Resolving the Paradox – Is the Safe Withdrawal Rate Sometimes Too Safe?

As promised, in this month's issue we are taking a break from the recent coverage of important tax law changes, and instead are delving into the world of safe withdrawal rates.

Determining how much can be safely spent in retirement has been a hot topic for the past several years, due in no small part to the oncoming wave of baby boomer retirees and the tremendous focus of the financial services industry on retirement income.

Although the use of safe withdrawal rates has received some criticism, in particular for being overly mechanistic in its approach, I still believe that we can learn a great deal from this body of research. We may not apply the results of the research in a strict fashion with our clients, but it's only through understanding the research and how to apply it that we can hope to bend and flex the research to fit specific client scenarios and develop suitable recommendations.

This month's newsletter is the culmination of new research I've been doing personally on the topic of safe withdrawal rates. I have specifically focused on the problem of how sensitive safe withdrawal rate rules seem to be to the precise level of a client's portfolio at the moment they wish to "flip the switch" to retire. Hopefully, you will find this research to be relevant to your practice and your work with clients as you help them navigate the road towards and through retirement!

About the Author

Michael E. Kitces, MSFS, MTAX, CFP®, CLU, ChFC, RHU, REBC, CASL, CWPP™, is the Director of Financial Planning for Pinnacle Advisory Group (www.pinnacleadvisory.com), a private wealth management firm located in Columbia, Maryland. In addition, he is an active writer and speaker, and publishes The Kitces Report and his blog "Nerd's Eye View" through his website www.kitces.com.

Safe Withdrawal Rates in Practice and the Starting Point Paradox

The existing body of knowledge on safe withdrawal rates, as first established by Bill Bengen and further developed subsequently by others as well, provides a "safe" initial withdrawal rate that can be adjusted subsequently for inflation and still be sustainable through an entire retirement period. For instance, if the safe withdrawal rate was 4.5% and the portfolio was $500,000, this means the retiree could spend $22,500 in the first year. This dollar amount would then be subsequently adjusted for inflation (e.g., $23,175 in year 2, $23,870 in year 3, etc., assuming a 3% inflation rate). Notably, the dollar amount of withdrawals are assumed to increase each year with inflation, regardless of changes in the account balance due to withdrawals and market returns, so the actual withdrawal percentage will vary to some extent in subsequent years.

This safe withdrawal rate approach provides tremendous value for those who wish to determine a starting point for the standard of living that a certain asset base can sustain. Although the reality is that many investors don't live a precisely stable real-dollars standard of living and merely adjust their nominal annual withdrawals by the rate of inflation, the approach nonetheless provides an excellent starting point for evaluating spending sustainability.

However, because the approach typically stipulates that the safe initial withdrawal rate is applied once at the beginning of the time period (i.e., at the point of retirement), the actual amount that a client may spend (both in year 1, and subsequently for the remainder of retirement) can suddenly become far more volatile than anticipated, simply due to the fact that the portfolio balance may fluctuate with market returns. Similarly, the approach can also be troublesome where it creates paradoxical situations that result in clients with

comparable investment portfolios receiving different safe spending recommendations.

For example, imagine two clients, the Retirenows and the Notquiteyets, who both have a $1,000,000 portfolio available for retirement. The Retirenows come into their planner's office, and wish to retire this year. Applying the safe withdrawal rate methodology, the planner suggests an initial withdrawal rate of 4.5% (or $45,000 of actual spending in year 1 on a $1,000,000 portfolio) as being "safe" (and may be combined with their pensions, Social Security, or other fixed income sources). The Retirenows move forward with their retirement on that basis, with the expectation that they will be able to increase their $45,000/year spending for inflation each year, and be safe for the next 30 years as long as their future returns are no worse than any market cycle in history. The Notquiteyets, on the other hand, decide that they wish to work for one more year, and plan to retire next year instead.

Over the ensuing year, a bear market emerges, and at the end of the year both portfolios have experienced 15% market declines. The Notquiteyets, now ready to retire, visit the planner's office to receive a recommendation on a safe and sustainable retirement spending amount. The planner, consistently applying a 4.5% initial withdrawal rate, informs the Notquiteyets that they can safely spend $38,250 (which is 4.5% of their now-$850,000 portfolio). Coincidentally, later that day, the planner also does a one-year review meeting with the Retirenows. Based on their retirement last year and the safe withdrawal rate research, the planner informs the Retirenows that they can safely continue last year's spending, and increase it for the past year's inflation (we'll assume 3%). Thus, for the upcoming year, the Retirenows are informed that they can safely spend $46,350.

Suddenly, a strange paradox emerges. At the beginning of year 1, the Retirenows and the Notquiteyets both had $1,000,000. Heading into year 2, both couples were ready to retire or had already retired. Both couples experienced the exact same investment returns (a 15% portfolio decline). Yet by applying the same methodology, the Notquiteyets were informed that they can safely spend only $38,250 for the year, while the Retirenows can safely spend $46,350! The Retirenows are able to safely spend almost 21% more than the Notquiteyets, despite the similar circumstances throughout. And in fact, the disparity is even more shocking; because the Retirenows also spent money in the first year, the reality is that not only is their safe spending in year 2 a whopping 21% higher than the Notquiteyets, but their portfolio value is actually *lower*. After all, the Retirenows didn't just experience the market decline; they also took a year 1 spending withdrawal!

How can we account for a safe spending approach that produces such disparities, given identical circumstances, where the only thing that changes is the timing of the withdrawal starting point? Is this a sign of an underlying flaw in the entire safe withdrawal rate methodology, or is there another way to account for the differences produced here? To understand whether or how the paradox can be resolved, and its further implications, it is first necessary to delve into the roots of how safe withdrawal rates originated and evolved in the research itself.

Background

The origins of the current body of knowledge on safe withdrawal rates date back to the work of Bill Bengen, and his seminal article in the Journal of Financial Planning in October of 1994.[1]

The Bengen article began with a fairly straightforward premise, drawing on an article earlier that year by Larry Bierwirth – that is, instead of using historical average rates of return, what if we analyzed the sustainability of retirement spending by looking at *actual* historical sequences of returns? The idea was not only to acknowledge that some shortened periods of time may have average returns that differ from the longer-term average, but also to acknowledge that the *order* of returns in individual years can have a significant impact on

Out and About

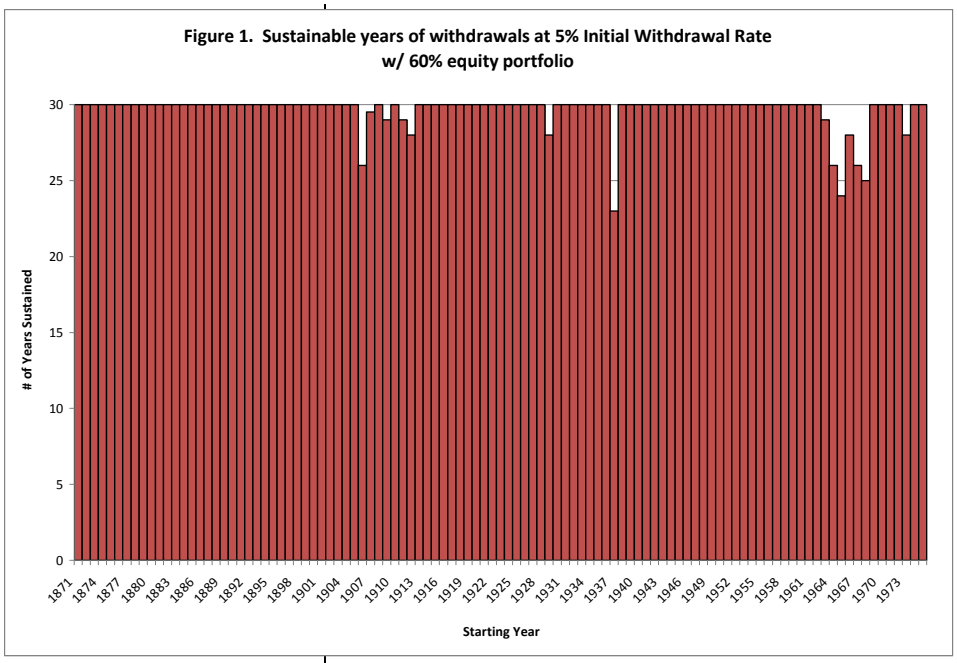
- Michael will be speaking at NAIFA Delaware about the "Taxation of Deferred Annuities" on May 6th.

- Michael will be speaking on "Cutting Edge Tax Planning Developments and Opportunities" for the NAPFA National Conference on May 14th.

- Michael will also be presenting at the FPA NorCal Regional conference on May 27th on "Advanced Concepts in Long-Term Care Insurance Planning."

Interested in booking Michael for your own conference or live training event? Contact him directly at ***speaking@kitces.com***.

the success over the entire retirement time period.



Thus, the Bengen article explored the sustainability of various spending/withdrawal strategies using actual sequences of returns for various asset classes and inflation throughout history, instead of simply doing projections using average returns. On this basis, it quickly becomes clear that in some situations, a favorable sequence of market returns and inflation allows for a relatively high spending rate. In other years, the order of returns and inflation is less favorable, and a lower spending rate is necessary to ensure retirement success.

The Bengen approach (followed by much of the subsequent researchers in this area as well), was to analyze safe spending strategies by assuming an initial withdrawal rate as a percentage of the starting portfolio to produce a certain dollar amount of spending in year 1, and then assuming that the specified year 1 dollar amount would be adjusted annually in subsequent years for inflation. On a nominal basis, this leads to a steadily rising dollar amount of spending as inflation increases are applied. On a real (inflation-adjusted) basis, this effectively assumes a flat, level real spending amount throughout the time period.

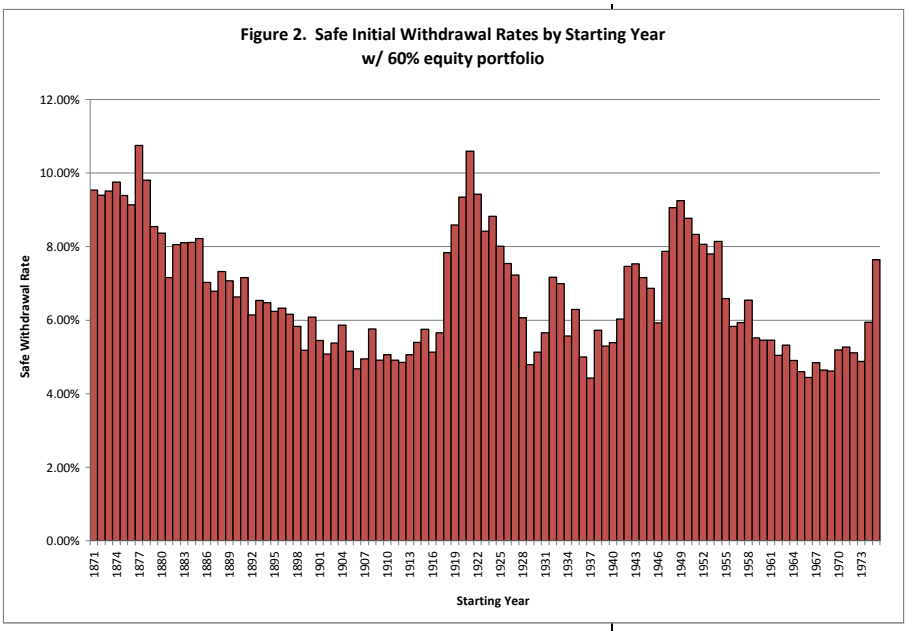
This approach provides two alternate, yet similar, ways to analyze safe spending. The first is to assume a certain initial withdrawal percentage, and evaluate the number of years that the spending amount can be sustained at various historical starting points (or how often the portfolio lasts for a minimum number of years, such as 30 years). Figure 1 above shows how many years (up to a maximum of 30) that a sample initial withdrawal rate of 5% (e.g., $50,000/year on a $1,000,000 starting portfolio, with spending adjusted annually for actual inflation) will last starting at various points throughout history using balanced 60/40 stock/bond portfolio (rolling 30-year periods from 1871 to 1975).[2]

Not surprisingly, history reveals only three time periods at which a 5% initial withdrawal rate was not sustainable – for those who retired either: a) in the aftermath of the crash of 1903 (although life expectancy was only 47 at the time!) with the crash of 1916-1917 on the horizon; b) leading up to the crash of 1929 and/or in the middle of the Great Depression; or c) leading up to the bear market and hostile inflation environment of the 1970s.

It may be illuminating for some to see that in fact, a withdrawal rate of 5% is actually quite successful for the overwhelming majority of time periods. It is only in certain market- and retiree-adverse environments where the 30 year time horizon isn't achieved. However, in those situations, retirees can run out of money only 3/4s of the way through the target time period! On this basis, if you wanted to figure out what a truly "safe" withdrawal rate would be, you'd have to keep creating this graph with lower and lower withdrawal rates, until you eventually found one where the withdrawals were sustained for each and every 30-year period.

An alternative way to view the preceding data is to determine what the maximum initial withdrawal rate (adjusted subsequently for inflation) *would have* been for each of the rolling 30 year time periods. Examining the data this way, again using a 60/40 stocks/bonds balanced portfolio, yields the results shown in Figure 2 at the top of the next page.

Figure 2 reveals that in fact, over a 30-year time period, the sustainable initial withdrawal rate



(subsequently adjusted for inflation) can vary quite significantly. For the long series of rolling 30-year periods shown, the median safe withdrawal rate was actually 6.2%. The highest safe withdrawal rate was a whopping 10.8%. However, the lowest safe withdrawal rate was only 4.4% using this data set. (Note: Given slight discrepancies between the source data used for the analysis and the Bengen research, this should be viewed as yielding results substantively identical to the Bengen research.)

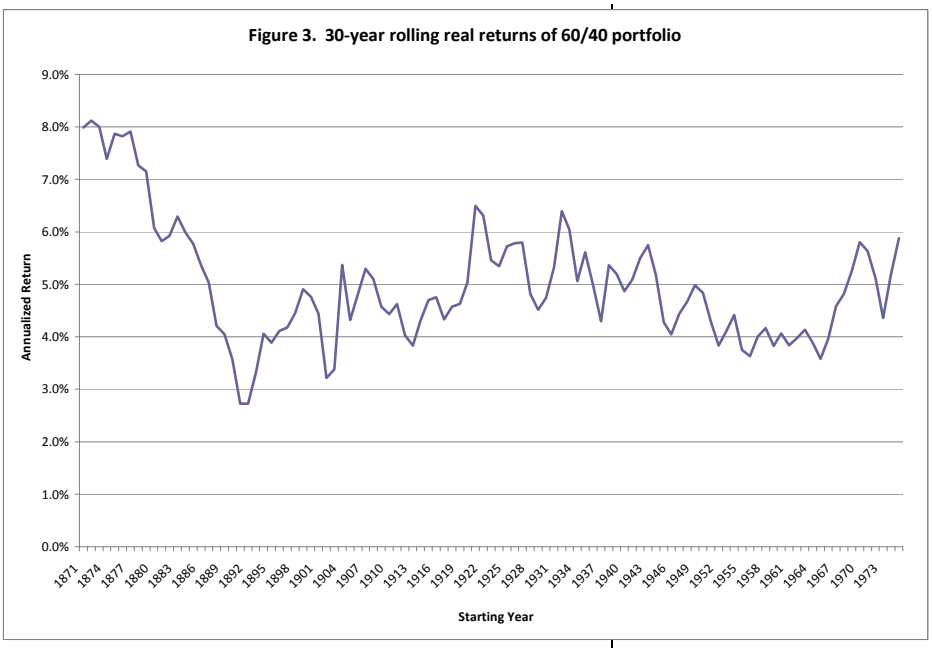
Thus, the basis for a safe withdrawal rate of approximately 4.5% (it appears to be about 4% to 4.5%, depending on exactly what data inputs are used) is really quite simple – *it is the lowest initial withdrawal rate that would have survived any historical rolling 30-year period*. Essentially, it means that the "safe" withdrawal rate is the "worst" or lowest successful withdrawal rate that occurs at any point along the series of rolling 30-year periods.

The underlying assumption of the research is that if withdrawals are low enough to have been capable of surviving the least favorable market scenario in history, it's probably a pretty "safe" spending amount that should be able to comfortably survive any future market scenarios. Of course, the future can always turn out to be different from any historical scenario we've ever seen – so even the 4% - 4.5% safe withdrawal rate isn't bulletproof – but it certainly forms a reasonable basis for moving forward with a client spending recommendation. Ostensibly, if a market shock that occurred was worse than any loss scenario in history, including the Great Depression and the bear markets and inflation spike of the 1970s, we as planners could be cognizant of that reality and make additional adjustments along the way as necessary.

Another important observation from Figure 2, beyond the fact that the lowest/worst withdrawal rate of any scenario was approximately 4.4%, is that the safe withdrawal rate in any particular year doesn't appear to be entirely random, either. It is not as though the safe withdrawal rate is 5.7% in one year, jumping to 10% in the next year, and dropping back to 4.8% in the third year. Instead, the safe withdrawal rate appears to move in trends of steadily increasing (or declining) safe withdrawal rates. These trends last many years (or sometimes even decades) at a time, before eventually shifting in the other direction. And these trends don't move entirely in isolation. Instead, perhaps not surprisingly, they appear to move in tandem with the long-term returns of the underlying stocks and bonds.

Average vs. Actual Returns

Most financial planners have seen some version of the long-term return charts produced by Ibbotson Associates and other similar sources, indicating that the long-term returns of large-cap equities and intermediate-term bonds are approximately 10% and 5%, respectively (give or take about 0.5% depending on the source of the data, with an additional 2% or so for small-cap equities). With a long-term average inflation rate of about 3%, the effective historical real returns on large-cap equities and intermediate-term bonds are approximately 7% and 2%, respectively. In fact, these long-term historical return and inflation rates underlie the assumptions that most financial planners use in both



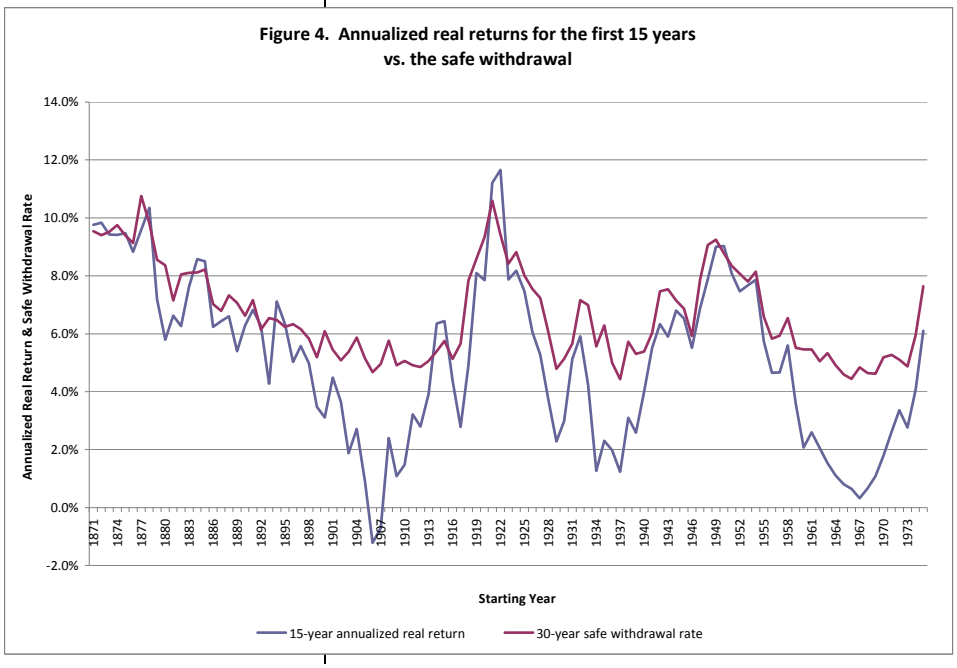
portfolio design and retirement and insurance needs projections.

However, the reality is that even over periods as long as 30 years, the total real return of a balanced portfolio of stocks and bonds can vary significantly from the average. For instance, Figure 3 above shows the rolling 30-year real (inflation-adjusted) returns of a 60/40 stocks/bonds portfolio from the data set used to produce Figures 1 and 2.

Even over periods as long as 30 years, the real returns of balanced portfolios have ranged from under 3% to over 8%, and in the last century have still ranged widely from approximately 3.5% to 6.5%. Compounded over 30 years, a range of 3% annualized returns can add up to a significant amount of money!

However, the returns in Figure 3 do not necessarily correspond clearly to the rise and fall of safe withdrawal rates over the associated time period. A closer look reveals that the mismatch sometimes occurs because it is actually the real returns over the *first 15 years* that have the most significant impact on long-term portfolio sustainability over the entire 30-year period. Figure 4 below graphs the safe withdrawal rate over a 30-year period, as shown previously in Figure 2, but this time against the annualized real return of the 60/40 portfolio for the first 15 years of the 30-year withdrawal period.

Suddenly, a strong relationship emerges. In fact, over the past 140+ years, the safe withdrawal rate for a 30-year retirement period has shown a whopping 0.91 correlation to the annualized real return of the portfolio over the first 15 years of the time period! The data show that when the real returns are elevated for the first 15 years, significantly higher withdrawal rates are sustainable. On the other hand, when real returns are depressed for the first 15 years, the result is typically a lower safe initial withdrawal rate. In point of fact, in virtually every instance where the safe withdrawal rate was below 6%, it was associated with a time period where the annualized real return of the portfolio was 4% or less for the first 15 years.



The results above reveal that deviations of real returns above or below the historical averages – even, or especially, over 15-year periods – can have a significant impact on the sustainability of a 30-year period of retirement spending. Of course, these are all results that we can view with 20/20 hindsight, looking back over the markets of the past. It's easy to say, after the fact, that a long sequence of weak returns turned out to be associated with a lower sustainable withdrawal rate. But a prospective retiree wants to know what is safe to spend, *in advance of* the market returns actually occurring! Thus, the next logical question to ask is whether there is anything we can do to anticipate above- or below-average returns over any *future* 15-year period, before they actually occur!

Anticipating Long-Term Returns

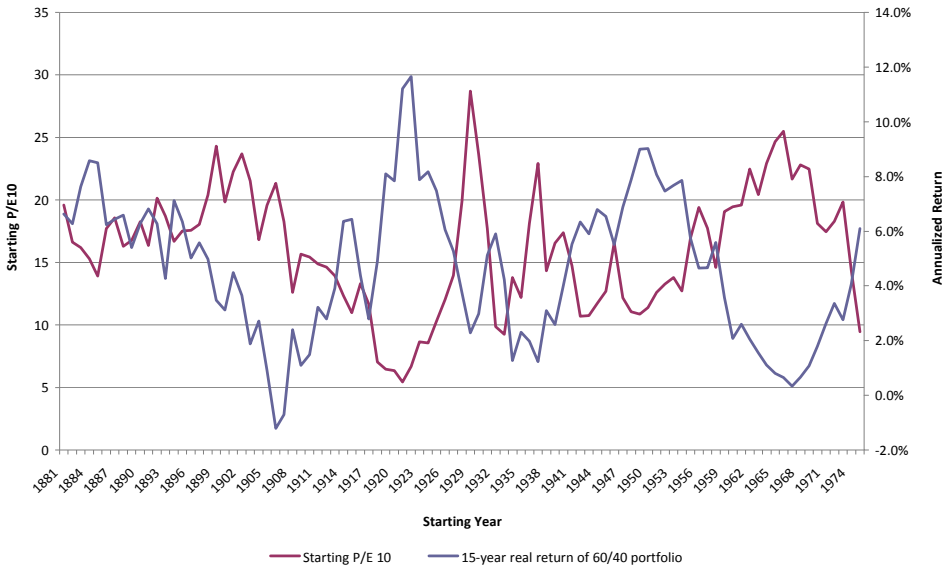
The good news is that a growing body of research reveals that, in fact, longer-term returns *can* be predicted to some extent. No, this doesn't mean you're necessarily going to forecast the price of the Dow Jones Industrial Average in 6 months, or even the return of the stock market over the next 3 years. Nonetheless, long-term returns don't appear to be entirely random either.

Over time, the total return of the markets is derived from three components – dividends paid, the growth in the underlying earnings of companies (which in turn is tied to overall economic growth trends), and changes in the price-to-earnings ratios (P/E ratios). As we know, the economy tends to move in cycles that accelerate and decelerate the growth in earnings (and to some extent available dividends to be paid). In addition (and more significantly), though, P/E ratios also tend to move in long cycles, with extended periods of expanding and contracting ratios that may span more than a decade, boosting or depressing total market returns. Perhaps even more importantly, those extended time periods of expanding or contracting P/E ratios (producing long-term real returns above or below historical averages) can often be anticipated in advance – by looking at the valuation of the aggregate market at the beginning of the time period!

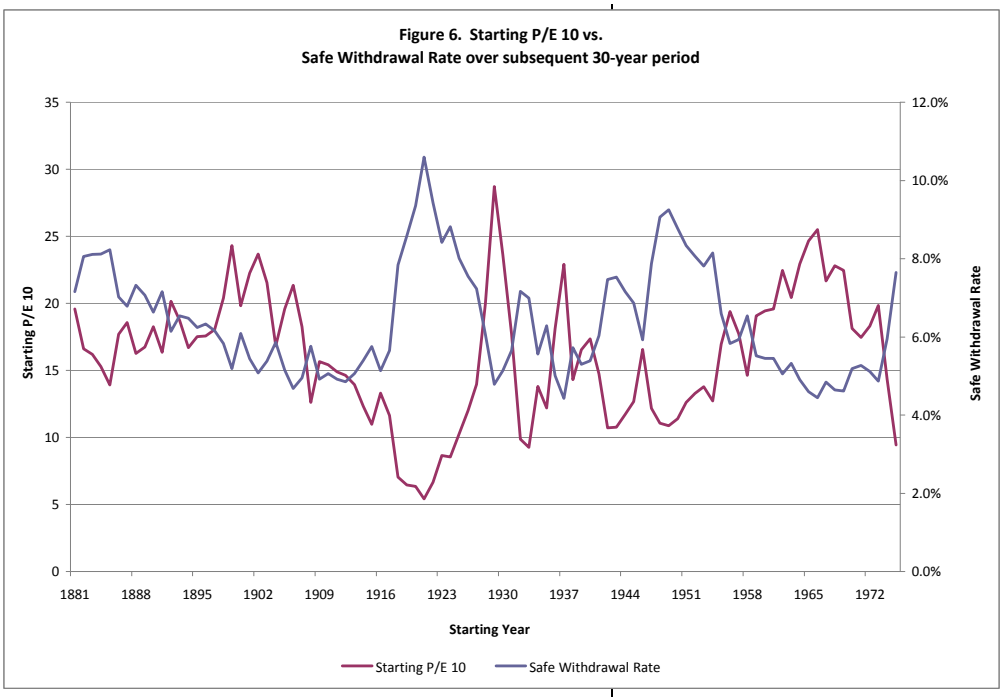
Figure 5 below shows the rolling 15-year return of the balanced 60/40 portfolio, and the associated P/E multiple at the beginning of the time period. In this case, the "earnings" denominator of the P/E ratio is calculated as an average of the preceding 10 years of inflation-adjusted real earnings (this 10-year-averaging process is done to smooth out market cycles) using the aforementioned Shiller data set. (Note: For future reference, the P/E ratio based on the 10-year average of real earnings will be abbreviated as P/E10.)

Figure 5 shows that in reality, the starting P/E ratio has an incredibly strong inverse relationship to returns over the subsequent 15 years (the correlation of the data is actually -0.65). This means, not surprisingly, that when P/E ratios are high (and ostensibly are due to contract), the subsequent returns of the market are below average. When P/E ratios are low (and have room to expand), the subsequent returns of the portfolio are higher.[3]

Figure 5. Starting P/E 10 vs. subsequent 15-year return of balanced portfolio



Given that we have already seen the relationship between safe withdrawal rates and the first 15 years of real returns, and the connection between starting P/E10 and subsequent 15 year real returns, Figure 6 at the top of the next page brings the two factors together to answer the question: "Does the starting P/E10 market valuation turn out to predict the safe withdrawal rate over the subsequent period for a 60/40 portfolio?"



In reviewing the results of Figure 6, a strong relationship becomes evident between initial market valuation and subsequent safe withdrawal rates for a balanced portfolio. In fact, the correlation between them is -0.74. Notably, that means that starting market valuation shows an even stronger relationship to safe withdrawal rates than it does to the 15-year real returns of the portfolio itself! The basic conclusion of the charts: when starting P/E ratios are low, significantly higher withdrawal rates can be consistently supported; but when starting P/E ratios are high, be very cautious about the portfolio withdrawal rate!

A natural extension of the initial results of Figure 6 is to explore whether safe withdrawal rates are simply higher "on average" when starting P/E10 valuations are low, or whether it is actually the case that withdrawal rates are "*always*" higher in lower valuation periods. In other words, if we segmented market returns into periods of high and low starting valuations (high and low P/Es, respectively), do we find that the safe withdrawal rates for low valuation environments to be uniformly more favorable than when starting at higher valuation levels? If it turns out that certain market environments are so favorable to market returns that it is actually "impossible" to have a safe withdrawal rate as low as "only" 4.5%, it may suggest that in fact the safe withdrawal rate really is "too safe" for some environments.

To explore this potential relationship further, Figure 7 below takes the results of Figure 6, breaks out the safe withdrawal rates for the 60/40 portfolio, and ranks them into quintiles (percentiles at 20% intervals) based on the starting P/E10. Quintile 1 represents the lowest valuation levels (low P/Es) that are theoretically associated with higher returns; quintile 5 reflects the highest valuation levels that are typically associated with lower subsequent real returns. From there, we can evaluate exactly what safe withdrawal rates are associated with various quintiles of starting P/E10 levels, to see if there are some environments where today's accepted safe withdrawal rate really may be "too safe."

Several notable trends begin to emerge from Figure 7. First, the relationship between starting P/E ratios and safe withdrawal rates for the balanced 60/40 portfolio continues to hold – the lowest 20% of starting P/E ratios (quintile 1) with favorable valuations are

Figure 7.
Safe Withdrawal Rates based on P/E10 quintiles

Quintile	Lower P/E	Upper P/E	Lowest SWR	Highest SWR	Average SWR
1	5.4	12.0	5.7%	10.6%	8.1%
2	12.0	14.7	4.8%	8.3%	6.7%
3	14.7	17.6	4.9%	8.1%	6.3%
4	17.6	19.9	4.9%	7.2%	5.8%
5	19.9	28.7	4.4%	6.1%	5.1%

associated with the highest average safe withdrawal rates, and each incremental increase in the P/E quintile (moving up from quintiles 1 to 5) is associated with a lower and lower average safe withdrawal rate as the market valuation becomes less and less favorable. In other words, as the market's P/E multiple increases and valuations become less favorable, the retiree does in fact need to start with lower withdrawal rates.

The second trend of Figure 7 is to note that the impact of market valuation is most pronounced at the extremes – the *best*/highest withdrawal rate from poorly valued markets (6.1%) is almost the same as the *worst*/lowest withdrawal rate from positive valuation environments (5.7%)! In other words, the best case scenario from overvalued markets is almost the same as the worst case scenario from favorably valued markets. Overall, there is a whopping 3% difference in the average safe withdrawal rate from the most unfavorable market valuations (5.1% average in quintile 5) to the most favorable (8.1% average in quintile 1)!

Beyond looking at the extremes, there is also value in looking at the middle quintiles. First, it is notable that the worst-case-scenario safe withdrawal rate is nearly 0.5% higher for any market valuation that is NOT the most unfavorable extreme. In addition, it is also important to bear in mind that this chart groups together all P/Es in the middle of the range – whether they occur in the midst of an up-trend or down-trend in P/E ratios overall. However, Figure 6 revealed that in reality the market tends to persist in valuation trends of expanding or contracting P/E10 ratios for extended periods of time, and rarely cross through the middle quintiles without being on the way to one extreme or the other. Thus, further research may explore how to better parse this middle ground to refine recommendations even further.

We can also expand on the data in Figure 7 by looking beyond the 60/40 portfolio on which we have focused thus far. Thus, in Figure 8 to the right, we evaluate safe withdrawal rates based on starting P/E10 quintiles – but in this case, we have noted the safe withdrawal rate (i.e., the initial withdrawal rate from the "worst" scenario that therefore survives all scenarios) for varying levels of equity exposure from 0% to 100% equities.

The results reveal several additional important trends. First of all, the impact of P/E ratios is significantly reduced in portfolios with less equity exposure (i.e., for the 0% equities, the safe withdrawal rate is 2.5% in both high and low valuation environments) – not surprisingly, market valuation and its impact on returns is a moot point if there is little or no equity exposure in the portfolio in the first place! In the mid- and upper-level equity policies, the general trend continues to hold as well – that lower valuation levels are associated with higher safe withdrawal rates (thanks to the above-average returns that typically occur in the subsequent 15 years), and higher unfavorable valuation levels require lower safe withdrawal rates.

Slicing the results a little further, it is also notable that in unfavorable valuation environments (high P/E quintiles), the 60% equity exposure portfolio is actually the most optimal of the available choices. This is somewhat counter-intuitive, since one may have expected that high valuation environments with depressed equity returns indicate you should avoid equities significantly or altogether. Certainly, as expected, the results reveal that while a balanced 60/40 portfolio produces higher safe withdrawal rates than even more equity-centric portfolios in unfavorable valuation environments. Nonetheless, the overall elevated long-term return of equities (over fixed income) also means that even in high valuation environments, 60% equity exposure is still superior to less exposure! In other words, it's good to give up some equity exposure in high valuation environments, but not too much!

On the other hand, in low valuation environments that are supportive of higher equity returns, there is no loss of safety over the long run in moving to higher and

Figure 8. Safe withdrawal rate ranked by P/E10 with varying equity exposure

P/E Quintile	Safe withdrawal rate w/ equity exposure of: 0%	20%	40%	60%	80%	100%
1	2.5%	3.8%	5.2%	5.7%	5.8%	5.8%
2	2.5%	3.5%	4.5%	4.8%	5.0%	5.0%
3	2.4%	3.3%	4.3%	4.9%	5.0%	5.0%
4	2.5%	3.4%	4.2%	4.9%	4.7%	4.5%
5	2.5%	3.2%	3.9%	4.4%	4.3%	4.0%

higher equity exposures – all the way up to 100% in equities. Of course, this doesn't necessarily mean that everyone should invest 100% in equities in favorable valuation environments. Clients must still be comfortable and willing to tolerate the day-to-day and year-to-year volatility. Nonetheless, from a safe withdrawal rate perspective, taking equity exposure above 60% is *only* harmful in high valuation environments, and in low/favorable valuation environments it is not "risky" (by these metrics) to increase equity exposure.

A straightforward set of starting enhancements to the current safe withdrawal rate rules begins to emerge from the data in Figures 7 and 8. Although there are a wide range of results for markets with P/E10 ratios in the middle quintiles, at a minimum it appears that clients can safely add 0.5% to their safe withdrawal rate as long as the market's P/E10 is NOT in the worst quintile. In other words, the only instances in history that a safe withdrawal rate below 4.5% was necessary all occurred in environments that had unusually high starting P/E10 valuations. As long as this is *not* the valuation situation for the prospective retiree, a higher safe withdrawal rate appears to be reliably sustainable.

In addition, the data also reveal that the reverse situation is relevant as well – that when markets are at extremely undervalued levels as measured by P/E10, a significantly higher safe withdrawal rate is merited. Specifically, in all historical market situations where the starting P/E10 was below 12.0, a withdrawal rate upwards of 5.5% (actually, 5.7% - 5.8% by this data) was safe in all historical scenarios as long as equity exposure was at least 60%.

A basic summary of these rules appears in Figure 9 to the right, assuming that the 'base' safe withdrawal rate in all scenarios is 4.5% and that equity exposure is at least 60%.

The impact of these withdrawal rules should not be ignored. From a base portfolio of $1,000,000, this means that while a safe withdrawal rate of 4.5% produces $45,000/year of real-dollar spending, the safe withdrawal amount is $50,000 in fairly valued environments and $55,000 in favorable market scenarios. These represent spending increases of more than 10% and 20%, respectively, in both the starting year and over the entire retirement period!

Figure 9.
Rules for adjusting Safe Withdrawal Rates

P/E10	Safe withdrawal rate impact
Above 20.0 "overvalued"	Utilize base safe withdrawal rate of 4.5%
Between 12.0 and 20.0 "fairly valued"	Increase safe withdrawal rate by 0.5% to 5.0%
Below 12.0 "undervalued"	Increase safe withdrawal rate by 1.0% to 5.5%

Beyond setting safe withdrawal rate levels, the results also have implications for the investment policy that should be associated with the safe withdrawal rate strategy for various valuation environments, as preliminarily discussed above. This is explored further in later sections.

Applying The Rules

We can now use our original retiree example of the Retirenows and the Notquiteyets to provide a context for applying the new rules of market valuation on safe withdrawal rates. As we can now see in retrospect, the critical piece of information missing at the time was the valuation of the markets. What changed from year 1 to year 2, besides the account balances of the Retirenows and the Notquiteyets, was the P/E multiple of the market, as a result of the changes in market/index price (and to some extent, also from changes in earnings).

In the original example, the markets had dropped 15%. We might also assume that this is combined with a modest growth in the 10-year average earnings of perhaps 3% (not impossible even in a bear market, given that the nature of a rolling 10-year average that grows over time is that the oldest year that drops off is typically the lowest earnings given that real earnings do grow steadily over time). With these changes in price and earnings, the total change in the valuation of the market (i.e., the total decrease in the P/E) is approximately an 18% decrease (from a 15% decline in the numerator of the P/E ratio and a 3% increase in the denominator).

To extend this example with "real" numbers, let's assume the starting price of the market index was 1,000, and the 10-year average earnings was $45/share, which had produced a starting P/E10 multiple of 22.2 (which is simply 1,000 / 45). One year later, the market

index would be down to 850 (given the 15% decline in the market from the original scenario) and the 10-year average earnings would be up to $46.35/share (given our assumption of a modest 3% increase in the 10-year average). Combined together, these changes would produce a new P/E in year 2 of 18.3 (calculated as 850 / 46.35).

In this case, the 18% decline in P/E (from 22.2 to 18.3) would cross the important line of a P/E10 of 20.0, which as shown in Figure 9 merits an increase in the safe withdrawal rate. Thus, when the Notquiteyets are finally ready to retire in year 2 with a portfolio of only $850,000, their safe withdrawal rate has increased from 4.5% to 5%, producing a safe spending amount of $42,500 for their first year of retirement. Although this is still a little lower than the spending of the Retirenows (which was $46,350 after the inflation adjustment), accounting for market valuation significantly reduces the gap between each couple's safe retirement spending in year 2 and helps to resolve the paradox. The safe withdrawal rate adjustments due to market valuation allowed the Notquiteyets to safely spend approximately 11% more when they retired than the traditional approach (without market valuation adjustments) would have allowed.

Unfortunately, market valuation doesn't completely eliminate the impact of the starting level of the market on a safe withdrawal rate. It's a refinement, but does not yield guidelines that precisely equalize the spending amount in each year due to portfolio fluctuations and changes in market valuation (if it did, the Notquiteyets would have had a safe spending amount when they retired of the exact same $46,350 that the Retirenows had). Nonetheless, accounting for market valuation does significantly mitigate the impact of fluctuations in the starting account balance on a prospective retiree's safe spending amounts. As mentioned earlier, the Notquiteyets were able to spend 11% more than they could have under the original framework, and this in turn reduced the gap between the recommended spending of the two couples from 21% to less than 10%.

On the other hand, it's also important to note that in some instances, even an 18% decline in the P/E10 ratio doesn't necessarily cross over a threshold level from Figure 9; consequently, in some cases the full disparity shown in the original example would still be present. Fortunately, there is still ample room for this body of research to be further refined, which over time may yield conclusions that allow planners to establish retirement spending recommendations that are even more consistent in spite of market fluctuations.

Why use P/E10 to measure value?

At this point, some readers are probably wondering "why P/E10" as a measure of market valuation? Why not use forward P/E ratios? Or trailing 1-year ratios? Amongst all the different ways P/E ratios are measured, why this one in particular?

Well, the short answer is because "it works." In other words, it may be true that other valuation measures are effective for investment purposes in other contexts, but for evaluating safe withdrawal rates P/E10 appears to work better than any other choice. This doesn't mean that P/E10 should be used solely for any and all valuation purposes in all situations – but the data speaks for itself in this context, with the incredibly high correlations that result from utilizing P/E10 for this analysis.

Fundamentally, P/E10 also makes sense because the focus here is to predict long-term future results, and such analyses often work better when adjustments are made to tune out "short-term noise." By using a 10-year average of real earnings, a great deal of short-term cyclical volatility in earnings is removed, allowing for a much steadier measure of earnings. This results in a P/E10 ratio that is highly sensitive to the price of the market (as it should be, since market movements reflect the price movements in the account balance of the portfolio!), but the P/E10 is not as sensitive to the volatility of earnings from quarter to quarter.

Applying The Rules In The Future

Many financial planners don't necessarily follow the aggregate corporate earnings of the stock market on an ongoing basis, not to mention the precise level of reported inflation. Consequently, manually calculating 10-year averages of real earnings to determine the appropriate P/E10 is probably not standard practice for most planners, to say the least.

Fortunately, publicly available data resolves this problem. In fact, the easiest shortcut is to look directly to some of the data available on Professor Shiller's site at www.econ.yale.edu/~shiller/data/ie_data.xls, which includes the current P/E10 of the S&P 500 (the most recent entry would be at the end of the 'Stock Data' tab, approximately row 2653, in column K). Notably, the data can generally only be updated every few months (because earnings are only released quarterly). Nonetheless, because the P/E applied here is a 10-year average (or 120 months), a lag of a few months waiting

for the next release of quarterly earnings data is not likely to materially affect the results.

Thus, planners can evaluate whether any of the adjustments shown in Figure 9 should apply for their own clients directly, by simply looking up the P/E10 from the chart. Since the data may lag by a few months, in volatile markets planners may also wish to calculate their own up-to-date measure of P/E10 manually. This can be accomplished with Shiller's data as well, by simply calculating the 10-year average of real earnings (i.e., the 10-year average of the monthly real earnings shown in Column J of the Shiller data), and dividing that average earnings result into the current price of the S&P 500.[4]

Applying The Rules Today

Today's environment can provide a good working example as well for applying P/E10 market valuation to determine how to currently apply safe withdrawal rates for clients. As of the time of this writing, the Shiller spreadsheet data for real earnings had been updated through the 3rd quarter of 2007 (as mentioned earlier, some of the data is produced on a lag). The 10-year average of the latest series of real earnings would be 56.82 (the average of cells J1530 through J1649).

Using an S&P price of approximately 1375, this means that the current P/E10 of the market would be 1375 / 56.82 = 24.2, placing it squarely in the realm of "overvalued" as measured under Figure 9. As a result, planners in this environment would continue to use the more conservative end of the safe withdrawal rate spectrum (a base rate of 4.5%, or whatever is preferred in your practice), in recognition of the overvalued market environment by these measures.

The Markets Are Overvalued?

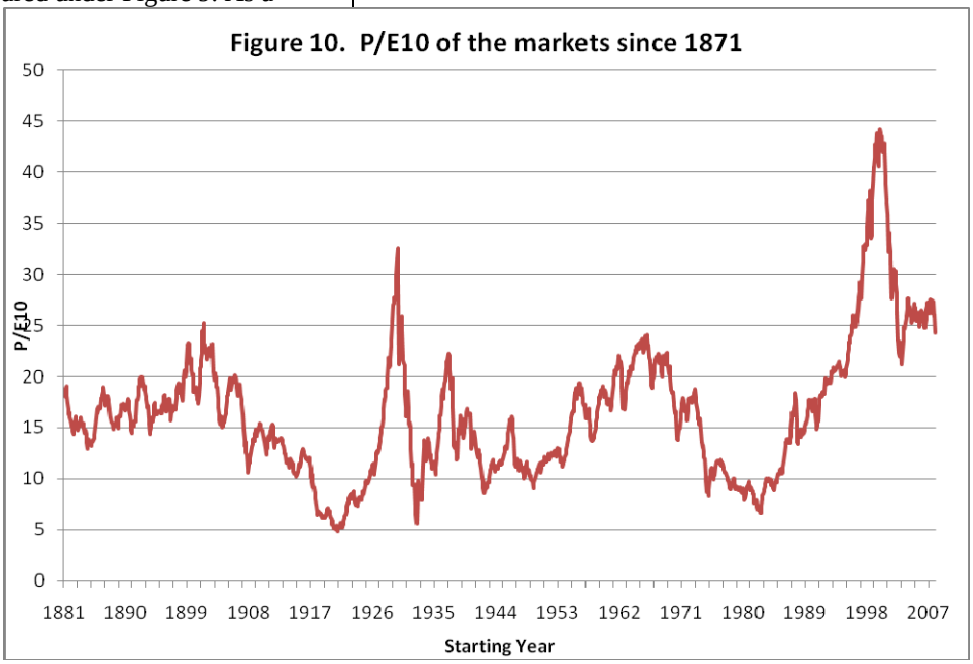
For some readers, the last paragraph may have come as a bit of a surprise. The markets are overvalued? Aren't some commentators saying the markets are reasonably priced, or even "cheap" by some valuation measures? How can we be so overvalued, when the price of many market indices (like the S&P 500) is still not higher than it was back in 2000?

Figure 10 below shows the historical P/E10 ratios for the market, from the beginning of the data series until the most recent time period.

Although the P/E10 of the markets has fallen quite significantly since the peak in 2000, it is notable that on this basis the markets are *still* as overvalued as they were in the mid-1960s (the last time safe withdrawal rates dropped to a minimum), and are still generally in line with the overvalued *peaks* leading up to the turbulent markets of the early 1900s, the Great Depression, and the 1970s. In fact, if the unusual time period of the tech bubble were excluded, the current valuation of the market is still as high as the 96th percentile in history (and even with the tech bubble, it's still the 90th percentile)!

The good news is that the extended period of overvaluation (now running for more than a decade!) means that our conservatism in recent years towards withdrawal rates has probably been quite fortunate. In fact, the historical data reveal that the markets have never been as overvalued, or overvalued for as long, as they have over the past decade – potentially a concerning sign that we may ultimately look back on

Figure 10. P/E10 of the markets since 1871



this period as being even more destructive of retirement plans than the 1960s and 1970s were. To say the least, though, a high level of conservatism certainly appears to be merited in today's environment.

Investment Implications

A natural extension of the analysis on P/E10s suggests that if markets are so overvalued that safe withdrawal rates should be held at conservative levels (from Figure 9), and that market returns could still be depressed for the next 15 years (as implied by Figure 6, given today's high market valuations), should we change our investment portfolios?

The early results from Figure 8 suggest that we should not necessarily change the portfolio significantly, merely because of the valuation environment. For instance, static equity exposures below 60% still result in lower (i.e., less desirable) safe withdrawal rates, even if equity returns are depressed due to high P/E environments. This is supported not only by the long-term data, but also anecdotally in more recent time periods. For example, the current "overvalued" environment (as measured by a P/E10 over 20.0) actually began all the way back around 1993! As we know, getting highly conservative in 1993 would have sacrificed a tremendous amount of return for another 7 years of a bull market, until the eventual bear market came in 2000. Thus, valuation alone cannot be a sole determinant of market exposure or investment policy, especially in the short- to intermediate-term. Markets can remain in an unfavorable valuation range, or even become more poorly valued, over long periods of time before the value (or lack thereof) is finally recognized by the markets with an appropriate price movement. To some extent, this is what helps to support moderate equity exposures for the long run, even in unfavorable valuation environments.

However, planners probably should consider at least modestly modifying their forecasts for equity returns on this basis, at least until the market environment adjusts back to the range of being more fairly valued. Notably, reducing long-term equity returns for projection purposes will actually yield another series of conservative projections, similar to the impact of the safe withdrawal rate research itself (i.e., if you project market returns for retirement planning at 8%-9%, instead of 10%-12%, you'll get lower wealth values and a need to reduce spending even with a traditional retirement projection).

Beyond merely the impact on projections, though, accounting for valuation may also suggest that it is proper to alter equity exposure, *at least temporarily*, to account for the reduction in anticipated intermediate-term equity returns. The research in this newsletter is all based on a static equity exposure – if you're conservative at the start, you're assumed to be conservative forever. This does not fully account for the possibility of reducing equity exposure in poor valuation environments, but moderating it in "fairly valued" situations and even becoming more aggressive if the valuation shifts to being extremely favorable. Such dynamic portfolio designs may also result even for investment managers evaluating their portfolio mix using modern portfolio theory and optimizing along the efficient frontier, as varying the input assumptions (changing means and standard deviations) to account for the current environment may also lead to a different optimized investment allocation than default historical assumptions.

Early research in the area of varying equity exposure has already begun – for example, see the excellent paper by David Blanchett that won the 2007 Financial Frontiers award for the Journal of Financial Planning, entitled "Dynamic Allocation Strategies for Distribution Portfolios: Determining the Optimal Distribution Glide Path" at www.fpanet.org/journal/articles/2007_Issues/jfp1207-art7.cfm. However, it is important to note that the Blanchett research did not focus on market valuation in particular when exploring safe withdrawal rates and portfolio exposures. This intersection of dynamic portfolio design and safe withdrawal rates is an area ripe for further research and investigation. Nonetheless, for an introductory discussion of the investment implications of long-term periods of declining market valuations, see the article "Understanding Secular Bear Markets: Concerns and Strategies for Financial Planners" by Solow & Kitces in the March 2006 issue of the Journal of Financial Planning at www.fpanet.org/journal/articles/2006_Issues/jfp0306-art7.cfm.

Summary

The conclusion of this research is to suggest that in some environments, today's accepted safe withdrawal rate of 4% - 4.5% may be "too safe." In reality, withdrawal rates that low are only necessary in certain investment environments, and such situations can be determined ahead of time by considering market valuation. When high-valuation market conditions are not present, higher safe withdrawal rates can be reasonably applied, yielding real retirement spending

that can be 10% to 20% higher over a multi-decade time period.

In the context of determining an individual's starting withdrawal rate, accounting for valuation can also help to some extent in managing the volatility and sensitivity of safe spending recommendations to the initial portfolio value. When valuation is incorporated, significant changes in the value of the market can lead to different safe withdrawal rates, which helps to reduce the year-to-year fluctuations in safe initial spending amounts for retirees and mitigates the impact of the timing paradox.

However, it is important to bear in mind that although the data in this newsletter reveals that in some environments the safe withdrawal rate should be 0.5% or even 1% higher than it is now (producing real dollar spending that is 10% to 20% higher) – we are *not* yet in one of those environments! Given today's high valuation measures, a great deal of conservatism in today's safe withdrawal rates should still reign supreme. Nonetheless, at *some* point in the future, this research suggests that a standard withdrawal rate approach in the 4% to 4.5% range may be *far too conservative*, representing an unnecessary restriction on the spending of retirees!

Of course, the research in this newsletter is not the final word on the subject. Much work remains to be completed. Ultimately, further research may help to refine valuation measures in greater depth, providing ever-more-accurate determinations of safe withdrawal rates based on the current valuation of the market, the underlying trend in valuation, and an investment strategy that ties into the current market environment. Nonetheless, the framework provided here yields a starting point and concrete steps that planners can apply now and in the future to give the opportunity for clients to spend more in favorable investment valuation environments where higher spending is reasonably prudent.

Endnotes

[1] Article available online from its 2004 reprint in the Journal at www.fpanet.org/journal/articles/2004_Issues/jfp0304-art8.cfm. You can also find Bengen's other articles online through the Journal of Financial Planning, and his book summarizing the research can be purchased from the FPA Press.

[2] For this research, and subsequent figures in this newsletter, the data source is the online stock market data made available by Professor Robert Shiller of Yale University at www.econ.yale.edu/~shiller/data.htm. Notably, these results will differ slightly (although not materially, as tested) from Bengen's work, which generally used the return data available through the *Ibbotson Associates' Yearbook*. The data source for this stock and bond data in particular was drawn from www.econ.yale.edu/~shiller/data/chapt26.xls. Note that for this analysis, stock returns were generated by combining the dividend and price change data from Shiller's data. Bonds were proxied by assuming a short-term bond investment using Shiller's one-year interest rate levels.

[3] For more information on the relationship between valuation ratios and market returns, see www.econ.yale.edu/~shiller/online/jpmalt.pdf.

[4] In the Shiller data, S&P 500 prices are determined by taking the monthly average of closing prices in the index for the month, rather than simply a single date data point. As a result, readers may notice a difference between the closing price of the S&P 500 on any particular date, and the price data presented in the chart. Nonetheless, using a single price point should be sufficient with a longer-term average earnings to generate an approximation of whether the market is currently under-, over-, or fairly-valued to apply to safe withdrawal rates.

What did you think?

Hopefully you found this latest issue of The Kitces Report to be of value to you.

Please let us know what you thought about it by emailing us at feedback@kitces.com!
Thanks in advance for your feedback!