On Course
Financial Planning
Facing the Future with
Optimism and Courage
May 2024
Vectors
geo@oncoursefp.com
425-861-9997

Fooled By Randomness

Just before graduation, some fellow math majors and I headed off to the campus library and scoured microfilms of past issues of *The New York Times*. We were not engaged in intense academic research; we were studying the results of past horse races in the paper's sports section in an attempt to find a mathematical weighting of horse and jockey ratings that could predict future winners. Soon after graduation, we went to a thoroughbred racetrack to test our formula. If my memory is correct, there were ten races that day. For the first race, our formula produced a clear favorite, and we headed off to the betting window and each bet $2 on Thunderbolt. We proceeded to the grandstand, eager to discover if an undergraduate degree in mathematics had any practical value in the real world.

To our dismay, Thunderbolt started slowly and was mired in the middle of the pack. In the final turn he put on a burst of speed and, to our glee and righteous vindication, caught and passed the horse that was in the lead. Thunderbolt, by a nose! We hooped and hollered and ran to the betting window to collect our just rewards. For the rest of the afternoon, our can't miss formula picked nine consecutive losers.

Behavioral finance is a relatively new academic discipline that identifies behavioral biases that lead to poor investment decisions. In our naïve attempt to outwit the rest of the racing world, we made three mistakes that behavioral finance research identifies as subtle traps that snare investors.

We were overconfident.
We like to think that we are rational beings, making investment decisions only after a disciplined analysis of risk versus reward. But behavioral finance studies, as well as my own experience with investors, tell a different story. What we think are well thought out, prudent investment ideas are often just speculations derived from insufficient data and haphazard research. Just like our hope that we had found a formula that could predict winning horses, active investors hope that they will find an investment strategy or fund that will outperform the market. One characteristic shared by horse pickers and active investors is overconfidence, they are unaware of the difficult odds they face.

We were fooled by randomness.
Our minds are designed to discern patterns in the world around us. This ability has produced the scientific method and all the advancements in science, engineering, medicine, and mathematics. Unfortunately, we can be led astray when we see "patterns" in random events. Let's call them cognitive illusions - they're like optical illusions in your brain. Here's one – which of the following patterns of heads and tails in a coin toss is more likely to occur?

H H H H H H H H H H H H or H T T H T T H T H H T H

Both patterns have the same probability of occurring. The first series can fool us because the consecutive heads create a cognitive illusion that something unique is happening. My friends and I were fooled by the random success of our library backtests and, after picking one winner in a row, felt like Mathematicians of Destiny.

In investing, randomness refers to the unpredictable variability of stock prices from one time period to the next. The idea that stock prices follow a random path was popularized in the investment classic "A Random Walk Down Wall Street" by Burton Malkiel (now in its 13th edition). Investment returns are influenced by a multitude of economic factors, geopolitical events, corporate earnings, and investor sentiment. These factors interact in unpredictable, complex ways, leading to random fluctuations in stock prices. Malkiel identifies the inherent randomness of stock market returns as the reason that it is so difficult to consistently outperform market averages. Speculations that succeed by random chance (better known as luck) can do funny things to your mind. Had we begun with a lucky streak of winners, I'm sure that we would soon have been betting more than $2 per race.

We were data mining.
Data mining (known as cherry picking by non-financial folks) describes the practice of analyzing past data to discover a strategy that would have produced market beating returns (or winning horses) during the time period under study. Wall Street firms are relentless data miners and use the results to create investment products that would have been market beaters in years past, with no assurance that the outperformance will continue into the future (it usually doesn't). When financial strategies are developed by analyzing a small amount of past data, the results are likely to be misleading due

to the impact of randomness in small sample sizes. I doubt that our library data mining research extended beyond the previous 12 months. My advice is to consider performance data of less than five years to be random and of no value. Ten-year data may tell us a thing or two, but even ten-year data contains a great amount of randomness. My friends and I created a formula that worked in the past and headed to the race track full of confidence – despite the fact that we had no idea why our formula worked in the past or why it should work in the future. Data mining will be with us as long as investment firms succeed in attracting assets by offering products that promise market beating returns.

To the dismay of all investors, fund managers and horse race fans, past results cannot be used to predict the future. What the stock market did today tells us nothing about what it will do tomorrow, next week, next month or for the remainder of the year. Once you accept this fact, you're left with three investment options –

1. Avoiding risk and the possibility of loss. Investors hate losses more than they love gains and loss aversion is usually at its highest after a stock market decline. Put all your money in government bonds and FDIC insured CDs and savings accounts. Net expectation - little or no return, especially after taxes and inflation. There is a hidden risk in taking no risk with your investments – you are likely to end up with a return that fails to keep up with your cost of living. Take this to the bank. Any strategy or investment that lowers volatility in the short-term is almost guaranteed to lower return in the long-term.
2. Accepting the inevitability of temporary losses and owning a diversified portfolio of stock and bond funds. Net expectation - modest, single digit real returns over the long term. Stocks have an excellent long-term track record, but they don't rise in a straight line. Even if your portfolio allocation is appropriate for your goals, time horizon and risk tolerance, unpleasant and unpredictable declines are sure to be in your future - they are an intrinsic part of equity investing. Since 1980, the average intra-year decline for the S&P 500 is -14.3%. April's peak-to-trough pullback in the S&P 500 was modest—just over 5% according to Yahoo Finance – a complete non-factor to anyone investing like an adult. There will be times when your sleep-at-night factor would improve if you adopted option 1. But the opportunity cost is likely to exceed any downside protection that a no-risk portfolio provides. If you want your portfolio's return to keep up with or beat the rate of inflation, you have to put your capital at risk – and that means investing in stocks. Like it or not, accepting short-term losses is an essential ingredient in achieving long-term investing success.
3. Taking a high degree of risk in an attempt to maximize return and accepting the possibility of permanent loss. Risk and reward are inseparable. A fundamental truth in investing is that the larger the return we seek, the greater the possibility of permanent loss. Most investors who try this option end up engaging in performance chasing, stock picking and market timing schemes. These folks keep the big Wall Street firms in business, cranking out products with promises designed to satisfy performance addicts. To succeed in this quest, you must outsmart the market, and Mr. Market is hard to outwit. The most likely outcome - permanent losses in the short-term that will lead to a long-term return that is less than that of option 2. Instead of seeking to maximize return, it's much wiser to seek to minimize your mistakes.

The research paper "Fooled by Randomness: Investor Perception of Fund Manager Skill" sought to discover why mutual fund investors buy top-performing funds despite the universal disclaimer that "past performance is no guarantee of future returns". The authors noted the two primary mistakes that investors make –

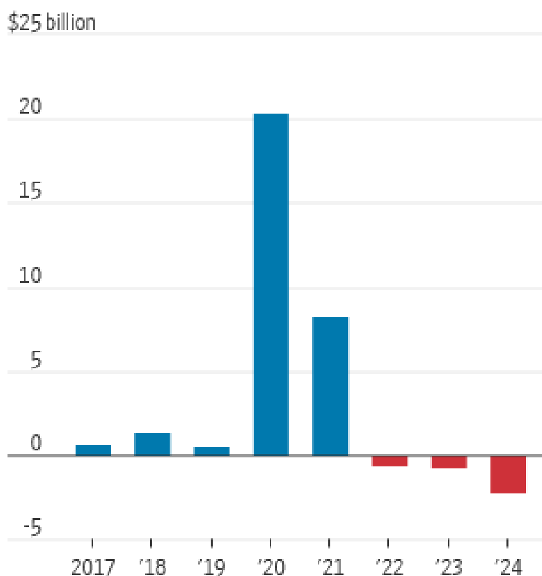
- Investors assume that good fund performance is an indication of manager skill. But they fail to understand that an unlikely event becomes likely if the population of funds is large enough. For example, let's assume that there is a 50-50 chance that a fund will outperform its benchmark index in any given year. If performance is independent from one year to the next (implying little or no manager skill) the chance that a fund will outperform in each of the next ten years is approximately 0.1% (one chance in 1,024). However, in a domestic fund population of approximately 7,400 mutual funds (as of 2022) we should expect that seven funds will outperform in each of the next ten years, even if there are no skilled managers. Unless the number of outperforming funds exceeds what we expect from chance alone, investors cannot assume that the outperformers did so due to manager skill. Conversely, if there are twenty outperforming funds, then investors can assume that manager skill played a part in the performance of some of the funds – with no way of knowing which fund managers were lucky and which were skilled.

- Investors do not consider fund volatility when looking at past performance. They do not realize that risk and expected return are positively correlated. Many fund managers, in an attempt to achieve high performance and attract more assets, take big risks with investor money, which leads to high fund volatility. It is common for an outperforming fund to be more volatile than the stock market – to the dismay of many of the fund's investors.

The authors concluded that even the fund managers themselves are often "*convinced that strong returns were the result of their personal skill even when there is clear evidence that they were lucky…investors underestimate the probability*

that a track record was generated by pure chance especially in large fund populations and when fund managers take excessive risks…These biases can lead to a misallocation of capital to unskilled managers."

Wall Street's media mouthpieces will never admit that average market returns have been sufficient for most investors to meet their financial goals. Wall Street's business model is greed focused – acting as if there is no such thing as "enough." It seeks to gather client assets by offering exciting products to beat the market. On the other hand, good financial planning is goals focused. Its concern is primarily on preparation and protection, not predictions or performance. It helps clients organize their lives and assets to achieve their goals with the least amount of risk exposure.



This month's Fooled by Randomness award goes to those investors who flocked to Cathie Wood and her ARK Innovation ETF (ARKK). She and her fund became the darlings of the financial media and the heartthrob of performance chasers in 2020, when the fund posted a 153% return. ARK Investment Management's seven actively managed exchange-traded funds took in $20 billion of new investor money that year, a staggering sum for a small, heretofore unknown fund company. Wood became the brightest star in the active manager universe.

But the magic wore off after ARKK lost 23% in 2021 and 67% in 2022. Today, its 5-year annualized return through April 22 is a loss of 1.4%, according to Morningstar.

Little surprise then that investors have pulled a net $2.2 billion from the funds at ARK Investment Management this year, more than double the outflows in all of 2023, according to *The Wall Street Journal*. Total assets in those funds have dropped to $11.1 billion—after peaking at $59 billion in early 2021, when ARK Investment Management was the world's largest active ETF firm.

In a recent report, Morningstar noted that by the end of last year, ARK Investment Management's ETFs destroyed more wealth than any other asset manager over the previous decade, losing investors a collective $14.3 billion. As predictable as the sun rising in the east, ARKK's biggest inflows came in the months surrounding the fund's February 2021 peak, giving many late-coming investors an up front and personal lesson in randomness and reversion to the mean. A Morningstar analysis of the fund notes that "*Wood remains the firm's key person…Wood's reliance on her instincts to construct the portfolio is a liability… It shoots for high returns by investing only in stocks it thinks will gain in price by 15% or more annualized over the next five years, trading in and out of them. But portfolio manager Cathie Wood lacks a robust approach to understanding or mitigating the portfolio's risks and instead relies on her instincts, which haven't proved effective.*"

The Lazy Golfer Deserves Some Respect

The comic Rodney Dangerfield was famous for saying that he didn't get any respect. Hedge funds are the opposite of Rodney Dangerfield -- they get too much respect. Assets in hedge funds reached a record $4.3 trillion in this year's first quarter according to research firm Hedge Fund Research, Inc (HFR).

Hedge funds are typically limited to accredited investors, who must meet at least one of several criteria, including a net worth greater than $1 million or income greater than $200,000 in each of the two most recent years and expected for the current year. The typical hedge fund charges an annual fee of 2% plus 20% of any gain (called a 2+20 fee). The financial media breathlessly promotes hedge fund managers who have done well in the recent past -- giving naïve investors the impression that all hedge funds are managed by financial geniuses who produce sterling performance. But the data reveals a different story.

HFR created the HFRX Global Hedge Fund Index. The index tracks the performance of thousands of hedge funds. The index is designed to be representative of the overall composition of the hedge fund universe. The HFRX Index does not include those funds that have expired during the time period under study. This taints the database with what is known as "survivorship bias" because the average return of the survivors is higher than the average return of all funds available to investors at the beginning of the time period. Additionally, many hedge funds own illiquid assets which are not easily priced. Therefore, we must accept the fund manager's opinion of the assets' current value. I kid you not.

Let's compare the ten-year performance of the average hedge fund to my Lazy Golfer Portfolio. The Lazy Golfer portfolio consists of five Vanguard index funds-- allocated 40% to the Total Stock Market Index Fund (VTSAX), 20% to the Total International Stock Index Fund (VTIAX), 20% to the Inflation Protected Securities Fund (VIPSX), 10% to the Total Bond Market Index Fund (VBTLX) and 10% to the REIT Index Fund (VGSLX). It has an annual expense ratio of 0.10%. Rebalance the portfolio on your birthday and ignore the stock market for the rest of the year.

	1 Year	5 Year	10 Year
HFRX Index	5.7%	3.4%	1.6%
Lazy Golfer	15.0%	8.0%	7.2%
	Data from HFRX	and Morningstar	through 3/31/24

There are only five things that the stock market can do in the short term. It can go up a lot, go up a little, go down a lot go down a little, or go nowhere at all. Simple enough, but no one knows which of the five will show up next because no one knows tomorrow's headlines or how the capital markets will react to tomorrow's news. Hedge fund managers are mere mortals -- possessing no more ability to foresee tomorrow's events or the near-term movement of markets than anyone else. Unfortunately for them, most of their investors rightfully expect excellent short-term performance in exchange for the exorbitant fees that they are paying. Some hedge fund managers will gain notoriety after an impressive hot streak and money will flow hand-over-fist into their funds, but performance chasing investors will likely end up being disappointed while the fund managers feast on their 2+20 fee.

While short-term returns can be highly volatile and influenced by random events, long-term investment horizons tend to reveal more consistent trends. Wise investors focus on their long-term goals rather than on short-term, random moves in the stock market. Owning and annually rebalancing a diversified portfolio of stock and bond funds is the best defense against the randomness of market returns. The portfolio should be the product of a written financial plan that has a built-in flexibility to adapt to unexpected events, because life will not happen just as we planned.

Successful investing is primarily an issue of temperament, not intelligence. Once you understand that no one can accurately forecast what the economy will do in the near term and that the stock market cannot be timed, you will liberate yourself from the tyranny of investing in response to forecasts and current events. Achieving your long-term financial goals isn't about being the smartest kid on the block, outperforming the market or finding the next superstar fund manager. It's about being smart enough to do boring, sensible things, consistently, over time. Not all your investments will be home runs, but hitting three singles usually ends up in a run scored.

Disclaimer - The information in this newsletter is educational in nature and should not be considered as personal investment, tax, or legal advice. Each reader must determine how its content should be applied to their investment portfolio. This newsletter is not a solicitation to sell investment advisory services where such an offer would not be legal. Investing in stocks and mutual funds involves risk and the potential loss of principal. Historical data has been obtained from sources believed to be reliable. Past performance is not an indication of future returns. The calculations or other information in this newsletter regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are shown for illustrative purposes only. Unless otherwise noted, rates of return reflect historical annual compounded total returns including the reinvestment of dividends but do not include taxes, fees, or operating expenses. If included, these additional costs would materially reduce the results. Index performance is provided as a benchmark and is not illustrative of any particular investment. It is not possible to invest directly in an index. All expressions of opinion are subject to change. OCFP accepts no responsibility for losses arising from the use of the information contained herein.