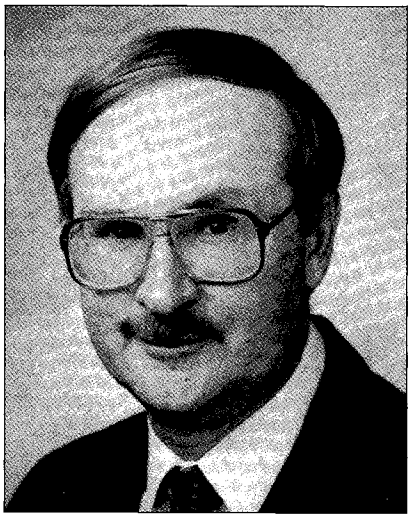
Conserving Client Portfolios During Retirement, Part III

by William P. Bengen, CFP

This article presents new findings in the author's ongoing research into asset allocation and withdrawal rates during retirement. The goal, as before, is determining how much money clients can extract from their portfolio annually without running out. This article explores the effects of adding small-cap stocks and Treasury bills to the asset mix. Retirement scenarios are expanded to include retirement beginning on the first day of any quarter, rather than just on January 1, as in earlier research. Refined advice is given on the selection of stock allocation within the "recommended" range, and earlier use of the term "risk tolerance" is corrected to "volatility tolerance." "Post-crash" planning issues, including "Black Hole" clients and "Withdrawal Envy," are examined. Finally, some corrections are made to earlier conclusions on planning for taxable portfolios.



Does 'Quarterly' Retirement Make a Difference?

In earlier articles in the *Journal* on this topic (October 1994 and August 1996 *Journal*), I based my analysis on the performance of 51 retirement "scenarios." These consisted of portfolios of investors who had retired on January 1 of the years 1926 through 1976. I avoided retirement dates after January 1, 1976, so that a minimum of 20 years of actual rate-of-return data (from the Ibbotson database) could be used in every retirement scenario. For years 1996 and later, average rates of return were used for both stocks and bonds in the computation of the scenarios.

Of course, clients are not constrained to retiring on January 1, particularly in this era of frequent downsizing. What happens to our earlier conclusions if we expand our retirement scenarios to include retirement on the first day of every calendar quarter, from January 1, 1926, through January 1, 1976?

My interest in this question was aroused when I constructed a chart of the returns on large company stocks (LC stocks) for 12-month periods, each ending on a successive calendar quarter (see Chart 1). If you are accustomed to the traditional charts showing "annual," or 12-month returns for calendar years only, this chart may contain some surprises for you. For example, you probably recall the best year for LC stocks (1933,+54 %), and the worst year (1931, – 43%).

A study of Chart 1 reveals that there have been several 12-month periods with significantly more extreme returns. For example, during the 12-month period ending June 30, 1933, LC stocks returned +163%—more than triple the calendar year, or "annual" maximum. On the downside, during the 12-month period ending June 30, 1932, LC stocks lost – 68%, a healthy correction indeed, and well in excess of the worst "annual" loss. All told, I counted at least seven 12-month "quarterly retirement" periods whose returns exceeded the extremes of "annual" returns.

My concern was that these greater extremes might invalidate my earlier conclusions about maximum "safe" withdrawal rates. Furthermore, they might disrupt the simple asset allocation equation I had developed. It should be noted that the charts for intermediate-term government bonds (I-T bonds) and inflation were not significantly different for "quarterly" returns compared with their earlier "annual" counterparts.

I began my investigation by constructing a new chart of the maximum "safe" withdrawal rate for "phased"

portfolios (see Chart 2). A phased portfolio is one in which stocks are reduced, or "phased down" by one percent each succeeding year. The maximum "safe" withdrawal rate is the highest initial withdrawal rate that guarantees 30 years of portfolio longevity, for all retirement dates, assuming the client increases initial withdrawals each year by the actual inflation rate experienced. This takes a 65-year-old retiree out to age 95.

As you can see, the "quarterly" data produces a symmetric, parabolic-looking curve. For initial stock allocations of 65 percent, the curve matches almost exactly the one developed in earlier research. However, at stock allocations above 65 percent, the curves diverge sharply.

One heartening observation is that the maximum safe withdrawal rate of 4.08 percent remains the same as before. Furthermore, the "recommended range" of stocks of 50 percent to 75 percent for an age-65 retiree still looks okay, although selecting near the center of that range now seems to offer near-maximization of the withdrawal rate. It looks as if my earlier reservations against very high stock allocations for age-65 retirees (above 75 percent) are borne out.

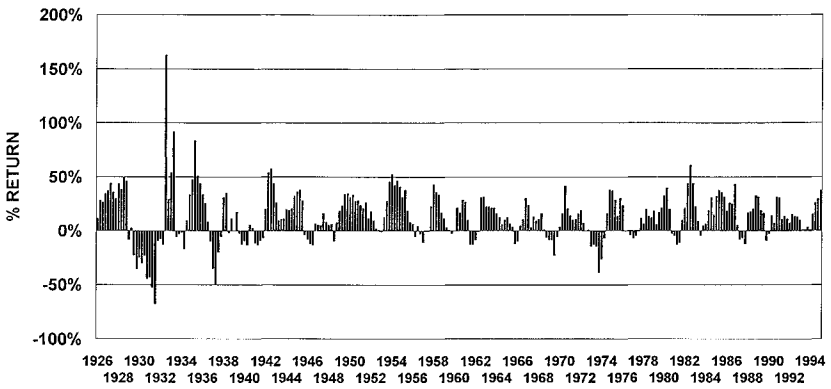
Examining the situation further, we next look at a chart of safe withdrawal rates for a variety of retirement ages (see Chart 3). If you compare this with Figure 9 from my August 1996 article in the *Journal of Financial Planning*, you will see some disturbing differences. Once again, the curves are virtually identical for lower asset allocations. By contrast, the curves for quarterly scenarios all clearly decline sharply for initial stock allocations in excess of 75 percent. This seems to invalidate my asset allocation equation, which, if you recall, set the recommended range of stocks (for a tax-deferred portfolio) as follows:

% of portfolio in stocks
= (115 to 140) – age

What exactly is going on here?

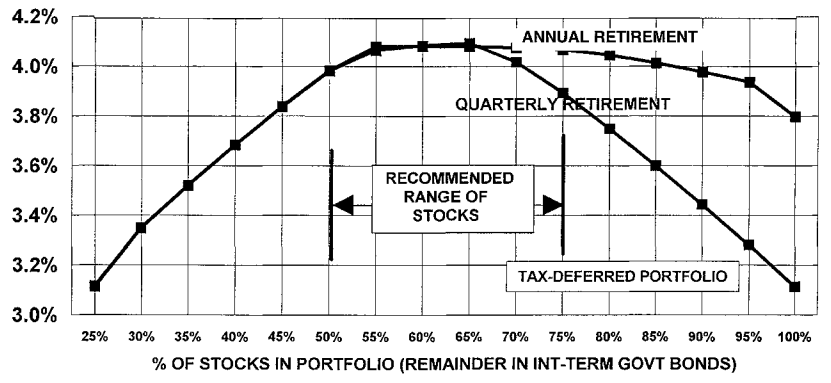
We can begin to answer that question by examining Chart 4 which,

CHART 1
Quarterly 12-Month Returns of Large Company Stocks 12/31/26 Through 12/31/95



Source: Ibbotson Associates

CHART 2
"Safe" Withdrawal Rates Vs. Stock Allocation
"Guarantees" a 30-Year Portfolio Longevity (Age 65 at Retirement)
Large-Cap Stocks and Intermediate-Term Govt. Bonds, 1% Stock Phase-Down



as a random example, depicts the portfolio longevities for all retirement scenarios that begin with an initial stock allocation of 90 percent and an initial withdrawal rate of 3.5 percent. This chart is drawn for "age-50" retirement, so that a 45-year portfolio longevity is required, since we seek to fund all clients' retirements through at least age 95.

Clearly, this chart does not correspond to a safe withdrawal rate, as at least one retirement date (as represented by the vertical bars) fails to achieve a 45-year longevity. You can confirm that by examining the bottom curve in Chart 3, which also applies to age-50 retirement. The "safe withdrawal" point corresponding to a 90 percent stock allocation on that curve is, in fact, well below the 3.5 percent initial withdrawal rate level.

However, you will note from Chart 4 that *failure to achieve the desired 45-year longevity is the result of one and only one retirement date*. That sharp, narrow dip in the chart corresponds to retirement beginning October 1, 1929, at the start of the Great Depression. This dip does not appear in our earlier annual charts, which looked only at calendar-year scenarios.

Further analysis reveals the following: for both annual and quarterly scenarios, safe withdrawal rates below

CHART 3
"Safe" Withdrawal Rates Vs. Retirement Age
Tax-Deferred, Large-Cap Stocks, Intermediate-Term Govt. Bonds, 1% Phase-Down, Quarterly Retirement

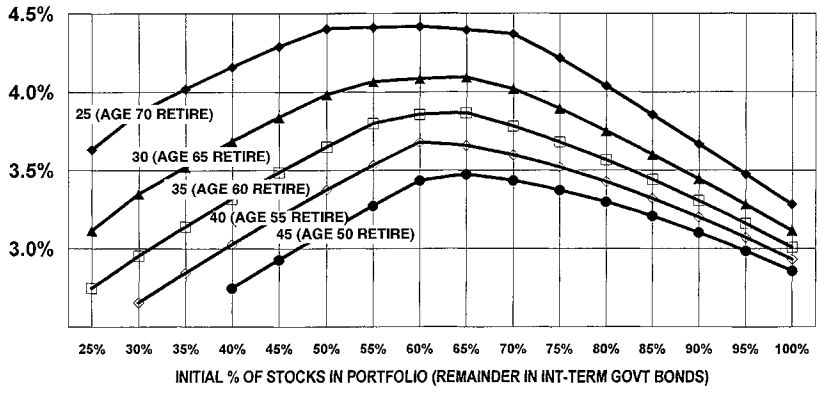
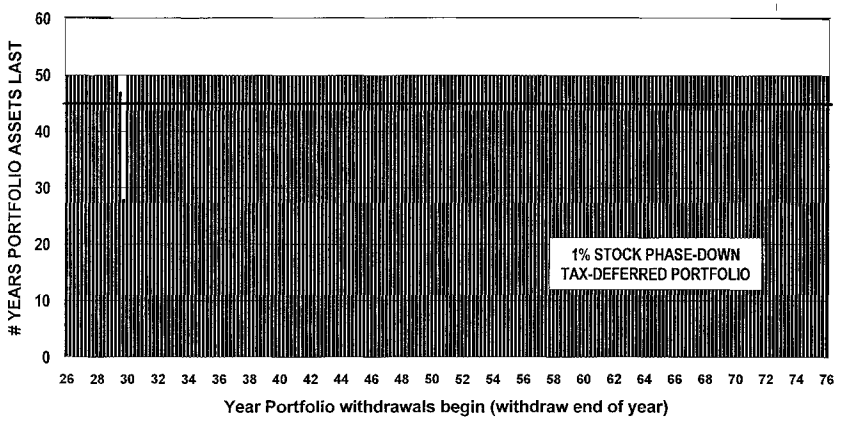


CHART 4
Portfolio Longevity: All Retirement Dates
Assume: 3.5% Initial Withdrawal Rate, 90% Large-Cap Stocks, Intermediate-Term Govt. Bonds, Quarterly Data



65 percent initial stock allocation are determined primarily by the 1973–1974 bear market (the "Big Bang"). This was a substantial stock market decline, exacerbated by double-digit inflation. Because the 1973–1974 bear market coincided very neatly with calendar years, the results look the same for both annual and quarterly scenarios.

At stock allocations above 65 percent, however, the safe withdrawal rate for the quarterly retirement curve is determined solely by the retirement scenario beginning October 1, 1929. This, of course, was the beginning of a much deeper stock market decline than 1973–1974, ameliorated somewhat by deflation. However, the ensuing stock decline was so severe beginning on October 1, 1929, that portfolios with high stock allocations were severely damaged. This damage does not appear on the "annual retirement" charts because there is no calendar year with a stock market decline as deep as the 12-month period beginning October 1, 1929.

In fact, when we ignore the scenario beginning October 1, 1929, all quarterly charts return to virtually the same shape they had before under annual retirement scenarios. Safe withdrawal rates and the asset allocation equation are restored to validity. All's right with the world again. The addition of almost 150 new quarterly scenarios to our original 51 thus provides affirmation of our original conclusions.

The question is, can we justify ignoring the October 1, 1929, retirement scenario? I believe that it is such an anomalous situation that it does not make sense to distort planning for our clients by including it in our analyses. A 90 percent stock market decline is unlikely to occur again in our lifetime, barring a global catastrophe. As it is only 1 of 201 scenarios, historically it represents less than half of one percent of all events. Practically, I believe that its future probability is far less. Its inclusion makes our recommendations far too conservative.

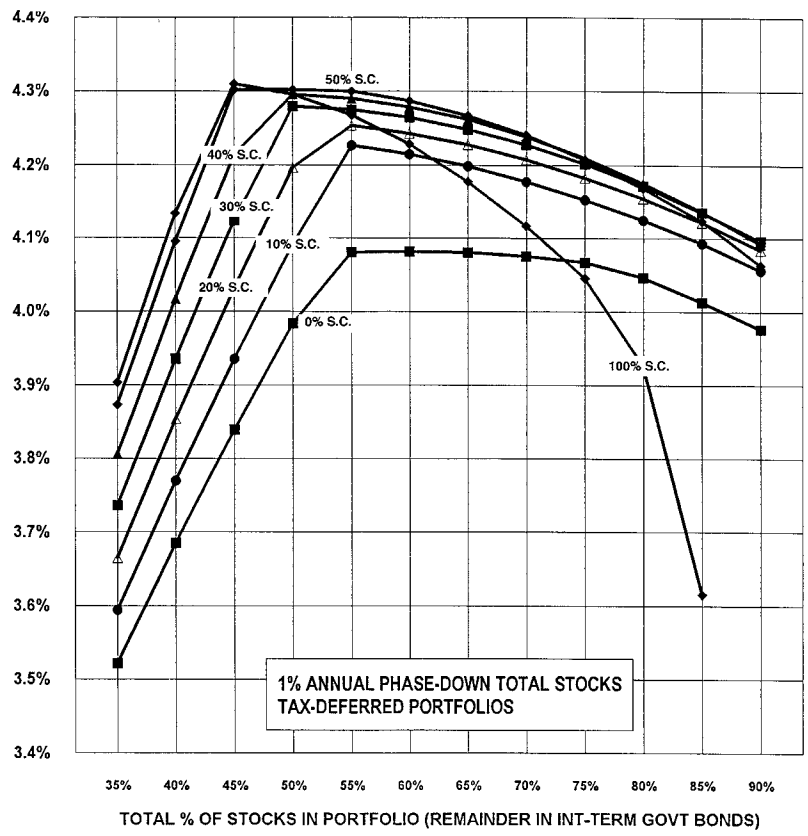
In the interest of full disclosure to your clients, I advise that you apprise them of this anomalous scenario, and recommend that it be ignored in the analysis. Clients can then choose for themselves whether they agree.

Including 'Small-Cap' Stocks in the Asset Mix

In earlier research, I limited the portfolio to only two asset classes: large-cap domestic stocks and intermediate-term U.S. government bonds. This was primarily in the interest of simplicity, so that I could study broad patterns of portfolio behavior without becoming overwhelmed with complexity (believe me, analysis with just two asset classes is in itself far from simple, given all the other variables being examined simultaneously).

Since most financial advisors employ more than two asset classes, it seemed natural to broaden my research to include additional classes. In this section, I present the effects of adding small-cap stocks (SC stocks) to the mix. In the next section, we study how the introduction of cash (as represented by Treasury bills) affects port-

CHART 5
"Safe" 1st-Year Withdrawal Rate Vs. Stock Allocation
30-Year Portfolio Longevity, Small- and Large-Cap Stocks, Intermediate-Term Govt. Bonds, Annual Data



folio performance during retirement. I had also hoped to study the effects of international stocks, but have not yet found a database for international stocks comparable to the Ibbotson series I used for the other asset classes.

I will not surprise any reader of this publication by asserting that SC stocks, as represented in the Ibbotson data, have different performance characteristics than LC stocks. After all, that is why we include them in client portfolios. In way of review, SC stocks have returned significantly more (12.6 percent annually) than LC stocks (10.5 percent annually) over the last 70 years. Furthermore, SC stocks have experienced extremes of annual performance that are greater than the annual extremes of LC stocks. Finally, the returns of SC stocks, according to Ibbotson, have a .81 serial correlation with returns of LC stocks, and a –.03 correlation with I-T government bonds. This suggests their inclusion in a portfolio with the other two asset classes could lead to some interesting results.

We begin our exploration with Chart 5, which presents the "safe" 30-year withdrawal rate for tax-deferred portfolios consisting of varying allocations of large- and small-cap stocks (the balance of the portfolio is in I-T government bonds). For reference, the "0% S.C.," ("0% Small Cap,") curve from our earlier research is included.

I draw your attention first to the line marked "100% S.C.," which represents a portfolio consisting entirely of SC stocks and I-T bonds. Compared with our earlier results, this is at best a bizarre curve. It peaks sharply at a relatively low stock allocation (45 percent), then declines rapidly with increasing initial stock allocation. Its peak of 4.3 percent initial withdrawal rate is significantly higher than the 4.08 percent for the LC stock-only curve, but this peak value is maintained for only a narrow range of stock allocations.

The other lines on the chart represent portfolios that contain both LC and SC stocks. The line marked "10 percent S.C.," for example, represents a portfolio whose equity allocation consists of 10 percent SC stocks and 90 percent LC stocks. This relationship between the two classes is maintained throughout retirement, as the total equity allocation is phased down one percent a year.

My first observation upon studying this chart is that *SC stocks have, indeed, increased the safe withdrawal rate significantly in the past.* My second observation is that 100 percent of the equity position in SC stocks is too rich a mixture for my blood. The chart appears too severely peaked and unstable. On the other hand, the curves for *30 percent and 40 percent of equities in SC stocks capture virtually the full, higher withdrawal value exhibited by 100 percent SC stocks,* and do so over a broader range of initial stock allocation. In fact, I will use a 30 percent SC stock fraction for the remainder of the charts in this section, although 40 percent SC stocks would serve equally well.

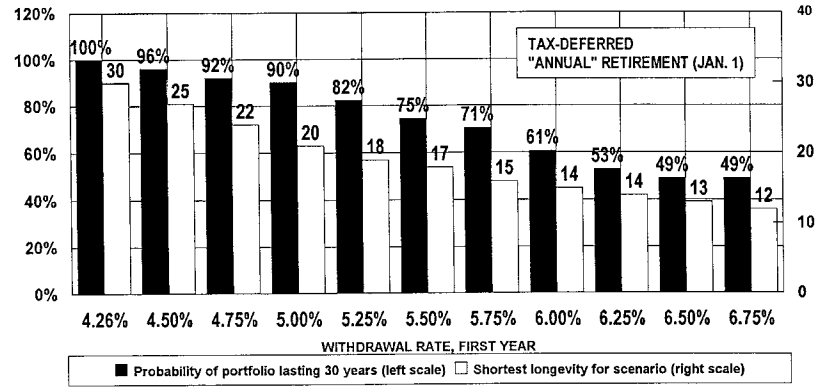
More Interesting Results

Chart 6 contains even more interesting results. It assigns a probability of success to higher withdrawal rates, success always being defined as the portfolio lasting until age 95, or in this case, 30 years for a 65-year-old retiree. It also notes the historical worst-case portfolio longevity for any given withdrawal rate.

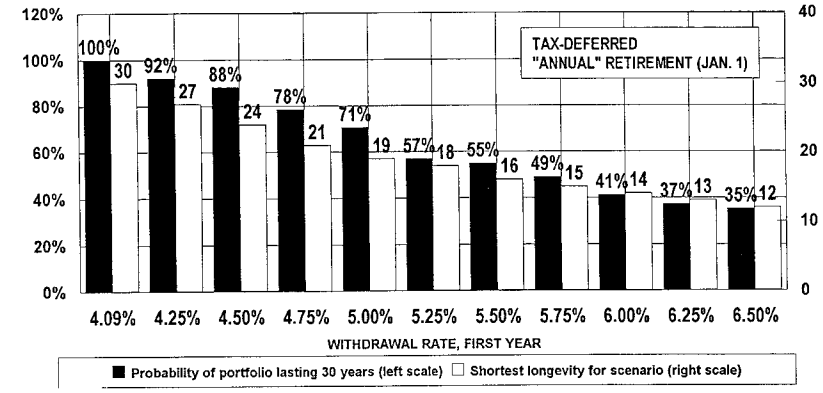
There are actually two charts here, one from our earlier research without SC stocks (bottom) and one for 30 percent of equities in SC stocks (top). The differences are quite striking when one compares performance at the same withdrawal rate. For

CHART 6

Probability of Portfolio Lasting for 30 Years Vs. Withdrawal Rate
63% Stocks Initially, Small-Caps 30% of Total Equities, 1% Phase-Down of Stocks, Remainder Intermediate-Term Govt. Bonds



Probability of Portfolio Lasting for 30 Years Vs. Withdrawal Rate
63% Large-Cap Stocks Initially, 0% Small-Caps, 1% Phase-Down of Stocks, Remainder Intermediate-Term Govt. Bonds



example, at a 5 percent initial withdrawal rate, we had originally computed only a 70 percent probability of the client's portfolio lasting for 30 years. When SC stocks are introduced, that probability leaps to 90 percent! This effect is experienced at all initial withdrawal rates. Note, however, that the "worst-case" portfolio longevity remains essentially unchanged.

If we are to believe the performance data for small-cap stocks, I conclude that ***allocating 30 percent of the total equity position to SC stocks significantly improves the odds for success for those clients who wish to withdraw more than the safe rate.*** A 90 percent success rate could be attractive indeed to those clients who want to withdraw 5 percent, which is almost 25 percent more spending money annually than our safe withdrawal rate of 4.1 percent without SC stocks.

Note that I have prefaced the conclusion in the last paragraph with a conditional phrase. That is because, despite the dramatic improvements to withdrawal rates apparently rendered by SC stocks, I have not fully embraced the much higher withdrawal rates in recommendations to my clients.

The reason, as you may well know, is that there is some controversy about the future reproducibility of the small-cap advantage. Articles have recently appeared (some are listed in the bibliography) that assert that the entire total-return advantage of small caps over large caps is the result of the extraordinary 1974–1983 period, when SC stocks returned an astounding 35 percent annually. It is claimed that this period was an anomaly, not to be repeated in the future.

Others assert that high small-cap stock returns listed in sources such as Ibbotson are not realizable, because trading costs, which could be substantial, are not considered. Thus, after commissions and spreads, there may be no real advantage to SC stocks after all.

I don't feel qualified to referee this debate; I will let others resolve it. In my practice, I now advise clients of the small-cap phenomenon, as well as reservations about it. However, my reservations are not as profound as those expressed in preceding paragraphs. I feel SC stocks do offer some measure of improvement in withdrawal rates, and provide comfort to those who want to exceed the safe withdrawal rates.

One last question needs to be asked: why do SC stocks improve withdrawal rates so significantly? Aside from considerations of overall return and serial correlation, my investigation suggests they have performed much better than LC stocks around the times of major stock bear markets of the past. Although SC stocks may have experienced steeper declines, they also recovered more vigorously than LC stocks. Charts showing the effects on portfolio longevity, which could not be included here, clearly demonstrate that the "depth" (in terms of shortest longevity) and "width" (in terms of the number of retirement scenarios affected) of major bear markets are considerably ameliorated when small caps are included.

Is Cash 'Trash'? Including Treasury Bills in the Asset Mix

The other new asset class we shall consider in this article is cash, as represented by the Ibbotson series on

U.S. Treasury bills (T-bills). The outstanding feature of T-bills is that over 70 years, they have experienced only one year of negative returns. This occurred in 1938, when returns dipped to a chilling –.02 percent. According to Ibbotson, T-bills also have relatively low correlations with large-cap stocks and I-T government bonds (–.04 and .50, respectively). These attractive features are offset by the abysmally low returns of T-bills: +3.7 percent for 70 years, barely above the average inflation rate. Will the stability and low covariance of returns win out for T-bills, or will the low returns predominate results? Let us see.

In Chart 7, we examine the effects on safe withdrawal rates of replacing I-T government bonds in the asset mix with T-bills. The top curve in the chart represents earlier research, which did not include T-bills. The other two curves on the chart represent portfolios where T-bills have replaced 50 percent and 100 percent, respectively, of I-T bonds. Remember that stocks are being phased down by 1 percent annually in these scenarios, so fixed-income investments are correspondingly phased up. T-bills and I-T bonds maintain the same relative percentage of total fixed income investments throughout retirement, so that a portfolio with a fixed-income component that initially consisted of 50 percent T-bills and 50 percent I-T bonds, retains those percentages.

It is apparent from this chart that at initial stock allocations above roughly 60 percent, the effect of introducing T-bills is negative, but only slightly so. At lower stock allocations, the effects of T-bills become more pronounced. Withdrawal rates at lower stock allocation are reduced by about ten percent when Treasury bills replace I-T bonds completely in the mix.

Chart 8 is a magnification of the central portion of Chart 7, focusing on the "recommended range" of stocks, and depicting T bill replacement of I-T bonds of less than 50 percent. I conclude from this chart that *T bill replacement of up to ten percent of I-T bonds in a portfolio has no significant effect on withdrawal rates within the recommended range of stocks*. Therefore, a small cash position, which may aid withdrawals, is not harmful, if it is carved out of the "fixed income" portion of the portfolio.

CHART 7
Replacing Intermediate-Term Govt. Bonds With T-Bills
Effects on Maximum Withdrawal Rate Yielding 30 Years of Longevity
Large-Cap Stocks, 1% Phase-Down, Tax-Deferred Portfolio, Annual Retirement

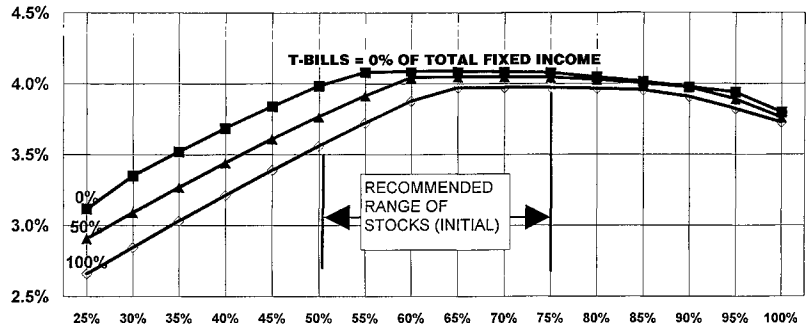
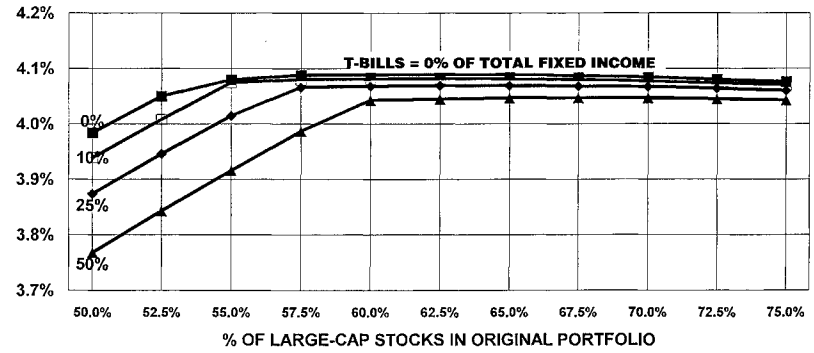


CHART 8
Replacing Intermediate-Term Govt. Bonds With T-Bills (Magnified)
Effects on Maximum Withdrawal Rate Yielding 30 Years of Longevity
Large-Cap Stocks, 1% Phase-Down, Tax-Deferred Portfolio, Annual Retirement



Replacing LC stocks with T-bills is another matter, however, as we see in Chart 9. In this chart, the stock allocations correspond to allocations prior to the introduction of T-bills. The indicated fraction of T-bills must then be subtracted from the stock allocation to arrive at the true stock allocation at the start of retirement. For example, consider the curve marked "20 percent T-bills replace 20 percent stocks." The point on this curve at 60 percent initial stock allocation (before T bill reduction) thus actually represents 40 percent stocks initially. The remainder of the initial portfolio is 20 percent T-bills and 40 percent I-T bonds. As before, stocks are phased down, and fixed income investments are phased up, one percent per year.

As you can readily observe, replacing stocks with as little as ten percent of T-bills substantially reduces the safe withdrawal rate, particularly at lower stock allocations. At a replacement rate of 20 percent, the penalties are even more severe, and affect all stock allocations under consideration. Therefore, I must conclude that *replacing stocks with T-bills in a long-term portfolio is detrimental to with-*

CHART 9
Replacing Large-Cap Stocks With T-Bills
Effects on "Safe" Withdrawal Rate Yielding 30 Years of Longevity, 1% Phase-Down, T-Bill and Bond Phase-Up, Large-Cap Stocks, Annual Retirement (Jan.1)

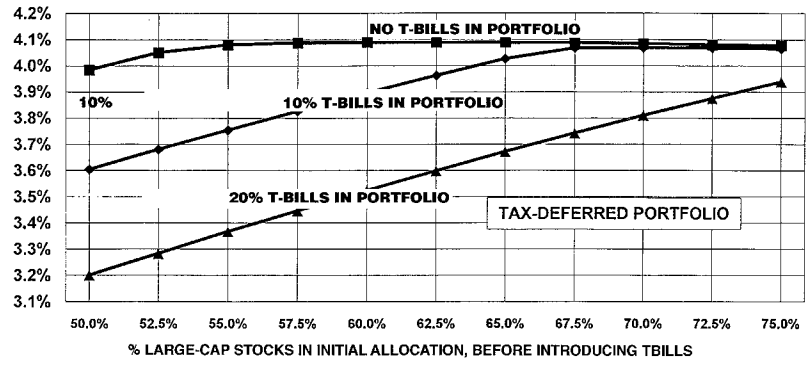
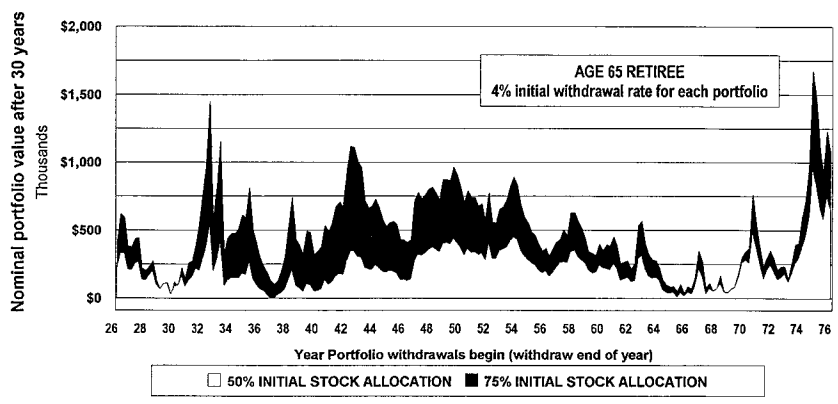


CHART 10
Nominal Portfolio Value After 30 Years: 50% Vs. 75% Stocks
Tax-Deferred, Large-Cap Stocks, Intermediate-Term Govt. Bonds, Quarterly Retirement, Initial Value $100,000



drawal rates, and should be avoided if the client wants to maximize his or her withdrawals.

It is interesting to note that it is conservative clients who generally prefer higher allocation of cash in their portfolios, and lower allocations of stocks. The analysis above shows that, ironically, *it is these clients who will be hurt most by such a strategy*, as the effects of T bill replacement are most pronounced at lower stock allocations. Therefore, every effort should be made to convince such clients that more stocks and less cash is in their own best interest.

As a final word, it is fair to conclude that cash is indeed "trash" in long-term investment portfolios, particularly when the client in seeking to maximize withdrawals.

International Stocks as an Additional Asset Class

Because of their wide use by financial planners in client portfolios, I would very much have liked to examine the effects of including international stocks as an additional asset class. Regrettably, I have been unable to locate a database for international stock returns comparable with the Ibbotson database for American stocks for the years 1926–1996. I would appreciate hearing from any reader who knows of such a database.

Choosing the Initial Stock Allocation

In earlier articles, I discussed the "withdrawal rate plateau," which shows up clearly in Chart 4. It corresponds to an initial stock allocation range of about 25 percent, within which withdrawals are effectively maximized. I gave some vague advice at the time on choosing an allocation within that range, upon which I would now like to expand.

Because withdrawal rates within the recommended range of stocks are essentially equal, they are not very useful in selecting stock allocation. For another view of the matter, consider Chart 10, which depicts the nominal wealth built up in a portfolio after 30 years, for a retiree who began withdrawing four percent the first year. The two stock allocations displayed, 50 percent and 75 percent, represent the extreme ends of the "recommended range" for this investor at age-65 retirement. Note that I used the new quarterly model with 201 retirement dates to create the charts in this section.

It is clear that in most cases, ***the investor who began retirement with 75 percent in stocks ended up with far more wealth than the investor who began with 50 percent in stocks.*** In fact, the 50-percent investor never ends up with a higher value for his or her portfolio after 30 years, although as a result of bear markets, the investor may end up with about the same amount in a few cases.

These results are further quantified in Chart 11, which compares results for 50-percent and 75-percent stock investors, as well as for an investor with an intermediate stock allocation of 63 percent. The top bar for each initial stock allocation corresponds to the average wealth after 30 years for all 201 retirees. It is apparent that there is virtually a linear relationship between stock allocation and average wealth, with the average

wealth of the 75-percent stock allocation more than double that of the 50 percent allocation after 30 years.

The second bar for each allocation in Chart 11 provides information on how many portfolios survived 35 years, or 5 years longer than the minimum we have previously considered. The purpose of providing this information is to see if any significant benefit may be derived for clients who live much longer than they expected. As you can see, higher stock allocations provide enhanced benefits for this criterion as well, as the 75 percent stock allocation shows less than half its portfolios exhausted after 35 years, as compared with the 50 percent stock allocation.

It is fair to conclude from the above that those *clients interested in growth of wealth should consider stock allocation near the upper end of the recommended range*. Should their longevity exceed their expectations, they also will have a greater margin for error with higher stock allocations.

Another aspect is what I erroneously referred to as "risk tolerance" in my earlier papers. Because clients who observe the recommended parameters of stock allocation and safe withdrawals should not run out of money, they effectively have no risk other than that of living longer than age 95. The use of the term "risk" to denote the probability of not having your money when you need it is the proper one, in my opinion.

I should have used instead the term "volatility tolerance" in my earlier work, because it was fluctuation of portfolio value, not exhaustion of principal, which was my primary concern. I will leave discussion of volatility to advocates of modern portfolio theory, who are far better qualified than I to discuss it. Suffice it to say that if volatility is of real concern to your clients, then lower stock allocations will probably provide the lower volatility they seek. However, they should be made aware of the high cost of avoiding volatility with respect to wealth accumulation and portfolio longevity, as discussed above.

CHART 11
Comparison of 3 Stock Allocations: 65-Year-Old Retiree
Large-Cap Stocks, Remainder Intermediate-Term Govt. Bonds, Tax-Deferred, 1% Stock Phase-Down

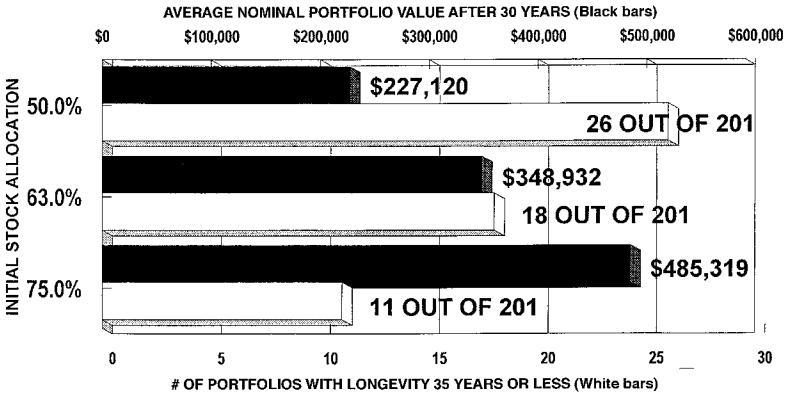
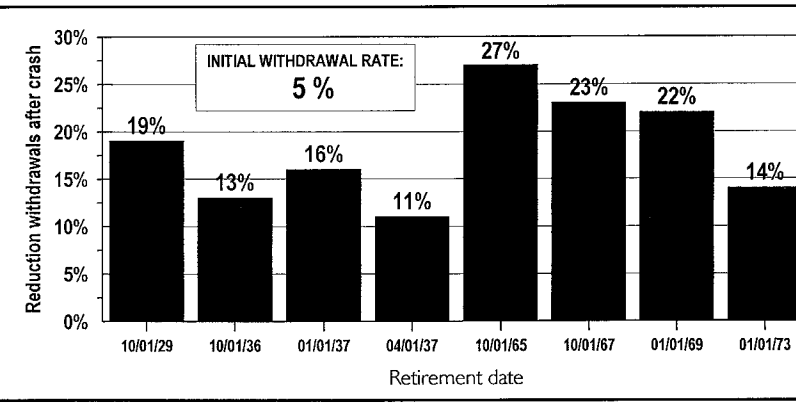


CHART 12
Reducing Withdrawals After a "Crash"
Sample Reductions in Withdrawals to Restore 30-Year Longevity, Tax-Deferred, Large-Cap Stocks and Intermediate-Term Govt. Bonds, 63% Stocks Initially, 1% Phase-Down



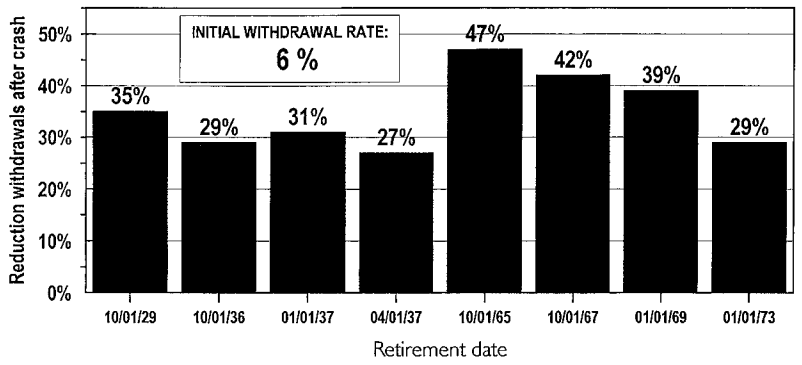
Post-'Crash' Planning: 'Black Hole' Clients

In my earlier work, I referred whimsically to clients who experienced a major bear stock market early in retirement as "Black Hole" clients, as their wealth was temporarily being sucked into a *black hole*. This term is particularly appropriate for clients who were aggressive with their withdrawal rates early in retirement, and are faced with premature exhaustion of their funds unless they take corrective action (clients who observed the safe withdrawal rates should be able to survive without changes, unless they live unexpectedly beyond age 95).

One obvious approach for Black-Hole clients is to reduce their withdrawals to the level which will restore their portfolios to age-95 longevity. In Chart 12, I provide examples of such cutbacks that would have been successful in the past. The first bar pertains to the 1929–1932 bear market; the next three bars pertain to the 1938-1941 period, and the remaining bars relate to the 1973–1974 "crash."

In each case, the investor withdrew 5 percent initially, which is considerably higher than the 4.1 percent safe withdrawal rate. Depending upon the retirement date, cutbacks in with-

CHART 13
Reducing Withdrawals After a "Crash"
Sample Reductions in Withdrawals to Restore 30-Year Longevity, Tax-Deferred, Large-Cap Stocks & Intermediate-Term Govt. Bonds, 63% Stocks Initially, 1% Phase-Down



drawals ranged from 11 percent to as high as 27 percent. It is instructive to note that the largest cutback was for an investor who retired in 1965, fully eight years before the Big Bang of 1973–1974.

In Chart 13, we examine the case of an investor who was even more aggressive on his withdrawals, tapping his portfolio for six percent initially. As you can see, whereas in the preceding case reduction in withdrawals was merely painful, here they border on murderous. Cutbacks of almost 50 percent were required to restore equilibrium to the portfolio in some cases.

The difficulty in determining the correct adjustment for any Black Hole client is defining when the bear market is over, and how much long-term damage was done to the portfolio. Since every bear market is different regarding percentage declines, inflation and duration, general rules may not be possible, although I will study that issue in the future.

The primary usefulness of Charts 12 and 13 is in apprising your clients of the risks inherent in high initial withdrawal rates, and the reduction in lifestyle they might have to suffer if things go badly in the markets. Although this may not be a matter paid much attention in this time of market exuberance, irrational or otherwise, the history of markets suggests it will at some future time be a concern for at least some of your clients.

Post-'Crash' Planning: 'Withdrawal Envy'

Consider this tale of two investors. The first retired on October 1, 1929 (unfortunate timing), with $100,000 in his retirement portfolio. He elected to withdraw at an initial rate of four percent. The history of his withdrawal rates is as follows:

Pre-crash retiree

- Withdrawal on 9/30/30: $3,838 (CPI 10/1/29 – 9/30/30: –4.0%)
- Withdrawal on 9/30/31: $3,468 (CPI 10/1/30 – 9/30/31: –9.6%)
- Withdrawal on 9/30/32: $3,097 (CPI 10/1/31 – 9/30/32: –10.7%)
- Withdrawal on 9/30/33: $3,059 (CPI 10/1/32 – 9/30/33: –1.2%)

Because this was a *deflationary* period, the client's withdrawals declined each year.

Contrast this with the experience of an investor who retired on October 1, 1932. For purposes of comparison, this investor also had $100,000 in his portfolio on October 1, 1929, and also elected to withdraw four percent on his retirement date:

Post-crash retiree

- Value of portfolio on 10/1/29: $100,000
- Value of portfolio on 10/1/30: $ 80,947
- Value of portfolio on 10/1/31: $ 59,009
- Value of portfolio on 10/1/32: $ 56,569
- Withdrawal on 9/30/33: $2,236 (CPI 10/1/32 – 9/30/33: –1.2%)

Withdrawal advantage of 10/1/29 retire: $ 823

As you can see, because my method of computing withdrawals is based on the portfolio value *at the time of retirement*, the post-crash retiree, whose portfolio has suffered during the Great Depression, appears to be at a distinct disadvantage to his compatriot. Is this fair? Is the post-crash retiree forever condemned to a lesser lifestyle, eternally fated to envy the withdrawals of others?

Fortunately, this story has a happy ending. Let us say the post-crash retiree obstinately refuses to withdraw less than the pre-crash retiree, and insists on withdrawing the same $3,059 on September 30, 1933. This is equivalent to a 5.5 percent initial rate of withdrawal, which previously we saw was risky on a random basis. In this case, obstinacy prevails, and the post-crash retiree enjoys a full 46 years from his portfolio, leaving a little bit to his children when he dies at 108 years old.

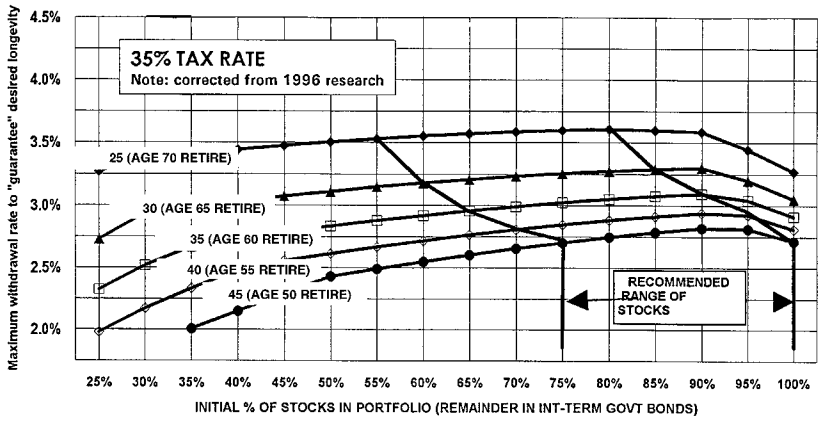
Meanwhile, the pre-crash retiree finds he is running out of money after only 32 years. Because he adhered to the safe withdrawal rate, his portfolio lasted the desired minimum 30 years, but just barely. Clearly, and unexpectedly, the advantage was with the post-crash retiree all along. What contributed to this significant turn of events?

A partial explanation is that although both retirees started with the same $100,000 on October 1, 1929, the pre-crash retiree began his withdrawals immediately, while the post-crash retiree deferred withdrawals for a full three years. Thus, even though the portfolios of both suffered severe investment losses during those years, the portfolio of the post-crash retiree declined less, because it was not reduced by withdrawals.

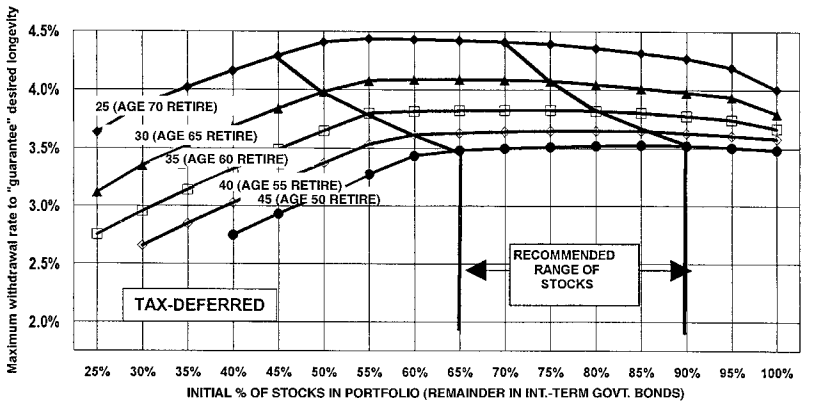
However, this does not come close to explaining the whole differ-

ence. More important is the fact that the second investor retired at a time of powerful recovery in the stock market. As we learned earlier, from July 1, 1932, through June 30, 1933, large-cap stocks generated a 163 percent return. Returns for the subsequent four years were strong, as well. Thus, the post-crash retiree began his withdrawals during a time when his portfolio was being strengthened by superior investment returns, which extended his portfolio longevity. By contrast, the pre-crash retiree began withdrawals during a time when his portfolio was being weakened by poor investment returns, which shortened his portfolio longevity.

CHART 14
"Safe" 1st-Year Withdrawal Rates Vs. Retirement Age
Large-Cap Stocks, Remainder Intermediate-Term Govt. Bonds, 1% Phase-Down, Annual Retirement



"Safe" 1st-Year Withdrawal Rates Vs. Retirement Age
Large-Cap Stocks, Remainder Intermediate-Term Govt. Bonds, 1% Phase-Down, Annual Retirement



Withdrawal Envy

Let us examine one more case of "withdrawal envy" before reaching a final conclusion. Consider first an individual who retired on January 1, 1973, just as the 1973–1974 bear market was getting under way. He started with $100,000 in his retirement portfolio, but elected to withdraw at a five percent rate, well above the safe rate. His withdrawals the first three years were computed as follows:

Pre-crash retiree

- Withdrawal on 12/31/73: $5,439 (CPI 1/1/73 – 12/31/73: +8.8%)
- Withdrawal on 12/31/74: $6,102 (CPI 1/1/74 – 12/31/74: +12.2%)
- Withdrawal on 12/31/75: $6,530 (CPI 1/1/75 – 12/31/75: +7.0%)

Because this was an *inflationary* period, the client's withdrawals rose each year.

For comparison, our post-crash investor retired on January 1, 1975. He also had $100,000 in his portfolio on January 1, 1973, and also elected to withdraw five percent on his retirement date:

Post-crash retiree

- Value of portfolio on 1/1/73: $100,000
- Value of portfolio on 1/1/74: $ 92,468
- Value of portfolio on 1/1/75: $ 79,290
- Withdrawal on 12/31/75: $ 4,242 (CPI 1/1/75 – 12/31/75: +7.0%)

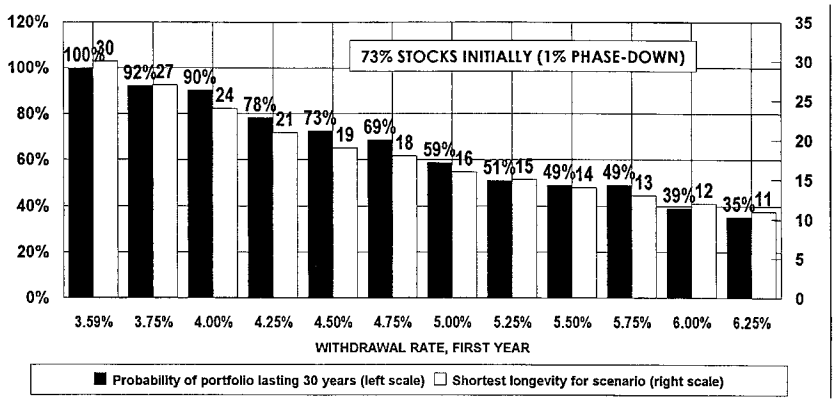
Withdrawal advantage of 1/1/73 retire: $ 2,288

As before, adjustments must be made to ascertain the true picture. First, the pre-crash retiree qualifies as a Black Hole client. His 5 percent initial withdrawal rate will now cause his portfolio to expire before age 95 unless he reduces his $6,530 withdrawal to $5,616, a cut of 14 percent. This cut will only "guarantee" (in the historical context) a full 30 years of portfolio longevity, and no more.

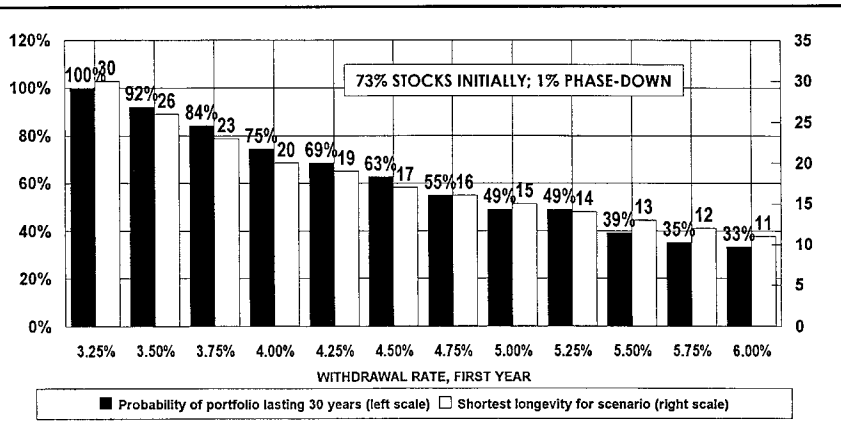
If the post-crash retiree adopts this same $5,616 withdrawal amount—a large increase over the $4,242 he originally intended—I project his portfolio will last not less than 44 years, well beyond the 30-year minimum. Note that this equates to a very high 6.6 percent initial withdrawal rate. It is apparent that the post-crash investor could withdraw even larger amounts, and still retain at least a 30-year longevity.

The conclusion I draw from the above discussion is that although Black Hole clients may have to cut back on their withdrawals after a serious bear market, *investors who retire in*

CHART 15
Probability of Portfolio Lasting for 30 Years Vs. Withdrawal Rate, 20% Tax Rate, Large-Cap Stocks, Remainder Intermediate-Term Govt. Bonds, Annual Retirement



Probability of Portfolio Lasting for 30 Years Vs. Withdrawal Rate
35% Tax Rate, 73% Stocks Initially, Remainder Intermediate-Term Govt. Bonds, Annual Retirement



the wake of such a bear market have been successful in being very aggressive with their withdrawals. Thus, post-crash clients should not have to suffer low withdrawal amounts just because their portfolio has been through perdition; if the past is any indication of the future, they should be able to withdraw at least as much, if not more, than their pre-crash retiree counterparts.

In effect, post-crash retirees become "star ," who in my earlier work I defined as those who had exceptionally fine investment returns during their early retirement years. The post-crash behavior of markets has provided this environment rather dependably; whether they will continue to do so is unknown. The hardest part, of course, is judging when the bear market is finally over, and the recovery phase has begun. Premature accelerated withdrawals can create their own damage, which could be difficult to undo!

Taxable Portfolios Revisited

Before I conclude, I must correct errors I made in my August 1996 article in this publication regarding taxable portfolios. In reviewing my spreadsheets prior to engaging on this latest leg of my research, I noted some cell formula errors that affected only taxable portfolios.

The effect of correcting these errors is to reduce the safe withdrawal rate for taxable portfolios, and to increase the recommended range of stocks by 5 percent. The corrected chart for the 35 percent tax rate appears in Chart 14. It is accompanied by a chart for a tax-deferred portfolio, which has not changed, but which is offered for purposes of comparison.

In general, at a 35 percent tax rate, taxable portfolios have safe withdrawal rates that are about 20 percent less than for tax-deferred portfolios of the same longevity. Because the portfolio is assumed to pay all taxes on investment income generated by the portfolio, this still gives the taxable portfolio the edge on after-tax withdrawals, when compared with a tax-deferred portfolio of identical size. However, this distinction is largely academic, as people generally cannot change the character of their portfolios once they are established.

Note that the *asset allocation equation* for taxable portfolios has been reformulated as follows:

% of portfolio in stocks = (125 to 150) – age

This corrected version of the asset allocation equation results in a five percent increase in stock exposure at all ages. A higher percentage of stocks is favored in taxable portfolios because less of the total return of stocks is taxed than the total return of fixed-income investments. The withdrawal rate must be set correspondingly lower to accommodate the increased risk of damage from a major stock bear market.

Finally, Chart 15 includes revised "Probability" charts (at 30 years longevity) for taxable portfolios at 20 percent and 35 percent tax rates. These also show significant differences from charts presented in earlier work.

I apologize if any of the above corrections cause any reader inconvenience.

Conclusion

The expansion of retirement scenarios to include all 12-month periods end-

ing on calendar quarters seemed at first to yield results differing from earlier research. However, when the anomalous period of October 1, 1929, to September 30, 1930, is excluded from the data, the earlier conclusions are supported. The period in question is not likely to recur in the future, barring a global catastrophe.

The addition of small-company stocks to the asset mix significantly raises withdrawal rates. However, the reality of the small-cap effect is being debated, and planners are urged to use their judgment in this area.

Small amounts of cash (as represented by Treasury bills) can replace intermediate-term government bonds in the portfolios without any serious effects on withdrawal rates. At higher replacement rates, withdrawal rates suffer. Replacing stocks with Treasury bills, even if relatively small amounts, results in deleterious effects on withdrawal rates, and should not be done for clients seeking to maximize their withdrawals.

Efforts to study the effects of including international stocks as yet another asset class were stymied by the lack of a database comparable to the Ibbotson data for American stocks.

Several factors influence the decision on the initial stock allocation within the recommended range. Higher stock allocations favor wealth formation and extended longevities. Lower volatility can be obtained at lower stock allocations, but at a considerable price.

Black Hole clients, who are aggressive in their initial withdrawals and then encounter a major bear market early in retirement, may have to cut back on withdrawals significantly to restore the portfolio's 30-year longevity. Historically, post-crash retirees have been able to withdraw at abnormally high rates, so they are not disadvantaged, as are pre-crash retirees. ■

Endnote

I wish to thank my friend and colleague, James N. Bray, Ph.D., for his support, encouragement, and tireless review of my work. I bear all responsibility for any errors which appear here and in earlier versions of my research. I also wish to thank all others who, over the last several years, have made suggestions for further research, and provided me with confirmation of my findings.

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