

Historical Performance Metrics for Six Asset Allocation Models

This article provides performance and volatility measurements for six different asset allocation models over the past 50 years from 1973-2022. These index-based asset allocation models represent portfolios that an actual investor might employ at various points in his or her investing “lifecycle.” Performance analysis during both the accumulation period and the decumulation years is presented.

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As shown in Table 1, the six portfolio models range from 100% equity to 100% fixed income. Six well-known indexes were used to build the portfolio models: S&P 500, Russell 2000, MSCI EAFE, Dow Jones US Select REIT, Bloomberg US Aggregate Bond Index, and 90-day Treasury Bills. Indexes are not investable, but there is no shortage of ETFs and mutual funds that replicate each of these indexes. Of course, actual investable products have expense ratios whereas indexes do not.

ACCUMULATION PORTFOLIO RESULTS

The first portion of this analysis reviews the performance of the six models in the “accumulation” stage of an investors’ life—or generally described as the pre-retirement years.

The aggressive all-equity portfolio consisted of 40% S&P 500 and a 20% allocation to the Russell 2000, MSCI EAFE, and DJ REIT. These allocations were maintained by annual rebalancing. Taxes and inflation were not accounted for. The 50-year average annualized

gross total return was 10.48% (based on the assumption of a lump sum starting investment) with a standard deviation of annual returns of 16.68 percent. This aggressive portfolio produced positive annual nominal (meaning not inflation adjusted) returns 80% of the time. In other words, over this 50-year period there were 10 calendar years with a negative gross return. If we take inflation into account, the 100% equity model produced positive calendar-year returns 70% of the time.

The classic 60% equity/40% fixed income model (often referred to as a “balanced” model) had an annualized return of 8.96% with a standard deviation of annual returns of 10.68 percent. It produced positive annual pre-inflation (“gross”) returns 84% of the time. After accounting for inflation, it produced positive annual returns 68% of the time.

The most conservative portfolio model was a 100% fixed income portfolio consisting of 70% bonds and 30% cash (with annual rebalancing). It produced an average annualized return of 6.01% with a standard de-

**Table 1: 50-Year Portfolio Performance:
January 1, 1973 - December 31, 2022**

Various Portfolios	Asset Allocation Models (Using underlying indexes)	Accumulation Statistics (Pre-retirement results)				Decumulation Statistics (\$1,000,000 Retirement Portfolio**)		
		50-Year Lump Sum Return*	50-Year Standard Deviation of Annual Returns	% of Time Positive Annual Returns (Before inflation)	% of Time Positive Annual Returns (After inflation)	Average Annual Withdrawal over 25-year Period (Based on RMD from age 72-97)	TOTAL Amount Withdrawn over 25-Year Periods (Average)	Retirement Portfolio Average Ending Balance in 25 th Year**
100% Equity	40% S&P 500 20% Russell 2000 20% MSCI EAFE 20% DJ US REIT	10.48	16.68	80%	70%	201,917	5,047,924	3,065,896
80% Equity 20% Fixed Income	35% S&P 500 15% Russell 2000 15% MSCI EAFE 15% DJ US REIT 15% Agg Bond 5% Cash	9.83	13.66	84%	70%	176,769	4,419,233	2,550,020
60% Equity 40% Fixed Income	30% S&P 500 10% Russell 2000 10% MSCI EAFE 10% DJ US REIT 25% Agg Bond 15% Cash	8.96	10.68	84%	68%	150,184	3,754,599	2,017,904
40% Equity 60% Fixed Income	20% S&P 500 10% Russell 2000 5% MSCI EAFE 5% DJ US REIT 40% Agg Bond 20% Cash	8.13	8.20	88%	72%	129,810	3,245,243	1,626,794
20% Equity 80% Fixed Income	10% S&P 500 5% Russell 2000 2.5% MSCI EAFE 2.5% DJ US REIT 60% Agg Bond 20% Cash	7.22	6.35	92%	70%	112,971	2,824,269	1,316,921
100% Fixed Income	70% Agg Bond 30% Cash	6.01	5.45	92%	66%	93,655	2,341,373	979,092

* Assuming lump sum investment and annual rebalancing. Analysis completed using customized spreadsheet developed by the author.

** The retirement portfolio had a starting balance of \$1,000,000 with annual end-of-year withdrawal based on RMD schedule starting at age 72. Ending portfolio balance is the average over 26 rolling 25-year periods. The first 25-year period was 1973-1997, second period was 1974-1998, and so on.

viation of 5.45 percent. It produced positive annual returns 92% of the time before inflation, but only 66% of the time if CPI-based inflation was accounted for. *When accounting for inflation, the frequency of positive calendar-year returns is nearly identical across all six asset allocation models. Interestingly, the worst performer in terms of positive return frequency was the most conservative 100% fixed income portfolio.*

The “accumulation” phase performance statistics are based on the underlying assumption of a lump sum investment. In this case, that investment occurred on January 1, 1973. There were no additional investments or withdrawals over the next 50 years (ending on December 31, 2022). Taxes were not accounted for in the 50-year return figures. In fact, these are the five standard assumptions in all reported **gross** performance

data: (1) a lump sum investment, (2) no additional investments, (3) no withdrawals, (4) no taxation, and (5) no inflation. When dealing with index-based results as we are here, there is the additional assumption of no portfolio costs (such as expense ratios, trading fees, advisory fees, etc.).

Are these assumptions realistic? In a word: No. Very few investors will only invest a single lump sum of money. And we are clearly all subject to taxation and inflation. A “real-world” analysis is now presented by analyzing how each model (built with the same six indexes) performed when money was systematically withdrawn—such as during retirement.

PORTFOLIO PERFORMANCE DURING RETIREMENT

We now turn our attention to “decumulation statistics” in Table 1—or that period in which money is being withdrawn from a portfolio. Our primary consideration is how a retiree would have fared in each of the portfolios during 25 years of retirement. We will assume a **starting balance of \$1,000,000** with each annual end-of-year withdrawal determined by the required minimum distribution (RMD) starting at the age of 72. Using current RMD guidelines, the first-year withdrawal would be 3.65% of the portfolio’s ending balance. The next withdrawal would be 3.77%, the third 3.92%, and so on. At the age of 96 the 25th RMD withdrawal was 11.90 percent. The average RMD withdrawal over the 25 years was 6.60 percent. Only the stipulated RMD was withdrawn—no more and no less.

The retirement period withdrawal analysis was evaluated over 26 rolling 25-year periods between 1973 and 2022. This is a very important point: we are not evaluating these six portfolios over one period of 25 years, but rather over 26 rolling 25-year periods. In this way we consider the impact of various return sequences (often referred to as sequence-of-returns risk).

The first 25-year period was from 1973-1997. The second was 1974-1998. The 26th 25-year period was 1998-2022. **The average ending portfolio balance in year 25 for the 100% equity portfolio across 26 rolling 25-year periods was \$3,065,896 and the average annual RMD withdrawal was \$201,917.** To assume a starting balance of \$250,000 just divide the dollar-based results by four. Or, for a starting balance assumption of

\$2,000,000 simply multiply the dollar-based results by two. The *total* amount of money withdrawn over each 25-year period averaged just over \$5 million (again, based on 25 RMD-based withdrawals over 26 rolling 25-year periods).

These are very encouraging outcomes. Consider that a 72-year-old retiree starts with \$1,000,000 in their portfolio. Over the next 25 years the retiree withdraws (on average) a total of roughly \$5,000,000 and then (on average) has a portfolio balance in the 25th year of roughly \$3 million. Almost sounds like a fairy tale: start with \$1 million, take out \$5 million, finish with \$3 million. Recall, this is a 100% equity portfolio, which may be atypical for most retirees. Also consider that to achieve these results the retiree annually rebalanced AND stayed in the portfolio for all 25 years. They did not bail out during rocky periods. Sadly, that is likely also atypical.

Here’s one additional statistic that adds to the good news: the smallest ending balance in the 25th year across all 26 25-year periods was \$1,049,923 for a retiree in the 100% equity portfolio. In other words, if the retiree stayed with the portfolio (*i.e.*, didn’t bail out) for the full 25 years, they never finished “under-water” (or with less money than their starting balance) over this historical time frame.

The next asset allocation model was an 80% equity/20% fixed income portfolio and is likely more representative of an actual retirement portfolio. The average annual RMD withdrawal during retirement declines to just over \$176,000, the total amount withdrawn over 25 years averaged around \$4.4 million, and the average ending balance after 25 years of withdrawals was around \$2.5 million.

The classic 60/40 portfolio produced about a 9% annualized return and an average RMD withdrawal of just over \$150,000. The average ending balance of the portfolio was roughly \$2 million after 25 years of withdrawals. Interestingly, a 60/40 portfolio produced a lump sum return that was 14.5% lower than the all-equity portfolio, but with 36% less volatility (based on a standard deviation of 10.68% compared to 16.68% in the all-equity portfolio). A seemingly attractive risk/return tradeoff.

The 100% fixed income portfolio consisted of 70% bonds and 30% cash. In this low-volatility portfolio, the

retiree had an average annual RMD withdrawal of just over \$93,000, a total 25-year withdrawal of \$2.3 million (on average), and an average ending portfolio balance of just under \$1 million. The lowest ending balance in the 25th year across all 26 rolling 25-year periods for the 70% bond/30% cash portfolio was \$409,897. Perhaps not surprisingly, this was the ending balance in the most recent 25-year period from 1998-2022.

SUMMARY

A key takeaway from this analysis is that all six portfolios survived intact over all 26 rolling 25-year periods when annual withdrawals were determined by the required minimum distribution (or RMD). A percentage-based withdrawal from a well-diversified retirement portfolio virtually guarantees that the portfolio will not be exhausted within 25 years. ***This is not a function of asset allocation, but rather a function of the raw mathematics of a percentage-based withdrawal.***

A percentage-based withdrawal (rather than a fixed dollar amount annual withdrawal with or without a cost-of-living-adjustment or “COLA”) allows the annual (or quarterly, monthly, etc.) withdrawal amount to decline when the portfolio has suffered a loss, such as after 2008. It is this occasional decrease in the year-over-year withdrawal that allows the portfolio to survive. In fact, the annual withdrawal from the 60/40 portfolio in this

analysis declined year-over-year 19% of the time by an average of \$11,913. Considering that the average annual RMD withdrawal from the 60/40 portfolio was over \$150,000, an average decline of just under \$12,000 that occurs only 19% of the time is a superb tradeoff for the “near-assurance” that the portfolio will not be exhausted within 25 years.

Now, there are several ways to kill a retirement portfolio: (1) simply withdraw too much money each year, (2) build a horrible portfolio using high-cost speculative funds, or (3) emotionally jump in and out of a well-designed portfolio. The latter is likely the most common killer (or maimer) of retirement portfolios. As mentioned before, the results presented here make the explicit assumption that the retiree stayed committed to their chosen portfolio (100% equity, 80/20, 60/40, etc.) in every 25-year period and annually rebalanced their holdings.

An intriguing observation is summarized below in Table 2 based on some gentle rounding of the figures presented in Table 1. Notice that from the 100% equity/0% fixed income model to the 0% equity/100% fixed income model return generally declines by 100 basis points (or 1 percentage point) from model to model, but volatility drops by roughly 300 basis points from model to model. (The exceptions being the 100% equity model which had a 50-year return of roughly only 50 basis

**Table 2. Historical Portfolio Return Based on Asset Allocation
(Based on the past 50 years)**

Asset Allocation	Return (Lump Sum)	Volatility (Standard Deviation)
100% Equity / 0% Fixed Income	10.5%	17%
80% Equity / 20% Fixed Income	10%	14%
60% Equity / 40% Fixed Income	9%	11%
40% Equity / 60% Fixed Income	8%	8%
20% Equity / 80% Fixed Income	7%	6%
0% Equity / 100% Fixed Income	6%	5%

points higher than the 80/20 model and the two most conservative models show a smaller change in volatility).

When considering broadly diversified, index-based portfolios, the range of expected returns is from roughly 10.5% to 6% from all-equity to all-fixed income. Volatility across asset allocation models is a different matter. The range in volatility, from 17% to 5%, is much larger than the range in return. **In other words, asset allocation will likely have far more impact on volatility than on return.**

Standard deviation is often reported, but likely seldom understood. This simple summary table suggests that 5% is a low standard deviation for a diversified multi-asset portfolio and 17% is a relatively high standard deviation for a diversified portfolio. With these “guardrail” standard deviation figures, investors (and advisors) can better calibrate the standard deviation of any given portfolio. Standard deviation may not be as intuitive as return, but we can at least have some ballpark figures to guide us.

The historical information in Table 2 might also reasonably serve as long-term performance and volatility benchmarks for actual multi-asset class investment portfolios—rather than using the S&P 500 Index which represents only one asset class.