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Develop Business/Financial Planning

How the 'Sequence of Inflation' Can Devastate Retirement Portfolios

By Jim Otar, CMT, CFP

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It's often a matter of luck whether a client retires in a low inflationary environment or a high one. But when you're planning 20-30 years out, you need to prepare for inflation-related extremes. Factoring in the sequence of inflation can protect clients from depleting their portfolio prematurely.

For over 13 years now, I've been researching the "luck factor" in retirement planning. In fact, it consists of two parts.

You may already be familiar with the first component—the "sequence of returns," the single largest determinant of a distribution portfolio's success. But are you fully aware of the second-most-influential factor? That's the "sequence of inflation." While the government is playing with retirees' financial future by manipulating concepts like "chained CPI," it might be a good time to share my research with you.

Our research

We use market history starting in 1900 and ending at the end of 2010. We do not use man-made simulators of any kind (generally known as Monte Carlo simulators). We use actual market history, which we call "aftcasting"—as opposed to "forecasting."

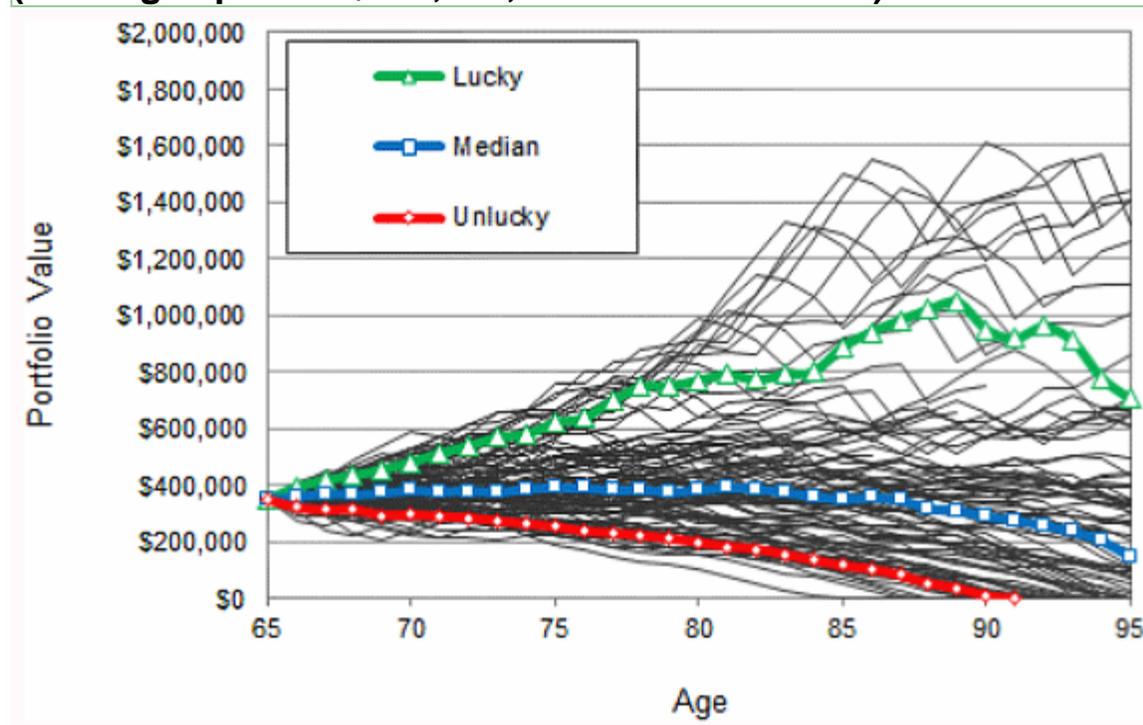
Aftcasting displays the outcome of all historical asset values of all portfolios since 1900 on the same chart as if a scenario started in each one of the years between 1900 and 2000. It provides the success and failure statistics with exact historical accuracy—as opposed to man-made simulation models—because it includes the actual historical equity performance, inflation rate, and interest rate, as well as the actual historical sequencing of all these data sets. In other words, aftcasting gives a bird's-eye view of all outcomes.

Let's look at an example: Bob, 65, is just retiring. He plans on withdrawing \$15,000, indexed annually to inflation, until age 95. His primary concern is sustainability of his income stream for life. In his investment portfolio he has \$350,000 with an asset mix of 40% equities and 60% fixed income.

Figure 1 shows the aftcast of this scenario. On this chart, we see the thin, black aftcast

lines. There is one line starting at the left vertical axis for each year since 1900. We define the bottom decile (bottom 10%) of all outcomes as the "unlucky" outcome, the top decile (top 10%) as the "lucky" outcome. The blue line indicates the median outcome where half of the scenarios are better and half are worse. In this example, the probability of depletion by age 95 happens to be 34%.

Figure 1: Aftcast: Fixed \$15,000 Annual Withdrawals From an Investment Portfolio
(starting capital of \$350,000; indexed to inflation)



Source: Retirementoptimizer.com Inc.

Aftcasting only shows what would have happened in history given a specific set of input data. We do not use it to make predictions. We fully agree with those who say that past events will *not necessarily* be repeated in the future. We are not interested in what happened in a specific year in history, other than to demonstrate it in the examples.

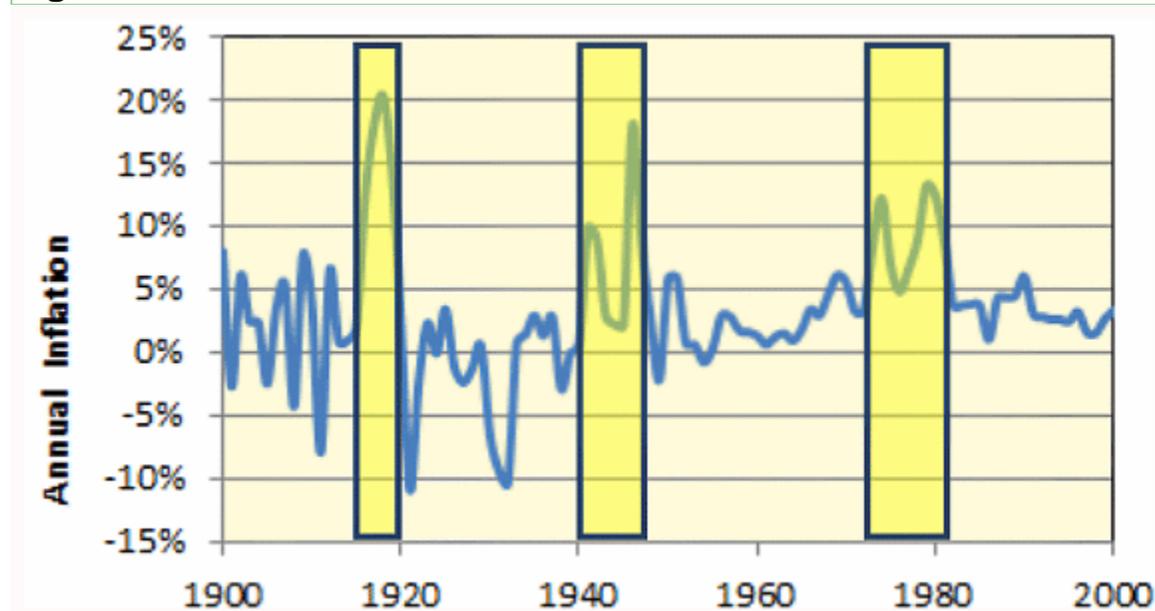
However, we are very interested in the *frequency*, the *size*, and the *persistence* of extreme events that happened in the past. These extremes are our starting point for designing a robust retirement plan for our clients. Today, we are focusing on only inflation-related extremes.

Sequence of inflation

Inflation, or more accurately, the sequence of inflation, is the second-most-important component of the luck factor after the sequence of returns. Even a short-term increase of inflation compels the retiree to withdraw higher and higher amounts from his portfolio for the rest of his life just to maintain his purchasing power. This can deplete a

retirement portfolio prematurely.

Figure 2: Inflation Since 1900



Source: U.S. Department of Labor, BLS, [Retirementoptimizer.com Inc.](http://www.Retirementoptimizer.com)

In Figure 2, we see that during the last century, there were three spikes of inflation. These spikes happened either during or right after a significant and costly war (World Wars I and II, Vietnam). We recently experienced two very expensive and lengthy wars and accumulated an enormous debt.

It would not be too surprising to run into another high-inflation era in a few years. The undercurrents are already there. Savers are being severely punished in favor of borrowers, or worse, their savings are being confiscated with the current zero-interest-rate policy. This can go on only for so long. Eventually, after there is nothing left to further plunder, the borrowers run out of resources and inflation will likely surface.

Among the many objectives that the Federal Reserve juggles is the inflation rate. The target inflation rate set by the Fed is currently around 2%. A large portion of retirement plans are designed for 2% to 3% annual CPI.

On the other hand, history shows that the inflation rate has been 3% or less only 52% of the time. Therefore any retirement plan that assumes an average inflation rate of 3% or lower is incongruent with historical experience. There is almost an even chance that inflation might be a higher than that, causing the portfolio to deplete much sooner than planned.

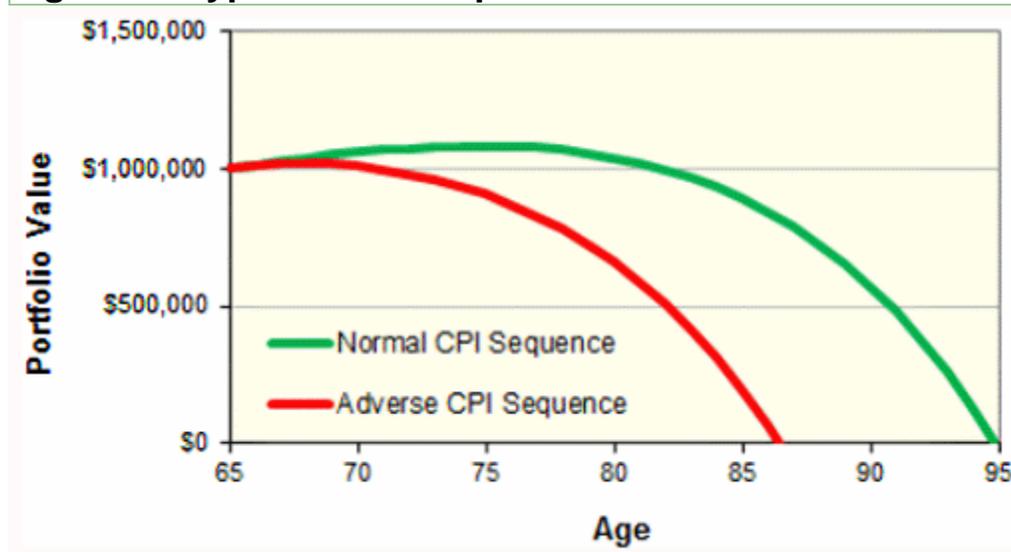
This is where the sequence of inflation comes into play: you do not need chronic high inflation lasting a long time to suffer the adverse effects of the sequence of inflation. If a retirement plan is designed for a normal inflation rate, only a few years of high inflation

can reduce the portfolio life significantly.

Figure 3 illustrates a hypothetical case. This particular retirement plan is designed to start at age 65 with initial capital of \$1 million. The plan assumes an 8% average growth rate of the portfolio. The retiree needs \$66,000 a year, indexed to 3% annually, until age 95. With these assumptions—albeit aggressive—the "forecast" indicates an uninterrupted income stream until age 95. This is designated on the graph as "Normal CPI Sequence."

Now consider that this retiree experiences a higher-than-normal CPI for the first three years of retirement. Between ages 65 through 67 (inclusive), the annual CPI jumps to 10% and then reverts back to 3% at age 68 for the rest of his life. This is designated as "adverse CPI sequence" on the chart. We observe that the portfolio longevity is reduced from age 95 to age 86, i.e., a 30% reduction over the original 30-year time horizon.

Figure 3: Hypothetical Sequence of Inflation



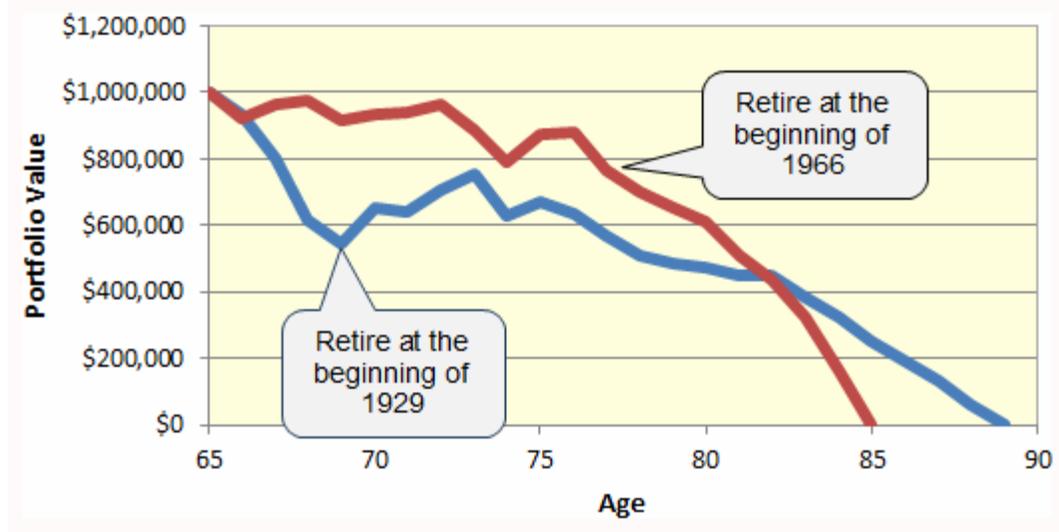
Source: Retirementoptimizer.com Inc.

Let's look at two examples from the last century. Consider a retiree with an asset mix of 40/60 equity/fixed income and a 6% initial withdrawal rate. Here, we use historical dividend rates and assume no management fees (i.e., total return).

If this person were to retire at the beginning of the market crash of 1929, his portfolio would have lasted until age 89. On the other hand, if he were to retire in 1966, the beginning of a secular sideways market, his portfolio would have depleted at age 85, as shown in Figure 4.

The high inflation between 1966 and 1981 would have forced our retiree to withdraw more and more income, eventually depleting his portfolio. The net effect of this was worse than the secular bearish trend that started in 1929, when equities lost about 80% of their value.

Figure 4: High Inflation vs. Worst Market Crash

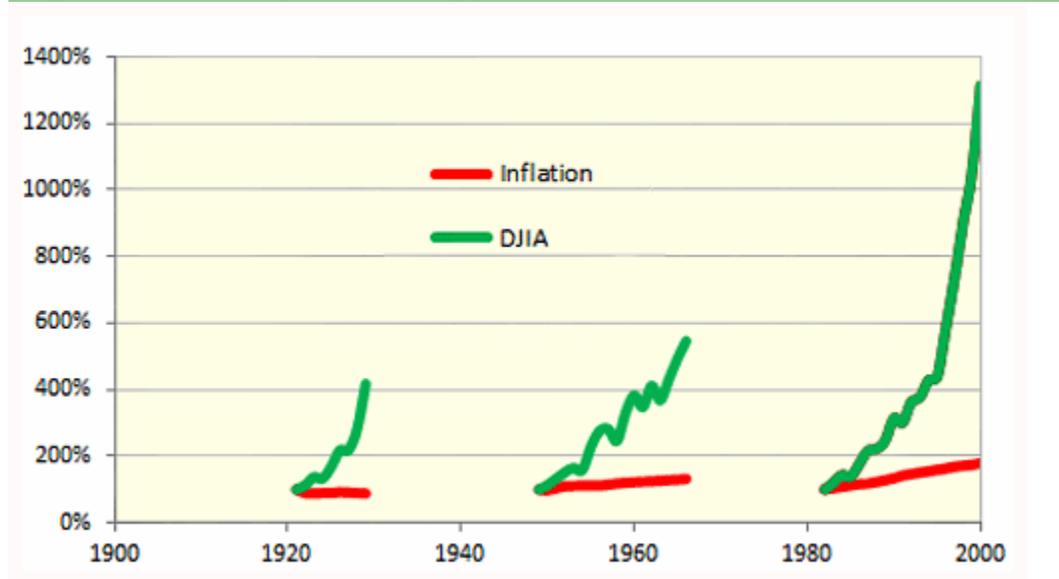


Source: Retirementoptimizer.com Inc.

Wait, it gets worse! Many academics and financial experts claim that equities traditionally beat inflation. That is mostly untrue. More often than not, the adverse sequence of returns and adverse sequence of inflation are cumulative.

Here is the part that is true: during the secular bullish trends (1921-1928, 1949-1965, 1982-1999) that occupied 43% of the last century, the growing equity index easily covered any adverse effects of inflation. Figure 5 depicts the three super waves of bullish trends and the inflation during the corresponding time periods:

Figure 5: DJIA (index only) and Inflation in Secular Bullish Trends

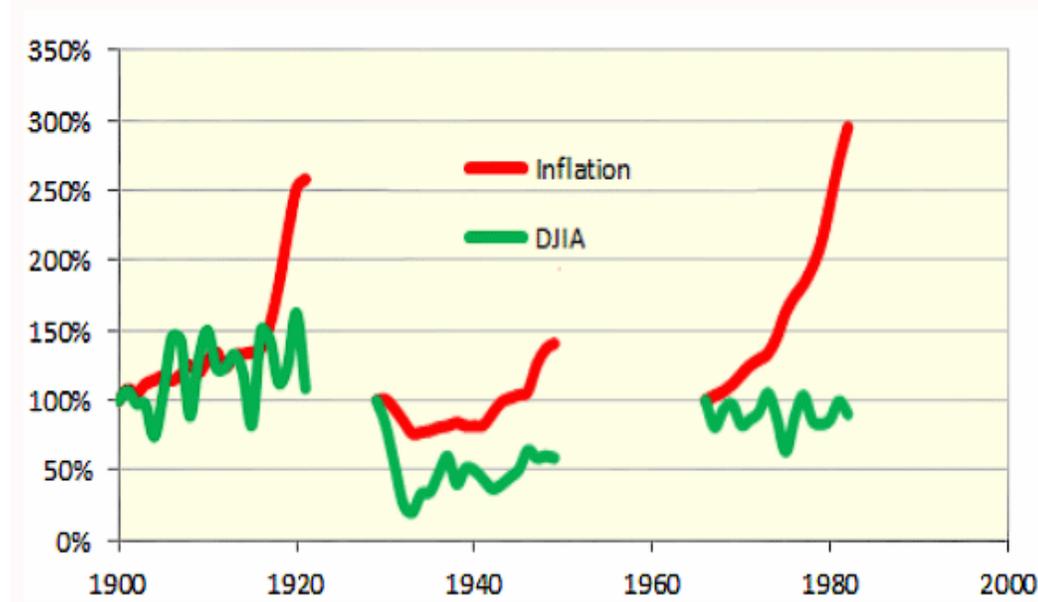


Source: Retirementoptimizer.com Inc.

However, during the remaining 57% of the time, the markets were either in secular

bearish or secular sideways trends. The equity index was never able to overcome the effects of inflation for the duration of any one of these time periods. By the time the trend eventually changed to secular bullish, there was little or no money left in distribution portfolios. Figure 6 depicts this observation.

Figure 6: DJIA (index only) and Inflation in All Secular Bearish/Sideways Trends



Source: [Retirementoptimizer.com Inc.](http://Retirementoptimizer.com)

In conclusion, our real challenge as advisors is not whether we should invest here or abroad or in stock or bonds, etc. Our real challenge is how to manage our client's retirement income when luck turns against us in the form of an adverse sequence of inflation.

Guidelines

In my practice, we've developed a summary of guidelines to follow in analyzing our clients' retirement finances. They are:

- 1. Client requires no income.** If the client doesn't need income from her portfolio during retirement, then we don't have to worry about the luck factor. Instead, we deal with the next most important factors, such as asset allocation, investment selection, cost reduction, and diversification.
- 2. Client requires unsustainable income.** If withdrawals from the portfolio are [too large](#) and can't be sustained, we have to suggest ways to bring them to below or near sustainable. Strategies might be to reduce expenses, delay retirement, create income from other assets, work part-time, and so on. If the client doesn't act on these suggestions, there is not much else we can advise. We can't create miracles

for clients.

On the other hand, if the client works with our suggestions and his withdrawals come closer to near sustainable, we suggest buying guaranteed income in the form of life and/or [variable annuities](#) to reduce the effect of the luck factor. This does not necessarily overcome the effects of adverse sequence of inflation in the future, but at least it guarantees lifelong income.

- 3. Client requires sustainable income.** If withdrawals from the portfolio are lower than sustainable, then we do a [stress test](#). We test two separate stress situations for the sequence of inflation.

The first test is for an acute spike of inflation. We increase the income requirement by 33%—for example, \$60,000 per year instead of \$45,000 a year to reflect a three-year, 10% CPI event.

The second test is for a chronic inflationary episode. We add 2% to each year of our historical CPI database that we use in our aftcast. This is to reflect a higher inflation that our client might experience, over and above the official government CPI numbers.

If the plan passes both tests, then we breathe easier, follow Guideline #1, and review it annually. Otherwise, we move our discussion to Guideline #2.

Of course, we hope that future adverse sequence of inflation events do not devastate our clients' retirement plans. However, it is better to start the discussion with clients now, before inflation strikes, while the risk still seems remote. Once we're in an inflation spike, the remedies only get harder.

*Jim Otar, CMT, CFP, is a financial planner, a professional engineer, a market technician, a financial writer, and the founder of [retirementoptimizer.com](#). His past articles on retirement planning won the CFP Board Article Awards in 2001 and 2002. He is the author of *Unveiling the Retirement Myth – Advanced Retirement Planning Based on Market History and High Expectation and False Dreams*. You can reach him at jim@retirementoptimizer.com.*

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