Will 2000-era retirees experience the worst retirement outcomes in U.S. history? A progress report after 10 years

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Will 2000-Era Retirees Experience the Worst Retirement Outcomes in U.S. History? A Progress Report After 10 Years

by

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Abstract

We find evidence that retirees in 2000, in particular, are on course to potentially experience the worst retirement outcomes of any retiree since 1926. This holds for a wide variety of asset allocations and withdrawal rate strategies. Wealth depletion is taking place more rapidly for 2000-era retirees than for retirees who even endured the Great Depression or the stagflation of the 1970s. Though moderate inflation during the past decade has resulted in current withdrawal rates that are a bit less for the 2000 retiree than for some retirees in the 1960s, this is hardly reassuring with further analysis based on the required future asset returns needed for sustainability. Our findings cast doubt as to whether the 4 percent withdrawal rate rule will be sustainable for turn-of-the-century retirees.

***JEL* Codes:** C20, D14, G11, G17, N22

Keywords: retirement planning, safe withdrawal rates, sequence of returns risk, retirement ruin, retiring in 2000, current withdrawal rate

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Bengen [1994] created a standard methodology for finding a safe withdrawal rate using historical data. His "SAFEMAX" is the minimum of all the maximum sustainable withdrawal rates (MWR) for rolling periods of a chosen length (often 30 years) during the overall historical period under consideration. Using data on the U.S. S&P 500 and intermediate-term U.S. government bonds since 1926, he suggested that an initial withdrawal rate (WR_0) of 4 percent of accumulated savings at retirement, an amount which can then be adjusted for inflation in subsequent years, will safely provide income for at least 30 years when the stock allocation is between 50 and 75 percent. The 4 percent WR_0 strategy was safe for 30-year retirement periods beginning between 1926 and 1980 in the United States, at least for the stylized assumptions used in withdrawal rate studies (such as no portfolio management or administrative fees, withdrawals that are taken at the end of each year, complete commitment to the asset allocation and rebalancing aspects of the strategy, and no need to ever extend withdrawals beyond 30 years). But it is important to realize that withdrawal rate studies cannot incorporate the experience of retirees after 1980, since the results for full 30-year periods after 1980 are not yet known. The question remains, then, what is the safe withdrawal rate for recent retirees after the volatile market performance in the 2000s?

Are more recent retirees on course to potentially experiencing the worst retirement outcomes of anyone in the post-1926 period? Will the 4 percent withdrawal rate rule still be safe? After all, there is nothing special about 4 percent that protects retirees from potential mishap. As the length of the historical period increases, the nature of Bengen's SAFEMAX calculations means that the only direction the SAFEMAX can possibly go is down. Pfau [2010] argues that U.S. data since 1926 provided very favorable results for retirees. When looking at 17 developed market countries since 1900, Pfau finds that even with overly optimistic assumptions, the SAFEMAX would have been above 4 percent only in 4 of the 17 countries. SAFEMAXs were even under 3 percent in Spain, Italy, Belgium, France, Germany, and Japan. The implication is that historical asset returns since 1926 in the United States were indeed quite high and do not provide a suitable foundation for forward looking forecasts of asset returns or retirement withdrawal strategies. Dimson, Marsh, and Staunton [2004] developed this general point

earlier, arguing that it is "irrational optimism" to assume that the stock market will always provide a positive real return over a 20-year period. The U.S. was one of only four countries out of 16 to enjoy these persistently positive returns.

We find that based on the conditions experienced in the first 10 years of retirement, 1999 and 2000 retirees are on course to potentially experience outcomes as bad as any American retirees since 1926. To determine this, we first develop a link between what happens early in retirement and the final outcome after 30 years. The strength of the link depends on factors including asset allocation, initial withdrawal rates, and administrative fees. We find in our baseline case that the amount of wealth remaining 10 years into retirement combined with the cumulative inflation since retirement can explain up to 80 percent of the variation in final retirement outcome measures after 30 years. With this link established, we investigate the amount of wealth remaining 10 years after retirement for rolling periods from the historical data since 1926. We generally find that retirees in 1999 rank among the bottom few positions in terms of remaining wealth, and in many situations the 2000 retirees are in the worst shape of anyone.

We further investigate the evolution of remaining wealth and other characteristics for the poor retirement periods beginning in 1929, 1966, and 2000, and attempt to provide perspective on what may be the ultimate outcomes for more recent retirees. This detailed year analysis clarifies that the current withdrawal rate (CWR) after 10 years is actually more important to determine ultimate retirement success than just the amount of remaining wealth. With this criterion, the 1999 and 2000 retirees fare only slightly better. The CWR in any post-retirement year is the proportion of remaining wealth that is withdrawn in that year. Because withdrawal amounts are adjusted for inflation but are not impacted by asset returns, the CWR differs from the initial withdrawal rate when asset returns do not precisely offset the inflation-adjusted withdrawals and account fees. The CWR increases with higher inflation, a higher WR_0 value, and lower remaining wealth. Not considering fees, which complicate the formula due to being taken out at the end of the year after asset returns are known, the pre-fee CWR in any given year is the initial withdrawal amount adjusted for cumulative inflation since retirement, divided by the amount of wealth remaining at the start of the year.

The most destructive scenario for a new retiree is facing high inflation and negative portfolio returns in the years immediately following retirement. Retirees adjusting their withdrawals for inflation liquidate increasing amounts of wealth at the same time that capital losses are decimating the remaining portfolio balance. An increasing CWR creates a compounding hurdle to recovery, as wealth will continue to be depleted and the CWR will continue to grow whenever real asset returns cannot keep pace. CWR increases accelerate and eventually exceed a terminal level from which recovery is all but impossible without a significant reduction in withdrawals.

The CWR explains variation in retirement outcomes not accounted for by the wealth remaining after 10 years, such as why the 1929 retiree was able to recover somewhat while the 1966 retire went on to experience the worst overall retirement outcome. The CWR indicates further bad news for turn-of-the-century retirees, as even the "safe" 4 percent withdrawal rate may fail them. After 10 years, the 2000 retiree has depleted wealth faster than anyone in history, but because inflation was much higher in the 1960s and 1970s, the CWR for some of those retirees is higher than for the 2000 retiree. But when we consider the real returns required for a 2000 retiree to sustain their retirement withdrawal strategy for a full 30 years based on what has happened through the start of 2010, and compare these required returns to reasonable forecasts for future asset returns based on current market fundamentals, the results are not promising.

Data and Methods for Calculating Retirement Outcome Measures

Though Pfau [2010] cautions against it, as the period covered was quite favorable for asset returns and may not be representative of what will happen in the future, this study uses the popular data choice for retirement withdrawal rate studies: Ibbotson Associates' *Stocks, Bonds, Bills, and Inflation* (SBBI) monthly data on total returns for U.S. financial markets since 1926. The objective is not to determine the SAFEMAX for past data, but to compare the situation of recent retirees to past retirees at equivalent points in their retirement. Following Bengen [1994], this study uses the U.S. S&P 500 index (large-capitalization stocks) to represent the stock market and intermediate-term U.S. government bonds to represent the bond market. Inflation data is used to calculate

real asset returns and inflation-adjusted withdrawal amounts. Returns are calculated on an annual basis with retirements assumed to begin at the start of each year. Though, for instance, September 1929 and November 1965 were worse times to retire than January 1929 and January 1966, limiting retirement dates does not obscure any important findings, and using monthly data would not increase the number of nonoverlapping data points.

We use a historical simulations approach, considering the perspective of individuals retiring in each year of the historical period. Because the assumed retirement duration is 30 years and the data ends with 2009, 55 full 30-year retirement periods take place starting between 1926 and 1980. More limited information about retirements since 1980 are available as well. For instance, 10 years of financial data are available to analyze the situation of 2000 retirees.

For each retirement year, we calculate the path of remaining wealth for as long as data is available up to a 30-year horizon. Upon retirement, accumulated portfolio wealth is assumed to be 100. At the beginning of the first year of retirement, an initial withdrawal is made equal to the initial withdrawal rate (WR_0) times accumulated wealth. Remaining assets then grow or shrink according to the asset returns for the year. At the end of the year, portfolio administrative fees are deducted from the remaining account balance, and the remaining portfolio wealth is rebalanced to the targeted asset allocation. In subsequent years, the withdrawal amount adjusts by the previous year's inflation rate and the order of portfolio transactions is repeated (make withdrawal, experience asset returns, deduct fees, rebalance). If the withdrawal pushes the account balance to zero, the withdrawal rate was too high and the portfolio failed. No attempt is made to consider taxes, which makes these findings applicable to Roth IRAs when considered on an after-tax basis. The assumptions to take withdrawals at the start of each year (rather than the end) and to include portfolio fees both serve to reduce the SAFEMAX.

This paper considers cases of no portfolio fees and of a 1 percent fee charged by the fund manager or financial planner at the end of each year. The fee percentage, which is somewhat arbitrary, is meant to show the impact of fees on retirement sustainability. The 1 percent fee is more than index funds tend to charge, but it is less than the average

1.6 percent fee for stock mutual funds and 1.2 percent fee for bond mutual funds found by Morningstar in 2008 (see http://news.morningstar.com/PDFs/Appendix_0409.pdf).

Overview of Past Retirement Outcomes

Exhibit 1 summarizes the retirement outcomes for past retirees. For a 30-year retirement duration, this exhibit shows the MWR with and without fees for a portfolio with a fixed asset allocation of 60 percent stocks and 40 percents bonds. The 4 percent safe withdrawal rate rule is attributable to 1966, when the maximum sustainable withdrawal rate was its lowest at just over 4 percent without fees. More generally, the no-fee maximum withdrawal rate was less than 5 percent between 1960 and 1973, and also in 1929 and 1937. When fees are added, the MWR is lower, though not by the full amount of the fee, since the fee is always a constant percentage of remaining assets while the CWR adjusts with the path of asset returns and inflation. The inclusion of fees pushed the MWR below 4 percent for 7 retirement years. With fees, the MWR for the 1966 retiree was only 3.56 percent. Though these were the worst outcomes, Exhibit 1 also shows at other times that MWRs were larger, even over 8.5 percent in 1949 and 1980.

// Exhibit 1 About Here //

The Strength of the Link Between Early and Late Retirement

The importance of the early retirement period to the ultimate outcome is known among academics and financial planners. The phenomenon is generally referred to as "sequence of returns risk." Bob's Financial Website [2008] also refers to it as "reverse dollar cost averaging." The basic idea, explained in more detail in Fullmer [2008], is that poor asset returns at the beginning of retirement can lead to early wealth depletion that becomes difficult to overcome. This is fundamentally due to the nature of the retirement decumulation process and the compounding effects of withdrawals and poor asset returns.

In order to formalize this link between the early retirement period and the retirement outcomes after 30 years, we develop two simple regression models in which the remaining wealth and cumulative inflation at a given number of years after retirement, ranging from 0 to 30 years, is used to explain two different retirement outcome measures

30 years after retirement. These two dependent variables are the MWR over 30 years (shown in Exhibit 1), and the amount of wealth remaining after 30 years for a given withdrawal strategy (shown in Exhibit 3). The MWR and remaining wealth measures both depend on the assumed asset allocation during the retirement period, and the remaining wealth measure also depends on the WR_0 and the level of portfolio administrative fees. There are 55 data observations, representing the 55 rolling 30-year periods starting between 1926 and 1980. The purpose of these regressions is to track the value of R^2 across the range of time since retirement. The R^2 measure indicates the proportion of variation in the final retirement outcomes explained by the model. Values for R^2 can be between 0 and 1, and a larger R^2 indicates more predictive power in which the early retirement outcome better explains the final result.

// Exhibit 2 About Here //

Exhibit 2 provides the results for a WR_0 of 5 percent with a 1 percent administrative fee, and a fixed asset allocation of 60 percent stocks and 40 percent bonds. Importantly, this exhibit shows that the R^2 curves are quite steep in the early part of retirement and gradually flatten in later years. What happens in the early retirement period plays an important role in determining the final outcome. The wealth remaining and inflation experienced after 5 years already explain about 50 percent of the ultimate retirement results, and after 10 years these two explanatory variables account for about 73 percent of the final wealth and about 80 percent of the MWRs. After about 18 years, the explanatory power for MWRs exceeds 90 percent, but then it weakens in later years as more retirees have exhausted their wealth. More wealth values of zero mean less variation in the explanatory variable and less ability to explain the MWRs. With remaining wealth after 30 years as the dependent variable, however, prior remaining wealth continues to grow in explanatory power until the very end when the remaining wealth components become the same.

Positioning Recent Retirees in the Distribution of Early Retirement Outcomes

The remaining analysis in this paper is about the situation 10 years after retirement, which would mean the beginning of 2010 for the 2000 retiree. Up to 80

percent of the variation in the final retirement outcome can be explained by the wealth remaining and cumulative inflation observed after 10 years. Exhibit 3 provides a visual demonstration of the link between early and late retirement by plotting the wealth remaining after 10 years and after 30 years for each retirement year from a starting wealth level of 100. The exhibit shows a baseline case of a 5 percent WR_0 and a 1 percent fee, and assets divided 60/40 between stocks and bonds. With this withdrawal strategy, wealth has been exhausted by the end of 30 years in 24 of the 55 cases. Of the 20 retirement periods between 1926 and 1980 in which remaining wealth is less than 100 after 10 years, 18 ended in failure. Retirees in 1928 and 1931 did survive (they were the two exceptions) with about 37 percent of their initial wealth remaining after 30 years. But even 6 of the retirees whose wealth had grown after 10 years still experienced ruin by the end of 30 years.

// Exhibit 3 About Here //

Unless financial markets suddenly experience a strong and prolonged boom in the near future, a 5 percent WR_0 with a one percent fee is unlikely to be sustainable for the 1998, 1999, and especially the 2000 retirees. In particular, the 2000 retiree is in the worst condition of any retiree in the historical period with only 54 percent of wealth remaining after 10 years. Essentially tied for the second worst performance are the 1929 and 1999 retirees, who both had only about 57.8 percent of their wealth remaining after 10 years. The 1966 retiree, who ultimately experienced the worst retirement of anyone as defined by having the lowest 30-year MWR, still held 67.2 percent of their wealth after 10 years. The bottom portion of Exhibit 3 provides a closer look at the 23 cases through 2000 in which retirees experienced a net wealth loss after 10 years.

// Exhibit 4 About Here //

Exhibit 4 maintains the 60/40 asset allocation, showing the distribution of remaining wealth after 10 years for WR_0 values ranging between 4 and 7 percent, as well as with and without an additional 1 percent fee. This exhibit indicates that the poor performance of the 1999 and 2000 retirement years, the two outcomes which are provided specific marks to indicate their positions in the distributions, did not occur only with the baseline strategy shown in Exhibit 3. Naturally, as withdrawal rates and fees

grow, the distribution of remaining wealth shifts left. Except for WR_0 values higher than 6 percent plus a fee, where the 1973 retiree experienced an even larger loss than the 2000 retiree, the 2000 retiree is consistently at the very bottom, and the 1999 retiree is consistently not far behind.

// Exhibit 5 About Here //

Exhibit 5 restores the 5 percent WR_0 with a 1 percent fee, but provides a similar analysis as Exhibit 4 for asset allocations ranging in 20 percentage point increments from 0 to 100 percent stocks. Bond returns for turn-of-the-century retirees were actually above the historical average, and these retirees do not rank among the worst outcomes after 10 years for stock allocations of 40 percent or less. But as stocks reach the 60 percent allocation otherwise considered throughout the rest of this paper, the 2000 retiree is in the worst shape, and this holds also for the 80 percent stock allocation. For portfolios holding 100 percent stocks, the 1929 retiree is in the worst shape, followed by the 2000, 1930, and 1999 retirees.

Retirees in 1929, 1966, and 2000, and the Role of Current Withdrawal Rates

The next three exhibits provide a closer examination of the 1929, 1966, and 2000 retirees in an attempt to determine why their wealth depletion rates were so high. Proceeding chronologically, despite retiring on the eve of the Great Depression and being in such bad shape after 10 years, the 1929 retiree ultimately did recover somewhat by the end of the retirement period. The MWR for the 1929 retiree with a 60/40 asset allocation without fees was 4.94 percent, and it was 4.39 percent with fees. The MWR outcomes are higher than those for the 1937 retiree and the retirees between 1962 and 1973. The 1929 retiree demonstrates the important role of the CWR.

// Exhibit 6 About Here //

The 1929 retiree experienced only one ingredient of the calamitous recipe for retirement destruction. That is, as shown in the top portion of Exhibit 6, the stock market index lost 54 percent of its value in real terms between the start of 1929 and the start of 1932. However, the bond market enjoyed a sustained boom from January 1929 with the real value of bonds almost doubling in the subsequent 10 years. A 60/40 portfolio lost 20

percent of its value by 1932 in real terms, but then generally trended upward at a moderate pace before starting a sustained boom in 1949. The Great Depression was also a time of sustained deflation, with prices falling 24 percent by 1933. The January 1929 price level was not seen again until 1943. This aspect helped retirees to decrease their nominal withdrawal amounts during the early retirement period, which helped limit the impact of withdrawals on wealth depletion.

The middle portion of Exhibit 6 shows the path of CWRs for 5 different WR_0 values with a 1 percent fee, and the bottom portion of this exhibit shows the corresponding paths of remaining wealth. A 4 percent WR_0 was mostly able to hold ground as the pre-fee CWR 10 years later was just slightly above 4 percent. Remaining wealth had fallen by about 25 percent, but so had the price level and withdrawal amounts. The 4 percent withdrawal rate was sustainable for 30 years with about half of the initial wealth still remaining and a CWR of about 14 percent at the end. But none of the higher WR_0 values shown were sustainable. The 4.5 percent WR_0 with fees led to ruin after 29 years. With a 7 percent WR_0, ruin occurred only 16 years after the retirement date. The CWR paths show how once a certain threshold is reached, the positive feedback loop leads to further rapid CWR growth and a few years later to retirement ruin.

// Exhibit 7 About Here //

The 1966 retiree holds the distinction of having experienced the worst 30-year period of any retirement beginning between 1926 and 1980. With the 60/40 asset allocation, the MWR was 4.03 percent without fees, and 3.56 percent with a 1 percent fee. Exhibit 7 shows how this poor outcome came about. The top portion of the exhibit shows how persistently high inflation in the years after retirement pushed nominal withdrawal amounts higher and higher, while real cumulative returns on the 60/40 portfolio hovered around zero for more than 15 years. As the rest of the exhibit also shows, the CWRs were rising slowly during the first 7 years of retirement, but the rate of wealth depletion was not overly excessive. Then a dramatic stock market decline in 1973 and 1974 sent the CWRs shooting upward and triggered the path to ruin for the 6 and 7 percent WR_0 values. Lower WR_0 values were able to provide income for longer, but continuing inflation pushed the CWRs higher and the other strategies eventually gave out as well. The 4

percent WR_0 plus a 1 percent fee was only sustainable until the 24th year. Though the stock and bond markets set out on a prolonged boom in 1982, by then it was already too late for the 1966 retiree to recover much lost ground as CWRs were already too high.

// Exhibit 8 About Here //

Exhibit 8 provides related details for the first 10 years of a retirement beginning in 2000. In real terms, the stock market declined by 42 percent by the start of 2003. Although bonds had grown by 27 percent in the same period, the 60/40 portfolio lost over 14 percent of its value in real terms. The financial losses at the start of retirement had immediate effects, since after three years around 30 percent of the initial wealth had already been depleted. Combined with moderate inflation, CWRs grew quickly in the early years. Compared to 1966, after 10 years the 2000 retiree had less remaining wealth. But when combined with less cumulative inflation, the 2000 retiree did experience lower CWRs. Nonetheless, CWRs for the 6 and 7 percent WR_0 values have already entered into their terminal phase and all remaining wealth will be wiped out within a few more years. The CWRs for the lower initial withdrawals are also dangerously high.

What is in Store for the 2000 Retiree?

Exhibit 9 provides a final look at the 2000 retiree, plotting the pre-fee CWR at the start of 2010 for a 60/40 asset allocation and for various WR_0 and fee combinations, against the average real return required from the retiree's portfolio investments to sustain the same withdrawal strategy for another 20 years. These required returns provide an oversimplified starting point, as they assume no volatility in asset returns and thus ignore sequence of returns risk. If returns over the next few years fall below the requirements shown in the exhibit, then even higher returns will be needed in the future, and vice versa.

Between 1926 and 2009, the geometric real return for stocks and bonds were 6.6 percent and 2.25 percent, respectively. The geometric real return on a 60/40 portfolio over this period, thus, was 4.86 percent. Exhibit 9 shows that if asset returns continue to match these historical averages, then the 4 percent WR_0 strategy with no fees will survive, as its required average real return is 3.4 percent. But the historical average return would not be enough for any other strategy to survive for another 20 years. To consider a much

more optimistic scenario, for rolling 20-year periods, the maximum geometric real return for the 60/40 portfolio was 10.29 percent beginning in 1980 (while the smallest 20-year return was 0.57 percent starting in 1962). If returns over the next 20 years could match the past maximum, then strategies up to a 5 percent WR_0 with no fees could be sustainable as well.

// Exhibit 9 About Here //

What is a realistic return to expect? Bogle [2009] is very skeptical about basing stock return expectations on their historical performance, arguing instead that they should be based on the fundamental sources: earnings growth and the dividend yield. Speaking more generally about the returns for any asset class, Arnott [2004] reminds that the key components of returns are income, growth, and changing valuation multiples. As such, he argues that sustainable spending rates are not fixed, but change as yields change. For intermediate-term government bonds, at the end of 2009, nominal yields (the source of income) were about 2.4 percent, which is well below their historical average. A low yield, plus the more likely than not prospect of higher future yields that will reduce the returns on these bonds, indicate that retirees should not expect real bond returns to match their historical averages. As for stocks, at the start of 2010 the dividend yield on the S&P 500 was 1.98 percent, which is well below its 4.91 percent average for start-of-the-year values since 1926. Robert Shiller's PE10 measure, which is the S&P 500 index price divided by the average real corporate earnings over the previous 10 years, was 20.52 in January 2010, which is above its 17.7 historical average. Taken together, retirees should not expect asset returns to even match their historical averages. Using analysis based on these market fundamentals as of October 2010, West [2010] actually forecasts an average real return of about 2 percent for a 60/40 portfolio over the next 10 to 20 years. If that were to happen, then even the no-fee 4 percent WR_0 strategy will end in failure.

Conclusions

No absolute conclusions can be made about the prospects for turn-of-the-century retirees, as that would require a crystal ball. Perhaps we are on the brink of a long-term sustained market boom that raises the fortunes of recent retirees. But the evidence shown

here at least provides a strong indication that a 4 percent withdrawal rate strategy cannot be considered as safe for the 2000 retiree, even in the miraculous case that there are no portfolio management fees. With the fastest rate of wealth depletion and CWRs among the highest, the 2000 retiree could be on course to experience the worst retirement in U.S. history since 1926, and may end up being the source for a new lower SAFEMAX value. Turn-of-the-century retirees should definitely now consider their reliance on withdrawals from their retirement savings and their current withdrawal rate. They may find it necessary to make reductions to their expenses or to potentially seek other sources of income.

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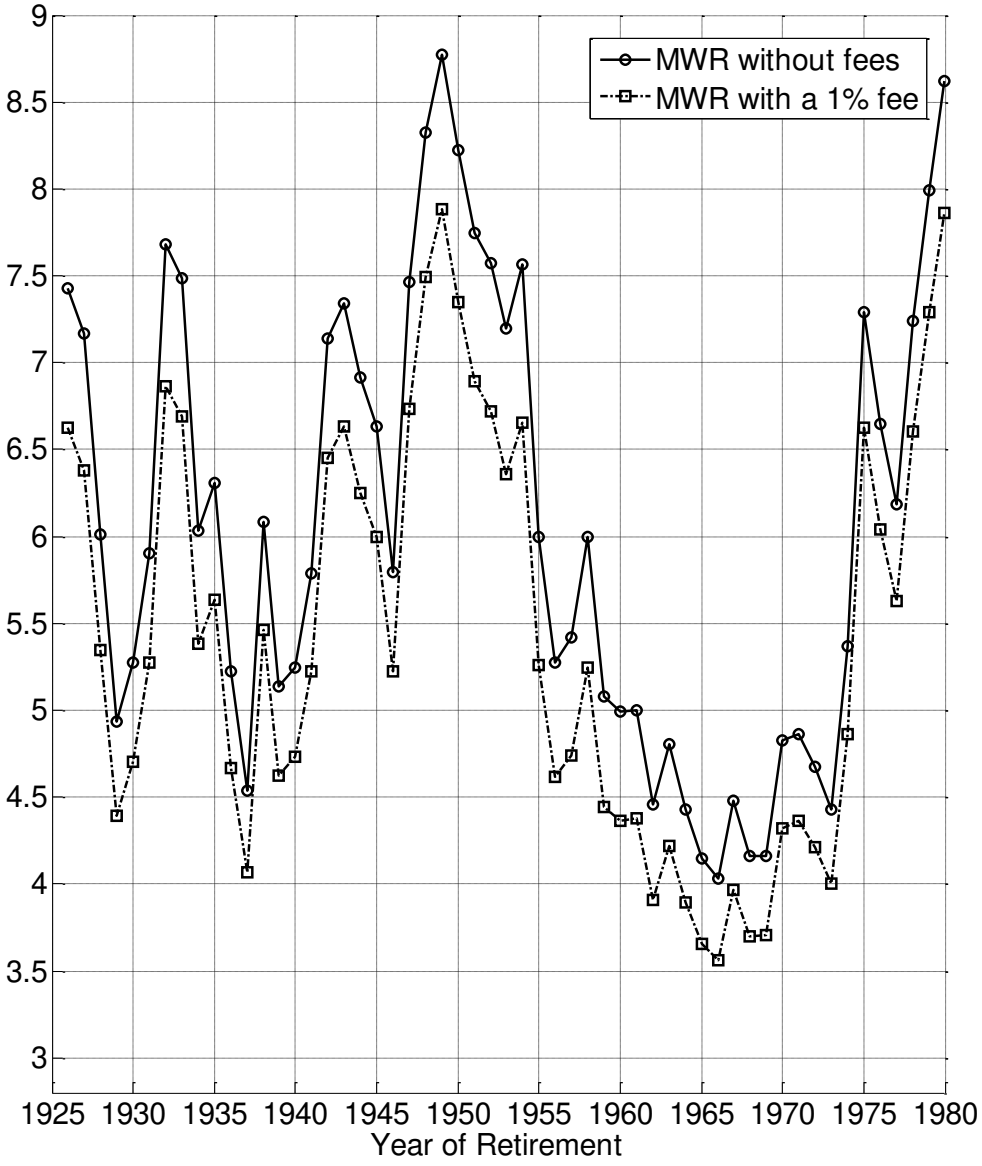
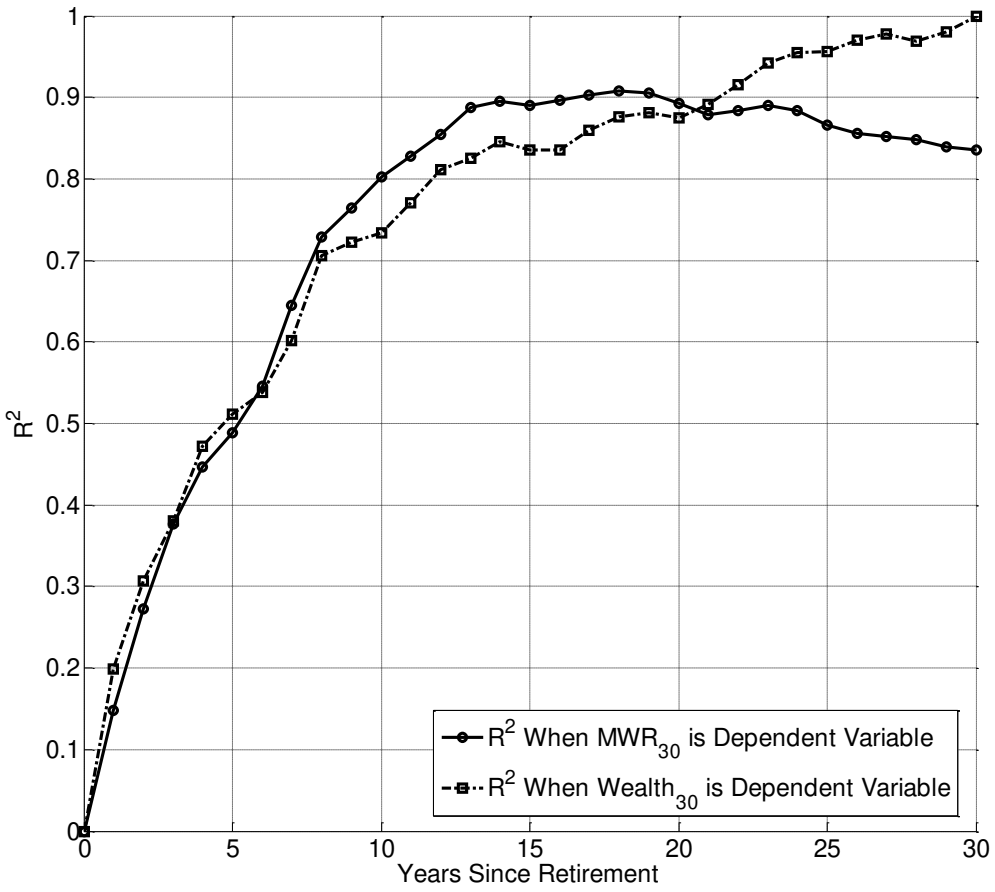
EXHIBIT 1
Maximum Sustainable Withdrawal Rates (MWR) for a 30-Year Duration
60% Stocks / 40% Bonds Asset Allocation



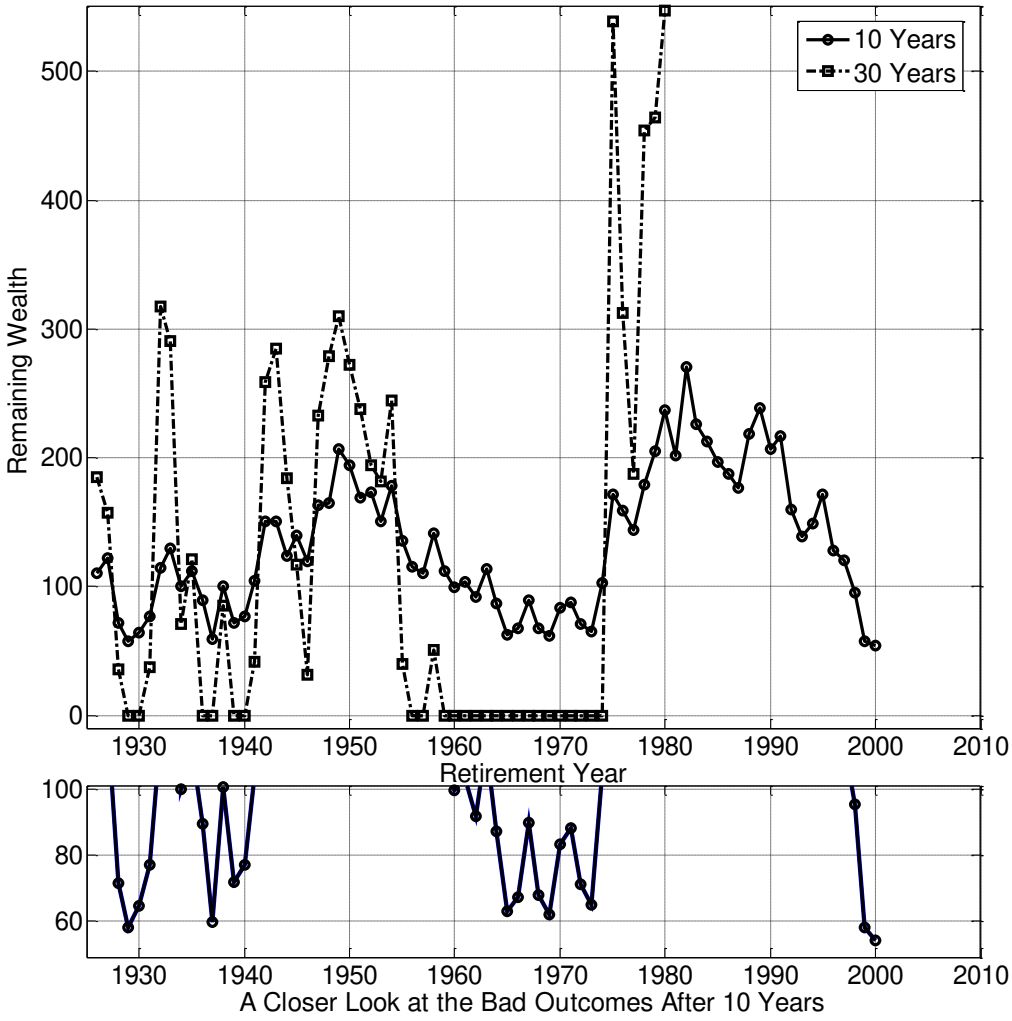
Note: Assumptions, data definitions, and data sources are fully explained in the section, "Data and Methods for Calculating Retirement Outcome Measures."

EXHIBIT 2
Explanatory Power (R^2) From a Regression of Remaining Wealth and Cumulative Inflation Since Retirement on 30-Year Retirement Outcome Measures
5% Real Withdrawal Rate, 1% Administrative Fee, 60% / 40% Asset Allocation
Retirement Dates: 1926 - 1980



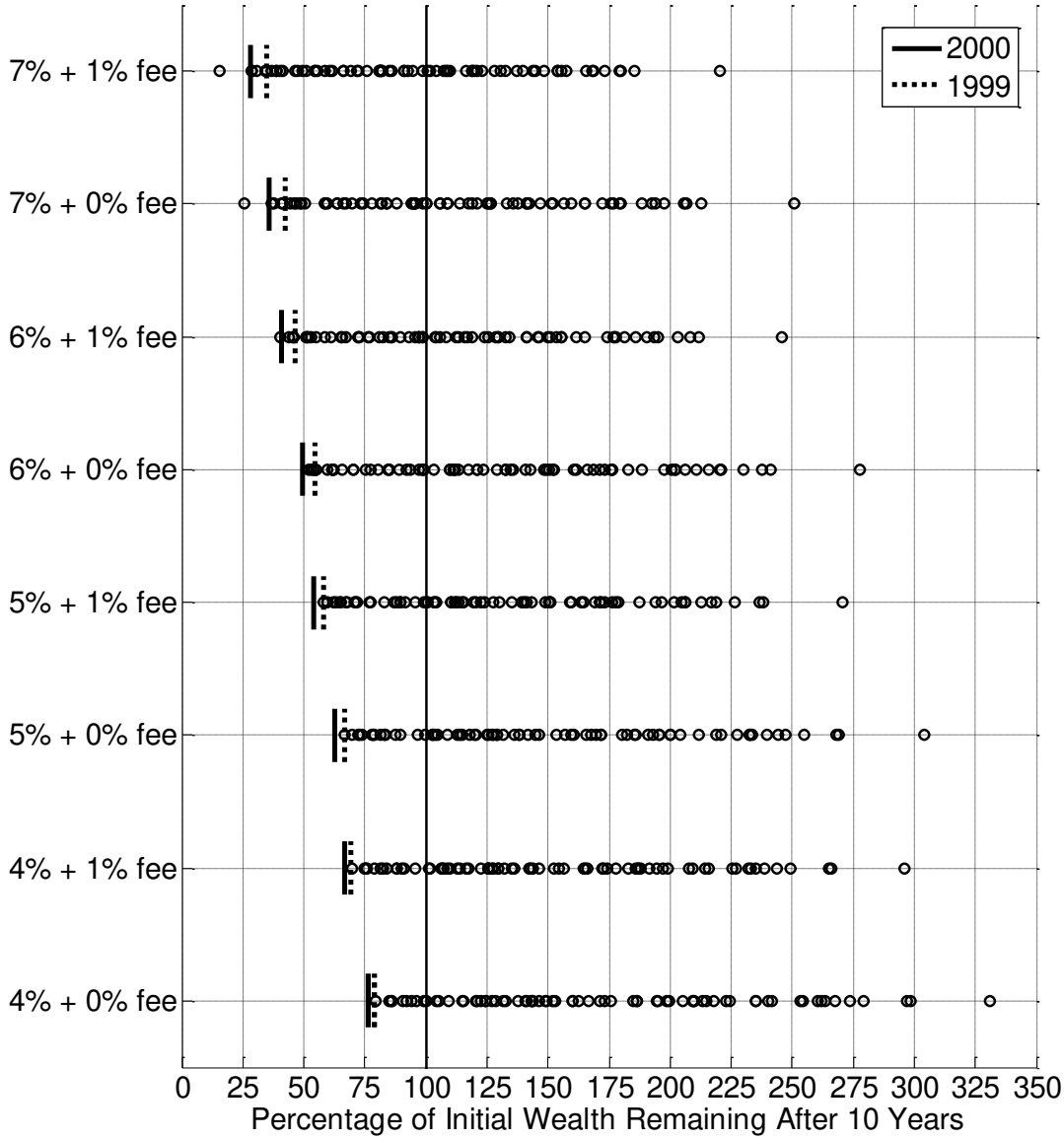
Note: Assumptions, data definitions, and data sources are fully explained in the section, "Data and Methods for Calculating Retirement Outcome Measures."

EXHIBIT 3
Remaining Wealth 10 and 30 Years After Retirement
5% Real Withdrawal Rate, 1% Administrative Fee, 60% / 40% Asset Allocation



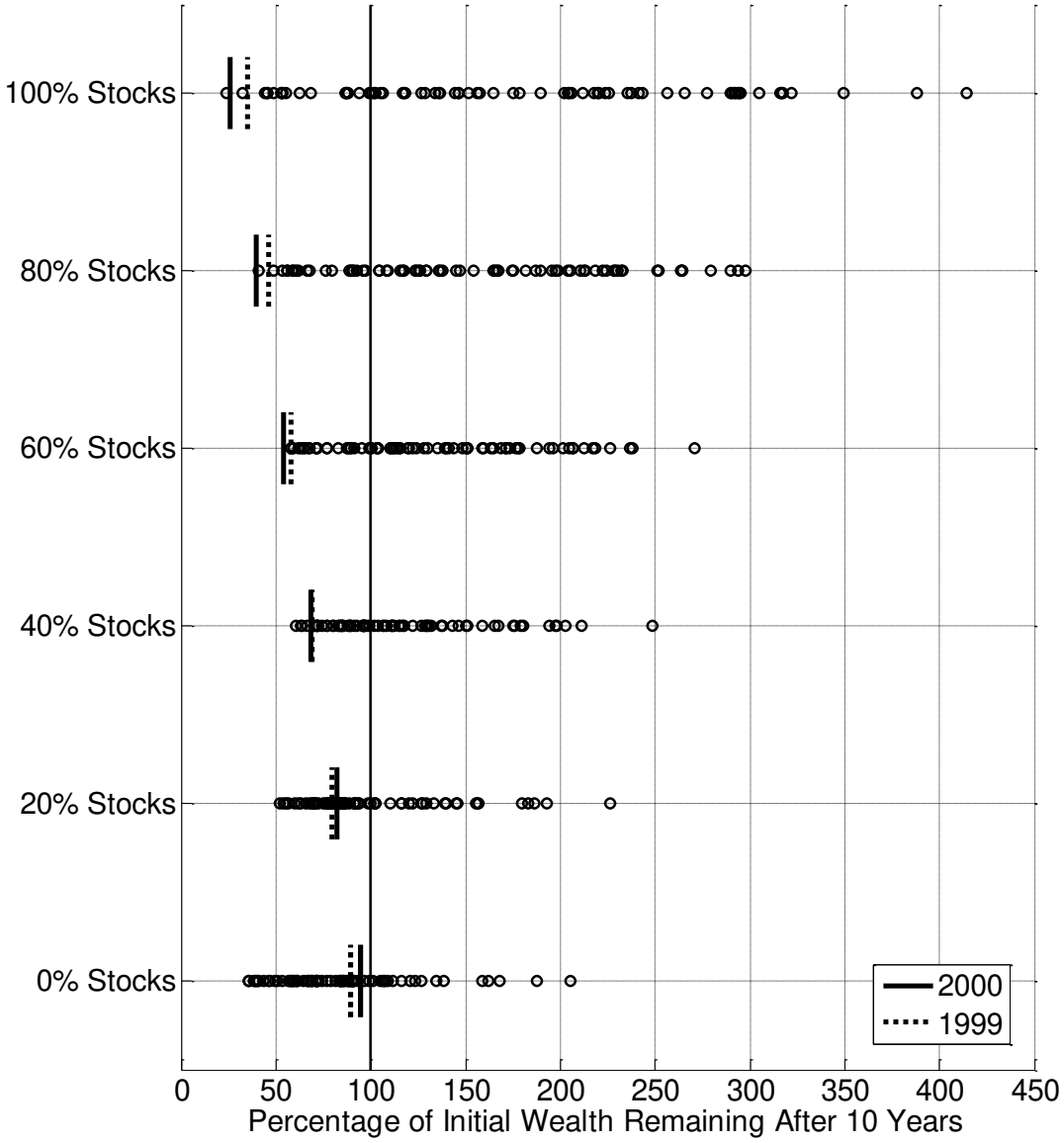
Note: Assumptions, data definitions, and data sources are fully explained in the section, "Data and Methods for Calculating Retirement Outcome Measures."

EXHIBIT 4
Distribution of Wealth Remaining 10 Years After Retirement
For Various Real Withdrawal Rates and Administrative Fees
60% / 40% Asset Allocation, Retirement Dates: 1926 - 2000



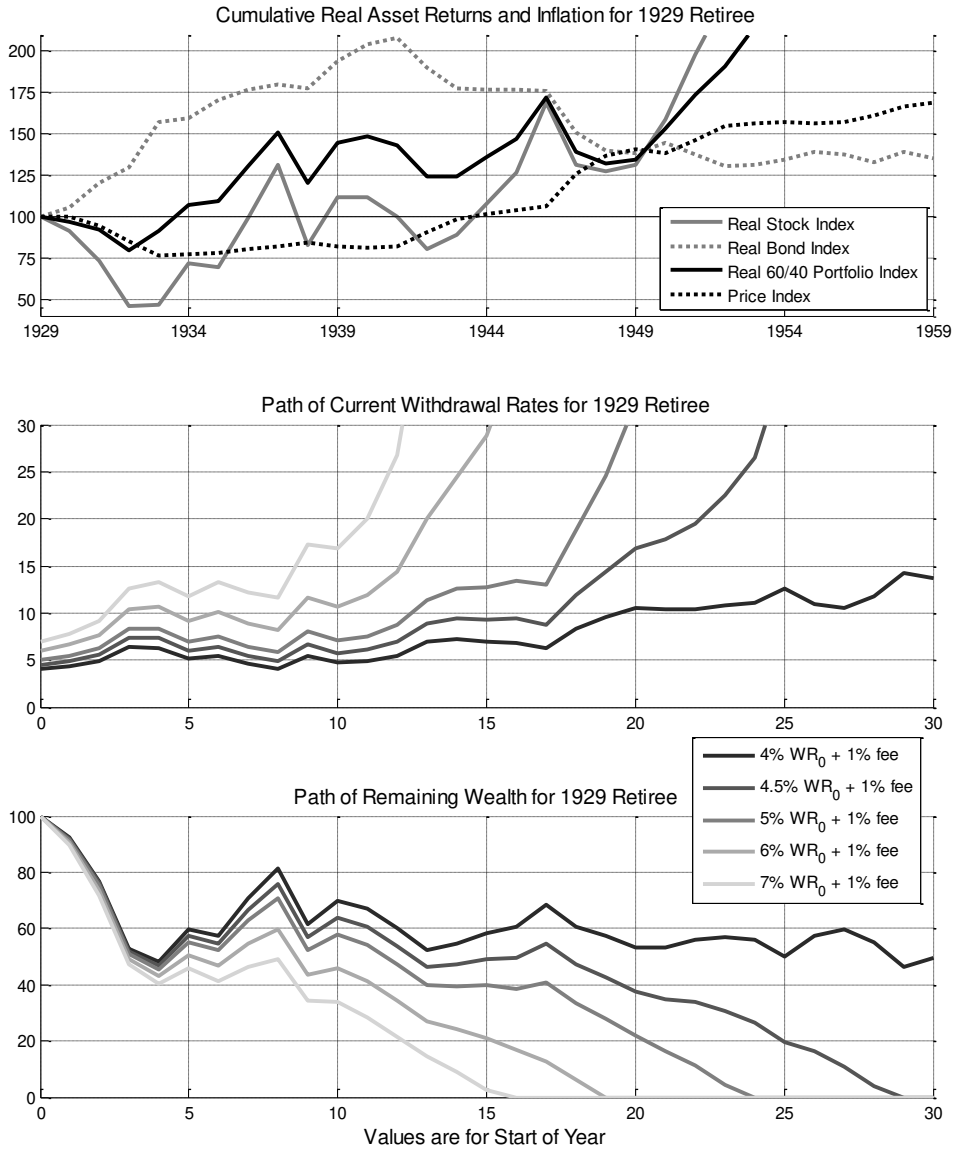
Note: Assumptions, data definitions, and data sources are fully explained in the section, "Data and Methods for Calculating Retirement Outcome Measures."

EXHIBIT 5
Distribution of Wealth Remaining 10 Years After Retirement
For Various Asset Allocations
5% Real Withdrawal Rate, 1% Administrative Fee, Retirement Dates: 1926 - 2000



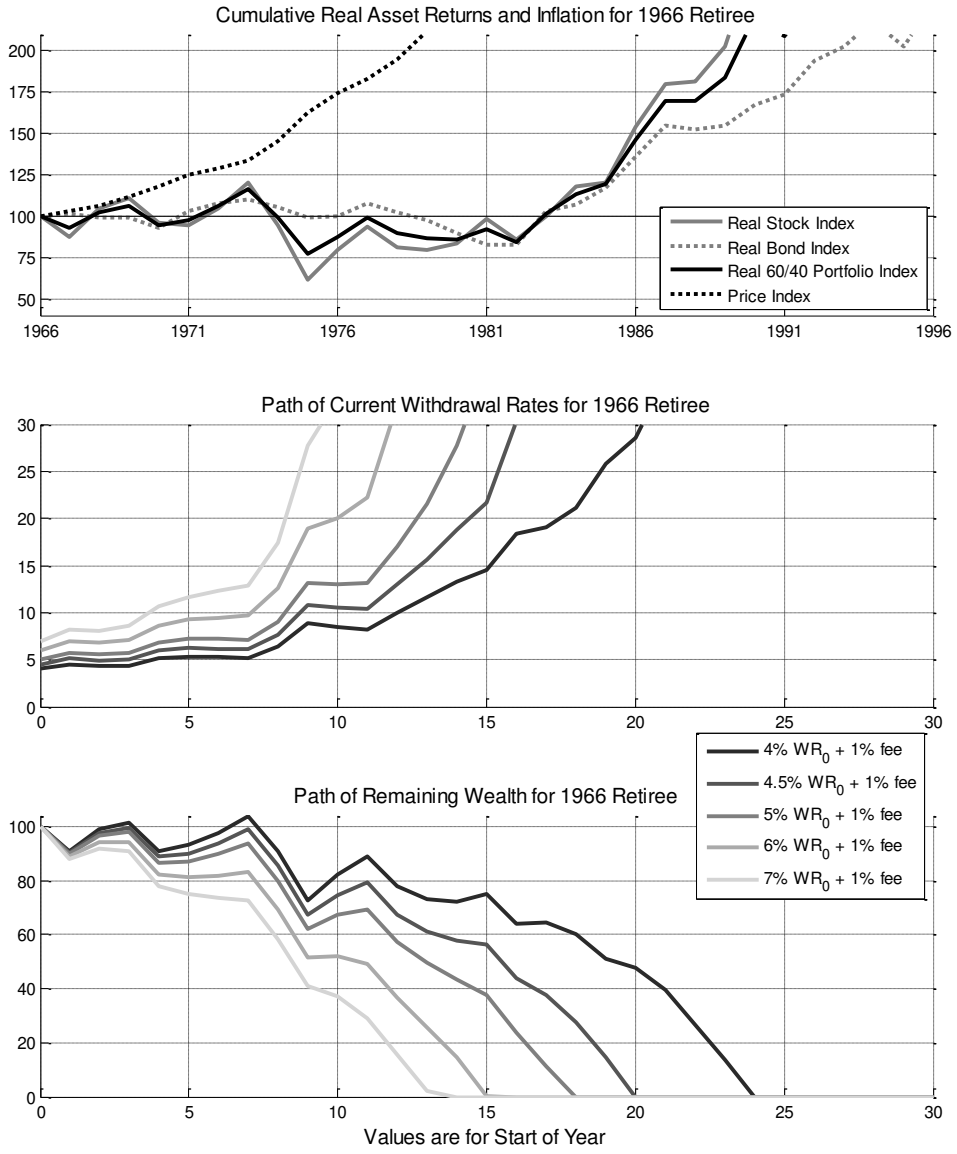
Note: Assumptions, data definitions, and data sources are fully explained in the section, "Data and Methods for Calculating Retirement Outcome Measures."

EXHIBIT 6
Details for 1929 Retiree, 60% Stocks / 40% Bonds Asset Allocation



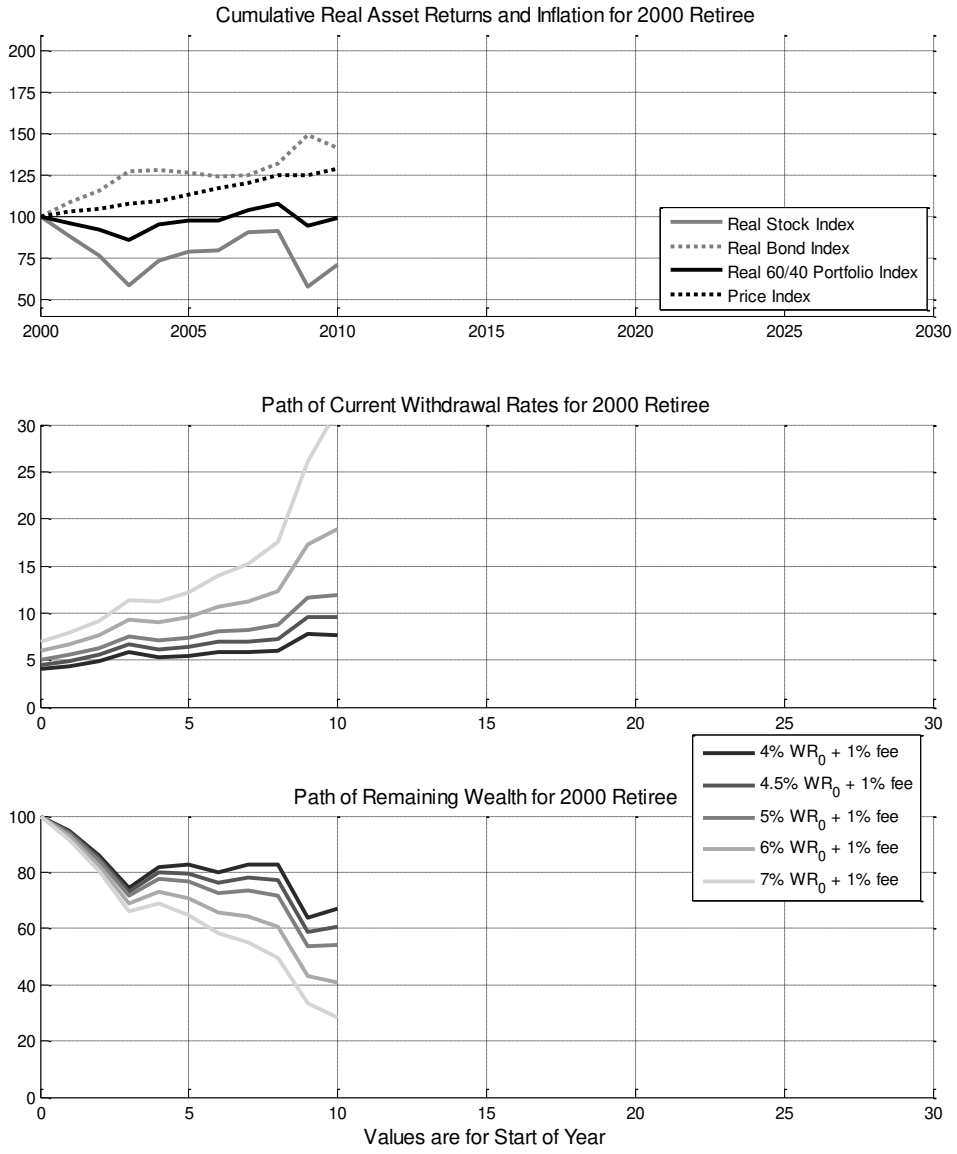
Note: Assumptions, data definitions, and data sources are fully explained in the section, "Data and Methods for Calculating Retirement Outcome Measures."

EXHIBIT 7
Details for 1966 Retiree, 60% Stocks / 40% Bonds Asset Allocation



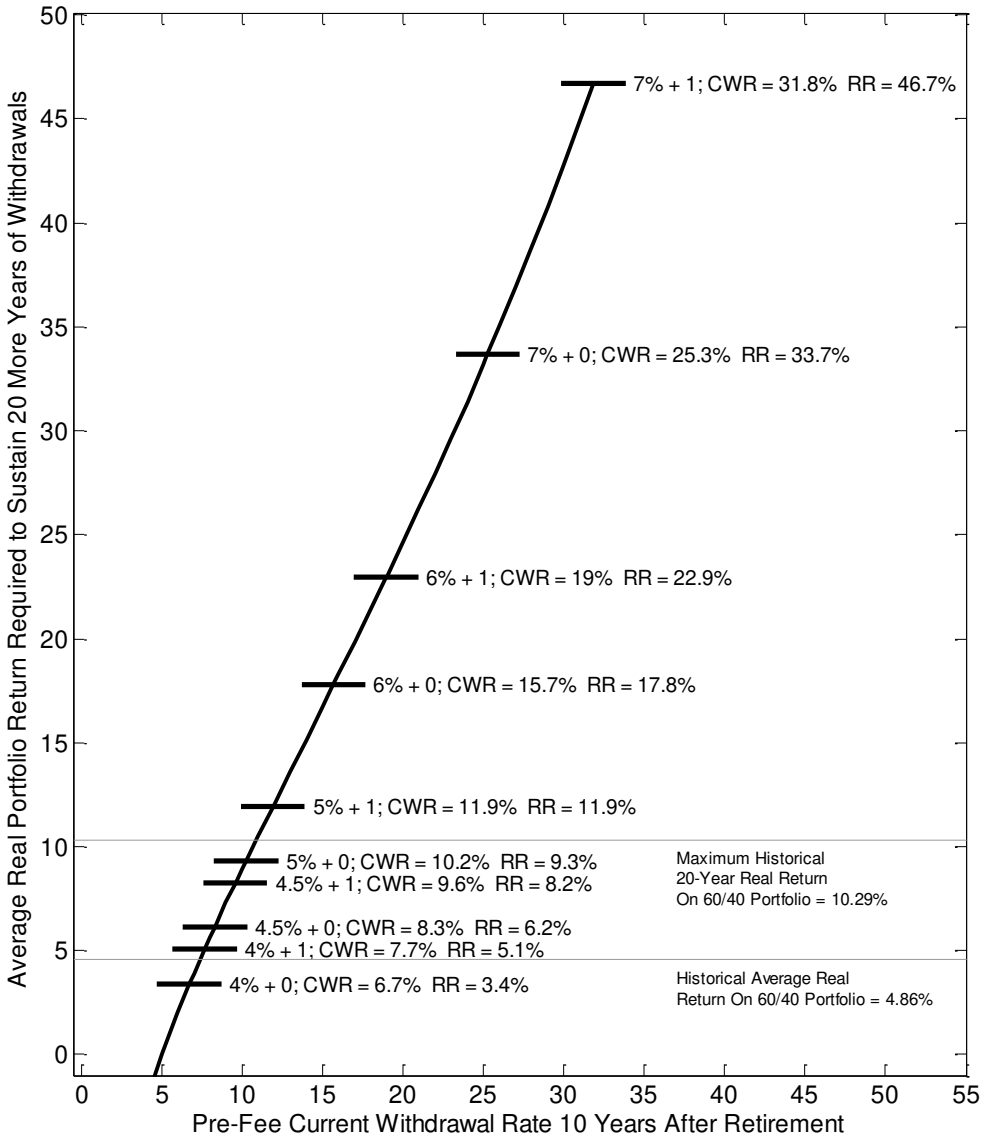
Note: Assumptions, data definitions, and data sources are fully explained in the section, "Data and Methods for Calculating Retirement Outcome Measures."

EXHIBIT 8
Details for 2000 Retiree, 60% Stocks / 40% Bonds Asset Allocation



Note: Assumptions, data definitions, and data sources are fully explained in the section, "Data and Methods for Calculating Retirement Outcome Measures."

EXHIBIT 9
Details for 2000 Retiree, 60% Stocks / 40% Bonds Asset Allocation
Current Withdrawal Rate (CWR) 10 Years After Retirement
and Required Real Portfolio Return (RR) to Sustain 20 More Years of Withdrawals



Note: Assumptions, data definitions, and data sources are fully explained in the section, "Data and Methods for Calculating Retirement Outcome Measures." Plotted text shows the initial real withdrawal rate plus annual portfolio fee percentage, followed by the CWR after 10 years and the fixed real portfolio return required to sustain 20 more years of inflation-adjusted withdrawals starting from the CWR.