Editorial Note


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As a baby boomer, I am very aware of the increasing need to provide for my own retirement as well as watching over my clients' retirement. And as we all gradually become less young, more and more of the retirement savings plans I manage become retirement income plans of one type or another, and investment objectives change toward managing cash flow and portfolio longevity.

It used to surprise me how clients would ask, "Do you think I have enough saved for retirement?" regardless of the size of their portfolios. But after numerous retirement plans got the wind knocked out of them in the last bear market, I can understand this concern.

Our clients hope, and perhaps assume, that the wealth management we provide them with will result in a comfortable retirement, free of financial worry. With constantly changing pension and income tax rules, our continuing education is critical to ensure that we are always up to date with accurate information and able to design appropriate retirement planning solutions.

We take a look in this issue at how better to predict portfolio longevity in an article by Jim Otar, who explains the detrimental effects of the time value of fluctuations.

An increasingly popular retirement savings vehicle is the retirement compensation arrangement (RCA). Ashley Crozier provides us with some in-depth information on the workings of RCAs and some analysis as to whether or not your clients would derive any benefit from this.

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Chair, *The Monitor* Canadian Supplement

WEALTH MANAGEMENT / RETIREMENT PLANNING

Can the Prevailing PE be a Good Predictor of Portfolio Longevity?

BY JIM OTAR, CFP®, CMT

The price-earnings ratio (PE) is one way to measure the fair value of an individual stock or the stock market as a whole. If the average PE of all the stocks that makes up an index is relatively high, the market is considered overvalued. On the other hand, if the average PE is relatively low, many consider the markets undervalued. Campbell and Shiller (1998) relates the prevailing PE ratio to subsequent market performance.

This brings us to distribution portfolios. Our industry expects more than 80 million boomers to retire over the next 10 years. Many baby boomers are worried about the sufficiency of their savings to finance their retirements. Many retirement plans reflect the optimism of the planner and overestimate a distribution portfolio's longevity. Many planners ignore or are unaware of the unforgiving effects of the time value of fluctuations.

Is there a correlation between current PE ratios and subsequent portfolio longevity? I've studied this question in a general context and the answer is "yes." My analysis shows that the prevailing PE has a great influence on portfolio life. This article is excerpted from my upcoming book, *Mathematics of Retirement*, which I expect to finish in 2008.

This question has two parts: Part 1 is the portfolio longevity. Part 2 is the PE ratio.

Portfolio Longevity

This is the easy part. I used the retirement calculator that is based on historic market performance. The retirement portfolio starts with $1 million, invested 40 percent in the S&P 500 and 60 percent in fixed income. The withdrawal in the first year is $60,000, indexed to inflation in subsequent years. Thus the initial withdrawal rate (IWR) is 6 percent, calculated at $60,000 as a percentage of $1 million. On the equity side, I used the prevailing dividend rate of 2 percent. As for the management costs, I assumed 1.5 percent for the equity holdings and 1 percent for the fixed income holdings.

This calculator gives me the portfolio life for starting retirement in all years since 1900. To smooth the fluctuations of the portfolio life, I took the four-year moving average, which reflects the average market cycle.

PE Ratio

This is the second part. I like using the earnings yield (EY) instead of PE. The EY is calculated as earnings

divided by the stock price, the exact opposite of the PE. I like the EY because EY and portfolio life should move up and down together. In other words, I am trying to demonstrate that when the prevailing EY is low, then the subsequent retirement portfolio will have a short life. If this is correct then both lines should move up and down together and that makes it easier to interpret the charts.

I used the historic earnings data available in Shiller (1992) between the years 1900–1935. For the years after 1935, the historic PEs were available at the Standard & Poor's database (http://www.standardsandpoors.com). I calculated the EY for each year since 1900. I took the four-year moving average of the EY to smooth the fluctuations. Subsequently, I observed that this process needed two modifications.

The first modification is to account for the survivor bias after the market crash of 1929. Many companies went under during and after the Great Depression. The earnings yield during this time period included only the surviving companies. Therefore, I reduced the earnings yield by one third of the average surviving EY starting in 1935 and ending in 1945.

The second adjustment was for the years between 1900 and 1934. Before 1934, most companies did not disclose detailed financial information. After observing the time-phase shift between the portfolio longevity and EY, I allowed a three-year time lapse in the dissemination of real company information for years before 1935.

I made no modifications whatsoever for any of the years after 1945.

Table 1 shows the portfolio life, earnings yield, and other calculated data for selected retirement years since 1900.

Next, I plotted the four-year moving average of the portfolio life over time. I also plotted the modified four-year moving average of the earnings yield. Figure 1 depicts the outcome. Does it appear that these two curves have any correlation? I think so.

In the final analysis, for a 6-percent initial withdrawal rate, the average expected portfolio life could be estimated to within a five-year window using the following formula:

$$\text{Portfolio Life for 6\% IWR} = 4 + (250 / PE_4)$$

where PE_4 is the average PE of the most recent four years.

For example the PE for the S&P 500 was 28.31, 20.32, 18.83, and 17.05 at the end of June 2003, 2004, 2005, and 2006, respectively. The average of these is 21.13. What is the expected approximate portfolio life at 6-percent IWR, fully indexed to inflation, retiring at the end of June 2006?

$$\text{Portfolio Life for 6\% IWR} = 4 + (250 / 21.13) = 16 \text{ years}$$

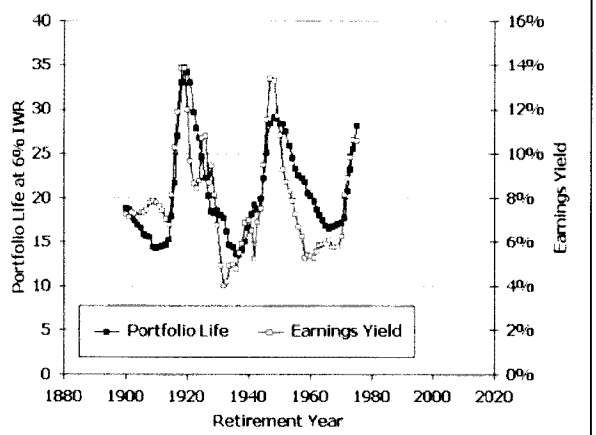
What if the IWR is 5 percent? In this case, the formula is:

$$\text{Portfolio Life for 5\% IWR} = 4 + (360 / PE_4)$$

Using the same example, retiring at the end of June 2006 and taking out 5-percent IWR, fully indexed to inflation, we calculate:

$$\text{Portfolio Life for 5\% IWR} = 4 + (360 / 21.13) = 21 \text{ years}$$

FIGURE 1 Portfolio Life and Average Earnings Yield over Time



CONTINUED ON P.7 >>

TABLE 1 Portfolio Life, Earnings Yield, Other Data for Selected Retirement Years since 1900*

RETIRE IN YEAR	PORTFOLIO LIFE, 6% IWR, YEARS	FOUR-YEAR MOVING AVERAGE OF PORTFOLIO LIFE	EARNINGS YIELD (EY)	FOUR-YEAR MOVING AVERAGE OF EY	MODIFIED FOUR-YEAR MOVING AVERAGE OF EY
1910	14.4	15.6	7.2	7.8	7.5
1920	34.8	27.0	9.1	12.0	11.9
1930	17.6	20.1	4.5	6.8	8.7
1940	13.3	13.4	9.9	8.2	5.4
1950	29.0	28.4	13.9	13.3	13.3
1960	21.0	22.2	5.6	6.2	6.2
1970	17.4	16.7	5.6	5.7	5.7
1978	30.0	28.2	12.8	10.6	10.6

** Indicated in 10-year increments for space consideration*

>> "PREVAILING PE" CONTINUED FROM P.3

I define a proper equity diversification in a distribution portfolio as follows: The added equity index (geography or sector) must have a five-year Sharpe ratio that is greater than that of the core equity holding, in this case the S&P 500.

Diversification

What if you have a more-diversified equity portfolio? I define a proper equity diversification in a distribution portfolio as follows: The added equity index (geography or sector) must have a five-year Sharpe ratio that is greater than that of the core equity holding, in this case the S&P 500. If that is the case, then add two to four years to the portfolio life calculated using the formula above.

In the final analysis, these formulas can help to narrow the effect of the most influential factor after retirement: the time value of fluctuations. They provide a better estimation of longevity than using "assumed" growth rates and inflation. Keep in mind the results are only approximate. They answer the question, "Is my retirement portfolio going to last 15 years or 25 years?" They do not answer the question, "Is my retirement portfolio going to last 15 years or 18 years?" The margin of error is not that precise. However, I'd rather be approximately right than precisely wrong.

Disclaimer

Always keep in mind that these formulas are based on historic observations, which I call "aftcasting." The future outcomes will be different. M

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