Hardwired COLA vs. Performance-Based COLA: What's Best?

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For retirees who don't mind slight to moderate reductions in their annual income roughly one-third of the time, we recommend withdrawing a fixed percentage of their portfolio's ending account value each year.

Retirees understandably would like their income during retirement to increase each year. They can accomplish that in either of two ways: by hardwiring the cost of living adjustment (COLA) into the annual withdrawal schedule or by letting the annual growth of the portfolio (if any) determine the COLA.

A hardwired increase in the annual withdrawal from a retirement portfolio (for example, a 3% annual COLA) sets in motion a schedule of withdrawals that

- Is known in advance
- Increases each year
- Is blind to the annual performance of the portfolio (thus adding to the portfolio loss after a down year)

Alternately, an annual withdrawal based on a percentage of the portfolio's year-end value (the Required Minimum Distribution method) will fluctuate from year to year and can decrease in some years.

The withdrawal will decrease because it is based on the portfolio's ending account value; if the account value declines, the withdrawal will decline proportionately. This built-in protection mechanism minimizes the damage to a retirement portfolio, especially after a year like 2008. Retirees won't be guaranteed a larger withdrawal every year, but this approach will be kinder to their portfolios.

Let's back-test these two methods of withdrawal over the past 95 years (from 1926-2020). We'll look at 71 rolling periods of 25 years each, where each period represents a retiree who might withdraw money from ages 70 to 94, for example. This multi-period analysis allows us to account for a wide array of possible sequences-of-returns—a vitally important issue to retirees.

We allocated our hypothetical retirement portfolio to 40% large-cap US equity, 20% small-cap US equity, 30% US aggregate bond market, and 10% cash (using common index returns

throughout.) We rebalanced annually and for simplicity, excluded taxes and inflation. The portfolio's starting balance was $1 million and the initial first-year withdrawal was 4%, or $40,000.

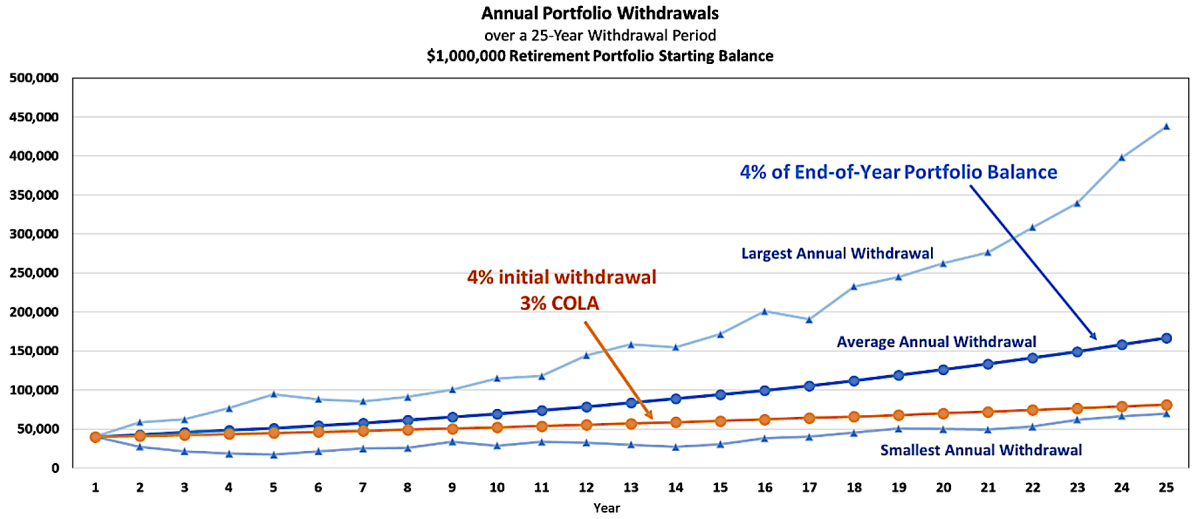
When we used a hard-wired 3% COLA in years 2-25, the withdrawal each year was known in advance and escalated each year by 3% (See Table 1). In year two, the withdrawal was $41,200 (or 3% more than in year one). In year three, the withdrawal was $42,436, and so on. Per the Rule of 72, the withdrawal was $81,312 in year 25, or roughly double the withdrawal in year one.

Performance-based COLA

We now turn to the performance-based COLA. As Table 1 below shows, a 4% withdrawal rate produced a larger *average* annual withdrawal in years 2-25 than a fixed 3% COLA. But the different sequences of returns over the 71 rolling periods produced considerable variation in the size of the annual withdrawals.

Year	4% initial Withdrawal, 3% COLA in Years 2-25 (Hardwired COLA)	4% of Year-End Portfolio Balance Withdrawn Annually (Performance-Based COLA)		
	Withdrawal in year…	Average Withdrawal in year…	Largest Withdrawal in year…	Smallest Withdrawal in year…
1	40,000	40,000	40,000	40,000
2	41,200	42,622	58,700	27,250
3	42,436	45,547	62,247	21,672
4	43,709	48,413	76,637	18,437
5	45,020	51,369	94,619	17,402
6	46,371	54,421	88,072	21,609
7	47,762	57,673	85,499	25,206
8	49,195	61,248	91,224	25,773
9	50,671	65,262	100,768	33,880
10	52,191	69,340	115,128	28,823
11	53,757	73,862	118,102	33,687
12	55,369	78,696	144,443	32,765
13	57,030	83,605	158,594	30,126
14	58,741	88,813	155,046	27,029
15	60,504	94,168	171,637	30,717
16	62,319	99,722	201,030	38,142
17	64,188	105,603	190,428	40,029
18	66,114	112,214	232,760	45,492
19	68,097	119,247	245,101	50,566
20	70,140	126,561	262,353	49,955
21	72,244	133,759	276,620	49,162
22	74,412	141,117	308,469	53,229
23	76,644	149,390	339,584	62,152
24	78,943	158,045	398,108	66,767
25	81,312	166,832	437,995	69,845

Table I. Annual Withdrawals. Results drawn from 71 rolling periods of 25-year retirement withdrawal periods from 1926-2020. Assumes $1m starting balance and allocation of 40% large US stock, 20% small US stock, 30% bonds, and 10% cash.



For example, in year 14 (highlighted in yellow), the hardwired COLA of 3% produced a withdrawal of $58,741 in year 14, while the 4% method produced an average withdrawal of $88,813. The highest withdrawal in year 14 (recall that there were 71 year 14's) ranged from a high of $155,046 (based upon a lucky sequence of returns) to a low of $27,029. The variation in the annual withdrawal in year 14 (and in each year after year 1) was wide—and grew wider over time.

The tradeoff between a hardwired COLA and a performance-based COLA is shown in Table 2. Assuming a 4% initial withdrawal, a performance-based COLA produced an average annual withdrawal of over $90,000 whereas the average annual withdrawal for a hardwired 3% COLA was $58,335. However, your withdrawal using the performance-based COLA would be smaller than in the previous year about 35% of the time.

Is the dollar decline in the annual withdrawal significant? As shown below in Table 2, withdrawing 4% of the portfolio balance each year resulted in year-over-year declines in the annual withdrawal 35% of the time, but the average decline was only $5,807 (with an average annual withdrawal of $90,701 over the 71 rolling periods). Thus, a performance-based COLA exposed the retiree to a 6.4% decline in annual income roughly 35% of the time. The upside of the performance-based COLA was an average annual withdrawal over a 25-year withdrawal period that was 55% higher than a hardwired COLA of 3%.

Annual withdrawal method →	4% of portfolio balance *(Performance-based COLA)*	5% of portfolio balance *(Performance-based COLA)*	6% of portfolio balance *(Performance-based COLA)*
Average Annual Withdrawal over 25 Year Period	90,701	98,561	103,121
Average Ending Balance After 25 Years	4,396,440	3,466,344	2,726,514
Portfolio Failure Rate	0%	0%	0%
% of Time Annual Withdrawal Decreased the Following Year	35% of the time Average decline - $5,807	36% of the time Average decline - $7,218	36% of the time Average decline -8,700

Annual withdrawal method →	4% Initial Withdrawal 3% COLA in Years 2-25	5% Initial Withdrawal 3% COLA in Years 2-25	6% Initial Withdrawal 3% COLA in Years 2-25
Average Annual Withdrawal over 25 Year Period	58,335	72,345	84,921
Average Ending Balance After 25 Years	5,996,654	4,732,455	3,518,920
Portfolio Failure Rate	0%	4.2%	8.5%
% of Time Annual Withdrawal Decreased the Following Year	0%	0%	0%

Table II. Fixed % COLA vs. Performance-based COLA. Results drawn from 71 rolling periods of 25-year retirement withdrawal periods from 1926-2020. Assumes $1m starting balance and allocation of 40% large US stock, 20% small US stock, 30% bonds, and 10% cash.

Portfolio failure rate

Notice in Table 2 that we also analyze withdrawal rates of 5% and 6%. Assuming a 4% initial

withdrawal rate, both the hardwired 3% COLA and the performance-based COLA produced no portfolio failures over any of the 71 rolling 25-year periods. When we raised the initial withdrawal rate to 5%, the hardwired COLA of 3% led to a failure rate of 4.2%. That is, 4.2% of the portfolios ran out of money before 25 years. When we raised the initial withdrawal rate to 6% a hardwired COLA led to portfolio failure 8.5% of the time.

Conversely, withdrawing 5% of the portfolio balance at the end of each year led to no failures. Neither did a 6% withdrawal rate. In fact, a 10% withdrawal rate does not lead to any portfolio failures because of the self-protecting nature of a "%-of-portfolio-withdrawal" approach. Of course, at higher and higher withdrawal rates the retirement portfolio will have a lower ending balance after 25 years.

For retirees who don't mind slight to moderate reductions in their annual retirement income roughly one-third of the time, we believe that withdrawing a fixed percentage of their portfolio's ending account value each year will be a superior approach.