

ABSTRACT

This paper explores the potential benefits of delayed claiming of Social Security retirement benefits from a defined contribution (DC) plan perspective. This analysis suggests the average retiree, especially the average DC participant, would likely benefit from delayed claiming; however, relatively few retirees fully delay to age 70 or appear to have the financial means to do so (when focusing on DC balances). Therefore, increasing awareness of the benefits of delayed claiming to DC participants is important, as is ensuring participants have considered the strategy before allocating to an alternative lifetime income solution in the DC plan, such as an annuity. One approach to potentially improve claiming behaviors through preconditioning would be to create an explicit “bridge account” within the default investment to fund spending during the delay period. Overall, this analysis suggests that delayed claiming needs to be more proactively considered among DC plan sponsors and participants.

FINDING THE RIGHT PATH FOR DEFINED CONTRIBUTION PARTICIPANTS TO DELAY CLAIMING SOCIAL SECURITY RETIREMENT BENEFITS

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INTRODUCTION

There are few strategies as widely touted among retirement academics as delayed claiming of Social Security retirement benefits. Not only are Social Security retirement benefits explicitly linked to inflation, which is something no other annuity or guaranteed lifetime income product offers today, but Social Security retirement benefits are also tax advantaged, can provide attractive spousal survivor benefits, and are economically advantageous because they are based on relatively dated assumptions.¹ Despite these well-known benefits, the average claiming age today is approximately 65, with only roughly 5% of Americans delaying claiming benefits until age 70, and only roughly half of Americans delaying to full retirement age according to the Social Security Administration’s 2020 Annual Statistical Supplement.²

This paper explores the potential benefits of delayed claiming of Social Security retirement benefits, specifically from a defined contribution (DC) plan perspective.³ This piece provides an overview of Social Security retirement benefits, details how the potential economic benefits of delayed claiming can vary by longevity and in the presence of a spouse, and explains how Social Security retirement benefits fit within an overall DC context given the lack of complete participant information available (e.g., information about savings outside the DC plan). Understanding the potential benefits of delayed claiming of Social Security retirement benefits

1. There is also no explicit need to turn a profit, which is common in insurance products.
2. “Social Security Administration’s 2020 Annual Statistical Supplement.” Accessed 12/1/2022.
<https://www.ssa.gov/policy/docs/statcomps/supplement/2020/index.html>
3. In particular 401(k) plans.

is especially timely given the increased focus among DC plan sponsors of making DC plans retirement friendly, especially since many of the other products or solutions actively being considered provide some form of longevity protection, such as annuities.

When focusing only on current DC savings (effectively at the current employer), this analysis suggests that less than 10% of participants have the ability to fully delay claiming Social Security benefits to age 70 while maintaining a reasonable liquidity cushion (i.e., not exhausting the entire balance). While most DC participants (and households) have savings outside the DC plan, these savings vary significantly by household and are generally unknown to plan sponsors. Since delayed claiming of Social Security retirement benefits is likely to be more economically advantageous than purchasing an annuity,⁴ especially for the average DC participant, ensuring participants have at least considered delayed claiming is important before allocating savings to a sub-optimal solution or strategy.

One potential approach to nudge more participants to delay claiming would be to create an explicit “delayed claiming account” sleeve within the default investment, which is typically a target-date fund. The bridge sleeve (or account) would be used to bridge the income gap during the delay period and would generally be expected to be invested in relatively liquid securities (e.g., mostly fixed income but also equities and alternatives). Having the explicit sleeve geared towards delayed claiming would not only precondition participants to delay claiming (i.e., behaviorally prepare them for it), but it also results in a significantly higher level of flexibility compared to other strategies that require a higher level of commitment, from both participants and plan sponsors. While the monies in the “delayed claiming account” sleeve could (or ideally would) be used to fund delaying Social Security, they could also be used to purchase a different type of annuity or not annuitize at all (i.e., there is significant optionality to the savings).

Overall, this research suggests that delayed claiming of Social Security retirement benefits is a valuable strategy that needs to be more proactively considered among

DC plan sponsors and participants, especially in the context of the other solutions that have been introduced in the space.

SOCIAL SECURITY RETIREMENT BENEFIT CLAIMING: AN OVERVIEW

In this section the mechanics behind delayed claiming of Social Security retirement benefits are reviewed.

Social Security retirement benefits are based on an individual’s “average indexed monthly earnings” (AIME), which is the highest 35 years of earnings, where wages are indexed based on the national average wage index (NAWI). A formula is applied to the AIME to get the individual’s primary insurance amount (PIA), which is the basis for the benefits paid to the individual. The actual benefit is calculated based on bend points, where the income replacement level from Social Security declines as the AIME rises (i.e., individuals with higher historical incomes get a lower percentage of their lifetime earnings replaced through Social Security).

An individual can claim Social Security retirement benefits as young as age 62 and receives an increase in the lifetime income amount for each year he or she delays claiming benefits up to age 70. There is no benefit to claiming benefits after age 70. Exhibit 1 provides context about how the monthly Social Security retirement benefits would evolve based on a \$700 monthly benefit at age 62, assuming a full retirement age of 67.

An individual who claims Social Security retirement benefits at age 70 would receive a lifetime income benefit that is approximately 77% higher than if benefits are claimed at age 62, adjusted for inflation. While this is a relatively staggering increase, the individual would have to fund the respective income he would have received starting at age 62 until the higher benefits would commence at age 70.

If the individual were to pass away during the delay period, or shortly thereafter, the decision to delay could result in an obvious negative financial outcome (ignoring any kind of spousal survivor benefit). In other words,

4. Although there are a variety of reasons a retiree may decide to purchase an annuity versus delaying Social Security retirement benefits, which are discussed.

Claiming Age	Benefit
62	\$700
63	\$750
64	\$800
65	\$867
66	\$933
67	\$1,000
68	\$1,080
69	\$1,160
70	\$1,240

EXHIBIT 1: *Monthly Social Security Retirement Benefit by Claiming Age*

Source: Social Security Administration

unlike period certain or cash refund provisions that are common in other products that provide protected lifetime income (e.g., annuities), the decision to delay claiming subjects the retiree (or really the retiree’s heirs) to premature mortality risk. Therefore, while delayed claiming is generally considered relatively economically advantageous (something discussed in additional detail in the next section), it is by no means a “free lunch” given uncertain life expectancy.

Social Security retirement benefits are taxed based on the “combined income” of the household. The combined income is the household’s adjusted gross income (AGI) plus effectively half the total Social Security retirement benefits. For a single (joint) household, if the combined income is less than \$25,000 (\$32,000) benefits are tax-free, if the combined income is between \$25,000 (\$32,000) and \$34,000 (\$44,000) Social Security retirement benefits can be taxed up to 50%, and if the combined income is over \$34,000 (\$44,000) Social Security retirement benefits may be taxed up to 85%. The fact that no more than 85% of Social Security benefits can be taxed is an important factor that should be considered when determining whether to delay, since other income sources are generally fully taxed.

Social Security retirement benefits are explicitly linked to inflation, specifically the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W), which is calculated by the Bureau of Labor Statistics. There are no annuities available today which offer a guaranteed lifetime income benefit directly linked to inflation (without any type of cap). While many annuities offer some type of cost of living adjustment (COLA), these COLAs are generally fixed, where the income benefit would increase by some fixed percentage per year (e.g., 2%) for the life of the annuitant (or annuitants).

Unlike other annuities, such as a single premium immediate annuities (SPIAs),⁵ Social Security benefits are based entirely on lifetime indexed wages and not affected by the prevailing economic environment (in particular bond yields). Therefore, while payouts for annuities are typically going to increase as bond yields increase, Social Security retirement benefits are unaffected by the bond yield environment (ignoring inflation). This is important inasmuch that the potential benefits of delayed claiming are going to vary over time when compared to buying an annuity or self-funding retirement.

5. These are annuities that pay the annuitant some amount of income for life, based on the initial premium, as well as things like the age of the annuitant.

Annuity COLA Rate

	0%	1%	2%	3%	4%
0%	4.10%	3.57%	3.09%	2.66%	2.27%
1%	4.66%	4.10%	3.58%	3.10%	2.67%
2%	5.26%	4.66%	4.10%	3.58%	3.11%
3%	5.88%	5.25%	4.65%	4.10%	3.59%
4%	6.53%	5.87%	5.24%	4.65%	4.10%
5%	7.19%	6.50%	5.85%	5.23%	4.64%
6%	7.87%	7.16%	6.48%	5.83%	5.21%
7%	8.56%	7.83%	7.13%	6.45%	5.81%
8%	9.26%	8.52%	7.79%	7.10%	6.43%

EXHIBIT 2. *Estimated Annuity Payout Rates for Different Discount Rates and Annuity COLA Rates Based on a Life Only Annuity for a 65-Year Old*

Source: Author's Calculations

Exhibit 2 provides some perspective about how payout rates⁶ for a single premium immediate annuity (SPIA) would be expected to vary across different discount rates (i.e., bond yield environments) and assumed annual fixed cost-of-living adjustments (COLAs). The calculations assume a life-only annuity⁷ based on gender-neutral pricing (Social Security benefits do not vary by gender) for a 65-year-old based on a model fit to actual historical payout rates (based on data from CANNEX) for various mortality rates are based on the Society of Actuaries 2012 Immediate Annuity Mortality table with improvement to the year 2022.

Payout rates for immediate annuities increase for higher discount rates (i.e., interest rates) and lower COLA rates. In other words, during periods where bond yields are higher and inflation is lower (since inflation is the explicit COLA with Social Security) the marginal benefit of delayed claiming of Social Security benefits is likely to be lower, on average.

The average claiming age for Social Security benefits has been increasing over time, an effect demonstrated in Exhibit 3, which includes information about the distribution of claiming ages (Panel A) and the average claiming age (Panel B) of males from 1990 to 2019 based on data from the Social Security Administration's 2020 Annual Statistical Supplement.⁸

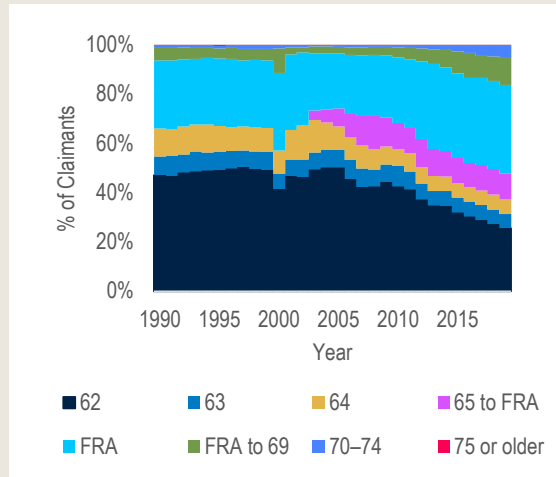
The increase in claiming age can likely be attributed to a variety of factors. First, the Social Security full retirement age (FRA) has increased over time. The FRA was set at age 65 in the original Social Security Act of 1935, but has increased to age 67 for anyone born in 1960 or later, based on the Social Security Amendments of 1983. Second, Americans are working longer, which reduces the need to claim benefits earlier (i.e., to the extent consumption can be covered by wage income). For example, the average retirement age has increased from age 57 in 1991 to age 61 in 2022, according to

6. The payout rate is the income generated by the annuity divided by the initial premium.

7. While life only annuities are unpopular, it mirrors the payout structure of Social Security retirement benefits since there is no type of cash refund or period certain provision with Social Security retirement benefits.

8. <https://www.ssa.gov/policy/docs/statcomps/supplement/2020/index.html>, Accessed 12/1/2022

PANEL A: DISTRIBUTION OF CLAIMING AGES



PANEL B: AVERAGE CLAIMING AGE

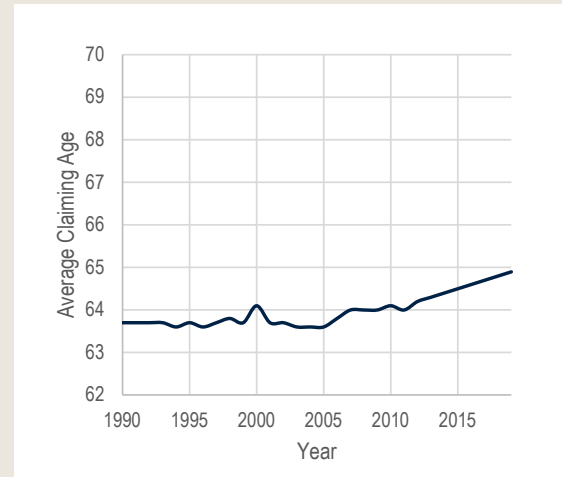


EXHIBIT 3. Male Retirement Benefit Claiming Decisions: 1990-2019

Source: Social Security Administration

a Gallup survey.⁹ Third, there has been an increased communication (e.g., media coverage) around the general benefits of delaying claiming and therefore a growing number of retirees are likely aware of the benefits associated with the strategy.

The potential benefits associated with delayed claiming of Social Security retirement benefits are going to vary by individual (and household). Individuals who are in poor health are less likely to benefit from delayed claiming, since they would receive the higher delayed benefit for a shorter period of time; however, delaying could still make sense for someone who is in poor health when considering the spousal survivor benefit. Blanchett and Finke (2022)¹⁰ note that DC participants have life expectancies that are approximately three years longer than the average American, suggesting that DC participants are more likely to benefit from delayed claiming than the average American.

There are three notable considerations with respect to delayed claiming of Social Security retirement benefits compared to other strategies that generate longevity protected income (i.e., annuities). First, the decision to claim Social Security benefits is effectively irrevocable. While each retiree has the option to withdrawal benefits once for a 12 month period, once the decision around what age to claim has been made, it is effectively final. While this is similar to a SPIA, which also typically requires an irrevocable election, SPIAs are relatively unpopular as far as annuities go. For example, according to LIMRA, only approximately \$6 billion of the \$255 billion total annuity sales in 2021 were in SPIAs.¹¹ The most popular strategies that provide lifetime income (i.e., annuities) typically provide some level of access to the initial premium (e.g., products with a Guaranteed Lifetime Withdrawal Benefits, or a GLWB).

9. "More in U.S. Retiring, or Planning to Retire, Later" by Jeffery Jones. Accessed 12/4/2022.

<https://news.gallup.com/poll/394943/retiring-planning-retire-later.aspx>

10. Blanchett, David, and Michael Finke. 2022. "Welfare Improvements from Default Annuitization in Defined Contribution Plans." Working Paper. Accessed 12/4/2022. <https://www.protectedincome.org/research/welfare-improvements-from-default-annuitization-in-defined-contribution-plans/>

11. "Secure Retirement Institute: Total Annuity Sales Jump 16% in 2021 — Marking Highest Sales Since 2008." Published: 1/27/2022. Accessed 12/4/2022.

<https://www.limra.com/en/newsroom/news-releases/2022/secure-retirement-institute-total-annuity-sales-jump-16-in-2021--marking-highest-sales-since-2008/>

Second, there is no type of “money back” provision if you die early during the Social Security benefit claiming period. The vast majority of annuities sold include some type of cash refund of period certain provision, even among SPIAs. For example, 89.8% of the immediate and deferred annuities quoted by CANNEX (2022) in the 2021 calendar year included some type of residual benefit (most commonly cash refund).

Third, the overall health of the Old-Age and Survivors Insurance Trust Fund is a potential cause for concern. Based on the 2022 Annual Board of Trustees Report, using the intermediate assumptions, the fund is forecasted to be depleted in 2034, whereupon only 77% of scheduled benefits could be paid through current taxes.¹² While this is a pressing issue that will need to be addressed, this research assumes all *current* benefit commitments are met (i.e., those who have already made their claiming decision will receive those benefits). While *future* changes to the structure of Social Security benefits could obviously impact the claiming decision, we think it is unlikely retirees who have already claimed benefits will be affected by any changes in policy (i.e., younger generations will bear the expense of making the system whole).

While this research positions delayed claiming of Social Security benefits against annuities, to some extent, it is important to note the two are not necessarily mutually exclusive options. There are going to be a number of retirees who would benefit from both delayed claiming as well as purchasing additional longevity protected income. However, as we will demonstrate, if we focus only on DC savings, relatively few participants have sufficient balances to delay claiming and purchase an annuity (and will technically need both). Therefore, the decision to include an annuity in a DC plan (e.g., as part of the default investment) needs to be considered to the extent it pulls savings away from monies that could be used to delay claiming (since delayed claiming of Social Security benefits would generally be considered more economically advantageous than purchasing an annuity).

MOVING BEYOND BREAKEVEN AGE

The potential benefits of delayed claiming of Social Security retirement benefits are going to vary by individual (and household). When estimating the optimal claiming age there are going to be both important economic considerations, such as life expectancy, as well as behavioral considerations, such as how the value of the benefits are perceived.

One of the most common approaches to determine whether to delay claiming Social Security retirement benefits is estimating what’s known as the “breakeven age.” The breakeven age is the age at which a person would be (mathematically) indifferent between either claiming early or delayed claiming (based on some kind of forecast). If the individual lives longer than the breakeven age, then delayed claiming would be considered advantageous, and vice versa.

While it is common to focus on the Social Security claiming decision in isolation, doing so ignores the holistic implications of the Social Security retirement benefit claiming decision. For example, while it’s true an individual who delays claiming Social Security retirement benefits (e.g., to age 70) and dies early in retirement (e.g., at age 75) would likely have not maximized potential total benefits that could have been received (ignoring any kind of spousal benefit), the remainder of his or her savings would still be available to pass along to his heirs. Since death would have occurred relatively early in retirement (at age 75) there should be quite a bit of savings left. Therefore, while his heirs may have been better off had he claimed benefits early, the impact of delayed claiming may not be that significant in absolute terms (i.e., depending on the other wealth).

In contrast, if an individual claims early (e.g., age 62) and has an unusually long retirement (i.e., survives to age 100), he may not only completely deplete his entire retirement savings, but he may also have to rely on family resources (or other forms of public assistance) to fund expenses later in life. At this point there would not only be relatively little if any assets to pass to heirs, but the

12. <https://www.ssa.gov/oact/TR/2022/tr2022.pdf>. Accessed 12/4/2022.

heirs themselves may also have to commit resources to fund the unexpected longevity. Contrast this scenario to where death occurred unexpectedly early, and there is likely to be some (or significant) assets remaining.

Therefore, the actual decision to delay claiming Social Security retirement benefits should be made not just on the margin (i.e., focusing on the breakeven age), but rather considering the context of a retiree's entire wealth (i.e., from a more holistic perspective). While we do focus on a breakeven metric in the next section (breakeven return) we do so primarily to provide context about how generally economically advantageous it is to delay claiming (i.e., the probability of outperforming delayed claiming through investing is relatively low) and would again recommend the decision be viewed more holistically before any final decisions are made.

ESTIMATING THE BREAKEVEN RETURNS FOR DELAYED CLAIMING

In this section we provide some context around the potential economic benefits of delayed claiming. For the analysis, we estimate the breakeven return, which is the portfolio return required so that the individual would technically be indifferent between early and delayed claiming. We focus on the breakeven return (e.g., versus breakeven age) since it allows us to estimate values for different longevity planning ages. However, it is important to stress again that a break-even analysis should not be done in lieu of a much more holistic analysis on when to claim Social Security benefits. For context, if the realized return of the portfolio exceeds the breakeven return, the individual would be better off claiming early, if the realized return is lower than the breakeven return, the individual would be better off delaying.¹³

The breakeven returns are nominal geometric returns, which means they are the realized returns that include inflation and the impact of volatility, and are net of fees. The impact of volatility on realized returns is important since in order to achieve some of the relatively high noted breakeven returns the portfolio would likely need to be invested in relatively risky assets (which tend to have higher levels of volatility). For example, while stocks

have historically had approximately a 12% arithmetic (simple average) return, the realized return (i.e., geometric or compound return) has been closer 10%.

For the analysis, we assume a 2% inflation rate for future Social Security benefit increases, which is a relatively conservative assumption. If actual inflation is higher it would increase the breakeven return, and vice versa.

The entire balance funding the account (i.e., delay period) is assumed to be pre-tax (Traditional) monies. While 100% of the DC withdrawals would be taxed, the analysis only assumes 85% of the Social Security benefits are taxed. For retirees with relatively low income levels it is possible a lower portion of the Social Security benefits would be taxed, so this is a relatively conservative assumption.

SINGLE INDIVIDUAL SCENARIOS

The first set of scenarios ignores any kind of spousal survivor benefit. This would be for a retiree who is single, or whose benefit is going to be less than their spouse's. We consider five different delayed claiming scenarios, where the initial/delayed claiming ages are: 62/65, 62/67, 62/70, 65/67, and 65/70. The breakeven returns for various longevity claiming ages for the different combinations are included in Exhibit 4.

Not surprisingly, the breakeven required returns increase for higher longevity planning ages. This is due to the fact the individual would receive the higher benefit (from delaying) for a longer period of time. At age 85, which is the approximate average expected life expectancy at age 65 using the Social Security Administration (SSA) 2019 Period Life Table,¹⁴ the breakeven return averages about 7% among the five ages considered. Note, age 85 is a relatively conservative longevity planning age (e.g., in a financial plan), where ages 90 or 95 are more common. By age 90, the breakeven returns all exceed 8% and by age 95 they are all approximately 9%.

While US stocks have had a long-term return that exceeded 8% (closer to 10%), that would be a relatively risky portfolio with a significant level of uncertainty compared to Social Security benefits. Forecasted stock returns are also lower than historical averages.

13. You can learn more here: <https://www.ssa.gov/pubs/EN-05-10147.pdf>

14. "Actuarial Life Table." Accessed 12/4/2022. <https://www.ssa.gov/oact/STATS/table4c6.html>.

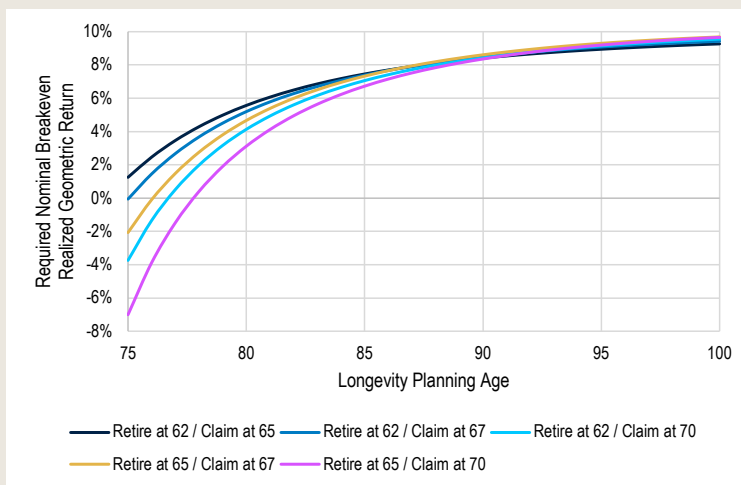


EXHIBIT 4. Breakeven Returns for Delayed Claiming by Longevity Planning Age

Source: Author's Calculations

For example, PGIM's Q3 2022 Capital Market Assumptions¹⁵ (CMAs) for US equities is only 7.11% for the next 10 years and 8.95% for the relatively long-term. This suggests even a relatively risky portfolio may be unable to achieve the same effective return benefit from delayed claiming. While there is obviously mortality risk associated with delayed claiming, a better proxy for the risk of Social Security retirement benefits would likely be some type of long-term government bond. If we assume a 5% geometric return (i.e., yield), the individual would only have to survive to between age 80 and 82 to be indifferent between delaying (and there is obviously significantly more upside to delaying if the individual lives longer).

Breakeven returns are highest (i.e., the expected benefits are greatest) from delayed claiming at relatively earlier ages. For example, going from age 62 to age 65 results in higher breakeven returns compared to going from age 67 to age 70. While there are benefits from delaying for all ages, the benefits are greatest at the relatively younger benefit ages. This context is important when conveying the decision to DC participants. For example, while delaying to age 70 results in the greatest potential

benefit for individuals who have an especially long retirement, many participants are unlikely to be able to afford delay claiming that long (something discussed later) and may not be interested in delaying that long either. Therefore, when communicating the potential benefits of delaying, a more reasonable target should be considered, such as delaying to full retirement age (which is effectively age 67) or at an even earlier age (e.g., age 65) if the company has a relatively young retirement age (e.g., age 60).

INCORPORATING SPOUSAL SURVIVOR BENEFITS

The previous analysis estimated breakeven returns were focused on a single individual and ignored any type of spousal survivor benefit. In reality, the potential benefits associated with delayed claiming can also potentially accrue to a spouse, if the spouse has a lower Social Security retirement benefit. While the actual rules are slightly more complicated, when one spouse of a married couple passes away the surviving spouses' total continued benefit will equal the larger of the two Social Security benefits being received. The total bene-

15. "2022 Q3 Capital Market Assumptions" by Marco Aiolfi, Yesim Tokat-Acikel, and Lorne Johnson. Accessed 12/4/2022. <https://cdn.pfcdn.com/cms/pgimquantsolutions/sites/default/files/PGIM-Quant-Capital-Market-Assumptions-CMAs-2022-Q3.pdf>

Primary, Change in Life Expectancy

Spouse Life Expectancy Δ	-3 Years		No Change		+3 Years	
	Primary Only	Plus Spouse	Primary Only	Plus Spouse	Primary Only	Plus Spouse
-6	6.30%	7.59%	7.04%	7.92%	7.63%	8.23%
-3	6.30%	7.84%	7.04%	8.12%	7.63%	8.37%
0	6.30%	8.10%	7.04%	8.31%	7.63%	8.52%
3	6.30%	8.35%	7.04%	8.51%	7.63%	8.67%
6	6.30%	8.57%	7.04%	8.69%	7.63%	8.82%

EXHIBIT 5. Breakeven Returns for Delayed Claiming Incorporating Spousal Survivor Benefits

Source: Author's Calculations

fits received decline upon the death of the spouse, since the household would be going from two beneficiaries to one, but delayed claiming has the potential to significantly increase the level of income for the surviving spouse, which could change the decision around whether to delay. For example, even if the primary individual is relatively unhealthy it could make sense to delay claiming benefits depending on the spouse’s health and expected benefits.

The presence of a potential spousal survivor benefit only increases the expected breakeven return. While the benefit increase may be relatively small, for example, if the spouse has a significantly lower life expectancy, it is always going to positively impact the breakeven return. Therefore, it is critical to understand the impact of a spousal benefit when claiming benefits.

Estimating breakeven returns with spousal survivor benefits is more complicated than estimating breakeven rates for a single individual because longevity expectations for two individuals need to be considered as part of the analysis. In order to provide context on varied mortality expectations the expected cash flows by mortality rates. The mortality rates for our analysis are calibrated to the average expected mortality of DC participants, based on the research of Blanchett and Finke (2022) who note that DC participants have life

expectancies that are approximately three years longer than the average American. More specifically, we apply a 30% mortality rate reduction to aggregate population mortality rates, which are defined as the Social Security Administration 2019 Period Life Table.

For this analysis, the entire benefit associated with the delayed claiming benefit is assumed to be realized. In other words, the entire increase from the delay is assumed to be received by the spouse upon the death of the primary recipient. This does not necessarily mean that the primary benefit is twice the spousal benefit, rather simply that the difference between the early claiming age and delayed claiming age is more than the current spouse’s benefit. To the extent this is not the case (i.e., the actual spousal benefit is somewhere in between) would just require weighting the “primary only” break even return with the “plus spouse” breakeven return by the percentage benefit associated with the delayed claiming that is realized.

Context is provided on breakeven returns for scenarios when there is only one individual (i.e., primary only), in order to connect this analysis to the previous analysis (Exhibit 4), as well as when there is potentially a surviving spouse. Providing breakeven returns for both scenarios also provides some context on the marginal impact of the surviving spousal benefit on the calculations.

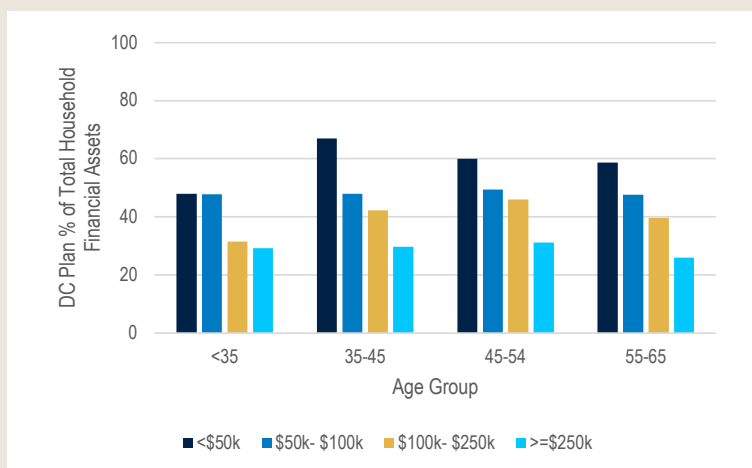


EXHIBIT 6. Average Percentage of Total Household Financial Assets Represented by 401(k) Plan Balance

Source: Author's Calculations

For the analysis, we incorporate adjustments to life expectancy¹⁶ for both the primary recipient and the spouse. The analysis assumes the early claiming age would be 62 and the delayed claiming age would be 65. The results are included in Exhibit 5.

If we focus on the scenarios that only consider a primary recipient with no change in life expectancy (i.e., no spouse) the breakeven return is 7.04% (in Exhibit 5). This is effectively the mortality weighted outcome of the entire curve included in Exhibit 4 for the respective scenario considered (Retire at 62 / Claim at 65). In other words, the average expected required breakeven return for a DC participant age 62 to be indifferent between delaying to age 65 is 7.04%. When a spousal survivor benefit is included (“Plus Spouse” the breakeven return increases, from 7.92% to 8.69%. The breakeven return increases as the life expectancy of the spouse increases. The largest benefits associated to delayed claiming are when both the primary and spouse have higher than average life expectancies, which is consistent with expectations (i.e., there is a higher probability of receiving benefits for a longer period of time).

Incorporating the spousal survivor benefit tends to increase the required breakeven return by at least 1%. For more conservative longevity planning ages (e.g., age 90+) which are common in financial plans, this would imply a breakeven required return, when considering the spousal survivor benefit, that would generally exceed 10% (when incorporating this 1% differential into the results in Exhibit 4). This is a relatively high hurdle for a portfolio to achieve over a 25+ year period.

HOW MANY 401(K) PARTICIPANTS CAN ACTUALLY AFFORD TO DELAY CLAIMING BENEFITS?

DC balances only represent a portion of total household financial assets. This fact is important when DC plan sponsors consider developing or implementing retirement income solutions for the DC plan. This effect is demonstrated in Exhibit 6, which includes the relative weight of the respondent’s defined contribution plan balance as percentage of household financial assets.

16. Technically modal mortality estimated using a Gompertz function calibrated to the mortality rates as outlined in Appendix 1.

DC (Pre-Tax) Balance as a Multiple of After-Tax Income Goal

Liquidity Target (% Goal)	DC (Pre-Tax) Balance as a Multiple of After-Tax Income Goal															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0.5	65	66	67	68	69	69	70	70	70	70	70	70	70	70	70	70
1.0	65	65	66	67	68	69	70	70	70	70	70	70	70	70	70	70
2.5	65	65	65	66	67	68	69	69	70	70	70	70	70	70	70	70
5.0	65	65	65	65	65	65	66	67	68	69	70	70	70	70	70	70
10.0	65	65	65	65	65	65	65	65	65	65	65	66	67	68	69	70

EXHIBIT 7. Social Security Claiming Age by Liquidity Target and Balance Multiple at Retirement (Age 65)

Source: Author's Calculations

The analysis relies on data from the 2019 Survey of Consumer Finances (SCF).¹⁷ The SCF is a triennial cross-sectional survey of U.S. families conducted by the Federal Reserve Board that includes information on families’ balance sheets, pensions, income, and demographic characteristics. Only respondents who are actively contributing to a company-sponsored DC plan (i.e., have a deferral rate greater than 0%) with a DC balance greater than zero are included. The analysis includes each of the five SCF implicates¹⁸ and household weights for calculations. Respondents are grouped into different age and respondent-level (not household) income group.

Exhibit 6 clearly demonstrates that DC assets generally provide a relatively incomplete perspective on total household financial assets, especially for those with higher earnings. The role of the DC plan as part of a household’s total financial wealth is likely to continue to decline as relatively few households stay with the same employer for their entire working careers. Job tenure among American workers has been declining for decades.¹⁹

This context on balances is important when attempting to gauge things like which participants can actually afford to delay claiming benefits, especially if we only focus on the DC plan. While in theory, a DC partici-

part (or household) could fully deplete the DC account balance to delay claiming, this is unlikely to be a wise retirement strategy. Retirees typically need some level of liquidity to fund emergencies throughout retirement and therefore should not fully “annuitize” their savings (either through delayed claiming or the actual purchase of annuity).

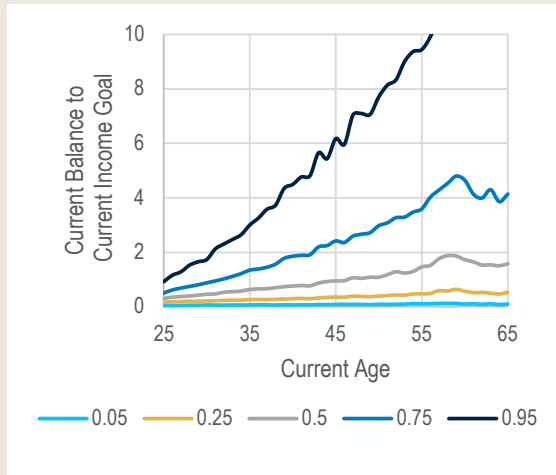
In order to better understand the potential for an individual to delay claiming, in the presence of a liquidity goal, an analysis is conducted. For the analysis, we estimate at what age an individual could delay claiming, assuming a base retirement age of 65, based on a given liquidity target and total assumed savings at retirement. All savings are assumed to be Traditional (i.e., pre-tax) and are conveyed as a multiple of the after-tax income goal. While it may be a better practice to include absolute balances in participant communications, a balance of \$100,000 has greater significance to someone with a \$25,000 after-tax retirement income goal compared to someone with a \$250,000 after-tax retirement income goal. By focusing on relative savings, we effectively normalize the analysis. The analysis assumes a real equity return of 5% and a real bond return of 1%, with a standard deviation of 18% and 5%, respectively, with a zero correlation. The equity allocation is 40% and constant for the analysis.

17. Survey of Consumer Finances website. Accessed 12/4/2022. <https://www.federalreserve.gov/econres/scfindex.htm>

18. Each household appears five times in the survey, as replicate (or implicate) where missing survey data is estimated using a multiple imputation technique. Therefore, there are 28,885 records in the public data set for 5,777 families.

19. “Trends in Employee Tenure, 1983–2018” by Craig Copeland. Accessed 12/4/2022. https://www.ebri.org/docs/default-source/ebri-issue-brief/ebri_ib_474_tenure-28feb19.pdf

PANEL A: CURRENT BALANCE



PANEL B: PROJECTED BALANCE

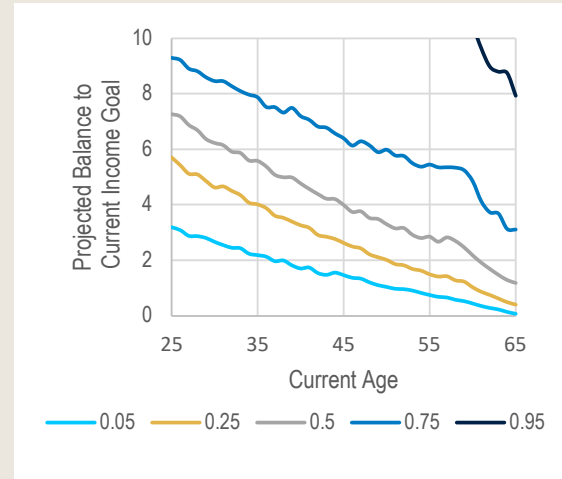


EXHIBIT 8. Ratio of Current Balance to After-Tax Income Goal

Source: Author's Calculations

In order to be able to delay claiming the individual must have at least an 80% probability of having the required liquidity threshold at the respective claiming age. The analysis assumes all savings are pre-tax (Traditional) and the after-tax total retirement income goal is \$75,000 (although taxes have a relatively minor impact on the analysis).

Exhibit 7 includes the respective expected claiming ages given various balance multiples and target liquidity levels.

Expected claiming ages clearly increase for higher liquidity targets and higher balances. For example, a retiree with a 2.5x liquidity target threshold, would need to have a \$125,000 balance assuming an income goal of \$50,000. This individual would need at least four times the after-tax income goal, or approximately \$200,000, in order to delay claiming a single year (to age 66).

Relatively few participants have balances large enough to delay claiming. For example, using a dataset of 100,000 401(k) participants from a past research study,

obtained from one of the ten largest recordkeepers of DC plans in the US, we can estimate the likely ability of actual 401(k) participants to delay claiming. Appendix 2 compares the average and median balances used in the analysis to publicly available data from Vanguard (2022)²⁰ for various income and age groups, specifically Figure 55 in the Vanguard report. We can see that the balances used for this analysis are remarkably similar to the balances noted by Vanguard, which suggests the data used for this analysis is at least broadly representative of one other notable US DC recordkeeper.

For our analysis, we assume the after-tax income goal is 75% of current incomes. We assume the income goal remains constant (in real terms), but do also calculate estimated balances at retirement (which is assumed to be age 65). For these projections we assume a 3% growth rate. The results are included in Exhibit 8.

There are notable differences in Panel A and Panel B of Exhibit 8. Relatively few participants currently have large enough balances to delay claiming at any meaningful level (Panel A); however, if we project current

20. "How America Saves 2022." Vanguard White Paper. Accessed 12/4/2022. <https://institutional.vanguard.com/how-america-saves>

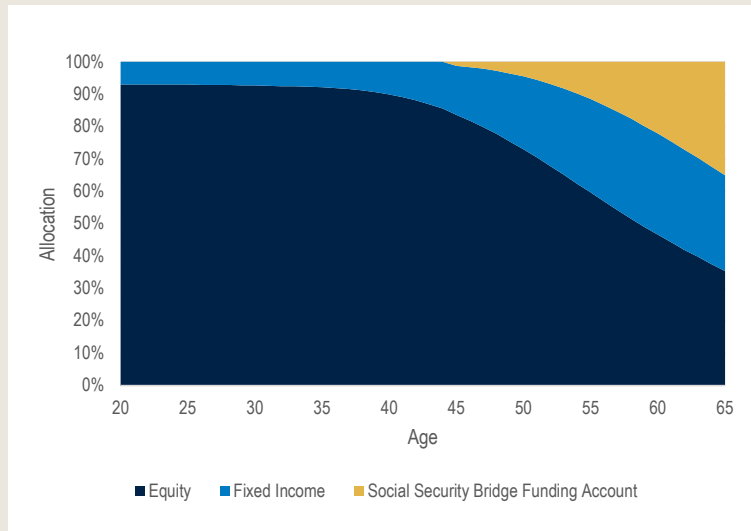


EXHIBIT 9. *Allocating Savings to Fund Delayed Claiming*

Source: *Author's Calculations*

savings to retirement the picture changes significantly (Panel B). The obvious problem with these projections is they assume the individual stays at the same employer until retirement (e.g., the next 20 years for a 45 year old). This is relatively unlikely, which is why the actual current balance ratios (Panel A) are so much lower than projected ratios (Panel B).

The results of the analysis strongly suggest relatively few participants are likely to have savings sufficient to even fully delay claiming until age 70. For example, if we assume a 1x liquidity target, a participant would need a balance that is approximately seven times their after-tax income goal to make it to age 70 (based on the information in Exhibit 7). Only approximately 10% of participants currently have this level of savings at age 55 and only roughly 20% of participants are expected to have that level of savings. If we assume a higher level of desired liquidity, such as a 2.5x liquidity target, the required ratio is nine times the after-tax income goal, which only approximately 5% of participants currently have and 10% of participants are expected have.

The fact that relatively few participants have, and are expected to have, sufficient balances to fully delay claim-

ing Social Security benefits has important implications for other decisions, such as adding an annuity to a DC plan. While it's likely a participant may have savings outside the plan that could be used to delay claiming Social Security retirement benefits, an investment product (or solution) that allocates participant savings to an annuity could completely deplete those monies (which would be used to delay claiming Social Security benefits). In theory, the decision to allocate to an annuity should only be made with an affirmative decision that the participant does not plan to delay claiming benefits and/or has sufficient funds available to do so (e.g., outside the plan). The extent that the participant decides to delay claiming, though, reduces the marginal need for additional lifetime guaranteed income. Therefore, by ignoring guidance on the decision to delay claiming Social Security retirement benefits, it is possible DC participants end up in a clearly suboptimal solution.

FUNDING THE BRIDGE

Preconditioning participants around the decision to delay claiming Social Security benefits before retirement has the potential to ease some of the concerns common-

ly noted with delayed claiming. One potential approach to prepare participants to fund delayed claiming would be to create an explicit sleeve within the plan default investment, which is typically a target-date fund, that is focused on delayed claiming of Social Security benefits. We demonstrate an example of this in Exhibit 9, which includes information about the allocation to equities, fixed income, and a Social Security bridge funding account (as a hypothetical example).

The monies allocated to the Social Security bridge funding account would likely mostly be fixed income but could also include equities and alternatives as well. If the account is invested in liquid securities, the monies could also be used to fund other decisions (e.g., purchase an annuity at retirement or to not annuitize or delay at all) thereby creating some level of optionality for the retiree. While the account would not earn any type of mortality credits during the period, mortality credits tend to be relatively small under the age of 65 and may result in liquidity restrictions. Visually demonstrating the separate existence of the account, even if it is merely a behavioral mechanism (similar to “bucket” strategies for retirees) could better help prepare retirees to delay funding and make participants more comfortable with the strategy by setting expectations well in advance.

One obvious benefit from creating a separate funding account is that it requires significantly less commitment from both plan sponsors and plan participants. This strategy does not require plan sponsors to definitely select a single strategy (e.g., allocating to an account that will eventually be used to purchase a SPIA) nor does it commit a participant to a certain type of annuity (e.g., a GLWB with an annual fee). The approach creates flexibility where the participant could use the monies to fund whatever income approach he or she deems optimal, which could be delayed claiming of Social Security retirement benefits, or purchasing a different type of annuity, such as a deferred income annuity, or more specifically a Qualified Longevity Annuity Contract (QLAC).²¹ Regardless, this approach offers a level of optionality that is unlikely to exist in other approaches that utilize some type of annuity.

CONCLUSIONS

Defined contribution (DC) plan sponsors are increasingly focused on getting participants not just “to” but also “through” retirement. The strategies and solutions required to help participants accumulate a sufficient balance to retire successfully (i.e., get “to” retirement) can be very different than those focused on helping participants deplete savings to fund a retirement spending goal (i.e., get “through” retirement).

One potential approach to effectively deal with longevity risk is to delay claiming Social Security retirement benefits. This research explored this topic at some depth, and consistent with existing research on the strategy, finds that delayed claiming of Social Security benefits can be an incredibly valuable way for DC participants to generate lifetime income. However, relatively few retirees fully delay claiming today (e.g., to age 70).

While plan sponsors and consultants are actively considering various strategies to generate lifetime income (e.g., adding an annuity to a DC plan), it is important that this is done so in the correct context. Delaying claiming of Social Security benefits is likely to economically dominate the purchase of an annuity for most participants. While an annuity is going to be a better solution for certain participants given various preference and situations, delayed claiming is simply a more attractive starting place in the absence of complete participant information and an affirmative decision around preferences. Therefore, delayed claiming of Social Security retirement benefits should likely play a more central role in strategies focused on getting participants to allocate more to longevity protected income.

One way to help encourage delayed claiming would be to explicitly carve out part of the default investment (e.g., a target-date fund) with an account where the monies are specifically targeted to be used to delay claiming, such as through the purchase of a short-term period certain. Ideally these monies would be relatively liquid and could be used for other purposes, significantly increasing the optionality to participants (e.g., they could choose not to delay or use the monies to purchase a different type of annuity).

21. Which is a specific type of longevity annuity purchased in a qualified account that meets certain provisions

Overall, this research suggests that DC plan sponsors and consultants need to ensure participants are aware of the benefits of delayed claiming of Social Security retirement benefits and to be sure they aren't simply selecting a product or strategy that sounds useful without understanding where it fits from a relative efficiency perspective.

AUTHOR

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APPENDICES

This research leverages the Gompertz mortality model, where the probability of survival to age t , conditional on a life at age (a) , is given by equation A1, where m is the modal lifespan and b is the dispersion coefficient.

$$q_t = \exp \left\{ \exp \left\{ \frac{a-m}{b} \right\} \left(1 - \exp \left\{ \frac{t-a}{b} \right\} \right) \right\} \quad [A1]$$

Gompertz parameters are determined by minimizing the sum of the squared errors for the respective parameters for m and b are 93.13 and 9.00, respectively.

APPENDIX 1: The Gompertz Mortality Model

Income Group	This Dataset		Vanguard's DC Plans	
	Average	Median	Average	Median
\$30,000-\$49,999	\$36,739	\$14,009	\$31,546	\$10,665
\$50,000-\$74,999	\$77,340	\$33,368	\$76,851	\$32,842
\$75,000-\$99,999	\$131,981	\$67,812	\$133,701	\$65,201
\$100,000-\$149,999	\$225,596	\$122,229	\$219,651	\$116,223
\$150,000+	\$392,843	\$222,684	\$397,882	\$225,478

Age Group	This Dataset		Vanguard's DC Plans	
	Average	Median	Average	Median
25-34	\$37,818	\$20,313	\$37,211	\$14,068
35-44	\$96,101	\$42,396	\$97,020	\$36,117
45-54	\$167,888	\$65,870	\$179,200	\$61,530
55-64	\$233,579	\$90,255	\$256,244	\$89,716

APPENDIX 2: Balance Comparison Across Datasets, Income and Age Groups

Source: Author's Calculations