



# ALHAMBRA INVESTMENTS

## Sequence of Returns Risk

It seems simple. If I average a 6% return in my portfolio, I can withdraw 6% every year and not have to worry about running out of money. It sounds simple and if markets gave you 6% each and every year, it would be. But that isn't how markets work and the volatility of returns as well as the sequence of returns matters a great deal for retirees.

If your retirement starts with a series of negative returns, even small ones, the impact can carry on for the rest of your retirement. In an extreme case it could mean the difference between a comfortable retirement and surviving on Social Security.

Here's a real-world example to illustrate the risk.

### Initial Conditions

1. \$3,000,000 initial portfolio.
2. Assume retirement in the year 2000.
3. Portfolio is a standard 60/40 portfolio with 60% stocks and 40% bonds.
4. Returns are actual returns of this 60/40 portfolio from 2000 to present (60% Vanguard Total Stock, 40% Vanguard Total Bond).
5. We compare two initial withdrawal rates of 4% and 6%. The amount withdrawn rises by 2%/year to account for inflation.

60/40 Portfolio	\$ 3,000,000.00	4.00%		6.00%	
Year	Return	Withdrawal Rate	Portfolio Value	Withdrawal Rate	Portfolio Value
2000	-1.79%	\$ 120,000.00	\$ 2,826,300.00	\$ 180,000.00	\$ 2,766,300.00
2001	-3.21%	\$ 122,400.00	\$ 2,613,175.77	\$ 183,600.00	\$ 2,493,901.77
2002	-8.98%	\$ 124,848.00	\$ 2,253,664.59	\$ 187,272.00	\$ 2,082,677.39
2003	20.04%	\$ 127,344.96	\$ 2,577,954.01	\$ 191,017.44	\$ 2,309,028.50
2004	9.37%	\$ 129,891.86	\$ 2,689,616.44	\$ 194,837.79	\$ 2,330,546.68
2005	4.74%	\$ 132,489.70	\$ 2,684,614.56	\$ 198,734.54	\$ 2,242,280.05
2006	11.12%	\$ 135,139.49	\$ 2,848,004.21	\$ 202,709.24	\$ 2,288,912.36
2007	5.99%	\$ 137,842.28	\$ 2,880,757.38	\$ 206,763.42	\$ 2,219,254.79
2008	-19.44%	\$ 140,599.13	\$ 2,180,139.02	\$ 210,898.69	\$ 1,576,932.97
2009	18.79%	\$ 143,411.11	\$ 2,446,376.04	\$ 215,116.66	\$ 1,658,122.01
2010	12.93%	\$ 146,279.33	\$ 2,616,413.13	\$ 219,419.00	\$ 1,653,098.19
2011	3.75%	\$ 149,204.92	\$ 2,565,323.70	\$ 223,807.38	\$ 1,491,282.00
2012	11.13%	\$ 152,189.02	\$ 2,698,655.22	\$ 228,283.52	\$ 1,428,978.16
2013	19.23%	\$ 155,232.80	\$ 3,062,373.82	\$ 232,849.19	\$ 1,470,921.47
2014	9.85%	\$ 158,337.45	\$ 3,205,680.19	\$ 237,506.18	\$ 1,378,301.05
2015	0.44%	\$ 161,504.20	\$ 3,058,280.98	\$ 242,256.30	\$ 1,142,109.28
2016	8.71%	\$ 164,734.28	\$ 3,159,922.97	\$ 247,101.43	\$ 994,485.57
2017	14.15%	\$ 168,028.97	\$ 3,439,023.10	\$ 252,043.46	\$ 883,161.82
2018	-3.17%	\$ 171,389.55	\$ 3,158,616.52	\$ 257,084.32	\$ 598,081.27
2019	14.40%	\$ 174,817.34	<b>\$ 3,438,639.96</b>	\$ 262,226.01	<b>\$ 421,978.96</b>
Average Annual Return	<b>6.40%</b>				

In this case, the 4% withdrawal rate is obviously sustainable and the account value continues to grow. With the 6% withdrawal rate, even though it is less than the average annual return, the balance declines and would soon hit zero. In fact, if you change the withdrawal rate to 6.3%, the balance falls below zero in 2019.

Now let's look at what happens if we reverse the returns. Let's have the illustration start with the return for 2019 and work backwards. Instead of starting with three straight years of negative returns, 2 of the first three years produce double digit returns.

		\$ 3,000,000.00				
1	14.40%	\$ 120,000.00	✓	\$ 3,312,000.00	\$ 180,000.00	\$ 3,252,000.00
2	-3.17%	\$ 122,400.00	✓	\$ 3,084,609.60	\$ 183,600.00	\$ 2,965,311.60
3	14.15%	\$ 124,848.00	✓	\$ 3,396,233.86	\$ 187,272.00	\$ 3,197,631.19
4	8.71%	\$ 127,344.96	✓	\$ 3,564,700.87	\$ 191,017.44	\$ 3,285,127.43
5	0.44%	\$ 129,891.86	✓	\$ 3,450,493.69	\$ 194,837.79	\$ 3,104,744.20
6	9.85%	\$ 132,489.70	✓	\$ 3,657,877.62	\$ 198,734.54	\$ 3,211,826.96
7	19.23%	\$ 135,139.49	✓	\$ 4,226,148.00	\$ 202,709.24	\$ 3,626,752.05
8	11.13%	\$ 137,842.28	✓	\$ 4,558,675.99	\$ 206,763.42	\$ 3,823,646.13
9	3.75%	\$ 140,599.13	✓	\$ 4,589,027.22	\$ 210,898.69	\$ 3,756,134.17
10	12.93%	\$ 143,411.11	✓	\$ 5,038,977.33	\$ 215,116.66	\$ 4,026,685.66
11	18.79%	\$ 146,279.33	✓	\$ 5,839,521.84	\$ 219,419.00	\$ 4,563,880.90
12	-19.44%	\$ 149,204.92	✓	\$ 4,555,113.88	\$ 223,807.38	\$ 3,452,855.08
13	5.99%	\$ 152,189.02	✓	\$ 4,675,776.18	\$ 228,283.52	\$ 3,431,397.57
14	11.12%	\$ 155,232.80	✓	\$ 5,040,489.70	\$ 232,849.19	\$ 3,580,119.79
15	4.74%	\$ 158,337.45	✓	\$ 5,121,071.46	\$ 237,506.18	\$ 3,512,311.29
16	9.37%	\$ 161,504.20	✓	\$ 5,439,411.65	\$ 242,256.30	\$ 3,599,158.56
17	20.04%	\$ 164,734.28	✓	\$ 6,364,735.46	\$ 247,101.43	\$ 4,073,328.50
18	-8.98%	\$ 168,028.97	✓	\$ 5,625,153.25	\$ 252,043.46	\$ 3,455,500.15
19	-3.21%	\$ 171,389.55	✓	\$ 5,273,196.28	\$ 257,084.32	\$ 3,087,494.27
20	-1.79%	\$ 174,817.34	✓	<b>\$ 5,003,988.73</b>	\$ 262,226.01	<b>\$ 2,770,002.11</b>
Average Annual Return	<b>6.40%</b>					

Merely switching the sequence of returns produces a vastly different result. The average annual return is exactly the same but the ending balances are very different.

We would point out as well that future returns are unlikely to match those of the past. The reason is simple. The 10-year Treasury note yielded nearly 7% in 2000 while today it yields just 1.75%. Mathematically, bonds cannot provide the returns they have in the past. Unless stocks return much higher than average returns in the future, a balanced 60%/40% stock/bond portfolio cannot produce returns near historic levels. We do not think it is prudent to plan for higher than average returns.

Of course, this is just an example. Reality is that we review withdrawal rates regularly and advise when they need to be changed. We do think it is important though to start with a conservative rate especially after markets have had a good run as they have now. If the initial withdrawal rate proves too conservative, we can always change it in the future. We just don't want to start in a hole.

