees with adequate savings, the drawdown of a 401(k) plan to permit delaying Social Security claiming is the best approach, but retirees at the 90th percentile of the income distribution would benefit if they purchased a longevity insurance annuity. Ezra (2016) analyzes issues related to the question of whether to defer annuitization.

INDIVIDUAL RETIREMENT ACCOUNTS

Annuities purchased through an IRA are generally purchased using gender-based pricing. Like all annuities purchased in the private sector in the United States and in other countries, they rarely provide inflation indexing. They can be purchased with a predetermined escalation of benefits, such as a 3 percent nominal increase per year.

INDIVIDUAL PURCHASES OUTSIDE OF A RETIREMENT SAVINGS ACCOUNT

Only 4 percent of the people who purchased longevity annuities through New York Life outside of retirement savings plans purchased an annuity that is solely a longevity insurance annuity, which is evidence of the limited demand for a pure longevity insurance annuity. Most people who purchase these annuities purchase annuities that also provide death benefits (New York Life 2012).

Consumer Reports surveyed five US life insurance companies and found a considerable variation in the annuity benefits that a hypothetical man aged 65 would start receiving at age 85 (Fichera 2013). For a purchase price of $100,000, the annual benefits ranged from $36,305 to $62,950. This large range would not occur in a competitive market. This large range suggests that consumers are not price-shopping. Since it was apparently easy for the Consumer Reports author to find this information, it is not clear why consumers would not also make the effort to discover this range, which through purchasing higher-benefit annuities would cause it to diminish.

LONGEVITY INSURANCE ANNUITIES PROVIDED BY THE GOVERNMENT

The US government can provide longevity insurance annuities through Social Security or the Pension Benefit Guaranty Corporation (PBGC). Social Security could provide longevity insurance annuities in two different ways (Chen, Hughes, and Turner 2016; Turner 2013a, 2013b): First, it could provide longevity insurance annuities available to all Social Security beneficiaries reaching an advanced age, such as age 82. Alternatively, it could allow workers to make voluntary contributions to purchase such annuities.

The government can limit its liability in case of an unexpected improvement in life expectancy by indexing the amount of benefits to life expectancy. Sweden adjusts social security benefit generosity at retirement age for immediate annuities (Turner 2004). Since this adjustment occurs annually, it occurs in small increments, so workers near retirement age face little risk.

The government would face adverse selection if it offered longevity insurance annuities through a voluntary program connected to Social Security. Adverse selection would be reduced if workers who earn less than the taxable maximum wage were allowed to buy additional wage credits. In the United States, the additional wage credits would then purchase future benefits through Social Security's progressive benefit formula (Turner 2019b). With the progressive benefit formula, the level of benefits relative to career-average earnings is higher for low earners relative to high earners.

Because employers seem to be reluctant to take on the responsibility of providing annuities, Poerio (2020) proposes that they could obtain annuities through the PBGC, which already provides annuities to missing participants with defined contribution participants. This proposal could be expanded to include the provision of longevity insurance annuities.

WHY PEOPLE DO NOT CHOOSE LONGEVITY ANNUITIES

Most people do not purchase longevity insurance annuities despite studies suggesting that doing so would improve their welfare. Horneff, Maurer, and Mitchell (2017) find that typical individuals with substantial defined contribution balances should allocate around 15 percent of their assets to a deferred annuity starting at age 85.

The life-cycle theory suggests that rational planners might not save for a level of consumption at advanced ages equivalent to their consumption at earlier ages. The low probability of being alive at those ages reduces the incentive to forgo consumption earlier in life.

Brown et al. (2015) present evidence that people generally have difficulty valuing annuities. An implication of their study is that people need a financial advisor to encourage them to purchase an annuity. When they seek financial advice, however, advisors generally do not suggest they do so. Turner (2014) analyzes 25 free retirement planning programs available on the internet. To analyze the advice provided by these programs, a scenario was created where an annuity would clearly be the desirable choice. Rarely do these internet programs advise doing so. Turner and Giordano (2020) note that most advisors are compensated based on assets under management (AUM), which refers to the level of assets

in financial market investments that the client has. Purchasing an annuity generally results in clients selling other assets, which reduces the fees earned by the advisor. However, fee-only advisors also may face issues relating to compensation that would discourage them from advising clients to purchase annuities.

While ignorance and lack of rational behavior may explain why some workers do not choose to annuitize, the apparent prevalence of adverse selection is evidence of rational behavior.[1] Adverse selection in the purchase of unisex longevity insurance annuities would be an issue in a voluntary system with rational workers because those annuities presumably would be purchased only by people with long life expectancies. Also, potential purchasers may be concerned about the risk of life insurance company insolvency, with government reinsurance not providing adequate protection—a risk that some may overestimate.

A person who postpones claiming Social Security in effect purchases an annuity that provides higher annual benefits in the future. The purchase price is the amount of benefits the person has forgone by the delay in claiming benefits. In a survey of financial advisors, Greenwald, Biggs, and Schneider (2011) found that 57 percent report that they use break-even analysis with at least 40 percent of their clients; break-even analysis calculates the age at which the client would have recouped in higher annual benefits the loss in benefits if he or she retires later. This survey suggests that many financial advisors do not have a sophisticated understanding of annuities and do not provide their clients good-quality advice relating to annuity purchases.

The argument presented by Schmitt and Turner (2021) related to delayed Social Security claiming also applies to the demand for longevity insurance annuities. Many people presumably have loss aversion, where they value a loss as being roughly twice as large as an equal-value monetary gain. Thus, the potential loss due to dying before receiving longevity insurance benefits is valued more than an equal gain in future benefits. Furthermore, with potentially high subjective discount rates, the distant future benefits are heavily discounted.

Turner (2019a) compares the drawdown problem of retirement assets without annuitization to the Halloween candy problem: a person wants to have enough money (candy) to pay future expenses (to give away) but does not want to have too much left over. Some higher-income people might not choose annuities because they have adequate resources to pay for their expected retirement expenses and thus choose to self-annuitize.

One explanation for why people do not annuitize is that many 401(k) plans do not offer annuities. Hewitt Associates (2009) reports that only 7 percent of 401(k) plans offered annuities in 2009. Nevertheless, the low prevalence of annuities arguably is the result, and not the cause, of workers' low demand for annuities.

A possible default for annuitization in 401(k) plans would be that workers purchase deferred annuity units with their contributions starting at a particular age, say at age 50 (Iwry and Turner 2009). At any time, they could stop purchasing additional units of annuities.

This default is likely to be more effective than a default at retirement in encouraging workers to annuitize because the amount they purchase at any one time is small. Workers would benefit from dollar-cost averaging if they purchased annuities over time at different interest rates. This approach mitigates the conversion risk when the person purchases the annuity with a single payment at retirement. In 2011 Hartford launched such a product, called Hartford Lifetime Income (Gladych 2011).

The financial services industry has conducted a massive advertising campaign that urges retirement savings plan participants to roll over their 401(k) plans to IRAs when they change jobs (Turner 2018; Turner and Klein 2014; Turner, Klein, and Stein 2016). An alternative advertising campaign that has not occurred is one that urges retirement savings plan participants to purchase annuities. The importance of the rollover decision causes many people to seek financial advice. One survey finds that 61 percent of the people with rollover IRAs received advice from a financial advisor concerning the rollover (Investment Company Institute 2015). An advisor who

1. Hilary Waldron suggested this point.

advises whether to roll over to an IRA or annuitize has a conflict of interest: If the advisor advises to annuitize, he or she will receive a one-time fee for that advice. If the advisor advises to roll over to an IRA that he or she manages, that advisor will receive a continuing stream of advisory fees with a larger present value, which can be as much annually as 2 percent of assets under management, though more generally they are around 1 percent.

Given the power of advertising and advice to get people to do something that is often not in their interests, namely 401(k) rollovers, this paper contends that a reason why people do not annuitize is that the financial services industry has not engaged in an advertising campaign to encourage people to purchase annuities, which raises the question of why that has not occurred.

CONCLUSION

Longevity insurance annuities are deferred annuities that begin payment at advanced ages, such as age 82. The potential role for longevity insurance annuities is growing because new generations of retirees are shifting from defined benefit plans to an increased reliance on defined contribution plans. With longevity insurance annuities, people can reduce their longevity risk in retirement, thereby helping them solve the problem of post-retirement asset allocation. Longevity insurance annuities could allow retirees to have riskier portfolios because the longevity annuity guarantees them a steady source of retirement income.

While lack of rational behavior may be a factor for some workers who choose not to annuitize, the apparent prevalence of adverse selection is evidence of rational behavior. Insurance companies face adverse selection because they provide longevity insurance to people who self-select, in part, based on their subjective belief in a long life expectancy.

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John A. Turner is Director of the Pension Policy Center.

ACKNOWLEDGMENTS

I have received valuable comments from Jason Fichtner, Sandy Mackenzie, and Mark Warshawsky.

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