

What Employers Lose in the Shift from Defined Benefit to Defined Contribution Plans... and How to Get it Back

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Introduction

The retirement landscape has changed significantly over the past three decades, with the most dramatic change being the shift from defined benefit (DB) plans to defined contribution (DC) plans as the primary workplace retirement offering. Among the roughly 50% of private-sector workers with access to any type of workplace retirement plan, the percentage covered by a DB plan has fallen from 83% in 1980 to 31% in 2008.¹

The shift from DB to DC plans means that individuals now have more responsibility to save adequately for retirement, to invest their savings appropriately, and to generate a stream of retirement income from those savings. This has contributed to a feeling of insecurity among individuals about their retirement; in fact, only 13% of individuals say that they are "very confident" they'll have enough money to provide for a comfortable retirement.² Moreover, approximately three in four individuals (72%) agree that they need to think differently about saving and planning for retirement.³

To address this pervasive insecurity regarding retirement, financial services firms are developing new retirement products, employers are devoting more energy to educating employees about how to prepare for retirement,⁴ and the Department of Labor and Department of the Treasury recently solicited perspectives on how to provide individuals with access to secure sources of income during retirement.

The four objectives of this paper are to...

- Highlight the plan design features that have been lost in the shift from DB to DC plans.

- Identify the workforce management challenges posed by the shift from DB to DC plans.

- Describe how incorporating income solutions into DC plans can help address these challenges.

- Provide a case study that demonstrates the benefits of incorporating income solutions into DC plans for employers and employees.

To date, less attention has been paid to how the changing retirement landscape impacts employers. The shift from DB plans to DC plans has certainly helped employers reduce both cost and risk. For example, from 1998 to 2008, a reduction in coverage under and benefits provided by DB plans lowered the cost of retirement benefits offered to new, salaried employees by roughly 10%.⁵

However, the shift from DB to DC plans also has the potential to negatively impact employers. For example, the Employee Benefit Research Institute (EBRI) reports that 36% of individuals plan to retire after age 65, up from 11% in 1991; the vast majority of these individuals are delaying retirement due to financial concerns.⁶ The growing number of workers planning to delay their retirements has the potential to create a number

of workforce management challenges for employers. Fortunately, there are new solutions that can help address these challenges.

Key retirement-plan design features lost in the shift from DB to DC plans

DB plans provide plan participants with a "retirement paycheck" which cannot be exhausted, regardless of stock market fluctuations or how long

a participant lives. The level of retirement income is typically based on how long a participant worked for a DB plan sponsor and how much the participant earned during his or her working years. DB plan participants can plan their retirement with a high degree of certainty—even during periods of economic uncertainty or weak market performance—because they know exactly how much retirement income they will receive. Underscoring this point, a recent survey found that participation in a DB plan increases the likelihood that an individual is satisfied with his or her financial situation: 40% of respondents that had DB plans were satisfied with their financial situation vs. 27% for respondents that only had DC plans.⁷

DB plans possess two key design features that contribute to their effectiveness, and which have been lost in the shift to DC plans:

- **DB plan participants are protected against investment and longevity risk (or the risk of outliving one's assets).** DB plan sponsors assume these risks because they promise to provide participants with a guaranteed retirement paycheck. In contrast, DC plan participants bear the risks of investment losses and outliving their assets. Some DC plans do offer participants access to products, such as fixed annuities, to protect against market and longevity risk. However, when fixed annuities are offered, only 1% of participants elect to use them.⁸ Retiring DC participants have made it clear that they do not wish to give up control of their retirement assets by annuitizing their balances.

- **DB plans efficiently pool longevity and investment risk across large numbers of participants.** Longevity risk is pooled because participants who only live a few years after retiring "subsidize" the participants who live for decades. This concept applies to investment risk as well. DB plan participants who retire

after periods of very strong market performance do not receive a larger pension. These market gains are absorbed by the plan to support payouts to future participants, some of whom may retire after periods of weak market performance. In contrast, there is no concept of pooling longevity or investment risk across participants in a DC plan.

The loss of these design features has significant implications for the performance of DC plans:

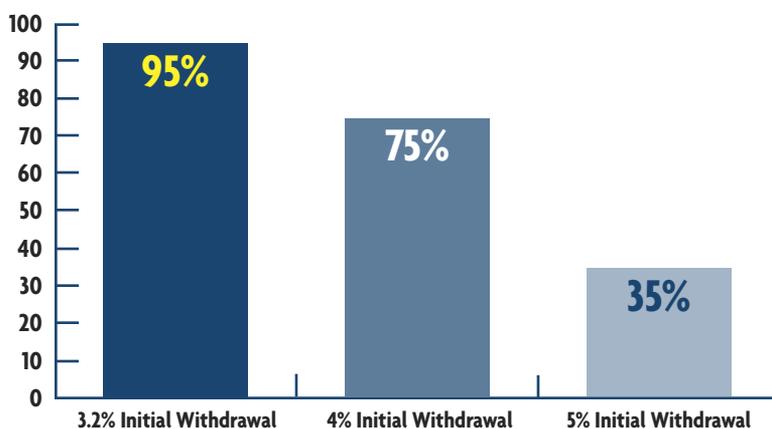
- **DC plans require a higher level of savings on a per participant basis than DB plans.** A recent study found that the cost to deliver the same level of retirement income to a group of employees is 46% lower in a DB plan than it is in a DC plan.⁹ The lack of risk pooling in a DC plan is a key reason for this. DB plan sponsors are able to fund their plans based on the average life expectancy of their participant

populations, because the average life expectancy of a large number of participants can be reliably predicted. In contrast, an individual DC participant cannot reliably predict how long he or she will live. As a result, financial experts recommend that individuals fund their retirements assuming that they will live to age 95.¹⁰

- **DC participants can "safely" withdraw only a small portion of their savings each year in retirement.** DC participants need to be sure that their DC savings will last through any ups and downs in the financial markets, and for as long as they live. As a result, studies recommend that individuals withdraw no more than 4% of their retirement accounts in their first year of retirement, and adjust that amount by inflation every year thereafter. This draw-down strategy is known as the "safe withdrawal rate" strategy.¹¹

FIGURE 1: THE IMPACT OF THE INITIAL WITHDRAWAL RATE ON THE PROBABILITY OF A PARTICIPANT'S RETIREMENT ASSETS LASTING THROUGH AGE 95

PROBABILITY OF A PARTICIPANT'S RETIREMENT ASSETS LASTING THROUGH AGE 95 (DISTRIBUTIONS START AT AGE 65)



Note: Assumes participant retires at age 65 and that withdrawals are increased after the first year of retirement to account for inflation; assumes retirement assets are invested in a target-date fund; glide path is based on the S&P Target Date Fund Index; investment fees of 60 bps.

Source: Prudential Financial calculations

However, the 4% safe withdrawal rate does not account for investment expenses.¹² The success rate using a 4% withdrawal rate with 60 basis points of expenses is 75% by age 95. This success rate is likely too low for most employees who wish to have a secure retirement.¹³ After accounting for investment expenses, the safe withdrawal rate drops to 3.2%; this withdrawal rate provides a DC participant with a 95% probability that his or her retirement assets will last until the age of 95.¹⁴ Figure 1 (previous page) illustrates the relationship between the initial withdrawal rate and the probability of an individual's assets lasting through age 95. In the absence of further innovation in retirement solutions, participants can only spend a small portion of their DC savings if they wish to achieve a financially secure retirement.

DC participants planning to utilize the safe withdrawal rate strategy will need to save more for retirement than if they had originally planned to utilize a higher withdrawal rate. Moreover, no matter how much DC participants save for retirement, those with a diversified portfolio remain exposed to the risk of a significant decline in their DC assets at critical times, such as just before or after retirement. Not surprisingly, these aspects of today's DC plans have a significant impact on DC participants' retirement decision-making, which in turn has workforce management implications for employers. The next section of this white paper explores these issues.

Workforce management challenges posed by the shift to DC plans

The shift from DB to DC plans is impacting individuals' retirement decision-making.

- **Delayed retirements.** Employees whose primary retirement plan is a DC plan tend to retire one to two years later, on average, than employees covered by a DB plan.¹⁵ Academic research has also found that, controlling for other factors such as age, individuals covered

only by a DB plan are 87% more likely to retire in any given year than individuals only covered by a DC plan.¹⁶ These findings are consistent with the observation that, due to the safe withdrawal rate strategy, DC participants must save a significant amount to generate a desired level of retirement income.

- **Less predictable retirements.** Since DC plan participants are exposed to investment risk, their retirement decisions tend to be sensitive to business cycles.¹⁷ For example, 35% of employees age 62 and older say that they have delayed retirement because of the recent recession.¹⁸ In contrast, DB plan participants, who typically can project what their retirement income will be, tend to forecast their retirement date more accurately than employees not covered by a DB plan.¹⁹

These trends indicate that despite employers' substantial investments in DC plans, including matching contributions and participant education, many DC participants will not be able to retire when desired. In addition to the negative impact on participants, these trends have the potential to result in several workforce management challenges for employers.

- **Increased volatility in staffing needs.** Employers may face increased volatility in their staffing needs because DC participants' retirement decisions will be heavily impacted by fluctuations in the financial markets. In fact, research has found that a 1% increase in the S&P 500 index in any given year increases the probability that a pre-retiree will retire by 2.5%.²⁰ It follows that DC participants are more likely to delay retirement when financial markets decline; this decline is likely to occur when employers are facing headwinds in their businesses and would therefore prefer that forecasted employee retirements take place.
- **Higher workforce costs.** Delayed retirements have the potential to increase workforce costs

for employers. According to a recent survey, employers expect that half their employees will lack the resources needed to retire at their organization's traditional retirement age. The surveyed employers are lukewarm about creating opportunities for even half of these employees to work longer, particularly if the employer views older employees as costly.²¹ Delayed retirements may also increase employers' healthcare costs, because annual healthcare costs for a 65-year-old or older worker are twice those of a worker between the ages of 45 and 54.²² However, the relationship between the age of a workforce and its cost is complex, with factors such as productivity also playing a role.

- **Reduced workforce engagement.** Delayed retirements may impact employee morale. For example, younger employees may become discouraged by a lack of advancement opportunities as fewer employees retire. A survey of finance executives found that more than 60% of the executives have become more concerned about employees who are unable to retire, and a resulting shortage of growth opportunities for younger staff.²³ Delayed retirements may also reduce employers' ability to hire new employees, reducing the flow of new ideas and talent into their firms.

These workforce management challenges are likely to become more pronounced over the next several years because the number of employees over age 55 is expected to grow by more than 40% by 2018.²⁴

A new solution to improve the effectiveness of DC plans

Many plans have adopted features, such as automatic enrollment, automatic escalation of contributions, and default investment options, to help individuals save and invest for retirement.

However, solutions are needed to help individuals manage their retirement income, and to help plan sponsors manage their workforce. Any solution to enhance DC plans should be evaluated from the following perspectives:

- **Improvement of plan performance.** Does the solution increase the amount that a participant can "safely" withdraw from his or her DC account after retiring, thereby reducing the amount that a participant needs to save for retirement in order to generate a certain level of retirement income? Plan performance is an important factor, as it has a direct and significant impact on how participants make retirement decisions.
- **Impact on workforce management.** Does the solution increase the likelihood that a participant can retire by a traditional retirement age, such as age 65, thereby providing employers with greater ability to forecast and plan their staffing requirements?
- **Alignment within individual preferences.** Does the solution provide participants with full control over, and access to, their assets at all times, including the ability to opt out of the solution at any time? This is critical given the aversion participants have demonstrated towards solutions such as traditional annuities that require participants to cede control of their retirement assets.

This paper explores a solution that can meet these criteria: the incorporation of a guaranteed minimum withdrawal benefit (GMWB) into a DC plan. GMWBs typically provide participants with a guaranteed amount of annual income after retirement, regardless of market conditions or how long a participant lives.²⁵

The mechanics of how a GMWB works are described below:

- Participants activate a GMWB five to 10 years prior to retirement, which generates an

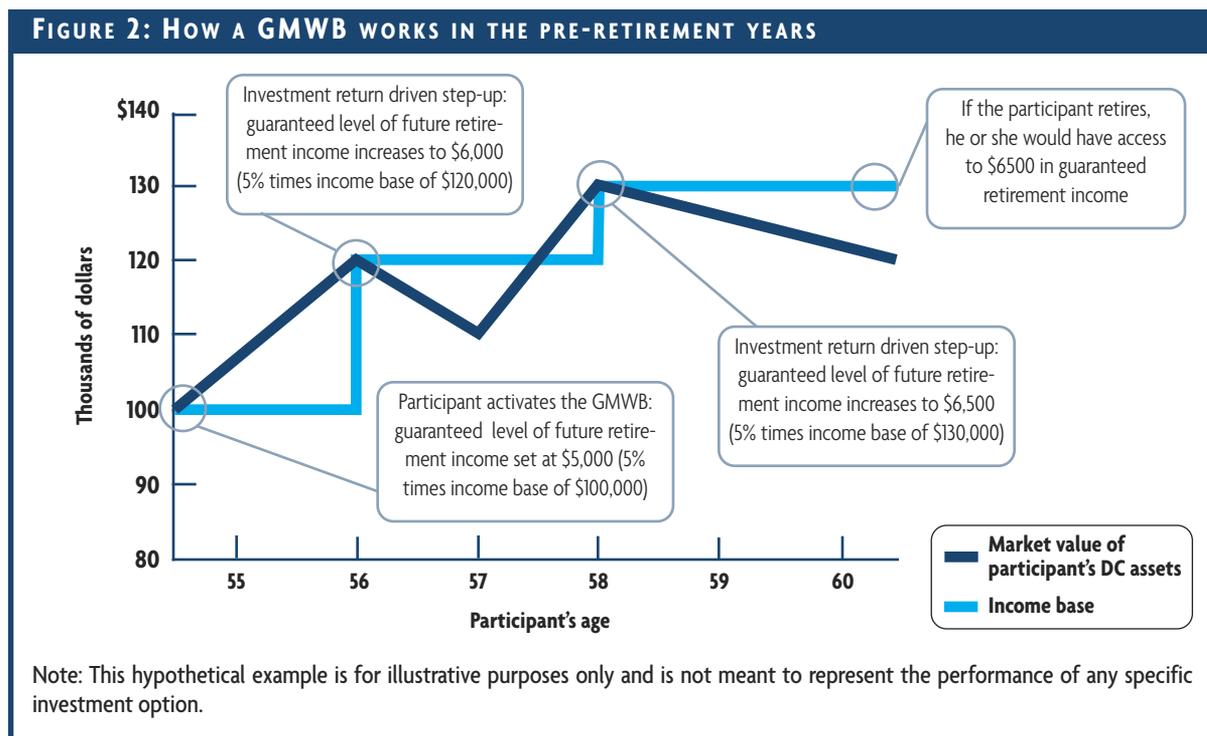
"income base." The income base is used to determine a plan participant's guaranteed level of future retirement income. The income base is initially set at the market value of the participant's assets at the time the GMWB is activated. After activation, the income base will increase on a dollar-for-dollar basis to reflect additional DC plan contributions.

- Participants' income base can increase due to investment return driven "step-ups" once a year. For example, an investment return driven step-up may be provided if a participant's DC assets have appreciated on his or her contract anniversary or some other specified anniversary compared to a year ago. Step ups can occur after retirement as well.
- After retiring, the participant will receive a guaranteed level of annual income for life set at a percentage, such as 5%, of the income base at retirement.
- Before retirement, the participant's income base can only decline if the participant withdraws

assets from his or her DC account. After retirement, the income base can only decline if a participant's annual withdrawals exceed the guaranteed level of annual retirement income provided by the GMWB.

- Before and after retirement, the participant retains full control over, and access to, their assets. In fact, with a GMWB, the participant has the flexibility to choose not to withdraw an annual income amount, or to withdraw a reduced level of income in any given year, and simply leave the remaining income to be reinvested. Excess withdrawals will reduce the market value of assets. The participant can turn off the GMWB and cease paying its associated fees at any time. Upon death, the participant's remaining market value of assets (if any) is available as a bequest to heirs.

Figure 2 (below) illustrates how a GMWB works in the pre-retirement years. In this hypothetical example, a participant activates a GMWB within



his DC account at age 55. The participant then makes no incremental contributions to the DC plan, but his income base increases due to investment return driven step-ups on his 56th and 58th birthdays. In addition, even though this participant's DC assets fall in value after his 58th birthday, the guaranteed level of future retirement income does not decline.

There is significant interest among individuals and employers in solutions such as GMWBs. In a recent consumer survey, two-thirds of respondents said that a retirement plan solution that provides guaranteed lifetime income, with the ability to opt-out, would be appealing.²⁶ In another recent survey, 40% of finance executives said their companies either already offer, or plan to offer within the next two years, guaranteed lifetime income products to DC participants.²⁷

The next section of this white paper presents a case study on how GMWBs can improve the effectiveness of DC plans.

A case study on how GMWBs can improve the effectiveness of DC plans

This case study focuses on a hypothetical DC participant, Sheila.

- Sheila begins saving for retirement at age 30.
- Sheila's salary at age 30 is \$30,000, and her salary increases 4% each year.
- Sheila's goal is to retire at age 65 with a retirement income that is 75% of her final salary. Sheila's sources of retirement income will be Social Security benefits and her DC savings.
- After retirement, Sheila wants a 95% probability that her retirement savings will not be depleted, even if she lives until the age of 95.

This case study compares the retirement outcomes for Sheila under two different DC plans,

a Traditional DC Plan and a GMWB DC Plan. The retirement outcomes were generated through 2,000 Monte Carlo simulations of different patterns of investment returns. Figure 3 (on next page) summarizes the key features of these two DC plans.

The level and timing of contributions to both plans by Sheila and her employer plans are identical. The primary differences between the two plan designs relate to how Sheila's retirement income is generated.²⁸

- **Traditional DC Plan.** Sheila generates her retirement income via a systematic withdrawal strategy. After retirement, Sheila begins withdrawing 3.2% of her assets annually, adjusted for inflation each subsequent year. This is the maximum level of withdrawals that will provide a 95% probability that her DC savings will last until age 95.
- **GMWB DC Plan.** Sheila's guaranteed retirement income will be 5% of her income base at retirement. Before and after retirement, Sheila's income base can increase due to step-ups.

When Sheila turns 65, her annual income will be \$118,382. Since Sheila wants to replace 75% of her final income after retiring, her desired retirement income will be \$88,787. Her projected Social Security benefits at age 65 will be \$54,356.²⁹ As a result, to retire at age 65, Sheila must be able to generate \$34,431 in income from her DC assets.

The remainder of this section evaluates these plan designs against the criteria discussed in the prior section.

Improvement of plan performance: Does the solution increase the amount that a participant can "safely" withdraw from his or her DC savings after retiring, thereby reducing the amount that a participant needs to save for retirement in order to generate a certain level of retirement income?

FIGURE 3: CASE STUDY ASSUMPTIONS

	Traditional DC plan	GMWB DC plan
Plan contributions	<ul style="list-style-type: none"> Employee contributes 6% of salary starting at age 30, gradually increasing to 15.5% by age 65 Employer matches contributions up to 4% of salary 	<ul style="list-style-type: none"> Employee contributes 6% of salary starting at age 30, gradually increasing to 15.5% by age 65 Employer matches contributions up to 4% of salary
Plan investments	<ul style="list-style-type: none"> Participants' contributions are defaulted to and remain invested in a target-date fund Target-date fund's glide path is based on the S&P Target Date Fund Index and is similar to the glide path of Prudential's EasyPath 2045 fund until age 55 Glide path becomes more conservative overtime 60 basis points investment management fee 	<ul style="list-style-type: none"> Participants' contributions are defaulted to and remain invested in a target-date fund Target-date fund's glide path is similar to the glide path of Prudential's EasyPath 2045 fund Glide path becomes more conservative over time. After age 55, this fund has a higher allocation to equities than the S&P Target Date Fund Index because of the presence of the income guarantee 60 basis points investment management fee
Retirement income approach*	<ul style="list-style-type: none"> After retirement, participant commences annual withdrawals of 3.2% of her assets Withdrawals increase each year to account for inflation; inflation was randomly generated based on historical data during the 2,000 Monte Carlo simulations The withdrawal rate is adjusted as needed to meet Required Minimum Distribution guidelines 	<ul style="list-style-type: none"> Participant activates a guaranteed minimum withdrawal benefit (GMWB) feature at age 55 100 basis points annual GMWB fee GMWB enables participant to lock in a guaranteed level of future retirement income when the GMWB is activated. This level of income is 5% of the participant's assets at the time the GMWB is activated plus any additional contributions GMWB provides for step-ups annually based on market performance

*Assumes participant's retirement at age 65
 Note: EasyPath Funds are target date funds. The target date is when withdrawals will begin. The funds become more conservative as the target date approaches by lessening equity exposure and increasing exposure to fixed income type investments. Principal value is never guaranteed, including at the target date.

- **Traditional DC Plan.** Using the safe withdrawal rate strategy, Sheila will withdraw no more than 3.2% of her DC assets in her first year of retirement. As a result, Sheila's DC account value at retirement must be at least \$1,075,969 to generate \$34,431 or more in income.
- **GMWB DC Plan.** The GMWB allows Sheila to lock in a future retirement income of 5% of her income base. As a result, within this plan design, Sheila's income base must reach \$688,620 before retirement in order for the GMWB to provide at least \$34,431 in guaranteed income after retirement. There are three ways for Sheila's income base to reach this

level: at activation; additional contributions after activation; and annual step-ups.

The incorporation of a GMWB into the DC plan reduces the level of assets required for Sheila to retire at age 65 by approximately 36%. This is a significant reduction, resulting in a much more efficient DC plan, when measuring a plan on its ability to convert retirement savings into retirement income. This is partly because the GMWB DC Plan benefits from risk pooling; in effect, this is similar to a DB plan, because the GMWB provider pools the longevity risk of large numbers of DC participants to offer each participant a higher level of guaranteed retirement income than the

participant can "safely" withdraw on his or her own.

Employers that incorporate a GMWB into their DC plan can immediately improve their employees' prospects for retirement—once provided access to a GMWB, employees approaching retirement will need a lower level of DC savings to be able to generate their desired level of retirement income.

Impact on workforce management: *Does the solution increase the likelihood that a participant can retire by a traditional retirement age, such as age 65, thereby providing employers with greater ability to forecast and plan their staffing requirements?*

The previous discussion focused on the level of retirement assets that Sheila will need to retire within two different plan designs. The next question is how likely is it that Sheila's DC assets will reach these levels by her desired retirement age of 65.

- **Traditional DC Plan.** Sheila has a 35% probability of being able to retire by 65, which means that there is a 35% probability of Sheila accumulating \$1,075,969 by age 65. This is the level of assets that Sheila needs to generate her desired level of retirement income. The 35% probability reflects the fact that under many simulated scenarios, the timing and level of investment returns prevent Sheila from accumulating sufficient assets.
- **GMWB DC Plan.** Sheila has a 77% probability of being able to retire by 65, which means that there is a 77% probability that Sheila's income base reaches \$688,620 before retirement.³⁰ Sheila has a higher likelihood of retiring by age 65 under the GMWB DC Plan largely because she does not need to accumulate as many assets as she needs to in the Traditional DC plan. In addition, unlike the Traditional DC plan, Sheila does not need to have the required level of assets precisely at retirement. For example, if Sheila's assets

reached \$688,620 on her 60th birthday, her income base would be set at this amount due to a step-up. After this, Sheila's income base would not decline due to a fall in the value of her assets. The fact that Sheila's income base cannot decline due to market fluctuations also contributes to the higher likelihood under the GMWB DC Plan that Sheila can retire at age 65.

Incorporating a GMWB into Sheila's DC plan more than doubles the probability that she can retire at age 65. As a result, the GMWB DC plan provides an employer with a powerful tool to increase the probability that more of its workforce can retire at a certain age, thereby improving the employer's ability to forecast and manage staffing needs.

Alignment with individual preferences: *Does the solution provide participants with full control over and access to their assets at all times, including the ability to opt-out of the solution at any time?*

Employees must be willing to embrace any potential enhancements to today's DC plans. Within the Traditional DC Plan, Sheila has full control over and access to her assets at any time. Similarly, within the GMWB DC plan, Sheila has full control over and access to her assets at anytime. However, excess distributions will reduce the income base, and thus the guaranteed withdrawal amounts. Moreover, even after activating the GMWB feature, Sheila can turn it off and cease paying its associated fees at any time. Figure 4 (next page) summarizes the results of this case study.

A comparison of a participant's retirement outcomes in the Traditional and GMWB DC Plans

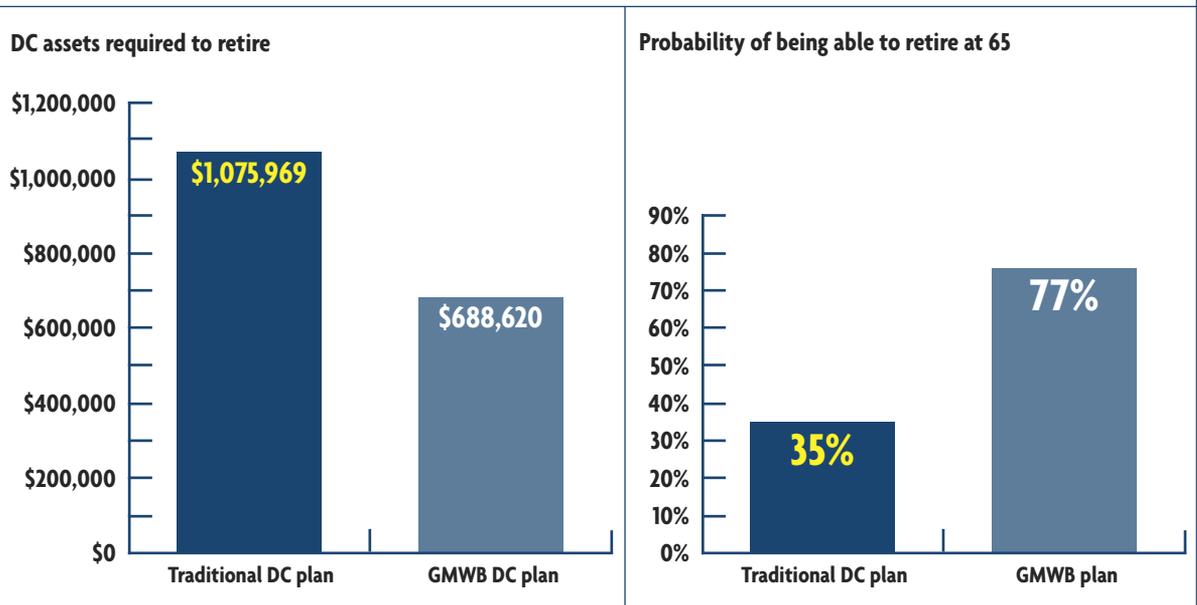
There are four key retirement outcomes that matter to a typical participant such as Sheila:

- Can Sheila retire on time with her desired level of retirement income?

FIGURE 4: CASE STUDY RESULTS

Sheila's retirement:

- Goal is to retire at 65 and replace 75% of her final income
- Only sources of retirement income are Social Security benefits and DC assets
- At 65, Sheila will need to generate \$34,431 in income from her DC assets to supplement Social Security benefits and achieve her income replacement target



The three ways Sheila's income base can reach the required goal of \$688,620:

- **At activation.** Sheila has accumulated her goal at the time the GMWB is activated.
- **Additional contributions.** Sheila continues to contribute to her DC plan after the GMWB has been activated and before retirement until she reaches her goal.
- **Annual step-ups.** Due to market appreciation, Sheila's assets reach her goal on a specified anniversary, such as her birthday, after the GMWB has been activated and before retirement.

Notes: Assets required to retire within the GMWB DC plan reflect the level that the income base must reach.
 Source: Prudential Financial calculations of 2,000 Monte Carlo simulations.

- What is Sheila's quality of life during retirement? A key measure for this is how much retirement income Sheila withdraws after retiring.
- Will Sheila run out of money after retiring?
- Will Sheila be able to leave a bequest from her retirement assets?

Figure 5 (at right) provides a comparison of the outcomes for the Traditional DC Plan and the GMWB DC Plan. This comparison demonstrates that the GMWB DC Plan performs better than the Traditional DC Plan in every respect, with the exception of Sheila being able to leave a bequest. The reasons for this are that, on average, the GMWB DC Plan provides a higher level of income during

retirement, and there are incremental fees associated with the GMWB feature.

For most plan participants, a retirement plan should be designed to enhance a participant's retirement security, rather than maximizing the possibility of a bequest. The GMWB DC Plan enhances a participant's retirement security by increasing the probability that a participant can retire on time, providing a higher level of income during retirement, and ensuring that a participant will not run out of money after retiring.

Conclusion

The shift from DB to DC plans is resulting in delayed and less predictable retirements for today's DC participants. While negatively impacting

individuals, this trend also has the potential to affect employers by making it harder to forecast and manage staffing needs, increasing workforce costs, and reducing employee engagement.

This paper presents a potential solution to these challenges: the incorporation of GMWBs into DC plans. This solution directly addresses the challenges facing individuals and employers by reducing the amount that individuals must save to achieve a desired level of retirement income and therefore increasing the probability that an individual can retire by a certain age, such as age 65.

Employers should actively evaluate whether such a solution is appropriate for their DC plan because solutions like this can dramatically improve the

FIGURE 5: COMPARISON OF SHEILA'S RETIREMENT OUTCOMES*

	Traditional DC plan	GMWB DC plan
Can Sheila retire on time?	35% probability of being able to retire by age 65 with desired level of retirement income	77% probability of being able to retire by age 65 with desired level of retirement income
What is Sheila's quality of life during retirement?	\$715,000 in income drawn during retirement**	\$963,000 in income drawn during retirement**
Will Sheila run out of money after retiring?	5% probability of Sheila's DC assets being depleted by age 95	0% probability of Sheila exhausting her retirement income at any age
Will Sheila be able to leave a bequest?	95% probability of having a residual account value at age 95 that could be left to heirs	60% probability of having a residual account value at age 95 that could be left to heirs

* All 2,000 simulations are reflected in the averages, including scenarios in which Sheila achieves her required level of assets at retirement and others in which she does not.

** Total retirement income reflects the sum of annual withdrawals from age 65 to 95, expressed as a future value when Sheila is age 95 using a 5% re-investment rate. Sheila's income under the GMWB DC plan is higher than under the Traditional DC plan because the withdrawals are higher, investment return driven step-ups may occur, and withdrawals continue even if Sheila runs out of money. Source: Prudential Financial calculations of 2,000 Monte Carlo simulations.

The advantages of incorporating a GMWB into a DC plan:

- Reduces the level of assets required for a typical participant to retire at age 65 by 36%, thereby improving the effectiveness of the DC plan.*
- More than doubles the probability that a typical participant can retire by a traditional retirement age, such as age 65, thereby improving an employer's ability to forecast and manage staffing requirements.*
- Provides DC participants the opportunity for a guaranteed stream of lifetime benefits.

* Prudential Financial calculations of 2,000 Monte Carlo simulations.

effectiveness of a DC plan, support employees in achieving their retirement

goals, and address the workforce management challenges arising from the shift from DB to DC. ■

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Footnotes:

- 1 Center for Retirement Research at Boston College calculations from Form 5500 filings, March 2011.
- 2 Employee Benefit Research Institute, "The 2011 Retirement Confidence Survey: Confidence Drops to Record Lows, Reflecting 'the New Normal,'" March 2011, page 1.
- 3 Prudential Financial, "The Next Chapter: Meeting Investment and Retirement Challenges," June 2011, page 3.
- 4 CFO Research Services, "Benefits Planning in a Challenging Environment," March 2011, page 8.
- 5 Towers Watson, "Retirement Benefits for U.S. Workers Declined 19% Between 1998 and 2008," July 22, 2010.
- 6 Employee Benefit Research Institute, "The 2011 Retirement Confidence Survey: Confidence Drops to Record Lows, Reflecting 'the New Normal,'" page 7.
- 7 Towers Watson, "Retirement Attitudes Part I: Confidence in Retirement," September 2010, page 5.
- 8 Hewitt, "Trends and Experience in 401(k) Plans 2009."
- 9 Beth Alemedia and William Fornia, "A Better Bang for the Buck: The Economic Efficiencies of Defined Benefit Pension Plans," August 2008, page 1.
- 10 McKinsey & Company, "The Retirement Journey," 2005, page 12. According to a McKinsey & Company, a 65 year-old couple has greater than a 50 percent chance that at least one partner will live into their 90s.
- 11 William Bengen, "Determining Withdrawal Rates Using Historical Data," *The Journal of Financial Planning*, October 1994, pages 14-24.
- 12 Ibid.
- 13 Prudential calculations using 2,000 runs of Monte Carlo stochastic simulations, S&P target date fund glide path, and 60 basis point expense ratio. Note that the 60 basis points expense charge is applied against a market value that fluctuates from year to year while the withdrawal rate steadily increases each year by the inflation rate. As a result, one cannot arrive at the safe withdrawal rate by subtracting the 60 basis point expense charge from a safe withdrawal rate such as 4%.
- 14 Ibid.
- 15 Center for Retirement Research, "The Recent Trend Towards Later Retirement," March 2007.
- 16 Rui Yao and Eric Park, University of Missouri, "Do Market Returns Affect Retirement Timing?" 2011.
- 17 Gaobo Pang, Mark J. Warshawsky, and Ben Weitzer, "The Retirement Decision: Current Influences on the Timing of Retirement among Older Workers," September 2009, pages 5, 23.
- 18 Pew Research Center, "How the Great Recession Has Changed Life in America," June 2010.

-
- 19 Center for Retirement Research, "How do Pensions Affect Expected and Actual Retirement Ages!"
- 20 Rui Yao and Eric Park, University of Missouri, "Do Market Returns Affect Retirement Timing?" 2011.
- 21 Center for Retirement Research, "Employers (Lack of) Response to the Retirement Income Challenge," June 2009, page 4.
- 22 U.S. Department of Health and Human Services, "National Health Expenditure Fact Sheet." Data as of 2004.
- 23 CFO Research, "Managing Retirement Benefits Amid Capital Market Disruption," August 2009, page 7.
- 24 *Monthly Labor Review*, November 2009.
- 25 Guarantees will be subject to the claims-paying ability of the insurer.
- 26 Prudential Financial, "The New Economic Reality and the Workplace Retirement Plan," January 2010, page 8.
- 27 CFO Research Services, "Benefits Planning in a Challenging Environment," March 2011, page 9.
- 28 The other key difference between these two plans is that the market risk protection provided by the GMWB enables the GMWB DC plan to offer a target-date fund with a higher equities allocation in the pre-retirement and retirement years.
- 29 Based on the Quick Calculator at www.ssa.gov, each year of delayed retirement to age 70 increases the benefit level by 10.8% due to cost-of-living increases and delayed retirement credits.
- 30 The ways in which Sheila's income base can reach \$688,620 are discussed in Figure 4.