THE BENEFIT CONNECTION
GLIDE • PATH • DESIGN

When the Retirement Clock Gets Wound Forward

Glide path design should reflect possibility of early retirement.

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KEY INSIGHTS

- Many defined benefit plans allow or encourage early retirement by granting participants access to benefits prior to Social Security full retirement age.
- The decision to retire early can materially increase the amount of wealth needed to sustain income over a longer period.
- Sponsors evaluating their defined contribution glide paths should account for the wealth and early retirement incentives provided by a defined benefit plan.

Previously in our Benefit Connection series, we explored how the additional wealth provided by a defined benefit (DB) plan can impact the target date glide path in an accompanying defined contribution (DC) plan, particularly if the substitution effect isn't considered.[1] We showed how this additional wealth generally pushes down the equity allocation across most ages. However, we didn't consider the impact that the presence of a DB plan might have on when participants choose to retire.[2] We do so here.

Data from U.S. corporate pension plan regulatory filings suggest that participants who have DB plan benefits often retire earlier than the Social Security full retirement age, which is transitioning from age 66 to age 67 (Figure 1). This is particularly true when plans offer early retirement subsidies, which creates a retirement benefit that is more valuable than the actuarially reduced benefit.

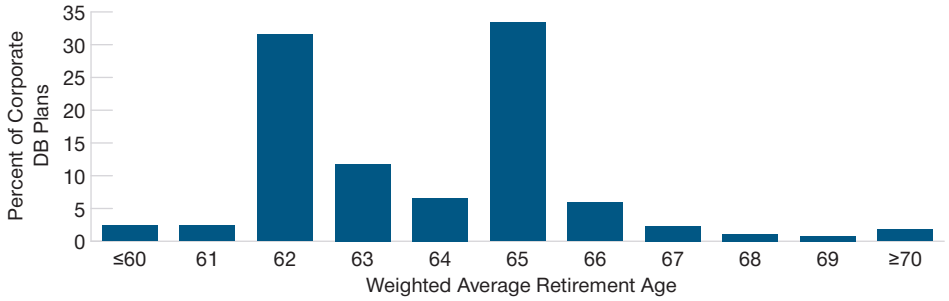
While aggregated U.S. public plan data are harder to come by, the typical designs of many local government, firefighter, and law enforcement DB plans leads us to expect that the average retirement age for these participants is lower than the Social Security full retirement age, just as we see in the U.S. corporate sector. If a DB plan encourages employees to retire earlier than they otherwise would, the glide path for a companion DC plan's target date offering should reflect this earlier transition from accumulation to decumulation.

Many DC plan glide paths, including the ones offered by T. Rowe Price in our flagship commingled vehicles, are built on the assumption that participants will retire at a specific age, typically 65.

[1] Justin Harvey, Adam Langer, Aaron Stonacek, and James Tzitzouris, "Understanding the Substitution Effect" (2021).
[2] We would like to congratulate one of our coauthors in the Making the Benefit Connections series, Lorie Latham, on her early retirement. Thanks to Lorie for all she has done to help improve retirement outcomes for our plan sponsor clients and their participants.

Almost 90% of U.S. Corporate Plans Have an Average Retirement Age of 65 or Lower

(Fig. 1) Weighted average retirement ages for DB plans with 10+ participants



Source: U.S. Employee Benefits Security Administration, 2020 Form 5500 dataset (n = 17,029). Data analysis by T. Rowe Price.

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An earlier retirement date will impact postretirement wealth and spending in several ways for participants who have both DB and DC benefits.

- Most obviously, the DC asset accumulation phase will be shorter, while the decumulation phase will be longer.
- Any defined benefit that incorporates a service multiplier will provide less retirement income, reflecting the participant's shorter career. Similarly, a cash balance plan participant retiring early would receive fewer pay credits.
- Even if the defined benefit does not directly depend on service years or pay credits, the benefit is likely to be reduced for an early retiree, due to actuarial equivalence plan provisions that adjust benefits lower to account for mortality and the time value of money, especially if the early retirement benefit is not subsidized.
- Early retirees also may have lower annual retirement liabilities compared with participants who retire at the normal age, depending on potential salary growth during their later working years.

Impact on Glide Path Suitability

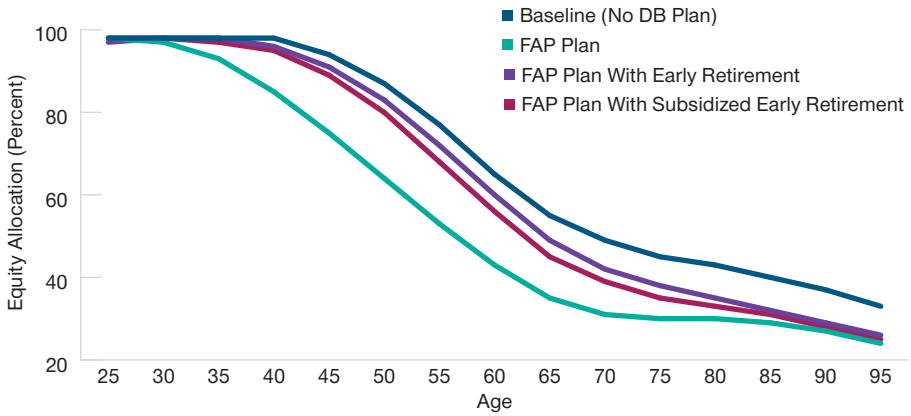
To assess how much glide paths should change to reflect lower retirement ages, we modeled four hypothetical scenarios, all of which are based on the baseline safe harbor DC plan that we have used throughout the Benefit Connection series:

1. **Baseline:** The employer matches 100% of the first three percentage points of employee salary deferrals and 50% of the next two percentage points, for a maximum employer contribution of 4% of salary. There is no accompanying DB plan.
2. **Final average pay (FAP) plan:** The same defined contribution plan, paired with a final average pay DB plan that pays normal retirement benefits at the normal retirement date, equaling 1% x the average of the final five years of pay x years of service.
3. **FAP plan with early retirement:** The same DC and final average pay DB plans described in scenario 2, but optimized for retirement at age 61 with a benefit that is actuarially equivalent to the normal retirement benefit.[3]
4. **FAP plan with subsidized early retirement:** The same DC and final average pay DB plans assumed in

[3] We show results for age 61 retirement because it is the youngest age given as the average retirement age by a critical mass (at least 2%) of U.S. corporate DB plans in their 2020 Form 5500 filings.

Early Retirement Brought Equity Up Toward Baseline Scenario

(Fig. 2) Hypothetical optimal glide path equity allocations



Source: U.S. Employee Benefits Security Administration, 2020 Form 5500 dataset (n = 17,029). Data analysis by T. Rowe Price.
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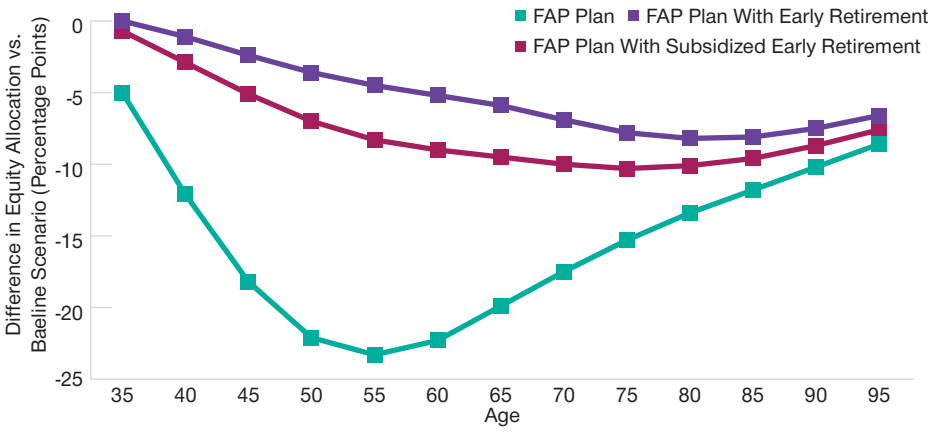
scenarios 2 and 3, but optimized for retirement at age 61 with a benefit that is subsidized relative to the actuarially equivalent normal benefit.[4]

Not surprisingly, and consistent with the findings in the other papers in the Benefit Connection series, the addition of the FAP plan brought the hypothetical optimal glide path equity allocation down significantly

Early Retirement Significantly Offset DB Wealth Effect in Accumulation Phase

(Fig. 3) An unsubsidized FAP plan reduced equity by less than eight percentage points vs. baseline



Source: T. Rowe Price.
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[4] For the subsidized plan, we applied a 3% reduction to the normal retirement benefit per year of early retirement. This compared favorably with the roughly 5.7% annual reduction in benefits that we estimate is actuarially equivalent. See the Appendix for further details on the modeling methodology.

> Even with a subsidy, the full wealth effect of having a DB plan is not realized for early retirees when compared with those who retire at the full retirement age.

throughout both the accumulation and decumulation phases (Figure 2). The largest disparity occurred in the peak earning ages for someone retiring at age 65. However, when we took the same DB plan and allowed a participant to retire at age 61 with an actuarially equivalent benefit, the impact on the hypothetical glide path equity allocation was much more muted (Figure 3).

The biggest difference in equity allocations between the FAP plan with early retirement (scenario 3) and the baseline scenario (i.e., a DC plan without a companion DB plan) occurred well into retirement and was only about eight percentage points in magnitude. The longer retirement period required significant DC plan portfolio growth throughout the accumulation phase in order to be sustainable.

By its very nature, the early retirement subsidy provided in scenario 4 increased retirement wealth, so we saw a two- to four-percentage-point reduction in the hypothetical optimal equity allocation throughout the glide path in comparison with the unsubsidized early retirement glide path in scenario 3. The impact of the subsidy was largest in the years right around retirement, since those were the years when the additional wealth from the subsidy would have been realized.

Conclusions

While the addition of a DB plan to an existing DC plan can improve participants' overall retirement wealth, if the existence of the DB plan encourages employees to retire early, there could be several offsetting factors that affect glide path design.

If their early-retirement DB benefits are unsubsidized, participants still will need significant equity exposure in their DC plans to sustain their longer retirement periods. In this case, the DB benefit would likely be lower due to both a shorter career service multiplier and a reduction to reflect the actuarial impact of mortality and the time value of money.

Even with a subsidy, the full wealth effect of having a DB plan is not realized for early retirees when compared with those who retire at a later retirement age. Higher equity allocations and investment returns would still be needed to support a longer decumulation horizon.

Appendix

Key Modeling Plan Design Parameters

Hypothetical DC plans: Our baseline assumption was a safe harbor plan design with the employer matching up to 100% of the first three percentage points of salary deferrals and 50% of the next two percentage points.

Hypothetical DB plan: A final average pay plan that pays a single life annuity with the following benefit formula: normal retirement benefit at normal retirement date = 1% x the average of the final five years of pay x years of service. For the final average pay plan with early retirement subsidy, we applied a 3% reduction to the normal retirement benefit per year of early retirement. This subsidy compares favorably with the roughly 5.7% annual reduction in benefits that we estimate is approximately actuarially equivalent based on the RP-2014 healthy annuitant mortality table with MP-2021 mortality improvement scale published by the Society of Actuaries and the November 2021 minimum present value segment rates published by the IRS.

Demographic analysis: We assumed that participant incomes grew in line with a proprietary salary growth model calibrated on T. Rowe Price's recordkeeping platform. Participants were assumed to begin taking Social Security benefits at age 65 and to begin withdrawing income from their DC plans to support a steady, inflation-adjusted level of spending over the full retirement period, including early retirement where applicable.

Projections or other information generated regarding the likelihood of certain outcomes are not guarantees of future results. This analysis is based on assumptions, and there can be no assurance that the projected results will be achieved or sustained. Actual results will vary, and such results may be better or worse than the assumed scenarios.

Additional Disclosure

Monte Carlo simulations model future uncertainty. In contrast to tools generating average outcomes, Monte Carlo analyses produce outcome ranges based on probability—thus incorporating future uncertainty.

Material Assumptions include:

- Underlying economic and behavioral inputs, including savings rates and cash flows, are generated from a structural model built up from factors relating to both financial markets and the broad economy as well as data calibrated based on T. Rowe Price's recordkeeping platform's participant population.
- The mortality weighting is sourced from the Society of Actuaries. Retirement age is assumed to be 65 years old.

Material Limitations include:

- The analysis relies on assumptions, combined with a return model that generates a wide range of possible return scenarios from these assumptions. Despite our best efforts, there is no certainty that the assumptions and the model will accurately predict asset class return ranges going forward. As a consequence, the results of the analysis should be viewed as approximations, and users should allow a margin for error and not place too much reliance on the apparent precision of the results.
- **Users should also keep in mind that seemingly small changes in input parameters, including the initial values for the underlying factors, may have a significant impact on results, and this (as well as mere passage of time) may lead to considerable variation in results for repeat users.**
- Extreme market movements may occur more often than in the model.
- Market crises can cause asset classes to perform similarly, lowering the accuracy of our projected return assumptions, and diminishing the benefits of diversification (that is, of using many different asset classes) in ways not captured by the analysis. As a result, returns actually experienced by the investor may be more volatile than projected in our analysis.
- Asset class dynamics, including, but not limited to, risk, return, and the duration of "bull" and "bear" markets, can differ from those in the modeled scenarios.
- The analysis does not use all asset classes. Other asset classes may be similar or superior to those used.
- Fees and transaction costs are not taken into account.
- The analysis models asset classes, not investment products. As a result, the actual experience of an investor in a given investment product may differ from the range of projections generated by the simulation, even if the broad asset allocation of the investment product is similar to the one being modeled. Possible reasons for divergence include, but are not limited to, active management by the manager of the investment product. Active management for any particular investment product—the selection of a portfolio of individual securities that differs from the broad asset classes modeled in this analysis—can lead to the investment product having higher or lower returns than the range of projections in this analysis.

Modeling Assumptions:

- The primary asset classes used for this analysis are stocks and bonds. An effectively diversified portfolio theoretically involves all investable asset classes including stocks, bonds, real estate, foreign investments, commodities, precious metals, currencies, and others. Since it is unlikely that investors will own all of these assets, we selected the ones we believed to be the most appropriate for long-term investors.
- The analysis includes 10,000 scenarios. Withdrawals are made annually at the beginning of each year.
- **IMPORTANT:** The projections or other information generated by T. Rowe Price regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. The simulations are based on assumptions. There can be no assurance that the projected or simulated results will be achieved or sustained. The charts present only a range of possible outcomes. Actual results will vary with each use and over time, and such results may be better or worse than the simulated scenarios. Clients should be aware that the potential for loss (or gain) may be greater than demonstrated in the simulations.
- The results are not predictions, but they should be viewed as reasonable estimates.

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