Issue Paper

Social Security Retirement Benefits and Private Annuities: A Comparative Analysis

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Retirement income in the United States has been described as a three-legged stool composed of Social Security benefits, personal savings, and employer-based retirement plans. For the latter, today's workers usually have a defined contribution plan in which the worker and employer contribute to the plan and the worker bears the risk for account performance. At retirement, the worker has the option of purchasing an annuity, which is similar to Social Security benefits and traditional defined benefit pension plans insofar as they provide a steady income stream for life. This issue paper examines the similarities and differences between Social Security retirement benefits and annuities, and the factors that determine how much lifetime retirement income an individual would receive.

Summary

Retirement income in the United States has been described as a three-legged stool composed of Social Security benefits, personal savings, and employer pensions (DeWitt 1996). The first leg, Social Security, is a social insurance program that pays retirement benefits to workers and their family members. Workers are eligible for lifetime benefits if they have worked long enough in covered employment to qualify.[1] For the second leg, personal savings, individuals can invest for retirement independently, usually through an individual retirement account (IRA).[2] The third leg, employer pensions, has changed significantly over the past 30 years (Employee Benefit Research Institute, n.d.).[3] Historically, a worker's pension income came from a defined benefit (DB) plan, which generally is employer-funded and provides set monthly payments based on the worker's salary, years of service, and age at retirement. DB plans typically provide retirees with lifetime pension income and offer survivor benefits for spouses. Today, workers with employer-sponsored pensions are more likely to be covered under defined contribution (DC) plans, typically 401(k) plans. In DC plans, employees contribute a portion of their wages, often matched in full or in part by their employers, and earn investment returns over time to accumulate retirement savings.

Because of the shift from DB to DC plans, workers bear greater responsibility for managing their income and assets to ensure they last throughout retirement. While Social Security and DB plans provide monthly lifetime payments, at retirement a worker must determine how to spend the retirement savings accumulated in DC plans, IRAs, or other personal savings accounts. A worker can choose to take the money as a lump sum, draw it down through disbursements as needed, or use some or all of it to purchase an annuity. In general, an annuity is an insurance product that pays a monthly amount for the remainder of the person's life in exchange for a one-time upfront payment called a premium. Although privately purchased annuities seem similar to Social Security benefits because both offer a steady income stream, individuals may not understand the inherent differences between them. In addition, many may not understand the role of interest rates and life expectancy in determining annuity payments or how much money they should annuitize.

This issue paper explains some key features of Social Security retirement benefits, focusing on program funding; benefit payments to retired workers, their spouses, and survivors; and benefit taxation. It then discusses key features of private annuities, including funding and payments, types and features, and taxation. In addition, this paper gives examples of the premiums needed to replicate Social Security retirement benefits and discusses the variables that affect the amount of annuity income. Lastly,

Selected Abbreviations

CPI	consumer price index
DB	defined benefit
DC	defined contribution
FRA	full retirement age
IRA	individual retirement account
JS	joint and survivor
SPIA	single premium income annuity
SSA	Social Security Administration

this issue paper explains some of the risks of both the Social Security program and the private annuity industry. As more people reach retirement with a nest egg of savings, it is important that they understand the complexities involved in purchasing an annuity and how this type of income compares with other retirement income sources.

Social Security Retirement Benefits: Key Features

This section discusses key features of Social Security retirement benefits, including funding, payments, and taxation.

Benefit Funding

Both employees and employers pay Social Security payroll taxes—each pay 6.2 percent of an employee's covered earnings up to the taxable maximum ($127,200 in 2017),[4] with 5.3 percent allocated to the Old-Age and Survivors Insurance (OASI) Trust Fund and 0.9 percent allocated to the Disability Insurance (DI) Trust Fund (collectively referred to as the OASDI Trust Fund). Self-employed individuals pay both the employee and employer shares, or 12.4 percent. Social Security payroll tax revenues pay current beneficiaries; any excess revenues go into the OASDI Trust Fund to pay future benefits should revenues fall short of outlays. Currently, the Social Security program covers about 96 percent of U.S. workers, which means that most workers are subject to the payroll tax (SSA 2017). Because almost all U.S. workers are covered by the program, Social Security is able to pool mortality risk—the uncertainty about how long one will live—over a large and heterogeneous population.

Benefit Payments

An individual needs at least 10 years (40 credits) of covered earnings to qualify for Social Security retirement benefits. Social Security bases benefits on an individual's highest 35 years of earnings, indexed to changes in the national average wage.[5] With this information, the Social Security Administration (SSA) calculates a worker's average indexed monthly earnings (AIME). The AIME is then used to calculate the primary insurance amount (PIA), or the monthly benefit payable at the worker's full retirement age (FRA).[6] The FRA is 65 to 67, depending on the worker's year of birth.[7] Permanently reduced retirement benefits can be claimed as early as age 62, the early eligibility age (EEA). For those who choose to delay claiming benefits past their FRA, their monthly benefit increases through delayed retirement credits, up to age 70. Once claimed, monthly benefits last as long as a person lives and are fully indexed annually to the consumer price index (CPI) to protect against inflation.[8] At the end of 2014, about 39 million beneficiaries received retired-worker benefits and the average monthly benefit for a 65-year-old was $1,317 for a man and $1,033 for a woman (SSA 2016, Table 5.A1.1).

In addition to retired-worker benefits, eligible family members can claim benefits based on the worker's earnings record. Spouses are eligible for Social Security benefits, even if they never worked in covered employment on their own. The spouse (or unmarried ex-spouse, if the marriage lasted at least 10 years) of a retired worker can receive retirement benefits equal to 50 percent of the worker's PIA if the spouse (or ex-spouse) claims at FRA, or reduced benefits starting at the EEA. Survivor benefits are available to non-disabled widow(er)s starting at age 60, or as early as age 50 if the widow(er) is disabled. Monthly benefits are higher if a survivor waits until FRA to claim them. Widow(er)s receiving survivor benefits, who qualify for retired-worker benefits that are greater than their survivor benefits can switch to their own retirement benefit as early as age 62 or as late as age 70.[9] Social Security also pays benefits to minor and disabled children of retired, disabled, and deceased workers.

Benefit Taxation

Some beneficiaries may have to pay federal income tax on a portion of their Social Security retirement benefits depending on their combined income. For an individual with combined income between $25,000 and $34,000 (or for a couple, between $32,000 and $44,000), up to 50 percent of Social Security benefits are subject to taxation. For an individual with income greater than $34,000 (or greater than $44,000 for a couple), up to 85 percent of Social Security benefits are subject to taxation.[10]

Private Annuities: Key Features

This section discusses the key features of private annuities, including funding and payments, types and features, and taxation.

Annuity Funding and Payments

Many individuals save for retirement by contributing to employer-sponsored DC plans, typically 401(k)s. Employers sometimes offer a matching contribution, up to a certain percentage of employee contributions. Individuals can also save independently for retirement, usually through IRAs. However, in retirement, individuals must decide how to manage their retirement accounts for income, whether by withdrawing funds as needed,[11] purchasing an annuity, or some combination of the two. Annuities insure retirees against the risks of outliving their retirement savings (longevity risk) or losing savings due to low or negative investment returns (investment risk).

In general, an annuity pays a monthly amount for the remainder of the annuitant's life in exchange for a one-time upfront payment called a premium. The monthly annuity payment depends on the premium, the purchaser's age and sex, interest rates at the time of purchase, and the annuity's specific features. In general, for any given premium, annuity income rises with the age of the purchaser because the income will be paid out for fewer years, on average. An annuity can be purchased at retirement or later to increase monthly payments. Income will also be greater for an annuity purchased when interest rates are relatively high because the insurer will earn more by investing the premium at the higher rates. Finally, for annuities purchased by individuals, women will receive a smaller monthly income than men the same age receive for the same premium because of their longer life expectancy.

Annuities pool mortality risk across many individuals, which allows an individual to have a predictable income stream and insures against outliving one's retirement savings. When a large number of individuals share mortality risk, some will live shorter than average lives and some will live longer than average. Annuities use the remaining monies from those who die early to pay benefits to those who live longer than the average life expectancy. Although, the benefits for the longer-lived annuitants in the risk pool are substantial, the disadvantage for shorter-lived annuitants also can be substantial as they forfeit unused premiums.

Private annuity markets are voluntary markets, which means that individuals self-select to purchase annuities. This introduces adverse selection into the annuitant pool because those who voluntarily purchase annuities tend to live longer on average than the general population. Those individuals may have knowledge about their expected future health and anticipated longevity and insure against outliving their financial resources. This adverse selection leads to private annuities being priced at relatively high rates, as insurers use life tables to account for longer life expectancy.[12]

Previous research has examined whether individuals should purchase annuities and how many people actually do so. Yaari (1965) showed that in the absence of a bequest motive, individuals should annuitize all of their wealth. However, few individuals annuitize even part of their retirement savings. Yakoboski (2010) reported that among retirees with DC and IRA balances in excess of $200,000 (and pension income of less than $200 per month), only 19 percent annuitized. Sabelhaus, Bogdan, and Holden (2008) found that 22 percent of DC plan account holders annuitized all or part of their retirement account balances. Among those who annuitized, 80 percent annuitized the full balance, while 20 percent elected a partial annuity.

Annuity Types and Features

Annuities can take many forms and have optional features, but such features either cost more or reduce monthly payouts. The two most basic annuities—single premium income and deferred income—require a prepaid premium and, in return, the annuitant receives a fixed nominal monthly income for life. Upon death, the annuitant usually forfeits any unused premium and the insurer uses the balance to pay the longer-living annuitants in the risk pool.

Single premium income annuity (SPIA). The most basic annuity, SPIA, pays a lifetime income in exchange for an initial lump-sum premium. The income for any given premium depends mainly on the market interest rates at the time of purchase and the purchaser's age and sex. Women receive lower monthly payouts because of their longer life expectancy. For example, with a market interest rate of 3.9 percent and a $100,000 premium, a 65-year-old man would receive about $545 per month from an SPIA, while a woman would receive around $511 per month.[13]

Deferred income annuity (DIA). The DIA also pays an annuitant a fixed monthly income for life, but the annuitant pays the premium in advance with the payouts starting at a later age. The DIA premium is significantly lower than if the annuity payments started immediately because the insurer invests the premium during the deferral period. A DIA grows tax-free in the preretirement stage with a guaranteed interest rate for a specified time. Once payouts begin, an annuitant receives payments for life. Under a variant called an Advanced Life Delayed Annuity, the monthly payment starts much later (typically after age 80). This allows those living significantly beyond their retirement starting age to enhance their monthly payments. For example, if the same man and woman in the prior SPIA example wait until age 80 to begin their annuity payouts, their monthly payouts increase to $910 and $830 per month, respectively. The higher payments are due to the retirees' decreased life expectancy and can help minimize the chance of having too little income late in life.

In addition to a basic monthly payment in return for a premium, some annuities offer optional features for additional upfront costs.

Term certain annuity. A term certain annuity guarantees payouts for a specified time, even in the event of the annuitant's death. For example, if an annuitant purchases a 10-year term certain annuity and dies after 6 years, the monthly payments continue to the designated beneficiary for 4 years. Payments stop after 10 years, so a term certain annuity does not insure the annuitant against living longer than the term.

Joint and survivor (JS) annuity. Under a JS annuity, monthly payments continue to the spouse, if the spouse survives the annuitant. JS annuities pay income for the longest life of either spouse. Under a typical 50 percent JS annuity, the insurer reduces payments by 50 percent when one spouse dies, but pays the surviving spouse for life. As the percentage paid to the surviving spouse increases, so does the premium. For example, if a couple purchases a 50 percent JS annuity that pays $1,000 a month while both annuitants are living, upon the death of one spouse, the lifetime payouts drop to $500 per month for the surviving spouse. A 100 percent JS annuity would continue to pay the full $1,000 per month to the survivor. Naturally, the higher the survivor's benefit, the greater the premium.

Graded annuity. Private-sector insurers are not usually able to absorb the risk of fully protecting annuitants against inflation. Instead, they typically offer an option called a graded annuity. In exchange for a higher premium (or a lower initial payout for the same premium), insurers will increase the nominal monthly annuity payment by a fixed percentage each year. The typical annual increase provided by this annuity rider is 3 percent. For example, if the 65-year-old man and woman from the SPIA example each purchased an annuity with a 3 percent annual increase, their monthly payout would be $394 and $363, respectively, in the first year, then increase at 3 percent per year on the annuity's anniversary date. Under a graded annuity, the annuity payouts increase by the set percentage regardless of whether inflation is higher or lower than the set amount. If inflation as measured by the CPI is lower than the set amount, the annuitant's purchasing power increases; however, if inflation is higher, the annuitant's purchasing power declines.

Refund annuity. A refund annuity pays to a beneficiary at the annuitant's death the difference between the premium and the amount already paid to the annuitant. For example, if an annuity costs $100,000 upfront and at the time of death the annuitant had received $40,000 in payouts, the beneficiary would receive a refund of $60,000. Because this option offers a refund, the monthly payouts are lower. For example, if the 65-year-old man and woman in the SPIA example selected a refund annuity, their monthly payouts at an interest rate of 3.92 percent would be $493 and $476, respectively.

Annuity Taxation

If pretax monies from a qualified retirement plan, such as a 401(k) or IRA, are used to purchase an annuity, then all payouts are taxable just like other withdrawals from DC plans. If after-tax dollars, such as those from a Roth IRA, are used to purchase an annuity, then the portion of the payout that represents return of principal is not taxed.

Examples of Private Annuity Premiums to Replicate Social Security Benefits

Purchasing additional features for a private annuity results in either a higher premium or a lower monthly payout. Table 1 shows the private annuity premiums needed to equal the average monthly Social Security retirement benefit at age 65 for men and women. In addition, it shows the increased premiums needed to purchase inflation protection and survivor benefits. Because the average monthly benefit is lower for women, the corresponding premium needed to purchase the monthly benefit ($1,033) is lower than the premium for men. If a 65-year-old woman purchased

Table 1.
Premiums for annuities with monthly payments equal to the average Social Security retirement benefit, December 2014 (in dollars)

Sex	Average monthly Social Security benefit at age 65	SPIA premiums		100 percent JS annuity premiums	
		For a nominal fixed monthly payment	With 3 percent inflation protection	For a nominal fixed monthly payment	With 3 percent inflation protection
Men	1,317	263,043	359,045	359,045	471,066
Women	1,033	229,262	321,954	321,594	367,338

SOURCES: SSA 2016, Table 5.A1.1; Immediate Annuities (2016).

NOTES: While Social Security benefits are gender-neutral, annuity premiums and monthly payments are based on the differences in life expectancy between men and women. Equivalent annuity amounts were imputed from these data.

an annuity with a monthly payment equal to the average Social Security benefit for a 65-year-old man ($1,317), she would pay a higher premium. This comparison does not account for other benefits that the Social Security program automatically includes, such as payments for spouses, ex-spouses, and children, which the private annuity market does not offer. In addition, it is important to note that Social Security adjusts benefits for inflation each year based on changes to the CPI, while a graded annuity is based on a fixed inflation adjustment.

As a purchaser adds features to a basic annuity, the cost to purchase a monthly payment equal to the average Social Security benefit increases dramatically. Table 1 shows that for a basic annuity equal to the average monthly Social Security benefit at age 65, an individual would need over $200,000, or over $300,000 with inflation and survivor protections. However, according to the Survey of Consumer Finances, the median household account balance from workplace retirement savings plans was about $111,000 in 2013 (Munnell 2014). Table 2 shows the monthly annuity payment that a 65-year-old could purchase with that amount of savings.

Table 2.
Monthly annuity payment received for a $111,000 premium, by annuity type, 2014 (in dollars)

Annuity type	Monthly annuity payment
SPIA, men	623
SPIA, women	488
100 percent JS annuity, men	347

SOURCE: Immediate Annuities (2016).

NOTE: The monthly annuity payments are estimates.

The current U.S. median account balance is only enough to purchase an SPIA with a monthly payment that is about half the average monthly Social Security benefit. The annuity would not include the additional features of inflation protection and survivor benefits.

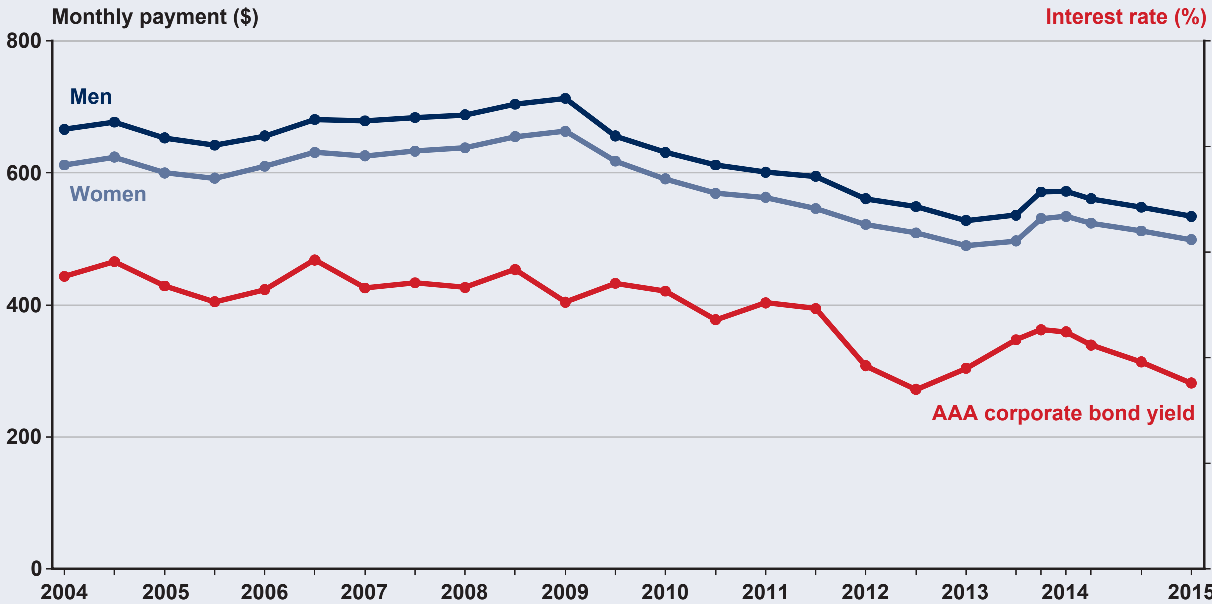
Annuity Income Variables

An insurer primarily bases a monthly annuity payment on the premium, interest rates at the time of purchase, and the age and sex of the purchaser. Insurers typically invest premiums in fixed-income assets, such as U.S. Treasury securities, highly rated corporate bonds, and other safer fixed-income assets to increase capital, which helps insurers pay annuitants. These assets typically pay fixed or periodic payments, which insurers pass along to the surviving risk pool of annuitants. Like any interest-sensitive financial product, its price, or value, is inversely related to interest rates. Market interest rates at the time an individual purchases an annuity (usually at retirement) affect the monthly payment. Annuities purchased when interest rates are higher have higher monthly payouts, all else being equal. Likewise, annuities purchased when interest rates are lower have lower monthly payouts.

In addition to interest rates, the life expectancy differences between men and women can affect their monthly payouts. A man reaching age 65 today can expect to live, on average, until age 84.3, while a woman turning 65 today can expect to live, on average, until age 86.6 (SSA, n.d. a). This life expectancy difference explains how given the same premium and age, a woman receives a lower monthly annuity payment than a man.

Chart 1 shows how monthly annuity payouts for men and women have varied over time with changes in interest rates. For example, if a 65-year-old bought

Chart 1.
Nominal monthly payments from a $100,000 SPIA purchased at age 65, by sex; and interest rate at purchase; various dates 2004–2015



SOURCE: Federal Reserve Bank of St. Louis (n.d.).

NOTES: The interest rate is the average AAA corporate bond yield obtained from Federal Reserve data.

Data for are for January and July 2004–2012; January, July, and October 2013; January, April, and October 2014; and April 2015.

a $100,000 SPIA in 2005, the annuitant's monthly payment would be about $642 for a man and $592 for a woman. In contrast, if a 65-year-old purchased that same annuity during the lower interest rate period of 2015, the monthly payment would have been $535 for a man and $500 for a woman, about a 17 percent and 16 percent reduction in monthly payments, respectively.[14]

Age when payments begin, life expectancy, interest rates at purchase, and the premium paid determine annuity income in the private market. In contrast, Social Security bases retirement benefits on a worker's highest 35 years of indexed earnings and the age at which he or she claims benefits. Unlike annuity payments, Social Security benefits are gender-neutral and are not affected by market interest rates.

Risks

Insurance companies sell annuities and are regulated by the states in which they sell their products. State regulators require insurance companies to be financially solvent and maintain cash reserves sufficient to meet their obligations. Though it is unusual, insurance companies can become insolvent. The National Organization of Life and Health Guaranty Association (NOLHGA) and National Conference of Insurance Guaranty Funds (NCIGF) jointly reported 74 insurance company insolvencies among member insurers over the period 1988–2009, with average recoveries on annuities of 94 percent (NOLHGA/NCIGF 2011). In contrast, 465 banks failed from 2008 to 2012, with 157 alone in 2010. Annuitants' premiums are typically protected up to a maximum amount, which is set by each state's insurance guaranty fund.[15]

As previously noted, Social Security payroll tax revenues pay current beneficiaries with the excess funds allocated to the OASDI Trust Fund. As the ratio of workers to retirees has decreased over the years, from about 5:1 in 1960 to less than 3:1 in 2013,[16] the trust fund is expected to be depleted by 2034. However, the Social Security Trustees project incoming payroll tax revenues to be enough to pay about 75 percent of the promised (or scheduled) benefits (SSA, n.d. b). Congress is responsible for acting to address the Social Security trust fund shortfall.

Conclusion

This issue paper provides an overview of Social Security retirement benefits and the private annuity market, by comparing and contrasting the two sources of retirement income. Private annuities share some similarities with Social Security benefits. Both provide a stream of lifetime income that can help maintain a person's standard of living throughout retirement. The impact of having a relatively small amount of retirement income later in life can be significant. VanDerhei (2014) reported that the number of households in the lowest income quartile projected to run short of money within 20 years of retirement is considerably larger than those households in the other three income quartiles combined.[17] However, there are substantial differences between them. While Social Security provides benefits for survivors and fully indexes benefits each year to inflation, private annuities charge a higher upfront premium for similar protections. In addition, Social Security provides benefits that are not available in the private annuity market, such as benefits for ex-spouses and minor children. Unlike private annuities, Social Security does not pay different benefit amounts to men and women because of their differing life expectancies. Lastly, the interest rate at the time of the annuity purchase affects the annuitant's monthly payment. In comparison, Social Security bases the retirement benefit on an individual's earnings and the age at which the individual claims benefits. The benefit can be calculated based on those factors alone.[18] As employer-sponsored retirement plans continue to shift from DB to DC plans, it is important for individuals and policymakers to understand both the significance of a steady income stream throughout retirement and the pros and cons of the various sources of retirement income.

Notes

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[1] To be fully insured for Social Security retirement benefits, a worker must have at least 10 years (or 40 credits) of earnings.

[2] IRAs are tax-advantaged retirement savings plans. Individuals can contribute to traditional IRAs with pretax earnings (subject to taxation at the time of withdrawal) or to Roth IRAs with after-tax earnings (generally not taxed at the time of withdrawal). For more information on IRAs, see https://www.irs.gov/retirement-plans/individual-retirement-arrangements-iras-1.

[3] "From 1980 through 2008, the proportion of private wage and salary workers participating in DB pension plans fell from 38 percent to 20 percent" (Butrica and others 2009). In 2015, only 15 percent of workers in private industry participated in a DB plan (Bureau of Labor Statistics 2015, Table 2).

[4] The taxable maximum increases each year by the national average wage index. For more information on the taxable maximum, see https://www.socialsecurity.gov/planners/maxtax.html.

[5] For more information on the national average wage index, see https://www.socialsecurity.gov/oact/cola/AWI.html.

[6] For more information on how Social Security benefits are calculated, see https://www.socialsecurity.gov/oact/cola/Benefits.html.

[7] For more information on the FRA, see https://www.socialsecurity.gov/planners/retire/retirechart.html.

[8] The annual Social Security cost-of-living adjustment (COLA) is based on changes in the CPI for Urban Wage Earners and Clerical Workers. For more information on the COLA, see https://www.socialsecurity.gov/OACT/COLA/latestCOLA.html.

[9] The FRA for survivor benefits differs from the FRA for retired-worker benefits. Spousal and survivor benefits do not accrue delayed retirement credits past the FRA. For more information, see https://www.socialsecurity.gov/planners/survivors/survivorchartred.html.

[10] For more information on combined income and taxation of Social Security benefits, see https://www.socialsecurity.gov/planners/taxes.html.

[11] Retirees who elect to draw down their IRAs or retirement accounts can start as early as age 59½, but must start taking the annual required minimum distribution (RMD) at age 70½. The Internal Revenue Service sets the RMD by taking the balance in the account and dividing it by the individual's life expectancy (or joint life expectancy, if married). For more information, see https://www.irs.gov/retirement-plans/plan-participant-employee/retirement-topics-required-minimum-distributions-rmds.

[12] Many factors can account for these higher prices, including adverse selection, mortality charges, and other fees.

[13] All annuity payment examples in this paper are from online calculators provided by https://www.immediateannuities.com/annuity-shopper/ starting in December 2015 and assume an interest rate of 3.9 percent. This interest rate is the average AAA corporate bond yield obtained from Federal Reserve data.

[14] A discussion of sales charges and other fees (which an insurer typically builds into the annuity quote) and how demand for immediate annuities has changed with payout/interest rate changes is beyond the scope of this issue paper.

[15] For more information on state guarantees of annuities, see https://www.annuityadvantage.com/stateguarantee.htm or http://www.nolhga.com/.

[16] For more information on covered workers to beneficiaries ratios, see https://www.socialsecurity.gov/history/ratios.html.

[17] Individuals who deplete all of their financial resources in retirement would likely rely on family members or public assistance programs, such as Supplemental Security Income (https://www.socialsecurity.gov/pubs/EN-05-11000.pdf), Supplemental Nutrition Assistance Program (formerly known as food stamps) (https://www.fns.usda.gov/snap/supplemental-nutrition-assistance-program-snap), and/or Medicaid (https://www.medicaid.gov).

[18] Individuals can see their future estimated Social Security benefit on their Social Security Statement. For more information, see https://www.socialsecurity.gov/myaccount/statement.html and https://www.socialsecurity.gov/myaccount/.

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