Improving Retirement Success by Managing the "Target-Date"

BY DAVID M. BLANCHETT AND GREGORY W. KASTEN

While it is impossible to force a participant to retire later, much like it is impossible to guarantee the long-term return of any portfolio, creating reasonable expectations about the optimal retirement starting date can significantly improve the probability of retirement success for a retiree. Delaying retirement improves the retiree's situation in two primary ways: by increasing the asset (since the portfolio has additional years to increase in value) and, most importantly, by decreasing the liability (through a lower expected retirement period and a higher Social Security benefit). Delaying retirement one year can improve the probability of retiring successfully by 18 percent, delaying two years can improve the probability of retiring successfully by 37 percent, and delaying three years can improve the probability of retiring successfully by 55 percent.

In an ideal world, all workers would be on track to retire successfully. Unfortunately, this is not the case. The widespread adoption of the 401(k) plan as the primary savings vehicle for retirement has placed control in the hands of the party who appears to lack the knowledge and skills necessary to make optimal savings decisions: the average participant.

Since, in many cases, it is not possible for a participant to save enough to achieve a fully funded retirement at an early age, additional options must be available to improve the likelihood of participant retirement success, which for the purposes of this article is replacing 70 percent of preretirement income at Social Security normal retirement age. One option previously reviewed by the authors is using a managed account platform to dynamically adjust portfolio asset allocation based on funded status of the participant [Blanchett and Kasten, "Improving the 'Target' in Target-Date Investing," *Journal of Pension Benefits,* 18(1)]. This approach increases the number of successful outcomes and delivers less variability. If no other solutions work, an additional method that could increase the probability of retirement success (in conjunction with dynamically adjusting the participant's portfolio) would be to delay retirement age.

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importantly, by decreasing the liability (through a shorter expected retirement period and a higher Social Security benefit). This article will explore the benefit of a delayed retirement from a retirement success perspective in order to quantify the benefit of managing a retiree's expected retirement date.

Creating Adequate Retirement Income

Delaying retirement is not the only method available to improve the probability of retirement success for a 401(k) participant. Perhaps the easiest method to improve a participant's funded status is the simplest: save more. Based on research by one of the authors, retirement savings drives approximately 74 percent of retirement success [Blanchett and Grantz, 2010, "Quantifying the Drivers of Retirement Success" White Paper]. Unfortunately, America is a competitive consumption society, where happiness and wealth are assumed to be one and the same. Americans are not good savers in the aggregate, tending to have one of the lowest savings rates among other developed nations.

While recent legislative changes in the Pension Protection Act of 2006 have made "forced" saving easier through features like automatic enrollment and automated progressive savings, i.e., the annual deferral rate is automatically increased by a certain percentage each year, up to some maximum defined by the plan. According to plansponsor.com's "2007 Defined Contribution Survey," only 23.6 percent of 401(k) plans use automatic enrollment. While plan sponsors can implement programs to improve employee savings, the ultimate savings rate is determined by the participant, not the plan sponsor. Even lower is the adoption of default savings escalators. According to the 2007 Fidelity study, "Building Futures Volume VIII," 66 percent of their 13,000 plans offered automatic enrollment. Of these 8,580 plans, only seven percent (600) offered automatic progressive savings. Thus, less than five percent of all the plans covered in the Fidelity study combined these two basic programs to increase savings.

Changing the risk profile of a portfolio is also a technique that can be used to improve the likelihood of retirement success. Changing portfolio allocations is perhaps one of the most widely used techniques to improve a participant's funded status. A portfolio with an expected rate of return of 10 percent should result in a higher account balance at retirement than a portfolio with an expected rate of return of seven percent, especially after considering the effects of compounding over longer periods. Unfortunately, one of the tenets of Modern Portfolio Theory is that higher returns result in increased market risk. Additional risk is something not every participant can emotionally tolerate. The participant may also not have the capacity to overcome the higher probability of a loss.

As noted above, the authors previously explored the potential benefit from increasing the number of target-date investment glide-paths in a 401(k) plan from one (Moderate) to three (Conservative, Moderate, and Aggressive) and dynamically moving a 401(k) participant based on his or her funded status. It was determined that such an approach led to 30 percent less account dispersion at retirement and 10 percent higher probability of achieving retirement success when compared to using single target-date, glide-path series.

An additional approach to deal with a participant who is not on track to retire successfully would be to change the expected income replacement level in retirement. It may be that, in order for a participant to retire at a given age such as Social Security normal retirement age, which is 67 for most workers today, he or she may have to live off a reduced benefit in retirement, e.g., 50 percent of pretax income. It is important to note that these approaches are not mutually exclusive and can be combined to improve the likelihood of retirement success.

Social Security Benefits

The Social Security Act was signed by President Roosevelt on August 14, 1935. The first monthly retirement payment was issued on January 31, 1940, to Ida May Fuller of Ludlow, Vermont. In 1937, 1938, and 1939 she paid a total of $24.75 into the Social Security system. Her first check was for $22.54. After her second check, Fuller already had received more than she contributed over the three-year period. She lived to be 100 and collected a total of $22,888.92, not a bad deal.

The magnitude and importance of Social Security benefits have increased significantly since the program's introduction. Today, according to the *Mid-Session Review, Budget of the U.S. Government, Fiscal Year 2009,* Social Security payments constituted 20.8 percent of federal outlays in 2008, a percentage that is even greater than defense spending (at 20.5 percent). As of June 30, 2010, according to the Social Security Administration Web site, total benefits to retired workers, which are 70 percent of all Social Security expenditures, are approximately $40 billion per month or $480 billion per year.

Social Security benefits are based on a worker's "Primary Insurance Amount" or PIA. The PIA is the average of the highest 35 years of the worker's covered earnings, limited to the Social Security Wage Base, which was $106,800 for 2010. Historical wages are increased based on the change in the average wage index, not the CPI as is commonly assumed, though CPI-W is used for benefit purposes. One-twelfth of this 35-year average is the average indexed monthly earnings (AIME). Benefits are then determined using "bendpoints" relative to the PIA: 90 percent of the first bendpoint point, 32 percent of the excess of AIME over the first bendpoint but not in excess of the second (high) bendpoint, plus 15 percent of the AIME in excess of the second bendpoint.

The earliest age at which (reduced) Social Security retirement benefits are payable is 62. Full retirement benefits depend on a retiree's year of birth. A worker's Social Security normal retirement age (SSNRA) will vary, based upon birthday, although those born before 1938 have an SSNRA of age 65 and those born after 1960 have an SSNRA of 67. Benefits taken before SSNRA are penalized 5/9 of one percent for each month up to 36 plus 5/12 of one percent for each additional month. This formula gives an 80 percent benefit at age 64 for a worker with an SSNRA of 67. Benefits taken after SSNRA are increased by 2/3 of one percent for each month up to 36 for those born in 1943 or later. **Figure** 1 illustrates the various multiples of the full benefit at SSNRA versus taking an earlier or later benefit. Note that there is no benefit from delaying retirement past age 70.

The potential benefit from a delayed retirement (past SSNRA) is evident in **Figure** 1; whereby the longer the worker delays retirement, the more the expected Social Security benefit is going to be. Because of the bendpoints, however, Social Security does not benefit all workers equally. **Figure** 2 shows the income replacement percentage at SSNRA and SSNRA +3 Years for various income levels. For lower-income workers, Social Security will replace a much larger percentage of their pre-retirement income than higher-income workers. For example, a worker with an average annual PIA of $25,000 will replace approximately 53 percent of preretirement income with Social Security, while a worker with an average annual PIA of $150,000 will only replace approximately 21 percent of preretirement income with Social Security. Delaying retirement improves the income replacement level even more.

Asset/Liability Impact of a Delayed Retirement

In addition to an increased retirement savings (the asset), delaying retirement also decreases the expected retirement need (the liability). Assuming a real, inflation-adjusted return of three percent, which is the approximate annual historical geometric real return of a balanced portfolio, an account will grow by ten percent based on appreciation alone over a three-year period. The growth increases even more if additional savings are considered.

Delayed retirement also typically means planning for a shorter distribution period. This concept

Figure 1. Social Security Benefit Multiple Based on Retirement Date

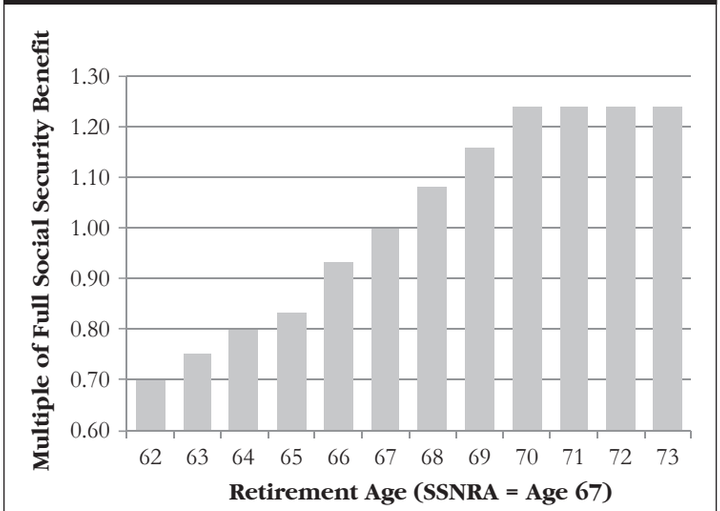
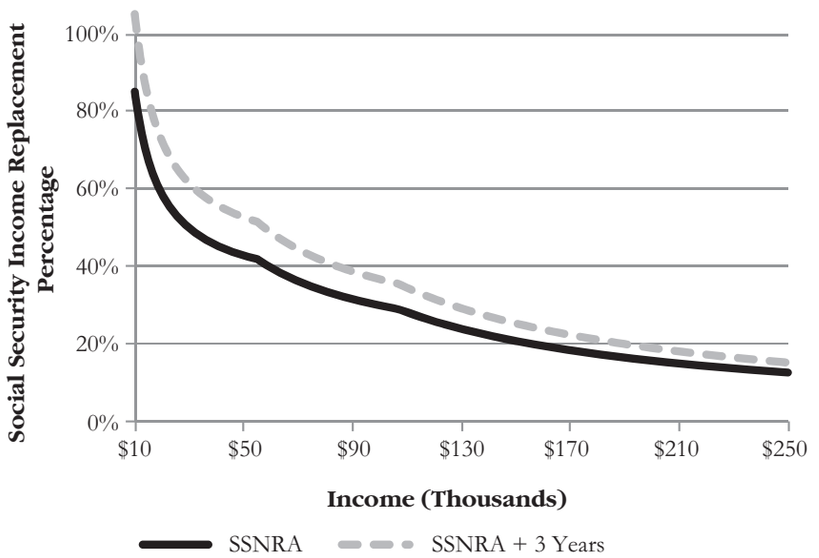


Figure 2. Social Security Benefit Income Replacement at SSNRA for Various Income Levels



is depicted in **Table** 1, which is based on the 2006 Periodic Life Table obtained from the Social Security Administration Web site. For example, assume a male participant wants no more than a 30 percent probability of outliving his target retirement distribution period. If he retires at age 67, the distribution period would be 21 years. Based on the same 30 percent probability, if he were to retire at age 70—three years past SSNRA—he would only need to plan for a distribution period of 18 years. The difference of three years results in a lower retirement liability.

Introducing John Doe

Let's take this example one step further and introduce "John Doe." John Doe is 37 years old and has current and lifetime average expected income of $60,000 in inflation-adjusted terms. John's goal is to replace 70 percent of his current pay ($42,000) at his SSNRA of 67. This gives John Doe 30 years to accumulate a retirement benefit, during which time he expects to save six percent per year. John Doe wants no more than a 30 percent chance of outliving his distribution period, so he expects 21 years in retirement (assuming he retires at age 67), a period that decreases approximately one year for each year he delays retirement (per Table 1).

John Doe's Social Security benefit, based on the 2010 bendpoints, is approximately $23,000, and it will increase approximately $2,000 per year that he delays retirement. If both his accumulation and distribution portfolios are invested in a portfolio that has a three percent real rate of return and a standard deviation of eight percent (the approximate historical values for a 50 percent equity and 50 percent fixed income portfolio), his probability of retirement success at SSNRA is only 25 percent, based on a 10,000 run Monte Carlo simulation. If he decides to delay retirement, his probability of retirement success increases significantly, as is depicted in **Figure 3**.

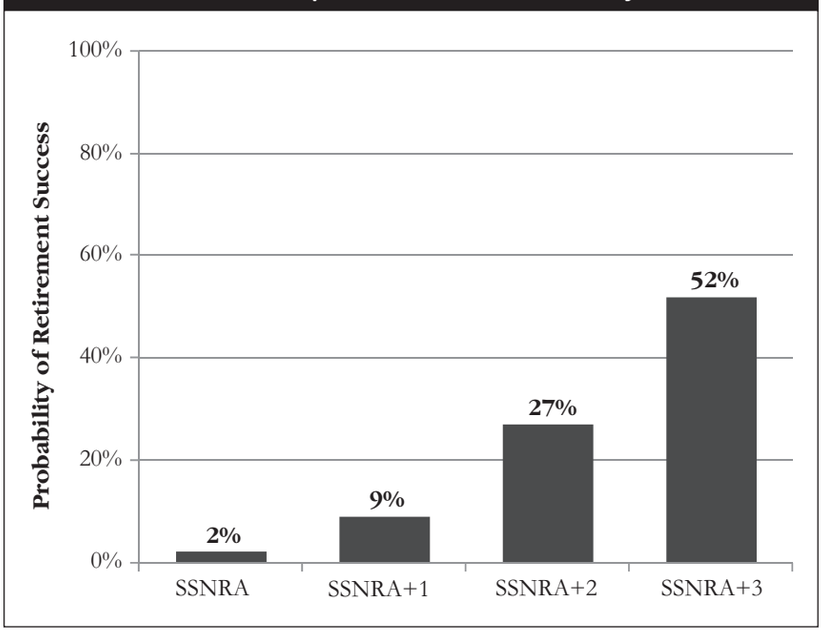
John Doe's problem is that his expected assets at retirement are significantly less than his expected retirement need. His median expected account value is roughly $162,000. His liability at SSNRA is $302,000, which is reduced from $667,000 by the present value of his Social Security benefits, which is roughly $365,000. This means John Doe has a "gap" of $140,000 at SSNRA ($302,000 - $162,000 = $140,000). If John Doe were to delay retirement, though, his gap would decrease and eventually disappear at age 70, which would mean delaying retirement three years past SSNRA. The concept is depicted in **Figure** 4, where at SSNRA +3 Years John Does' asset and liability are approximately equal, as well as in **Figure 5**, which includes just the gap/surplus amount.

Based on the results of John Doe's simulation, it is possible to quantify the benefit of delaying retirement based on the two primary component pieces: the increase in the assets and the decrease in the

Table 1. Length of Distribution Period Based on Various Probabilities Living to a Certain Age

50% Probability of Living			40% Probability of Living			30% Probability of Living		
Age	Male	Female	Age	Male	Female	Age	Male	Female
65	18	22	65	20	24	65	23	26
66	17	21	66	19	23	66	22	25
67	16	20	67	19	22	67	21	24
68	15	20	68	18	22	68	20	24
69	15	19	69	17	21	69	19	23
70	14	18	70	16	20	70	18	22
20% Probability of Living			**10% Probability of Living**			**5% Probability of Living**		
Age	Male	Female	Age	Male	Female	Age	Male	Female
65	25	29	65	28	32	65	31	34
66	24	28	66	28	31	66	30	33
67	23	27	67	27	30	67	29	32
68	23	26	68	26	29	68	28	31
69	22	25	69	25	28	69	27	30
70	21	24	70	24	27	70	26	29

Figure 3. Probabilities of Retirement Success for Various Social Security Retirement Dates for "John Doe"



liability (through a larger Social Security benefit and a reduced retirement distribution period liability). This information is included in **Figure 6**. Each figure represents the increase in income expected from a delayed retirement. For example, if a participant were to delay retirement two years (SSNRA +2 Years) the income from the retirement savings (the asset) would be six percent higher. Again, for example, if a participant were to delay retirement three years (SSNRA +3 Years) their Social Security benefit would be approximately 16 percent greater (this is also evident in Table 1).

Figure 4. Asset/Liability Totals for "John Doe"

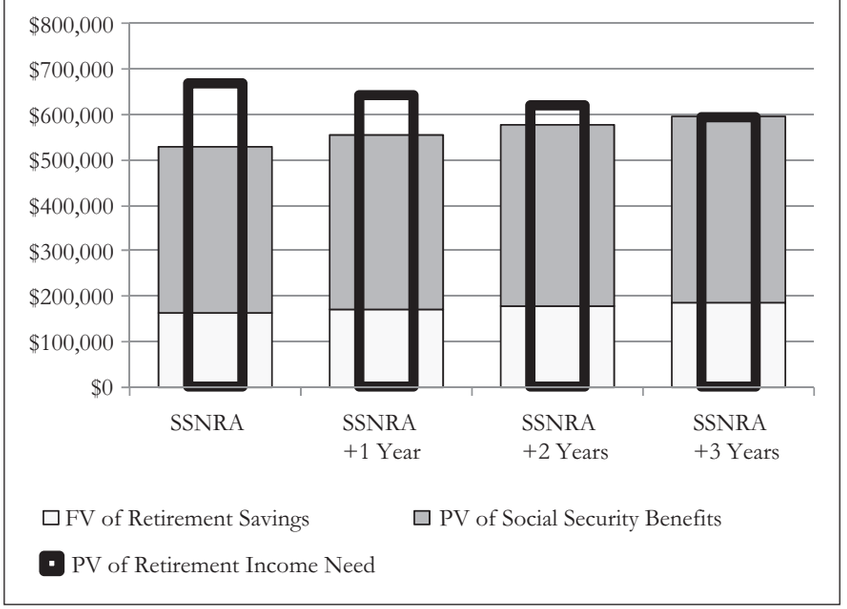
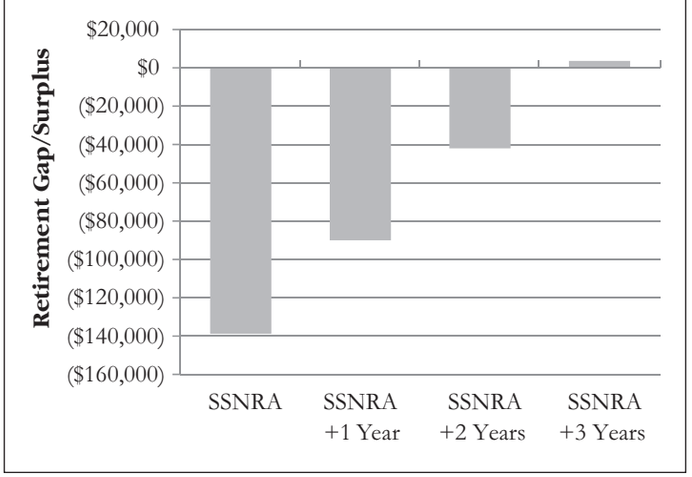


Figure 5. Retirement Gap/Surplus by SSNRA Year for "John Doe"



Combining a Dynamic Asset Allocation with Managing the Retirement Date: A Risk Matrix Approach

While this article has primarily addressed the potential benefits of delaying retirement, past research by the authors explored the potential benefit from a dynamic asset allocation strategy, where the participant invested in (and moved between) one of three glide-paths (Conservative, Moderate, and Aggressive) based on his/her funded status. Combining these two approaches creates a "matrix cloud" where it is possible to determine the optimal asset allocation and retirement date to maximize the probability of retirement success.

Combining the three glidepaths with the four potential retirement dates (SSNRA, SSNRA + 1 year, SSNRA +2 years, and SSNRA +3 years) yields a three by four "matrix cloud" that can be used to determine the optimal portfolio for a 401(k) participant. The fundamental goal of the approach is to first minimize

Figure 6. Total Impact of the Three Aspects of Delayed Retirement

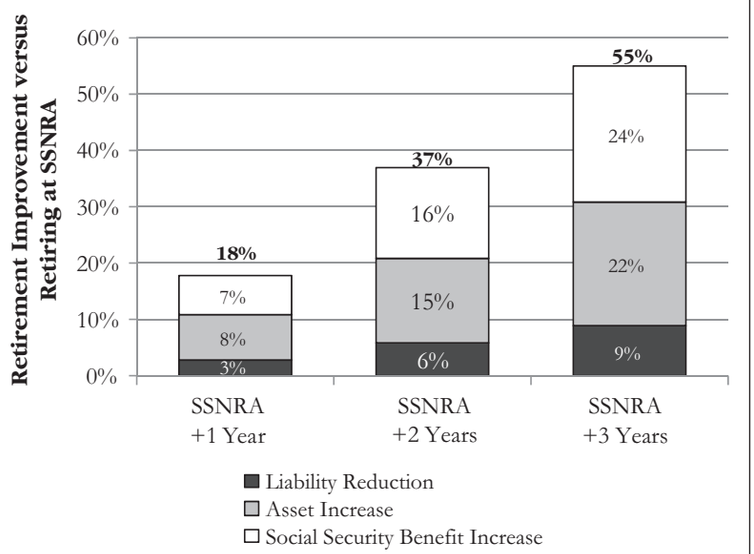


Table 2. Probabilities of Success for Various "John Doe" Scenarios

	Funded Ratios			
Portfolio	**SSNRA**	**SSNRA+1**	**SSNRA+2**	**SSNRA+3**
Aggressive	0.69	0.83	1.02	1.28
Moderate	0.61	0.74	0.91	1.14
Conservative	0.52	0.63	0.77	0.96
	Success Rates			
Portfolio	**SSNRA**	**SSNRA+1**	**SSNRA+2**	**SSNRA+3**
Aggressive	29.50%	39.90%	51.40%	63.80%
Moderate	15.00%	28.10%	42.50%	59.60%
Conservative	1.70%	7.10%	21.60%	44.70%

any delay in retirement and then minimize risk. The idea is that a participant would rather have a more risky portfolio than have to delay retirement an additional year. Note, however, this logic could easily be reversed.

Therefore, the goal is to select the first scenario in the matrix cloud with a funded ratio greater than one. The funded ratio is the expected value of the participant's assets at retirement divided by the expected cost of the participant's retirement income need at retirement, or more simply the asset divided by the liability. As has been demonstrated in this article, the longer a participant delays retirement, the higher the asset and the lower the liability; therefore, funded ratios should increase each year a participant delays retirement. This concept is displayed in **Table 2**, where the "optimal" scenario for John Doe would be to invest in an Aggressive portfolio and delay retirement by two years, since this is the scenario that first minimizes the additional years past SSNRA John has to work, then minimizes risk.

Conclusion

For participants not on track to retire successfully, there are number of different options, such as

increasing savings rates, investing in a more aggressive portfolio, or delaying retirement. These options can be implemented individually or in combination. This research has analyzed the potential benefit of a delayed retirement. Delaying retirement by one year can improve the probability of retiring successfully by 18 percent; delaying two years can improve the probability of retiring successfully by 37 percent; and delaying three years can improve the probability of retiring successfully by 55 percent. In summary, delaying retirement can yield a significant, positive impact on the probability of retirement success. Combining a delayed retirement date with a dynamic asset allocation strategy can further improve the potential benefit. ■