Asset Allocation Deep Dive:
A Review of the Past Half Century from 1974-2023

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In this brief article several asset allocation models are reviewed. The performance for each model over the past 50 years (from January 1, 1974 to December 31, 2023) in accumulation mode (pre-retirement) **_and_** in distribution mode (during retirement) is also presented.

The first model is comprised of 100% cash (see Table 1 on next page). Cash is only one asset class, thus it does not represent an asset allocation model (which implies at least two asset classes). However, as many investors often hunker down in cash when they're afraid of equity markets or worried about bonds, it's worth examining the performance of cash over the past half century. As can be seen, cash produced a 50-year average annualized return of 4.30% (in accumulation mode which assumes a single lump sum deposit at the start of the 50-year period) with a standard deviation of annual returns of 3.44%. It's important to recognize that Table 1 is showing **_nominal_** returns that have not been adjusted for the impact of inflation.
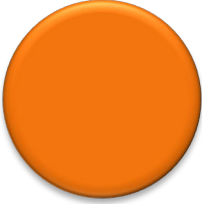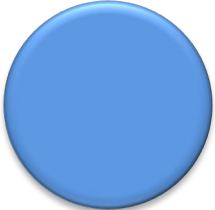
The right-hand column in Table 1 shows the median ending account balance of a retirement portfolio. For an all-cash portfolio, the median ending account balance after 25 years of withdrawals was $6,633. In the early 25-year periods during the 1970's and 1980's, cash performed reasonably well for a retiree. In recent 25-year periods, an all-cash retirement portfolio was depleted before the 25th year. The starting balance of the retirement portfolio over each rolling 25-year period was assumed to be $250,000. The initial withdrawal was 5% of the starting balance multiplied by a 3% cost of living increase—resulting in a first-year withdrawal of $12,875. The 2nd year withdrawal was 3% higher, or $13,261, and so on. The total amount of money withdrawn in each 25-year rolling period was $469,413. (See Table 2 for the results of each individual rolling 25-year period). An all-cash retirement portfolio had a high failure rate. Not good.

We now move down the asset allocation food chain to a 50% cash/50% bond portfolio. This 50/50 portfolio represents actual "*asset allocation*" (that is, a model that uses more than one asset class) -- albeit a very conservative model. The 50-year annualized return of a 50% cash/50% bond portfolio was 5.51% and a median ending account balance after 25 years of withdrawals in a retirement portfolio of $181,168. A 50% bond/50% cash retirement portfolio failed to stay solvent for 25 years in five of the 26 rolling 25-year periods. That represents a 19% failure rate. The all-cash retirement portfolio had a 46% failure rate.

The next asset allocation model is a 60% large cap US stock/40% US bond portfolio, which is often referred to as a "balanced portfolio". The 60/40 portfolio produced a 50-year annualized return of 9.71% from 1974-2023. The 50-year standard deviation of annual returns was 11.53%. When any type of equity ingredient is added to a fixed income portfolio the standard deviation will increase—often substantially. The 60/40 portfolio was rebalanced annually, as was the 50% cash/50% bond portfolio. The median ending account balance (after 25 annual withdrawals) was $1.13 million, but as you will see in Table 2 the ending balance after 25 years of withdrawals was markedly smaller in recent 25-year periods.

Next, we examine a multi-asset portfolio that includes seven different asset classes in equal portions (14.29% each) and is rebalanced annually. The asset classes include large US stock, small cap US stock, non-US developed stock, real estate, commodities, US bonds, and cash. The indexes utilized to represent these asset classes are shown on the last page of this report. The 7-asset portfolio produced a 50-year average annualized nominal return of 9.33% with a standard deviation of annual returns of 10.52%--comparable performance with less volatility than the standard 60/40 asset allocation model. The median ending balance in a retirement portfolio that sustained 25 annual withdrawals was $852,584. Recall that the starting balance was $250,000 in each rolling 25-year period.

Table 1. 50-Year Asset Allocation Risk Spectrum: 1974-2023
(Performance figures not adjusted for inflation)

Risk Level	Various Asset Allocation Models		50-Year Annualized Gross Return (%)	50-Year Standard Deviation of Annual Returns (%)	Median Ending Account Balance in $250,000 Retirement Portfolio*
Very Conservative	100% Cash		4.30%	3.44%	$6,633
Conservative	50% Cash 50% Bonds		5.51%	4.49%	$181,168
Moderately Aggressive	60% US Stock 40% Bonds Traditional "Balanced" Fund		9.71%	11.53%	$1,131,753
Moderately Aggressive	14.3% in 7 different asset classes 7-Asset Diversified Portfolio** 70% Growth/ 30% Fixed Income		9.33%	10.52%	$852,584
Very Aggressive	100% US Stock		11.19%	17.38%	$1,500,554

* Median ending account balance over 26 rolling 25-year periods from 1974-2023. Starting balance of $250,000, 5% initial withdraw rate in year 1, 3% cost of living increase in the subsequent 24 annual cash withdrawals. Total withdrawal in each of the 26 rolling 25-year periods equaled $469,413. See Table 2 for in-depth analysis.

** 7-asset portfolio consisted of large cap US stock, small cap US stock, non-US stock, real estate, commodities, US bonds, and cash.

Raw data source: Steele Systems Mutual Fund Software, calculations by Craig L. Israelsen.

Past performance does not guarantee future performance. Portfolios with more than one asset class were rebalanced annually.

Finally, we consider a 100% stock model. As with the 100% cash model, this does not represent an asset allocation model because it only includes one asset class. But, as large cap US stock is a very prominent asset class, we review it here. Large cap US stock (S&P 500 Index) produced an impressive 50-year average annualized return of 11.19% from 1974-2023. The standard deviation of 17.38% is significantly higher than the standard deviation of the 60/40 portfolio and the 7-asset portfolio. The median ending balance in an all-stock retirement model was $1.5 million—but with high variability based on the 25-year period. In the most recent 25-year period from 1999-2023 the all-stock retirement model was totally depleted by year 20.

Retirement is a Time to Be Diversified

The analysis of retirement portfolio survival in this article used an initial withdrawal rate of 5%. This particular rate was used for illustrative purposes and is not a suggested or recommended initial withdrawal rate for any particular retiree. An appropriate withdrawal rate is determined individually after considering a number of factors, including the amount of money in your retirement account, your age, needed income each year, anticipated number of years withdrawals may take place, anticipated annual rate of return of portfolio, anticipated general inflation rate in the overall economy, COLA being imposed, etc.).

Portfolio diversification should be a lifelong strategy before retirement as well as during retirement. Warning: diversification is not exciting. That's by design. Broad diversification tends to smooth out portfolio performance which is crucially important when you start withdrawing money from a portfolio— such as in retirement.

Why is smoothing portfolio performance so crucial? Because the sequence-of-returns matters a great deal when money is being withdrawn from a portfolio. The scenario a retiree wants to avoid is one in which their portfolio suffers several annual losses on the "front-end" (or just as they start pulling money out at the start of retirement). A disastrous sequence-of-returns has the potential to materially reduce the longevity of a retirement portfolio. Broad diversification does not eliminate sequence-of-returns risk, but it does significantly reduce it. Thus, retirees should be diversified across a wide range of asset classes.

Diversified Asset Allocation is Not Expensive

Building a broadly diversified, multi-asset portfolio need **not** be expensive. To illustrate this, I've listed below the aggregate expense ratio of a 12-asset class investment model known as the ***7Twelve***® Portfolio. (Disclosure: I am the designer of the 7Twelve® Portfolio).

If using actively managed mutual funds from various fund families, the Active 7Twelve portfolio can be built for 55 bps. If using only Vanguard ETFs, the 12-asset class 7Twelve portfolio aggregate cost can be as low as 9 bps. Performance for each of the 7Twelve models over the past 25 years is also listed. For comparison, the performance of Vanguard 500 Index (S&P 500 clone fund) over the past 25 years was 7.54%.

For more information about the various 7Twelve model portfolios:
http://www.7twelveportfolio.com/Downloads/Web7TwelveReport.pdf

12-Asset 7Twelve® model	*Active model* using 12 actively managed mutual funds	*Passive model* using 12 ETFs from various fund families	*Using 12 Vanguard Mutual Funds*	*Using 12 Vanguard ETFs*	*Using 12 Fidelity Mutual funds*	*Using 12 Funds available at Schwab*
Portfolio Aggregate Annual Expense Ratio in January 2024	0.55%	0.34%	0.17%	0.09%	0.44%	0.11%
25-Year Performance from 1999-2023	**6.99%**	**6.27%**	**6.79%**	**6.64%**	**7.71%**	**6.51%**

Table 2. Retirement Portfolio Survival Analysis: 26 Rolling 25-Year Periods from 1974-2023
$250,000 starting balance in each 25-year period
5% initial end-of-year withdrawal with 3% annual COLA

Various Retirement Portfolio Asset Allocation Models	1-Asset Portfolio Very Conservative ------ 100% Cash	2-Asset Portfolio Conservative ------ Cash and Bonds (50% in each)	2-Asset Portfolio Moderately Aggressive ------ US Stock and Bonds (60% US Stock, 40% Bonds)	7-Asset Portfolio Moderately Aggressive ------ Diversified 7-Asset Portfolio with Equal Allocations (14.3% each)	1-Asset Portfolio Very Aggressive ------ 100% Large US Stock
26 Rolling 25-Year Periods **Starting Account Balance $250,000** 5% initial withdrawal rate 3% annual cost of living adjustment *(Total withdrawal of $469,413 in each 25-Year Period)*					

Ending Account Balance ($) After 25 Years
Yellow shading indicates the balance in year 25 was below the starting balance of $250,000

Starting Year	Ending Year					
1974	1998	$340,486	$559,036	$2,192,086	$2,593,915	$3,379,444
1975	1999	323,731	550,261	3,820,786	3,673,637	8,446,670
1976	2000	336,047	577,667	2,736,196	3,272,992	4,923,284
1977	2001	350,141	532,793	2,004,667	2,483,264	3,219,388
1978	2002	353,395	588,444	2,186,646	2,239,880	3,195,251
1979	2003	331,190	623,065	2,661,431	2,375,171	4,063,831
1980	2004	280,081	630,281	2,606,287	2,075,425	3,741,955
1981	2005	223,318	619,559	2,136,488	1,730,718	2,666,776
1982	2006	149,568	573,862	2,641,535	2,121,775	3,703,071
1983	2007	105,190	392,944	2,064,762	1,851,738	3,116,226
1984	**2008**	73,801	363,913	1,364,754	1,032,622	1,520,430
1985	2009	35,928	291,837	1,497,154	1,177,381	1,896,346
1986	2010	13,170	200,834	1,148,953	952,148	1,480,678
1987	2011	96	153,507	953,467	704,090	1,207,014
1988	2012	$0 in year 24	161,503	1,088,074	753,020	1,404,556
1989	2013	$0 in year 23	136,451	1,114,552	624,121	1,542,880
1990	2014	$0 in year 22	85,582	836,478	457,693	1,109,268
1991	2015	$0 in year 22	56,616	922,449	568,162	1,349,646
1992	2016	$0 in year 21	12,809	657,480	433,618	957,698
1993	2017	$0 in year 21	4,087	716,183	465,792	1,119,634
1994	2018	$0 in year 21	$0 in year 24	621,602	363,118	972,130
1995	2019	$0 in year 21	9,982	883,049	471,060	1,403,513
1996	2020	$0 in year 20	$0 in year 23	568,699	314,665	887,434
1997	2021	$0 in year 19	$0 in year 23	491,778	223,790	714,119
1998	2022	$0 in year 19	$0 in year 22	185,039	142,209	156,249
1999	**2023**	$0 in year 18	$0 in year 21	38,808	205,873	$0 in year 20
Median Account Balance in 25th Year (across all 26 rolling 25-year periods)		**$6,633**	**$181,168**	**$1,131,753**	**$852,584**	**$1,500,554**

Past performance does not guarantee future performance.
The multi-asset portfolios were rebalanced annually.

Indexes used in calculation of 50-year performance (1974-2023)
Raw data source: Steele Systems Mutual Fund Software, calculations by Craig L. Israelsen

Portfolio Asset Class	Index Used to Represent Asset Class
Large US Stock	S&P 500 TR Index
Small Cap US Stock	Ibbotson Small Stock Index 1974-1978 Russell 2000 TR Index 1979-2023
Non-US Developed Stock	MSCI EAFE NR Index
Real Estate	NAREIT Equity REIT Index 1974-1977 Dow Jones US Select REIT TR Index 1978-2023
Commodities	S&P Goldman Sachs Commodity Index (GSCI)
US Bonds	Ibbotson Intermediate-term Government Bond Index 1974-1975 Bloomberg US Aggregate Bond TR Index 1976-2023
Cash	90 Day US Treasury Bill