

The Effects of Social Security Benefits and RMDs on Tax-Efficient Withdrawal Strategies

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WITH TENS OF MILLIONS of baby boomers entering and progressing through retirement in the coming decades, the demand for effective retirement portfolio management has been increasing. A key aspect of managing such portfolios is decumulating them in a tax-efficient manner. The challenge of this issue is heightened when the individual receives Social Security benefits (SSBs) and, because he or she is older than 70½ years, is subject to required minimum distribution tax rules.

Analyses of this issue generally involve three types of accounts: taxable accounts (i.e., non-qualified), tax-deferred accounts (e.g., traditional IRAs or 401(k)s), and tax-exempt accounts (e.g., Roth IRAs or Roth 401(k)s). For simplicity, assume the income a taxable

Executive Summary

- Financial planners often determine and recommend tax-efficient withdrawal strategies for their clients. This paper highlights how a portfolio's life can be extended by managing withdrawals from taxable, tax-deferred, and tax-exempt accounts for a wide variety of clients, with graphs that help planners visualize the effects throughout the portfolio's life.
- Cook, Meyer, and Reichenstein (2015) showed that decumulating taxable investments coupled with converting to Roth IRAs in the early years of retirement to fully use the 15 percent tax rate bracket, followed by decumulating tax-deferred accounts in the later years of retirement to fully use the 15 percent tax rate bracket coupled with withdrawals from Roth retirement accounts can improve tax efficiency.
- Their analysis was extended here to consider Social Security benefits and required minimum distributions. It compared their recommended strategy to both a strategy that equates taxable income every year and a strategy some call the conventional wisdom. This comparison was made for a variety of circumstances.
- Results indicate that two strategies (one that fully uses the 15 percent tax rate bracket, and one that equalizes tax brackets across years by equalizing taxable incomes across years) outperformed the conventional wisdom for the variety of circumstances.

account earns is taxed right away, and its decumulation triggers no additional income because its value does not differ from its tax basis.¹ The taxation of income a tax-deferred account (TDA) earns is deferred until withdrawn from the TDA, at which time the entire withdrawal is taxed. With a tax-exempt account (TEA), the income earned is typically never taxed.

The withdrawal strategy that some call the conventional wisdom is when the taxable account is decumulated first, then the TDA is decumulated, and the

TEA is decumulated last. Cook, Meyer, and Reichenstein (2015) showed that this strategy is suboptimal because it does not use the low tax brackets during the first few years and during the last several years when there is sole reliance on taxable account and TEA withdrawals, respectively. That is, the strategy results in several years where the TDA's embedded tax liability falls in higher tax brackets than would result with effective planning.

They recommended instead a strategy in which an individual converts funds from a TDA to a TEA each year to fully

utilize the 10 percent and 15 percent tax rate brackets, using taxable account withdrawals to fund consumption needs and pay the tax on the conversion.² After the taxable account is exhausted, they recommended TDA withdrawals to fully utilize those tax rate brackets, coupled with TEA withdrawals to further fund consumption needs and taxes. This strategy is more tax-efficient than the conventional wisdom because it reduces the average tax rate across years paid on TDA withdrawals and conversions. Because it fully uses the 15 percent tax rate bracket (and thus fully uses the 10 percent tax rate bracket), that strategy is referred to in this analysis as “MaxOut15%.”

This paper extends the analysis of Cook et al. (2015) to consider Social Security benefits (SSBs), whose taxation depends on modified adjusted gross income (discussed in more detail later). TDA conversions and withdrawals generate such income, so the way in which the strategies decumulate the TDA can affect the taxation of SSBs.

The Cook et al. (2015) analysis was also extended here to consider required minimum distributions (RMDs) from TDAs, which may compel the individual to deviate from the MaxOut15% strategy.³ The longevities of the individual’s portfolio with the conventional wisdom and MaxOut15% strategies were compared, taking into account SSBs and RMDs, as well as a third strategy: the “equal taxable incomes” strategy. This third strategy equalizes tax brackets across years by equalizing taxable incomes across years.

The MaxOut15% and equal taxable incomes strategies were found to generally perform well in a variety of circumstances. The MaxOut15% strategy, however, is easier to implement than the equal taxable incomes strategy because the latter depends on the investment returns actually realized.⁴ This indicates that the MaxOut15% strategy is a good starting point for determining

a tax-efficient strategy for decumulating an individual’s portfolio.

Review of Cook, Meyer, and Reichenstein

Cook et al. (2015) examined the longevity of portfolios comprised of a taxable account, TDA, and TEA under several strategies for withdrawing funds from them. Their analysis did not include SSBs or RMDs, but it is important to understand the insights of their analysis before considering SSBs and RMDs.

Cook et al. (2015) noted that conventional wisdom recommends an individual obtain cash needed for consumption by withdrawing funds first from the taxable account until it is exhausted, second from the TDA, and lastly from the TEA. They demonstrated that withdrawing funds first from the taxable account is valid, but exhausting the TDA before withdrawing any TEA funds is suboptimal when tax rates are progressive. Thus, they recommended an enhancement involving more carefully planned conversions and withdrawals from the TDA.

Their strategy converted funds from a TDA to a TEA whenever they would be taxed at a relatively low rate, using taxable account withdrawals to fund consumption and the conversion tax. Similarly, after the taxable account was exhausted, TDA funds were withdrawn whenever they would be taxed at a relatively low rate, using TEA withdrawals to supply additional funds for consumption and the tax on the TDA withdrawal. This strategy reduced the average tax rate on TDA conversions and withdrawals across years.

Cook et al. (2015) demonstrated this strategy of converting TDA funds in earlier retirement years and withdrawing TDA funds later, where the individual does so to offset all of his or her deductions and fully utilize the 10 percent and 15 percent tax rate brackets.⁵ The first several thousand dollars of a TDA conversion or with-

List of Abbreviations

IRA: Individual retirement account

MAGI: Modified adjusted gross income, which generally equals adjusted gross income without adding any taxable Social Security benefits (SSBs)

PI: Provisional income, which generally is MAGI plus one-half of Social Security benefits (PI is a determinant of the taxable portion of SSBs)

RMD: Required minimum distribution, which the tax law mandates for some types of retirement accounts beginning at age 70½

SSB: Social Security benefit

TDA: Tax-deferred account, such as traditional IRA and 401(k) accounts

TEA: Tax-exempt account, such as Roth IRA and Roth 401(k) accounts

drawal in a particular year were offset by the standard deduction and personal exemption(s), which effectively created a 0 percent tax bracket. Beyond that, income in the first and second brackets were taxed at 10 percent and 15 percent rates, respectively, and further income was taxed at rates that increased from 25 percent to 39.6 percent. The strategy recommended TDA conversions and withdrawals whenever their opportunity cost was less than or equal to a TEA withdrawal’s opportunity cost.⁶

Example. Consider an individual whose portfolio includes a taxable account with a \$450,000 current balance, a TDA with an \$825,000 balance, and a TEA with a \$225,000 balance. Assume the investments in the three accounts generate a 4 percent annual real pre-tax return, and the individual needs \$80,000 each year for consumption.⁷

For a single individual age 65 or older

Table 1: Results of Numerical Examples Illustrating Effect of SSB and RMD*

	Portfolio Life	Difference Versus Conventional Wisdom
Panel A: Zero SSB and Ignoring RMD		
Conventional Wisdom	26.93 years	N/A
MaxOut15% Strategy	28.86 years	7.17%
Equal Taxable Incomes	28.88 years	7.24%
Panel B: With SSB and RMD		
Conventional Wisdom	27.87 years	N/A
MaxOut15% Strategy	28.31 years	1.58%
Equal Taxable Incomes	28.19 years	1.15%
Panel C: Same as Panel B Except Smaller Initial Account Balances		
Conventional Wisdom	26.96 years	N/A
MaxOut10% Strategy	29.26 years	8.53%
Equal Taxable Incomes (Modified)	29.27 years	8.57%
Panel D: Same as Panel B Except SSBs Start at Age 70		
Conventional Wisdom	27.82 years	N/A
MaxOut15% Strategy	29.38 years	5.61%
Equal Taxable Incomes	28.69 years	3.13%
Panel E: Same as Panel D Except Higher Initial Account Balances		
Conventional Wisdom	27.28 years	N/A
MaxOut25% Strategy	28.07 years	2.90%
Equal Taxable Incomes (Modified)	28.07 years	2.90%
Notes: *SSB refers to Social Security benefits, and RMD refers to required minimum distributions. The individual's annual after-tax cash flow needs are the same in Panels B and D, but they are lower in Panels A and C (because of zero SSB and smaller initial account balances, respectively), and higher in Panel E (because of higher initial account balances).		

in 2017 who does not itemize deductions, the first \$11,950 of income is offset by an equal amount of deductions and thus is taxed at 0 percent.⁸ Income beyond \$11,950 is taxable income, the first \$9,325 of which is taxed at a 10 percent rate. Taxable income from \$9,325 to \$37,950 is taxed at 15 percent, and taxable income from \$37,950 to \$91,900 is taxed at 25 percent.

Under the conventional wisdom, where the individual pays for consumption from the taxable account first, the TDA second, and the TEA third, the portfolio lasts 26.93 years (see Table 1, Panel A). In the first few years, the individual's only income is from the taxable account, and this is insufficient to fully use the 10 percent tax bracket (and uses none of the 15 percent tax bracket).

In addition, in the last few years when there are only TEA withdrawals,

AGI and taxable income are zero, none of the individual's deductions are used to offset income, and none of the 10 percent or 15 percent tax brackets are utilized either. In the interim years when there are only TDA withdrawals, the deductions and these two tax brackets are fully utilized, but approximately half of the withdrawals are taxed in the 25 percent tax rate bracket.

The MaxOut15% strategy of converting TDA funds in earlier retirement years and withdrawing them in later years to fully utilize the 15 percent tax bracket (and thus fully utilize the 0 percent and 10 percent tax brackets) effectively shifts some TDA withdrawals away from a 25 percent tax rate to a tax rate of 0, 10, or 15 percent. Table 1, Panel A reports that this extends the portfolio's longevity by 7.17 percent (to 28.86 years).⁹

Applying this strategy to this

numerical example results in the TDA withdrawal only partially offsetting deductions in the portfolio's final year, so it can be slightly improved further by withdrawing fewer TDA funds such that, after the taxable account runs dry, taxable income is the same each year (in inflation-adjusted dollars) before the portfolio is entirely exhausted.¹⁰ This equal taxable incomes strategy, which reduces multi-year tax costs by equalizing tax brackets across years, slightly extends the portfolio's longevity (see Table 1, Panel A).

This prior research shows that one should take into account important features of the tax system when designing a tax-efficient withdrawal strategy. This article extends such research by considering SSBs, a significant component of retirement income for most individuals and whose taxation depends on the withdrawal strategy used. It also considers RMDs, a requirement for TDAs after an individual turns 70½ years old.¹¹

Federal Income Tax Treatment of Social Security Benefits

Under Section 86 of the Internal Revenue Code, the portion of SSBs that are taxable ranges from 0 percent to 85 percent. This portion depends on provisional income (PI), which generally is modified adjusted gross income (MAGI) plus one-half of the SSBs. MAGI generally equals adjusted gross income without adding any taxable SSBs.¹² None of a single individual's SSBs are taxed if PI is less than \$25,000. As PI increases beyond \$25,000, the taxable portion of SSBs phases in at a 50 percent rate. For example, if PI is \$26,000, \$500 (0.50 × (\$26,000 – \$25,000)) of SSBs are taxable. An 85 percent phase-in rate applies as PI increases beyond \$34,000, but the taxable portion of SSBs is capped at 85 percent.¹³

The shading in Figure 1 depicts the

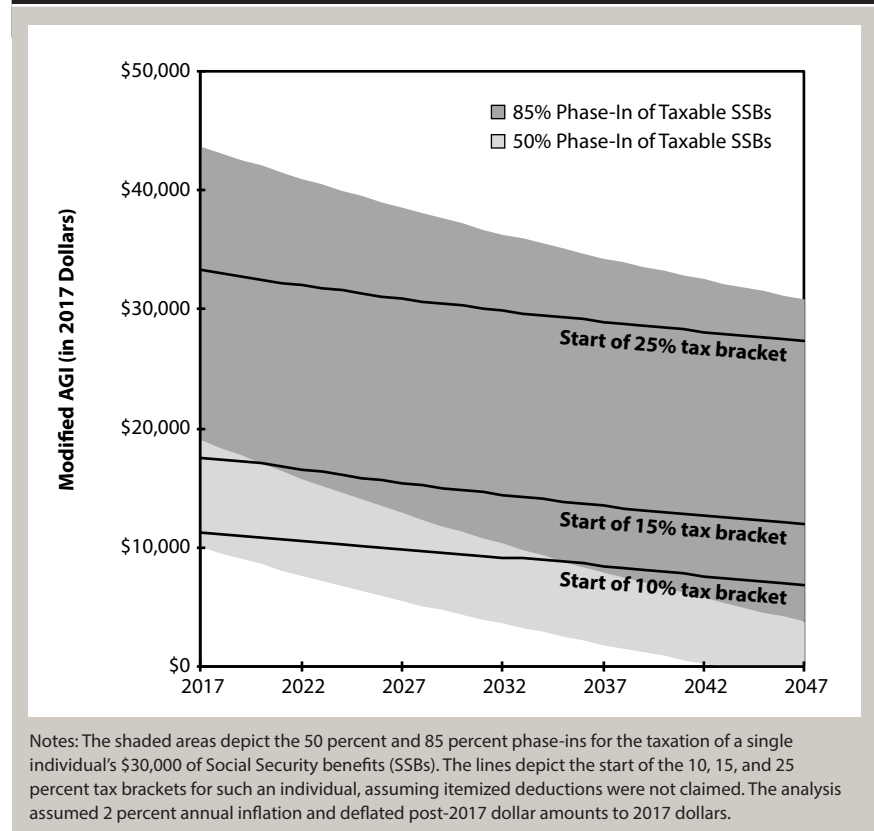
ranges over which the 50 percent and 85 percent phase-ins apply for a single individual receiving \$30,000 of annual SSBs.¹⁴ (The lines depicting the starts of the 10, 15, and 25 percent tax brackets will be discussed shortly.) SSBs are assumed to increase 2 percent each year for inflation, consistent with average inflation in recent years (Hanna and Kim 2017). SSBs thus are \$30,000 annually in real 2017 dollars.

Focusing first on the two phase-ins for 2017, the first \$10,000 of MAGI does not trigger any taxable SSBs because PI (MAGI plus one-half of the \$30,000 of SSBs) does not exceed \$25,000. The next \$9,000 of MAGI causes SSBs to become taxable at a 50 percent rate, while the subsequent \$24,706 of MAGI does so at an 85 percent rate. MAGI in excess of \$43,706 does not cause any additional SSBs to be taxable, because their taxable portion has already reached the maximum 85 percent. The tax law does not adjust the \$25,000 and \$34,000 PI thresholds for inflation, an aspect that is important when planning retirement income withdrawals over several decades.¹⁵ This lack of indexation causes the 50 percent and 85 percent phase-ins to occur, in real 2017 dollars, at lower levels of MAGI over time, an effect visible in Figure 1.

The additional tax that can occur because additional MAGI causes additional SSBs to be taxable has been dubbed the “tax torpedo” (Meyer and Reichenstein 2013; Garland 2013; VanZante and Fritzch 2011). Meyer and Reichenstein (2013) and Geisler and Hulse (2016) showed that its amount depends not only on the rate at which SSBs’ taxation is phasing in (i.e., 50 percent or 85 percent) but also on the tax brackets in which the phase-in is occurring (i.e., 0, 10, 15, or 25 percent).

Recall from the previous section that, for a non-itemizing individual age 65 or older in 2017, there effectively is a 0 percent tax rate bracket for the first

Figure 1: Overlap of Taxable SSBs Phase-In and Tax Rate Brackets



\$11,950 of income, because it is offset by deductions. The next \$9,325 of income is taxed at 10 percent, and the \$28,625 (\$37,950 – \$9,325) beyond that is taxed at 15 percent. Taxable income from \$37,950 to \$91,900 is taxed at 25 percent.

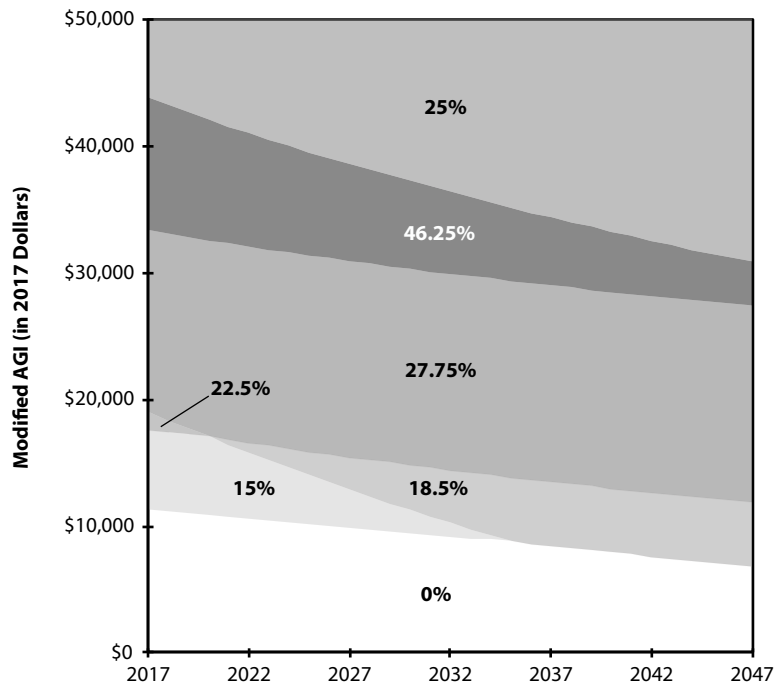
Figure 1 shows how these tax rate brackets (depicted by the solid lines) overlap with the two SSBs phase-in ranges, taking into account the taxable portion of SSBs. In 2017, \$11,300 of MAGI causes adjusted gross income to be exactly offset by the \$11,950 of deductions because \$650 of SSBs are taxable.¹⁶ MAGI of \$17,517 causes \$3,758 of SSBs to be taxable, resulting in the \$9,325 of taxable income where the 10 percent tax bracket ends and the 15 percent tax bracket begins for a single individual.¹⁷ The end of the 15 percent tax bracket and the start of the 25 percent tax bracket is reached at

\$33,270 of MAGI.

The tax brackets’ nominal dollar thresholds are adjusted annually for inflation, so they do not change in real 2017 dollars for years after 2017. Nonetheless, the three solid lines in Figure 1 depicting the tax brackets slope downward as the years progress, although less so than for the two phase-in ranges. This occurs because the \$25,000 and \$34,000 PI thresholds for taxing SSBs are not adjusted for inflation; over time, a lower amount of MAGI causes a given amount of SSBs to be taxable, so a lower amount of MAGI is needed to reach the start of a particular tax rate bracket.

Figure 2 depicts the effective marginal tax rate applicable to \$1 of MAGI. It is the same as Figure 1 except it highlights the joint effect of the SSBs’ phase-in and the tax rate brackets on the overall marginal tax rate.

For example, Figure 1 shows that

Figure 2: Effective Marginal Tax Rates on Modified AGI Resulting from SSB Taxation

Notes: This depicts the additional tax rate that arises from additional modified adjusted gross income for a single individual with \$30,000 of Social Security benefits (SSBs), taking into account the tax on any additional SSBs that it causes to be taxable. The analysis assumed 2 percent annual inflation and deflated post-2017 dollar amounts to 2017 dollars.

the 50 percent phase-in begins in 2017 before MAGI reaches the start of the 10 percent tax bracket, i.e., in the 0 percent tax bracket, and ends in the 15 percent tax bracket. The first few dollars of MAGI in the 50 percent phase-in trigger no additional tax, despite causing some SSBs to be taxable, because the MAGI and taxable SSBs are fully offset by deductions. Each of the next several dollars of MAGI causes an extra 50 cents of SSBs to be taxed, thus increasing taxable income by \$1.50 and increasing the tax by 15 cents (10 percent of \$1.50). The last few dollars of MAGI in the 50 percent phase-in range are effectively taxed at a 22.5 percent ($(\$1.00 + \$0.50) \times 0.15$) rate. The 85 percent phase-in occurs in the 15 percent and 25 percent tax brackets, leading to effective marginal tax rates of 27.75 percent and 46.25 percent, respectively.¹⁸

Figure 2 shows that the MAGI ranges for the various effective marginal tax rates evolve over time, because the tax brackets are adjusted annually for inflation but the PI thresholds are not. The 22.5 percent tax rate fades away and is replaced in 2021 with an 18.5 percent tax rate because, as can be seen in Figure 1, the start of the 85 percent phase-in moves from the 15 percent to the 10 percent tax bracket. The 15 percent effective marginal tax rate, which is due to the overlap between the 50 percent phase-in and the 10 percent tax bracket, also fades away, disappearing by 2036 because the start of the 85 percent phase-in further moves from the 10 percent to the 0 percent tax bracket.

An important implication of Figures 1 and 2 is that the effective marginal tax rates for an individual with SSBs can decrease as income increases.

Specifically, such rates decrease from 46.25 percent to 25 percent when the 85 percent maximum taxable portion of SSBs is reached. Because of this end of the tax torpedo, tax rates are not wholly progressive, so the MaxOut15% and equal taxable incomes strategies may not necessarily result in the most tax-efficient withdrawal strategy. In addition, the pattern of effective marginal tax rates evolves over time, further complicating the planning environment. For these reasons, it is worthwhile to extend the analysis of Cook et al. (2015) to consider SSBs, which many individuals receive.

Required Minimum Distributions

The tax law requires individuals older than 70½ years old to withdraw a minimum amount from their TDAs, and it imposes a 50 percent penalty on the minimum amount the individual does not withdraw. For an unmarried individual with a defined contribution plan, this required minimum distribution (RMD) is the TDA's balance at the beginning of the year divided by an IRS-specified distribution period that is similar to a life expectancy.

Analysis of Decumulation Strategies with SSBs and RMDs

The analysis is now modified to consider SSBs and RMDs. Accordingly, the three portfolio decumulation strategies examined previously are implemented as follows:

Conventional wisdom. Withdraw any RMD from a TDA; any funds needed for consumption and taxes beyond the TDA withdrawal and SSBs are obtained as before (from taxable account first, TDA second, and TEA third).

MaxOut15%. For the years before RMDs begin, as before, convert TDA funds to a TEA to fully use the 15 percent tax bracket and withdraw funds from a taxable account to generate the after-tax cash needed beyond SSBs for

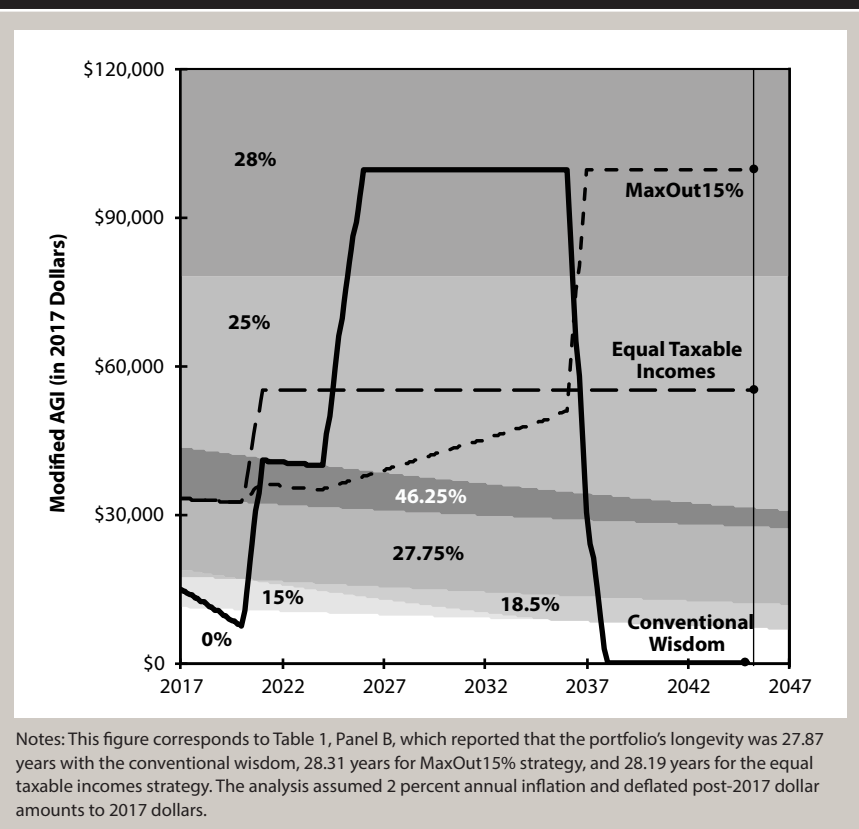
consumption and taxes. When RMDs are required, withdraw funds from a TDA equal to the greater of the RMD or the amount needed to fully use the 15 percent tax bracket. Any additional funds needed beyond SSBs and TDA withdrawals for consumption and taxes are withdrawn from the taxable account first and the TEA second.

Equal taxable incomes. For the years before RMDs begin, follow the MaxOut15% strategy. When RMDs are required, withdraw funds from a TDA to have equal taxable incomes for subsequent years (but not less than the RMD).¹⁹

The example above, without SSBs and RMDs, involved a single individual whose \$1.5 million portfolio included a \$450,000 taxable account, an \$825,000 TDA, and a \$225,000 TEA. That analysis was modified to have the individual receive \$30,000 of annual SSBs beginning at the full retirement age of 66 and increase his or her annual consumption needs by \$25,000 (to \$105,000).²⁰ As shown in Panel B of Table 1, the portfolio lasted 27.87 years if the individual followed the conventional wisdom, 28.31 years (1.58 percent longer) if the MaxOut15% strategy was followed, and 28.19 years (1.15 percent longer than the conventional wisdom) if the equal taxable incomes strategy was followed.²¹

Recall from above that Figure 2 depicts the joint effect on the effective marginal tax rate of the SSBs' phase-in and the statutory tax brackets. Figure 3 is similar to Figure 2, except it also depicts MAGI for the three decumulation strategies over time.²² With the conventional wisdom strategy, the taxable account generated a relatively small amount of MAGI that decreased as the individual withdrew funds from it. In contrast, with the MaxOut15% and equal taxable incomes strategies, the individual converts TDA funds to the TEA in the four years before RMDs begin to fully use the 15

Figure 3: Effective Marginal Tax Rates on Modified AGI—Analysis with SSBs and RMDs



percent tax bracket (which is a 27.75 percent effective marginal tax rate after considering the effect on SSBs' taxation). However, the individual can exploit this opportunity to a lesser extent than when no SSBs are received, because these conversions cause some SSBs to be taxable.

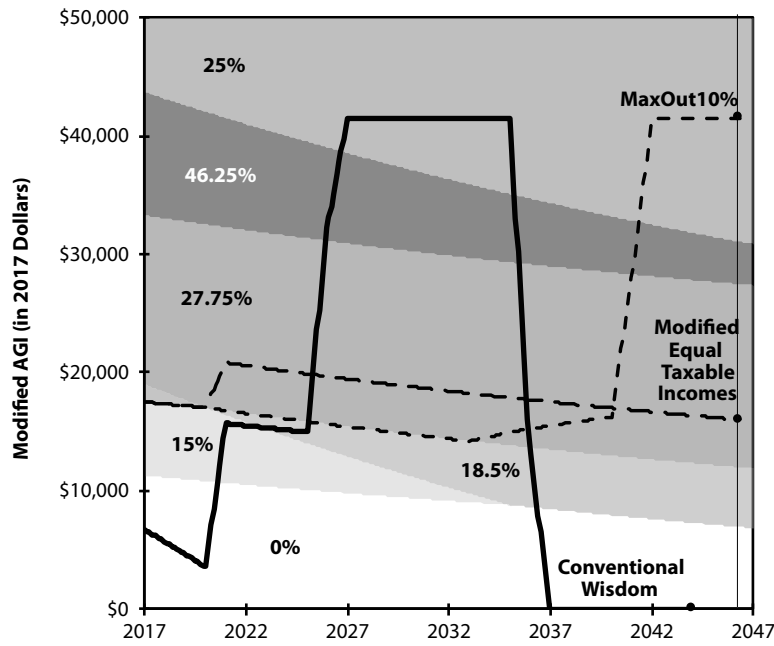
The MAGI lines for the three decumulation strategies turn upward in 2021 because RMDs begin. For the conventional wisdom, the RMDs for 2021 through 2024 happen to cause the taxable portion of SSBs to be slightly less than the maximum 85 percent, so MAGI happens to nearly coincide with the top of the 46.25 percent effective marginal tax rate. In 2025, the taxable account runs dry, so the individual relies on TDA withdrawals that exceed RMDs for the next several years, as well as SSBs, and relies on TEA withdrawals and SSBs after that. The portfolio runs

dry late in 2044 (after 27.87 years). The thin vertical line near the right edge is at the longest portfolio longevity (28.31 years for the MaxOut15% strategy) and makes it easier to see that this is longer than that for the conventional wisdom strategy and nearly identical to that for the equal taxable incomes strategy.

For the MaxOut15% strategy, RMDs trigger TDA withdrawals for a few years that are not much larger than they would be in the absence of RMDs, but these RMDs become more substantial as the years progress. As noted previously, the fact that SSBs are partially taxable causes the individual to make smaller TDA-to-TEA conversions in pre-RMD years, so the TEA is exhausted sooner. The individual thus relies solely on TDA withdrawals and SSBs in the portfolio's latter years, which pushes the individual into the 28 percent tax rate bracket.

The equal taxable incomes strategy

Figure 4: Effective Marginal Tax Rates on Modified AGI—Analysis with Smaller Initial Account Balances



Notes: This figure corresponds to Table 1, Panel C, which reported that the portfolio's longevity was 26.96 years with the conventional wisdom, 29.26 years for the MaxOut10% strategy, and 29.27 for the equal taxable incomes strategy. The analysis assumed 2 percent annual inflation and deflated post-2017 dollar amounts to 2017 dollars.

keeps taxable income the same each year (in real dollars) after RMDs begin, so the TDA and TEA are exhausted in the same year. This sets the individual in the middle of the 25 percent federal tax bracket during those years. The individual is never subjected to the 28 percent tax bracket, but the entire 46.25 percent effective marginal tax rate range is incurred every year after RMDs begin, unlike the MaxOut15% strategy. The latter effect slightly outweighs the former effect, so the MaxOut15% strategy outlasts the equal taxable incomes strategy by 0.12 years.

This analysis indicated that SSBs can affect the advantage of the MaxOut15% strategy over the conventional wisdom strategy because taxable SSBs can “crowd out” some TDA-to-TEA conversions to fully use low tax brackets in pre-RMD years. This, in turn, leads to larger TDA withdrawals in later years,

substantially increasing taxable income in those years. Stated differently, maintaining the cash flow needed in later years can conflict with the MaxOut15% strategy of keeping taxable income below the 25 percent tax bracket in earlier years.

An important implication for financial planning is that SSBs (with the potential to be taxable) reduce the ability to convert TDA accounts to TEA accounts without triggering the higher effective marginal tax rates depicted in Figures 2 and 3, and this should not be ignored.

The analysis also indicated that RMDs also affect the advantage of the MaxOut15% strategy over the conventional wisdom. In Figure 3, if the individual were not subject to RMDs, the line for the MaxOut15% strategy would not move into the 46.25 percent range in 2021 but would instead continue

along the top boundary of the 15 percent tax bracket (i.e., 27.75 percent effective marginal tax rate) for many more years, until the TDA is exhausted. RMDs thus can take away some of the flexibility to plan around the tax torpedo, and this reduced flexibility results in a shorter portfolio life.²³

Three subsequent analyses modified particular aspects of this Panel B and Figure 3 analysis with SSBs and RMDs. The first modification assumed beginning account balances that were smaller than \$1.5 million. The other two modifications involved delaying the start of SSBs until age 70, with one of these two assuming higher initial account balances.

Smaller initial account balances. In this analysis, the initial balances in the taxable account, TDA, and TEA were \$200,000, \$300,000, and \$100,000, respectively (annual SSBs remained \$30,000). These are substantially smaller than in the prior analysis, consistent with an individual who was unable to save as much during his or her working years.²⁴ Accordingly, this analysis decreased the individual's annual cash flow needs from \$105,000 to \$62,000. Because of these lower amounts, the MaxOut15% strategy was modified to be the MaxOut10% strategy, where TDA conversions and withdrawals were made to fully use the 10 percent tax bracket rather than the 15 percent tax bracket. The analysis similarly modified the equal taxable incomes strategy for the years before RMDs apply.

Panel C of Table 1 shows that the portfolio lasted 26.96 years with the conventional wisdom strategy, 29.26 years with the MaxOut10% strategy, and 29.27 years with the equal taxable incomes strategy.²⁵ Figure 4 depicts MAGI for this situation. Note that the vertical axis extends to only \$50,000, rather than the \$120,000 in Figure 3, because the smaller initial account balances result in smaller MAGIs. The

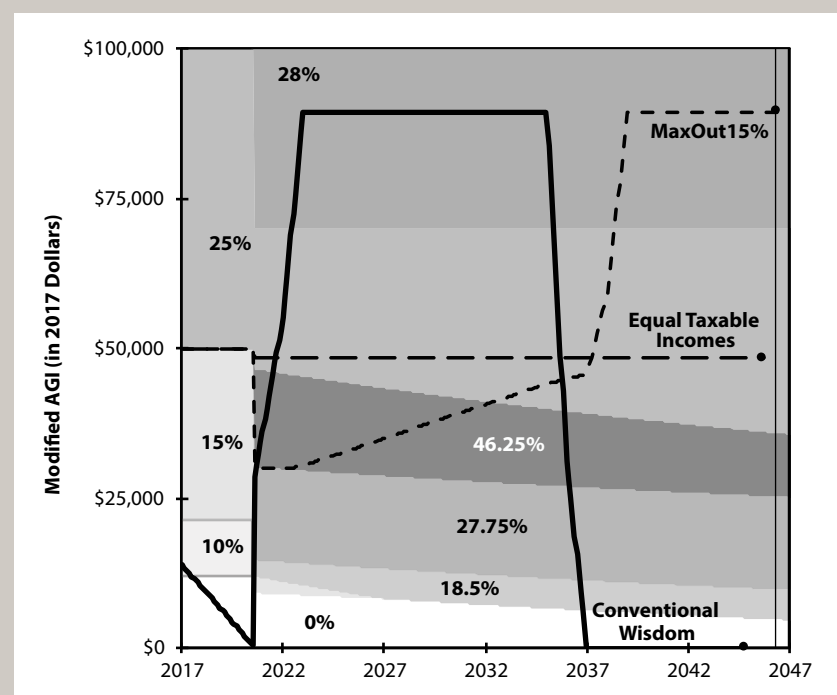
conventional wisdom significantly underperformed the other two strategies because it triggered significant tax torpedoes (i.e., the 27.75 percent and 46.25 percent effective marginal tax rates) for many years around the middle of the decumulation period.

The MaxOut10% strategy resulted in smaller TDA withdrawals for many years, relative to the equal taxable incomes strategy, thus avoiding the 27.75 percent effective marginal tax rate for these years. RMDs, however, eventually cause the individual to incur this rate (beginning in 2034). The smaller TDA withdrawals with the MaxOut10% strategy cause the TEA to be drawn down more quickly, leading to withdrawals from only the TDA for the last few years, fully triggering the high effective marginal tax rates of 27.75 percent and 46.25 percent. The equal taxable incomes strategy, in contrast, incurs part of the 27.75 percent effective marginal tax rate bracket for every year once RMDs begin but never gets hit by the 46.25 percent bracket.

Start SSBs at age 70. For the last two panels of Table 1, the analyses were modified to delay the SSBs' start to age 70, which increased them by 32 percent (to \$39,600 annually). For the four years before age 70, the individual relied on larger taxable account withdrawals for consumption needs. Panel D of Table 1 used the same assumptions as Panel B (\$1.5 million portfolio), except for the delay in the SSBs' start. It shows that the portfolio lasted 27.82 years if the conventional wisdom was followed, which was slightly less than the 27.87 years in Panel B. The portfolio lasted 29.38 years for the MaxOut15% strategy, which was more than one year longer than when SSBs started at age 66, and it lasted 28.69 years for the equal taxable incomes strategy, which was half a year longer.²⁶

Figure 5 depicts MAGI for the three decumulation strategies just discussed.

Figure 5: Effective Marginal Tax Rates on Modified AGI—Analysis with SSBs Starting at Age 70



Notes: This figure corresponds to Table 1, Panel D, which reported that the portfolio's longevity was 27.82 years with the conventional wisdom, 29.38 years for MaxOut15% strategy, and 28.69 for the equal taxable incomes strategy. The analysis assumed 2 percent annual inflation and deflated post-2017 dollar amounts to 2017 dollars.

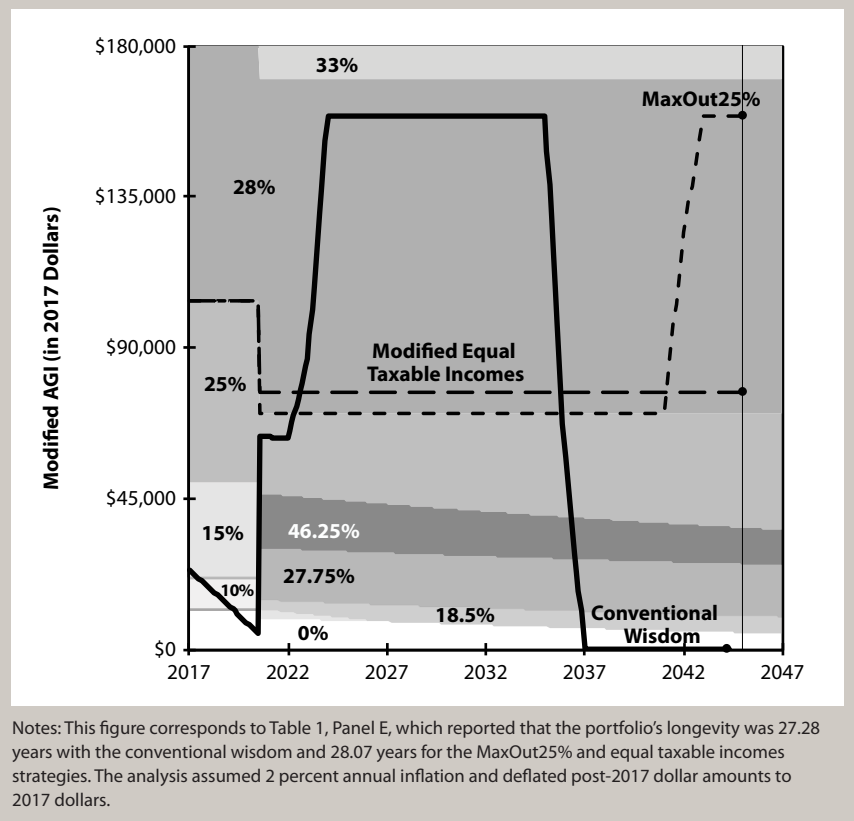
For the first four years (ages 66 to 69), the individual was not yet receiving SSBs, so the effective marginal tax rates reflected only the tax rate brackets and not any additional tax rate due to the phase-in of SSBs' taxation. Compared to the MAGIs under the conventional wisdom in the previous figures, this strategy's MAGIs in Figure 5 reached their maximum more quickly because the individual drew down more of the taxable account before age 70, causing the switch to TDA withdrawals to occur sooner.

With the MaxOut15% strategy, RMDs caused MAGI to be higher than it otherwise would be for 2024–2037, incurring some or all of the 46.25 percent effective tax rate (tax torpedo) for many of these years. With the equal taxable incomes strategy, RMDs do not compel the individual to take larger TDA withdrawals than the strategy

dictates, but it does incur the maximum tax torpedo for all years that SSBs are received. In this example, the MAGIs for 2017–2020 happen to be very nearly equal to the MAGIs in subsequent years.

One reason the MaxOut15% and equal taxable incomes strategies have longer portfolio lives in Panel D than previously in Panel B of Table 1 is that the lack of SSBs for the first four years allowed for much larger TDA-to-TEA conversions. When SSBs started at age 66, Figure 3 shows the MaxOut15%'s strategy of fully utilizing the 15 percent tax bracket resulted in approximately \$33,000 of MAGI those four years. When SSBs started at age 70, Figure 5 shows that the resulting MAGI for those first four years was nearly \$50,000. The individual thus can convert larger amounts to a TEA for those four years without exceeding the 15 percent tax bracket. In later years, when there were SSBs and higher

Figure 6: Effective Marginal Tax Rates on Modified AGI—Analysis with SSBs Starting at Age 70 and Higher Initial Account Balances



effective tax rates, the individual was able to generate more tax-free cash flow through larger TEA distributions.

Another reason the portfolio with the MaxOut15% strategy lasts longer when SSBs start at age 70 rather than at age 66 pertains to provisional income, which was previously noted as an important determinant of taxable SSBs. Because provisional income includes only half of SSBs, the tax triggered on SSBs can be smaller when \$9,600 (\$39,600 – \$30,000) of pre-tax cash flows are generated through larger SSBs than through larger TDA withdrawals. However, the tax on SSBs is not necessarily smaller, such as with the equal taxable incomes strategy for this case. This strategy resulted in 85 percent of SSBs being taxed in all years they were received. In other words, the MAGIs were above those for the 46.25 percent

effective marginal tax rate for all such years.

Start SSBs at age 70 and higher initial account balances. For this analysis, the initial balances in the taxable account, TDA, and TEA were two-thirds larger than those in the prior analysis. The individual’s annual after-tax cash flow needs were \$155,000 (versus \$105,000 in the prior analysis; the \$155,000 is less than two-thirds larger than \$105,000 because the annual SSBs were unchanged at \$39,600). Because of these higher amounts, the MaxOut15% and equal taxable incomes strategies were modified to fully use the 25 percent (rather than 15 percent) tax bracket (denoted as MaxOut25%). Panel E of Table 1 shows that the portfolio lasted 27.28 years for the conventional wisdom strategy and 28.07 years for the MaxOut25% and

equal taxable incomes strategies.²⁷

Figure 6 depicts MAGI for the three strategies just discussed. The MAGIs for the first four years were the same for the MaxOut25% and equal taxable incomes strategies because both fully used the 25 percent tax bracket these years. For the 21 subsequent years, the MaxOut25% strategy of fully utilizing the 25 percent statutory tax bracket resulted in slightly lower MAGIs than the equal taxable incomes strategy, and both strategies had TDA withdrawals that exceeded RMDs. The MaxOut25% strategy thus decumulated the TEA slightly more quickly than the equal taxable incomes strategy, causing the individual to rely heavily on TDA withdrawals the last few years of the portfolio.

Financial planning implication.

For an individual with a nest egg of a few million dollars or more (a majority of which is in TDAs), SSBs will fund a smaller fraction of consumption and TDA withdrawals a larger fraction, so RMDs are less likely to compel larger TDA withdrawals. Such individuals’ MAGIs likely will exceed the 46.25 percent tax torpedo by a significant amount, so moderate financial planning actions are unlikely to avoid it. Specifically, single individuals whose taxable income is at least \$91,900 (in real 2017 dollars), which is the end of the 25 percent tax bracket, necessarily have MAGI that is at least \$91,900, so the taxable portion of their SSBs is capped at 85 percent.²⁸

Despite this fact, the MaxOut25% and equal taxable incomes strategies are better than the conventional wisdom strategy because the latter results in nearly half of taxable income being taxed at 28 percent for 12 years, whereas the MaxOut25% strategy’s MAGI is in the 28 percent bracket for only three years and the equal taxable incomes strategy has only a small amount of taxable income being taxed at 28 percent every year beginning with age 70.²⁹

Discussion of Results

Overall, the MaxOut15% and equal taxable incomes strategies (and their modified versions for higher and lower initial account balances) both performed well in a wide variety of situations, beating the conventional wisdom in all these situations. When low beginning balances occur, the opportunity to beat conventional wisdom was strongest (see Table 1, Panel C). This is because the MaxOut10% and equal taxable incomes strategies can be modified to mostly avoid the SSB's tax torpedo, whereas the conventional wisdom strategy triggers far more of the tax torpedo in the years distributions are being taken solely from the TDA.

The tax bill enacted in December 2017 (and generally effective for 2018 and later years) does not change the income tax treatment of SSBs, and it does not change the rules for RMDs. The bill decreases the 15 percent and 25 percent tax brackets to 12 percent and 22 percent, respectively (the 10 percent tax bracket is unaffected). It also nearly doubles the basic standard deduction but eliminates the personal exemption (the additional standard deduction for being age 65 or older is unaffected). The bill also uses a slightly lower price index for inflation adjustments, which has a meaningful effect when aggregated over several decades. The net effect of these changes on the analysis here is relatively minor.

Although the analyses here examine several situations, individuals can be in other situations. The importance of considering SSBs' taxation and RMDs, as well as the ability to sustain a decumulation strategy over the entire portfolio's life, are applicable to a wide variety of circumstances. In practice, the simplest way a CFP® professional can use the MaxOut15%'s tax-efficient withdrawal strategy as a starting point for a particular individual's circumstances is to purchase financial

planning software that specifically considers this and other strategies. One such product is IncomeSolver (incomesolver.com).³⁰ This, however, runs the risk of turning it into a "black box," where the user can make only educated guesses about the reasons for its results. This article's analysis helps financial planners to better understand the reasons for the results.

A less costly but more time-consuming way to start with the MaxOut15% strategy is to use the current-year federal individual tax rate schedule and Form 1040 tax preparation software, which is available for as little as \$30 each year. Input the taxpayer's current-year filing status and estimated income and deductions to determine the tax consequences for a particular year for a particular strategy, e.g., TDA-to-TEA conversions in the early years of retirement, to take the taxpayer as closely as possible to the top of a tax rate bracket. An easily constructed spreadsheet can be used in conjunction with this to track the balances in the taxable account, TDA, and TEA.

Conclusion

Decumulating investments in a tax-efficient manner is an aspect of retirement planning whose importance is often underestimated, perhaps because an \$X,000 reduction in after-tax wealth over several years due to a tax-inefficient withdrawal strategy is much less visible than an \$X,000 decline in an investment's value. Fortunately, that situation has been changing due to the work of Cook et al. (2015) and the availability of software to analyze these strategies.

This paper contributes to this changing situation by extending the analysis of Cook et al. (2015) by illustrating how one should look beyond the statutory tax rates (i.e., 10, 15, 25 percent, etc. tax brackets) to consider effective marginal tax rates, which differ from statutory tax rates due to the 50 percent and 85

percent phase-ins of SSBs' taxation. Because of these phase-ins, an individual can effectively face tax brackets that differ from statutory tax rates under current tax law. This paper also highlights the importance of considering RMDs, which can compel an individual to withdraw more from a traditional retirement account than is otherwise tax-efficient.

The results in this paper indicated that the MaxOut15% strategy for decumulating investments during retirement resulted in a high degree of tax efficiency, even when the complexities arising from SSBs' taxation and RMDs were considered. That is, a portfolio's longevity often was substantially extended if the retired individual converted a portion of his or her traditional retirement accounts to Roth accounts before reaching age 70½, so as to fully use the 15 percent statutory tax bracket and liquidate taxable investments to pay for consumption and taxes in those years. In subsequent years, the individual takes traditional retirement account withdrawals so as to fully use the 15 percent statutory tax bracket (or the RMD, if greater) and uses taxable account liquidations (or Roth account withdrawals, if taxable accounts are fully liquidated) to provide additional funds needed for consumption and taxes.

The MaxOut15% strategy may not be the best strategy for every situation, but this paper's results indicated that it was a good starting point toward determining a favorable strategy. An adjustment to the strategy in which the individual equates his or her taxable incomes across years was also examined. While this strategy slightly outperformed the MaxOut15% strategy in some cases (and did not outperform in other cases), it is less practical to implement. One might be willing to sacrifice a modest degree of tax efficiency to avoid examining numerous other strategies that could be more difficult to understand and

explain to a client. The analysis in this article should help one understand the complexities of the tax aspects of this decision so that the good starting point of the MaxOut15% strategy can be adapted to better fit a particular client's situation.

Evidence was also provided that, for a smaller nest egg at the beginning of retirement, its longevity could be lengthened by modifying the MaxOut15% strategy to fully utilize the 10 percent statutory tax bracket (i.e., 15 percent or 18.5 percent effective marginal tax rate in the early or later years, respectively, due to the 50 percent or 85 percent phase-in of SSBs' taxation; see Figure 4). Similarly, for a larger nest egg, modifying this strategy to fully utilize the 25 percent statutory tax bracket can be beneficial (see Figure 6). Finally, evidence was provided that delaying the start of SSBs and increasing traditional-to-Roth conversions, coupled with following the MaxOut15% strategy, could significantly lengthen a portfolio's life. ■

Endnotes

1. The decumulation of taxable accounts (e.g., investments held outside of a TDA or TEA) can generate a significant amount of income in some cases, such as the sale of stock that has appreciated in value over many years. The analysis here did not consider this possibility to best focus on the key differences between a taxable account, TDA, and TEA.
2. An individual can convert funds from a traditional IRA to a Roth IRA. The converted amount generally is taxable for the year of conversion. Prior research (e.g., Anderson and Hulse 2007) has shown that this is a tax-efficient strategy if the individual's tax rate will be increasing and the additional tax will be paid with non-IRA funds. A rollover from one traditional IRA to another traditional IRA (or from one Roth IRA to another Roth IRA) would not accomplish this strategy's goals.
3. An individual might have only two of the three types of accounts; for example, a TDA and a taxable account but not a TEA. The analysis illustrated here is still relevant because the benefit of managing the average tax rate across years on TDA withdrawals is still important and because this management should consider SSBs and RMDs.
4. As discussed later, the analysis assumed a 4 percent pre-tax return. Because the actual return may not be the 4 percent that is forecast, it may not be straightforward to equalize taxable incomes across years.
5. This was "Strategy 4" in Cook et al. (2015). They also considered a strategy that allowed recharacterizations of TDA-to-TEA conversions, but this strategy was omitted here to focus more clearly on the effect of SSBs and RMDs.
6. To understand this result, denote as t_0 and t_n the current and future (year n) tax rates on a particular dollar of taxable income. An individual could pay for \$1 of current consumption by withdrawing \$1 from a TEA, foregoing a future TEA withdrawal of $\$1(1 + R)^n$, assuming the \$1 otherwise would have grown at R percent annually. The individual instead could generate \$1 after tax currently by withdrawing $\$1 / (1 - t_0)$ from a TDA, foregoing a future after-tax TDA withdrawal of $\$1[(1 - t_n) / (1 - t_0)](1 + R)^n$. This opportunity cost of a TDA withdrawal increases as its amount increases because t_0 increases. A larger current TDA withdrawal, however, results in smaller subsequent TDA withdrawals, which decreases the opportunity cost because t_n decreases. This implies that one should consider current and future years' effects when determining a TDA withdrawal's effects. A TEA withdrawal's opportunity cost remains constant at $\$1(1 + R)^n$, regardless of its amount, and it could be greater than, equal to, or less than a TDA withdrawal's opportunity cost depending on whether t_n is less than, equal to, or greater than t_0 .
7. As in Cook et al. (2015), the taxable account contains a fixed-income investment whose return is comprised solely of ordinary income, e.g., a taxable bond. A taxable account could contain other investments, such as stocks, but the insights of Cook et al. (2015) are still valid with them. The amounts in the TDA, TEA, and taxable accounts, as a percentage of their total, is similar to the portfolio mix in Cook et al. (2015).
8. The \$11,950 includes a \$7,900 standard deduction and a \$4,050 personal exemption (pre-tax reform). The tax law inflation-adjusts these amounts, as well as the tax rate schedule. The analysis here deflated them for post-2017 years to 2017 dollars to make them the same in real dollars across years, consistent with the recommendation of Hanna and Kim (2017).
9. In the numerical example in Cook et al. (2015), the portfolio lasts 7.12 percent longer with their strategy than with the conventional wisdom strategy (35.51 years versus 33.15 years), similar to the 7.17 percent found here.
10. This strategy did not equate taxable incomes in the years before the taxable account was exhausted with taxable incomes in later years. In those first few years, it applied the strategy in Cook et al. (2015), because a TDA-to-TEA conversion was more beneficial when the conversion tax was paid from a taxable account (Anderson and Hulse 2007).
11. Roth 401(k)s are subject to RMDs after age 70½ is reached, but Roth IRAs are not. The remainder of this article assumes the TEA was solely composed of Roth IRAs. For further details on RMDs, see IRS Publication 590-B: Distributions from Individual Retirement Arrangements (IRAs) at irs.gov/pub/irs-pdf/p590b.pdf.
12. PI also includes tax-exempt interest income, which was not included in the analysis because 85 percent of SSBs are taxable for the higher tax bracket investors for whom such income is attractive, whether or not the tax-exempt interest income is taken into account for PI.
13. If PI is between \$25,000 and \$34,000, the taxable portion of SSBs is capped at 50 percent, but this cap affects the taxable portion of SSBs only when SSBs are less than \$9,000. For a married couple filing jointly, the two PI thresholds are \$32,000 and \$44,000, so this cap affects the taxable portion of SSBs only when SSBs are less than \$12,000.
14. This analysis focused on single individuals and was not extended to married couples, but the insights highlighted for single individuals also apply for married couples.
15. The first and second PI thresholds (e.g., \$25,000 and \$34,000) have not been adjusted for inflation or changed through tax legislation since they first applied in 1984 and 1993,

- respectively (Geisler and Hulse, 2016).
16. Provisional income is \$26,300 (\$11,300 plus one-half of the \$30,000 of SSBs), which exceeds the \$25,000 threshold for the 50 percent phase-in by \$1,300. Taxable SSBs thus are \$650 ($\frac{1}{2} \times \$1,300$).
 17. Provisional income is \$32,517 ($\$17,517 + (\frac{1}{2} \times \$30,000)$), and taxable SSBs are \$3,758 ($\frac{1}{2} \times (\$32,517 - \$25,000)$). The \$9,325 of taxable income equals \$21,275 ($\$17,517 + \$3,758$) minus \$11,950 of deductions.
 18. Meyer and Reichenstein (2013) graphed these effective marginal tax rates for a single year.
 19. It often is not possible to equate taxable income for the portfolio's final year with that for the preceding years while satisfying the after-tax cash flows the individual needs, so this strategy equates taxable income for all years when RMDs are required except the portfolio's final year.
 20. Annual consumption needs were increased by less than the \$30,000 of SSBs because some of the SSBs were taxable. The maximum annual SSB for a single individual retiring in 2017 at the full retirement age of 66 was \$32,244 (see "What Is the Maximum Social Security Retirement Benefit Payable?" at faq.ssa.gov/link/portal/34011/34019/article/3735/what-is-the-maximum-social-security-retirement-benefit-payable), which was rounded down here to \$30,000.
 21. The portfolio lengths for Panel B were not quantitatively comparable with those for Panel A because the after-tax cash flows differed, and specifying the analysis to equate the after-tax cash flows required specifying the particular decumulation strategy the individual uses. Such comparisons, however, are qualitatively useful, e.g., understanding how SSBs and RMDs can affect portfolio lives.
 22. Note that the vertical axis extends to \$120,000 in Figure 3 (rather than the \$50,000 in Figure 2) because withdrawals from the \$1.5 million portfolio caused MAGI to exceed \$50,000 for some years. These higher MAGIs caused taxable income to reach the 28 percent tax bracket, which Figure 3 also depicts. Figure 3 should be used to understand the underlying intuition (which is applicable to many individuals), rather than the figure's particular dollar amounts (which vary among individuals because individuals' SSBs differ).
 23. An analysis (not reported in the table or figures) that considered SSBs but ignored RMDs resulted in the portfolio lasting 27.91, 28.74, and 28.40 years for the conventional wisdom, MaxOut15%, and equal taxable incomes strategies, respectively. The latter two portfolio lives are meaningfully longer than in Table 1, Panel B, consistent with RMDs reducing the flexibility to plan around the tax torpedo.
 24. Although \$30,000 of SSBs is consistent with an individual having earnings that are near the maximum amount of Social Security earnings for much of his or her career, some such individuals fail to save an adequate amount for retirement.
 25. Be cautious when comparing the portfolio longevities for this analysis with those for the prior analysis because the circumstances are quantitatively different, i.e., a total initial account balance that is 60 percent smaller and an annual after-tax cash flow that is \$43,000 smaller.
 26. For the portfolio lives reported in Table 1, the \$30,000 of annual SSBs received if they start at age 66 had a present value that was less than the present value of \$39,600 of annual SSBs starting at age 70 (if they were discounted at the same 4 percent rate that the analysis used for the three types of accounts). While this difference existed regardless of the decumulation strategy, one should keep it in mind when comparing portfolio lives between the panels in Table 1. This paper did not consider more generally the decision to start SSBs at age 66 versus age 70 to avoid making the analysis excessively long.
 27. Be cautious when comparing the portfolio longevities for this analysis with those for the prior analysis because the initial circumstances are quantitatively different, i.e., initial account balances that are two-thirds larger and an annual after-tax cash flow that is \$50,000 larger.
 28. For example, if a single individual has \$39,600 of SSBs, 85 percent of them are taxable if MAGI exceeds \$48,506. At this MAGI, PI is \$68,306 ($\$48,506 + (\frac{1}{2} \times \$39,600)$), and the taxable portion of SSBs is the lesser of \$33,660 ($(.85 \times (\$68,306 - \$34,000)) + \$4,500$) or \$33,660 ($.85 \times \$39,600$). If SSBs were \$30,000, 85 percent of SSBs would be taxable if MAGI is \$43,706 or higher.
 29. Because Roth retirement accounts are a relatively recent addition to the tax law compared to traditional 401(k)s and IRAs, many retirees may have taxable account and TDA balances but a zero TEA balance. An additional analysis, not reported elsewhere in this article, examined such a circumstance. The MaxOut15% and equal taxable income strategies had similar portfolio lives, which were longer than the conventional wisdom strategy's portfolio life. This analysis indicated that the MaxOut15%'s strategy was effective even when an individual entering retirement had taxable account and TDA balances but not a TEA balance.
 30. The authors do not have any financial interest in IncomeSolver.

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Citation

- Geisler, Greg, and David Hulse. 2018. "The Effects of Social Security Benefits and RMDs on Tax-Efficient Withdrawal Strategies." *Journal of Financial Planning* 31 (2): 36–47.