

PORTFOLIO STRATEGIES

Clarifying the Purpose of Diversification

Broad, multi-asset-class diversification allows us to produce an equity-like return while substantially reducing the volatility of returns in the portfolio.

BY CRAIG L. ISRAELSEN, PH.D.

Diversification is for folks who don't know the future—which is all of us. Think of it this way, if you knew the future perfectly, would you ever diversify your portfolio? Of course not. You would simply pick the single ticker that was destined to produce the highest return. End of story.

So, for the rest of us who don't own a crystal ball ... we diversify. Why? Precisely because we do not know the future. In this article, I examine a variety of asset allocation "recipes" that range from non-diversified to very diversified and how they performed over the past 49 years (from January 1, 1970, to December 31, 2018) both in accumulation mode (pre-retirement) and distribution mode (during retirement). The "purpose" of diversification will become clear.

Allocation Recipes

The first recipe is 100% cash (see Table 1). Having all of one's investment dollars in a certificate of deposit (CD) or savings account would represent a portfolio of 100% cash. As cash is only one asset class, it does not represent a diversified asset allocation model (which implies at least two asset classes). However, as many investors often hide out in cash when they are afraid of the equities markets or worried about bonds, it's worth examining the performance of cash over the past 49 years.

As can be seen, cash produced a return of 1.94% in calendar year 2018—the best return of the group in Table 1. The 49-year average annualized return of a 100% cash investment was 4.80% (accumulation mode performance) with a standard deviation of annual returns of 3.53%. It's important to recognize that Table 1 is showing nominal returns that have not been adjusted for the impact of inflation (as measured by the consumer price index).



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The last column in Table 1 shows the median ending account balance of a retirement portfolio. For an all-cash portfolio, the median ending account balance was \$174,482 (distribution mode performance). The median ending account balance was calculated over 25 rolling 25-year periods between 1970 and 2018, where the starting balance was assumed to be \$250,000 and a 5% initial withdrawal rate was followed by 3% cost-of-living increases in the subsequent annual cash withdrawals over the next 24 years. The total withdrawal in each 25-year rolling period equaled \$469,413. (See Table 2 for the results of each 25-year period).

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, we are using a "recipe" that calls for more than one asset class), albeit a very conservative model. The return of a 50% cash/50% bond portfolio in 2018 was 0.98%. The 49-year annualized return of a 50/50 portfolio was 6.13% and the median ending account balance after 25 years for the retirement portfolio was \$493,534.

The next asset allocation model is a 60% large-cap U.S. stock, 40% U.S. bond portfolio that is typically referred to as a "balanced fund." The 60/40 portfolio lost 2.63% in 2018, whereas the 49-year annualized performance was an impressive 9.43%. The 49-year standard deviation of annual returns was 11.06%. 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 in a retirement portfolio that was sustaining annual withdrawals was \$1.24 million.

This outcome is quite remarkable in light of the fact that the retirement portfolio began each 25-year period with a starting balance of \$250,000.

Next, we examine a multi-asset portfolio that included seven different asset classes in equal portions (14.29% each) that was rebalanced annually. The asset classes included large-cap U.S. stock, small-cap U.S. stock, non-U.S. developed stock, real estate, commodities, U.S. bonds and cash. The indexes utilized to represent these asset classes are shown in Table 3.

TABLE 1

49-Year Asset Allocation Risk & Return Spectrum: 1970–2018

Risk Level	Asset Allocation Model		Performance in 2018 (%)	49-Year Annualized Gross Return (%)	49-Year Standard Deviation of Return (%)	Median Ending Account Balance in \$250,000 Retirement Portfolio* (\$)
Very Conservative	100% Cash		1.94	4.80	3.53	174,482
Conservative	50% Cash 50% Bonds		0.98	6.13	4.25	493,534
Moderately Aggressive	60% U.S. Stock 40% Bonds Traditional “Balanced” Fund		(2.63)	9.43	11.06	1,240,563
Moderately Aggressive	14.3% in 7 different asset classes 7-Asset Diversified Portfolio** 70% Growth/ 30% Fixed Income		(6.47)	9.48	10.23	1,864,668
Very Aggressive	100% U.S. Stock		(4.38)	10.21	16.98	1,520,430

The multi-asset portfolios were rebalanced at the start of each year.

**5% initial withdrawal rate, 3% cost of living increase in the annual cash withdrawal. Total withdrawal in each 25-year rolling period equaled \$469,413. Past performance does not guarantee future performance.*

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

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

The seven-asset portfolio lost nearly 6.5% in 2018—only its seventh annual loss over the past 49 years. More indicative is its 49-year average annualized nominal return of 9.48% with a standard deviation of annual returns of 10.23%—slightly better performance with less volatility than the standard 60/40 stock-bond asset allocation model. The median ending balance over 25 rolling 25-year withdrawal periods was \$1.86 million—over \$620,000 more than the standard 60/40 model.

Finally, we examine a 100% stock model. As with the 100% cash model, this does not represent an asset allocation model (or recipe) because it only includes one asset class. But, as large-cap U.S. stock is a very prominent asset class, it is reviewed here. Large-cap U.S. stock (S&P 500 index) lost 4.38% in 2018. However, the 49-year average annualized return was an impressive 10.21% with a

standard deviation of 16.98%. The median ending retirement account balance was just over \$1.5 million—roughly \$344,000 below the seven-asset portfolio.

Multi-Asset Is the Answer

What are the advantages of building a diversified multi-asset portfolio? Compared to a 60/40 portfolio, a seven-asset equally weighted portfolio produced a five-basis-point (0.05%) higher return over this 49-year period with nearly a 7.5% decrease in volatility. Even more importantly, the seven-asset model outperformed the 60/40 model as a retirement portfolio.

Compared to a 100% large-cap U.S. stock investment, a seven-asset portfolio had a 49-year average annualized real return that was lower by 73 basis points (0.73%), but as

TABLE 2

Retirement Portfolio Survival Analysis: 25 Rolling 25-Year Periods From 1970–2018

The analysis shows how each portfolio performed over 25 rolling 25-year periods for the period of 1970 through 2018. The scenarios used a \$250,000 starting balance for each 25-year period with a 5% initial end-of-year withdrawal adjusted annually for a 3% annual cost-of-living adjustment (COLA). The annual COLA was applied at the end of each year starting with the first year.

Retirement Portfolio Asset Allocation Model		1-Asset Portfolio Very Conservative	2-Asset Portfolio Conservative	2-Asset Portfolio Moderately Aggressive	7-Asset Portfolio Moderately Aggressive	1-Asset Portfolio Very Aggressive
		100% Cash	Cash and Bonds (50% in each)	U.S. Stock and Bonds (60% U.S. Stock, 40% Bonds)	Diversified 7-Asset Portfolio* With Equal Allocations (14.3% each)	100% Large U.S. Stock
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)						
Starting Year	Ending Year	Ending Account Balance After 25 Years (\$)				
1970	1994	325,898	536,292	1,030,945	2,164,627	988,572
1971	1995	329,656	493,534	1,240,563	2,661,550	1,477,488
1972	1996	361,892	501,664	1,219,052	2,626,526	1,450,003
1973	1997	399,284	559,838	1,228,935	2,383,070	1,282,861
1974	1998	392,618	594,389	2,192,086	2,622,906	3,379,444
1975	1999	373,656	583,850	3,820,786	3,710,749	8,446,670
1976	2000	387,667	612,899	2,736,196	3,307,189	4,923,284
1977	2001	402,615	566,905	2,004,667	2,509,824	3,219,388
1978	2002	405,619	624,392	2,186,646	2,263,825	3,195,251
1979	2003	380,200	658,601	2,661,431	2,400,512	4,063,831
1980	2004	322,322	662,932	2,606,287	2,097,479	3,741,955
1981	2005	258,018	647,802	2,136,488	1,748,463	2,666,776
1982	2006	174,482	595,345	2,641,535	2,137,773	3,703,071
1983	2007	125,726	409,163	2,064,762	1,864,668	3,116,226
1984	2008	91,270	378,136	1,364,754	1,039,723	1,520,430
1985	2009	49,913	303,319	1,497,154	1,184,436	1,896,346
1986	2010	25,195	210,217	1,148,953	958,011	1,480,678
1987	2011	11,004	161,858	953,467	708,681	1,207,014
1988	2012	\$0 in year 24	169,337	1,088,074	757,536	1,404,556
1989	2013	\$0 in year 24	143,139	1,114,552	628,027	1,542,880
1990	2014	\$0 in year 23	90,928	836,478	460,621	1,109,268
1991	2015	\$0 in year 22	60,911	922,449	570,738	1,349,646
1992	2016	\$0 in year 21	16,369	657,480	435,724	957,698
1993	2017	\$0 in year 21	7,476	716,183	467,938	1,119,634
1994	2018	\$0 in year 21	\$0 in year 24	665,244	418,110	1,044,078
Median Ending Account Balance (\$)		174,482	493,534	1,240,563	1,864,668	1,520,430

Past performance does not guarantee future performance.

The multi-asset portfolios were rebalanced at the start of each year.

*Large-cap U.S. stock, small-cap U.S. stock, non-U.S. stock, real estate, commodities, U.S. bonds and cash.

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

TABLE 3**Indexes Used in Calculation of Performance**

Portfolio Asset Class	Index Used to Represent Asset Class
Large-Cap U.S. Stock	S&P 500 TR Index
Small-Cap U.S. Stock	Ibbotson Small Stock Index 1970–1978 Russell 2000 TR Index 1979–2018
Non-U.S. Developed Stock	MSCI EAFE NR Index
Real Estate	NAREIT Equity REIT Index 1970–1977 (1970–1971 returns from Su Han Chan) Dow Jones U.S. Select REIT TR Index 1978–2018
Commodities	S&P Goldman Sachs Commodity TR Index
U.S. Bonds	Ibbotson Intermediate-Term Government Bond Index 1970–1975 Barclays Capital U.S. Aggregate Bond TR Index 1976–2018
Cash	U.S. Treasury Stat U.S. T-Bill 90-Day TR

TR= Total Return. NR= Net Return.

compensation had a standard deviation of return that was lower by 40%. Moreover, the seven-asset recipe produced better results during the retirement “distribution phase.”

Retirement Is a Time to Stay 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

TABLE 4**Annual Expense Ratios for Implementing 7Twelve Portfolio**

12-Asset 7Twelve Model	Portfolio Aggregate Annual Expense Ratio
Actively managed mutual funds	60 bps
ETFs from various fund families	17 bps
Vanguard mutual funds	16 bps
Vanguard ETFs	9 bps
Fidelity mutual funds	29 bps
ETFs available at Schwab	21 bps

retirement account, your age, needed income each year, anticipated number of years with withdrawals may take place, anticipated annual rate of return of portfolio, anticipated general inflation rate in the overall economy, cost-of-living adjustments—aka, COLA—being imposed, etc.

Portfolio diversification should be a lifelong strategy—both before retirement as well as during retirement. Warning: Diversification is not exciting. That’s by design. Broad diversification tends to smooth out returns, which is crucially important when you start withdrawing money from a portfolio—such as in retirement. Why is it 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 just as they start pulling money out at the start of retirement. This would be a potentially disastrous sequence-of-returns risk that could materially reduce the longevity of their retirement portfolio. Broad diversification does not eliminate sequence-of-returns risk, but it does significantly reduce it. And, for that reason, diversification should be a central tenet in a retiree’s investment philosophy.

So, what is the purpose of diversification? Broad, multi-asset class diversification allows us to produce an equity-like return while substantially reducing the volatility of returns in the portfolio.

Diversified Asset Allocation Is Not Expensive

Building a multi-asset portfolio need not be expensive. To illustrate this, I have shown in Table 4 the aggregate expense ratio of a 12-asset class 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 multi-asset portfolio can be built for 60 basis points (0.60%). If using exchange-traded funds (ETFs), it can be built for 17 basis points (0.17%) If using only Vanguard ETFs, the 12-asset class 7Twelve portfolio aggregate cost can be as low as nine basis points (0.09%). ■

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