Part 1: Momentum—the 'Premier Anomaly'

America (and the world) loves winners. Football fans can recall Super Bowl winners going back several seasons. Hockey fans know which teams recently won the Stanley Cup and baseball fans the World Series. In sports, business, and life in general, being number one is the most coveted position of all.

That same conviction translates directly into the vast majority of investors' philosophies. "Buy Winners and Sell Losers" is a common mantra heard across the investment landscape. In Peter Lynch's groundbreaking book 'One Up on Wall Street' he uses the metaphor: "Selling your winners and holding your losers is like cutting the flowers and watering the weeds." The "Oracle of Omaha" Warren Buffett famously called Lynch and asked to use his quote in Berkshire Hathaway's 1989 annual report. William O'Neill, founder of Investor's Business Daily, and creator of the popular CANSLIM stock investing model explicitly teaches to buy stocks making new 52-week highs and sell those that are breaking down or underperforming. Legendary commodities and futures trader Richard Dennis, famously known as the 'Prince of the Pit', turned a small stake into hundreds of millions of dollars and proved that successful trading could be systematically taught through his 'Turtle Traders' experiment. With those rules now available in the public domain, the 'turtles' were taught to buy when a commodity's price breaks above its 20-day high for short-term trades, and breaks above its 55-day high for long-term trades.

Historical evidence across discretionary and systematic strategies suggests that buying strength and avoiding weakness has been a persistent behavioral and structural feature of markets. With ample anecdotal evidence supporting the concept of buying winners and selling losers—including the examples cited above—many investors have been content to accept the principle on its own. Sherman Research, however, is strictly data-driven. Our next questions are always: Does the academic research support this? And can we test and validate it ourselves?

Eugene Fama and Kenneth French are renowned financial economists, best known for their pioneering work in asset pricing and portfolio management. Eugene Fama is a Nobel laureate and professor at the University of Chicago Booth School of Business, while Kenneth French is a professor at the Amos Tuck School of Business at Dartmouth College. Eugene Fama is often called the "father of the Efficient Market Hypothesis (EMH)." The hypothesis states that prices reflect all available information and that persistent outperformance is difficult without increased risk or luck. Fama and French introduced their Three-Factor Model in 1993 that concluded the market itself, equity size, and valuation metrics explained the bulk of the cross-section of average stock returns—but **not all** return behavior.

In 1997, Mark Carhart, Professor of Finance at New York University (NYU) Stern School of Business, introduced momentum as a formal risk factor in asset pricing, extending the Fama-French framework. In his paper, "On Persistence of Mutual Fund Performance" in the *Journal of Finance*, Carhart demonstrated that mutual fund performance persistence is largely explained by market, size, value, *and* momentum, creating what is now called the **Carhart Four-Factor Model**. This has become the standard framework for evaluating mutual fund managers.

Against this backdrop, it is particularly noteworthy that Fama—together with French—has repeatedly acknowledged momentum as a robust and pervasive return factor, one that remains largely unexplained by traditional asset pricing models and therefore cannot be ignored in serious empirical research. In

2008, Fama and French acknowledged momentum as "real, strong, and pervasive" in their paper "Dissecting Anomalies". Not only that, they explicitly call momentum the "**premier anomaly**"[1].

So what is momentum and how do we measure it? In his book "Getting Started in Technical Analysis", Jack Schwager, author best known for his 'Market Wizards' series of books, states that it can be derived from price in any number of ways. The most basic calculation is simply the difference between today's price and the price some number of periods ago. For example, 10-day momentum would be the difference between the price today and the price 10 days ago--and often divided by the earlier price to put it in percentage terms. Putting the calculation into percentages allows quick comparisons between a wide variety of investable instruments.

Other ways of measuring momentum can be measuring the distance between price and a key moving average (or averages). It can also be a ratio of a short-term moving average divided by a long-term moving average. And for those even more mathematically-inclined, momentum can be measured as the slope of a linear regression line over x number of periods. Essentially, all of these measurements of momentum (and many more) are measuring things going "up"—and those going up the most will get the highest scores.

Is there a "best" measurement of momentum that is robust across multiple instruments and timeframes? Again, we'll let academic research and internal testing be our guide. In 2018 Doron Avramov, Professor of Finance at Arison School of Business, Reichman University, Guy Kaplanski, Director of the School of Business, Bar-Ilan University, and Avanidhar Subrahmanyam, Anderson Graduate School of Management, UCLA, published "Stock Return Predictability: New Evidence from Moving Averages of Prices and Firm Fundamentals". In it, they validate that MAR—the ratio between a short-term moving average and long-term moving average, is a robust measurement of momentum across asset classes, geography, and instruments:

> We show that a little-explored variable in the academic literature, the signed distance between short- and long-run moving averages of past prices, has strong predictive power for returns, in both U.S. and cross-country settings. This predictive ability survives a comprehensive set of other technical rules, including momentum (Jegadeesh and Titman, 1993) and 52-week highs (George and Hwang, 2004). Indeed, the predictor is profitable in all standard momentum deciles and yields significant profits on both long- and short-legs, unlike many other cross-sectional predictors (Stambaugh, Yu, and Yuan, 2012).[2]

While we're not ready to conclude that moving average ratios are the "best" method of measuring momentum in financial markets, it's widely used throughout our platform at Sherman Research LLC--and it's academically validated.

In addition to the moving average ratio, another academically-validated measure of momentum is *average trailing return per day*. While cumulative return over a fixed window is the most common expression of momentum in the academic literature, expressing that return as the average return per

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[1] Eugene F. Fama and Kenneth R. French, "Dissecting Anomalies," *Journal of Finance* 63, no. 4 (August 2008): 1653–1678

[2] Avramov, Doron, Guy Kaplanski, and Avanidhar Subrahmanyam. "Stock Return Predictability: New Evidence from Moving Averages of Prices and Firm Fundamentals." *Journal of Financial and Quantitative Analysis* 53, no. 2 (2018): 921–958

period provides a more precise and scale-consistent measure of trend strength[3]. In continuous-time finance, the percentage change in price divided by the length of the lookback window represents the estimated drift, or slope, of the asset's price path over that interval. This formulation is directly aligned with the time-series momentum framework, which evaluates whether past returns predict future returns, but it refines the signal by normalizing for window length. Dividing by the number of periods prevents longer lookback horizons from dominating shorter horizons and allows multiple trend measures to be combined in a coherent and comparable manner. In effect, the model is not simply measuring "how much" an asset has moved, but the rate at which it has been compounding. By combining multiple horizons of average past returns into a composite momentum score, the **Momentum 60/40 model** captures persistent drift across short-, intermediate-, and long-term windows while maintaining statistical consistency with the academic momentum literature.

Some argue that momentum investing is just 'performance chasing'. While securities that surge quickly often reverse, disciplined momentum strategies are designed to capture sustained trends, not short-term spikes. Our methodology is not based on short-term measures of momentum. The strength and reliability of momentum is most evident on the months to years timeframe. Using longer-term lookback calculations allows us to avoid the short-term ebb and flow (and noise) of financial markets. Our goal is to capture the persistent trends and then exit when those trends weaken.

Part 2: The Diversified Portfolio

"Give a portion to seven, and also to eight; for thou knowest not what evil shall be upon the earth."
Ecclesiastes 11:2

While the saying "Never put all your eggs in one basket" is as old as time itself, it wasn't until the 1950's that the concept of investment diversification was formalized in academic research. In 1952, Harry Markowitz, a PhD at University of Chicago, published his landmark paper "Portfolio Selection" in the Journal of Finance[4]. His breakthrough insight was that risk must be analyzed at the *portfolio* level, not the individual security level. He introduced the concepts of mean-variance optimization, covariance as central to risk, the efficient frontier, and mathematical diversification. Before Markowitz, the investment community had been focused mainly on picking "good stocks". After his research, the focus became on constructing *optimal portfolios*. This shift is groundbreaking because risk and return characteristics can change dramatically when assets are combined. Before Markowitz, risk was often treated as a property of individual securities. Markowitz showed that portfolio risk depends on covariance between assets. Put another way, a relatively risky asset can actually reduce overall risk in a portfolio, *if it has low or negative correlation* with the other assets. Two volatile assets together, as long as they are non-correlated, can actually produce a less volatile portfolio.

A second core tenet of Markowitz's research was the 'Efficient Frontier'. For any set of available assets, there exists a set of portfolios that offer the highest expected return for a given level of risk or offer the

[3] Tobias J. Moskowitz, Yao Hua Ooi, and Lasse Heje Pedersen, "Time Series Momentum," *Journal of Financial Economics* 104, no. 2 (2012): 228–250
[4] Harry Markowitz, "Portfolio Selection," *Journal of Finance* 7, no. 1 (March 1952): 77–91

lowest risk for a given expected return. These portfolios form the **efficient frontier**. All the other combinations of portfolios below this frontier are therefore *inefficient*.

For most investors seeking meaningful returns in the market without taking on undue risk, broad index funds have traditionally been the instruments of choice. A properly diversified portfolio can readily be built using ETFs or mutual funds with exposure to U.S. domestic equities, developed international equities, emerging market equities, high quality bonds both foreign and domestic, and U.S. Treasuries. Relatively simple calculations can be done in Excel using historical returns and standard deviations of each of the above to generate custom diversified portfolios. However, there is a simpler option. Mutual fund giant Vanguard, known for its low-cost index funds, created its 'LifeStrategy' series of mutual funds in 1995 that are 'all-in-one' diversified portfolios in a single ticker. Each fund offers **broad diversification**, automatic rebalancing, low-maintenance, and are cost-effective.

Part 3: Instant Diversification—the LifeStrategy Family of Funds

We've established that academic research supports the persistence of momentum in financial markets. We've also acknowledged the importance of proper diversification to enhance investor risk-adjusted returns. And now we're introducing a practical and implementable approach to allocating client portfolios based on their age, investment objectives, and risk-tolerance. Vanguard LifeStrategy funds use a balanced and static allocation to achieve their objectives. They use a highly-diversified fund-of-funds structure and are 100% indexed.

The Vanguard LifeStrategy Growth Fund (VASGX) is an 80% equity/20% fixed income all-in-one fund. The Growth Fund is comprised of 48.5% Total Stock Market Index Fund, 33.3% Total International Stock Index Fund, 13.0% Total Bond Market II Index Fund, and 5.2% Total International Bond Index Fund.

The Vanguard LifeStrategy Moderate Growth Fund (VSMGX) is a 60% equity/40% fixed income all-in-one fund. The Moderate Growth Fund is comprised of 36.3% Total Stock Market Index Fund, 25.4% Total International Stock Index Fund, 27.1% Total Bond Market II Index Fund, and 11.2% Total International Bond Index Fund.

The Vanguard LifeStrategy Conservative Growth Fund (VSCGX) is a 40% equity/60% fixed income all-in-one fund. The Conservative Growth Fund is comprised of 24.4% Total Stock Market Index Fund, 17.2% Total International Stock Index Fund, 41.2% Total Bond Market II Index Fund, and 17.2% Total International Bond Index Fund.

The Vanguard LifeStrategy Income Fund (VASIX) is a 20% equity/80% fixed income all-in-one fund. The Income Fund is comprised of 12.5% Total Stock Market Index Fund, 9.1% Total International Stock Index Fund, 55.2% Total Bond Market II Index Fund, and 23.2% Total International Bond Index Fund.

On the surface, each one of these funds appear to be a perfectly acceptable instrument to navigating treacherous financial markets—depending on a client's risk tolerance, age, and investment goals. According to their Fact Sheets and Investment Profiles, each one has long histories of quarterly and annual returns that essentially match their benchmarks with low expense ratios.

Let’s examine the Vanguard Balanced Index Fund (VBINX). The classic 60/40 portfolio is the financial industry’s default benchmark for balanced investing. What would the real, lived experience have been for a buy-and-hold investor who purchased this fund on January 1, 1996, shortly after inception? Using AmiBroker as our quantitative analysis platform and Tiingo as our data provider, we have everything we need to evaluate that experience and gain clearer insight into the results.

Hypothetical Returns/No fees assessed (1/2/1996-2/23/2026):

	All trades
Initial capital	100000.00
Ending capital	1037533.14
Net Profit	937533.14
Net Profit %	937.53%
Exposure %	100.00%
Net Risk Adjusted Return %	937.53%
Annual Return %	8.06%
Risk Adjusted Return %	8.06%
Transaction costs	0.00

An 8.06% return is broadly consistent with what we'd expect from a 60/40 portfolio over the past 30 years. Next, let's examine the fund's maximum drawdown on a daily basis. Maximum drawdown measures the largest peak-to-trough decline over the test period—the worst "pain" an investor would have had to endure. While volatility can be described in many ways—beta, standard deviation, and Sharpe ratios—maximum drawdown most directly reflects the severity of an investor's worst experience.

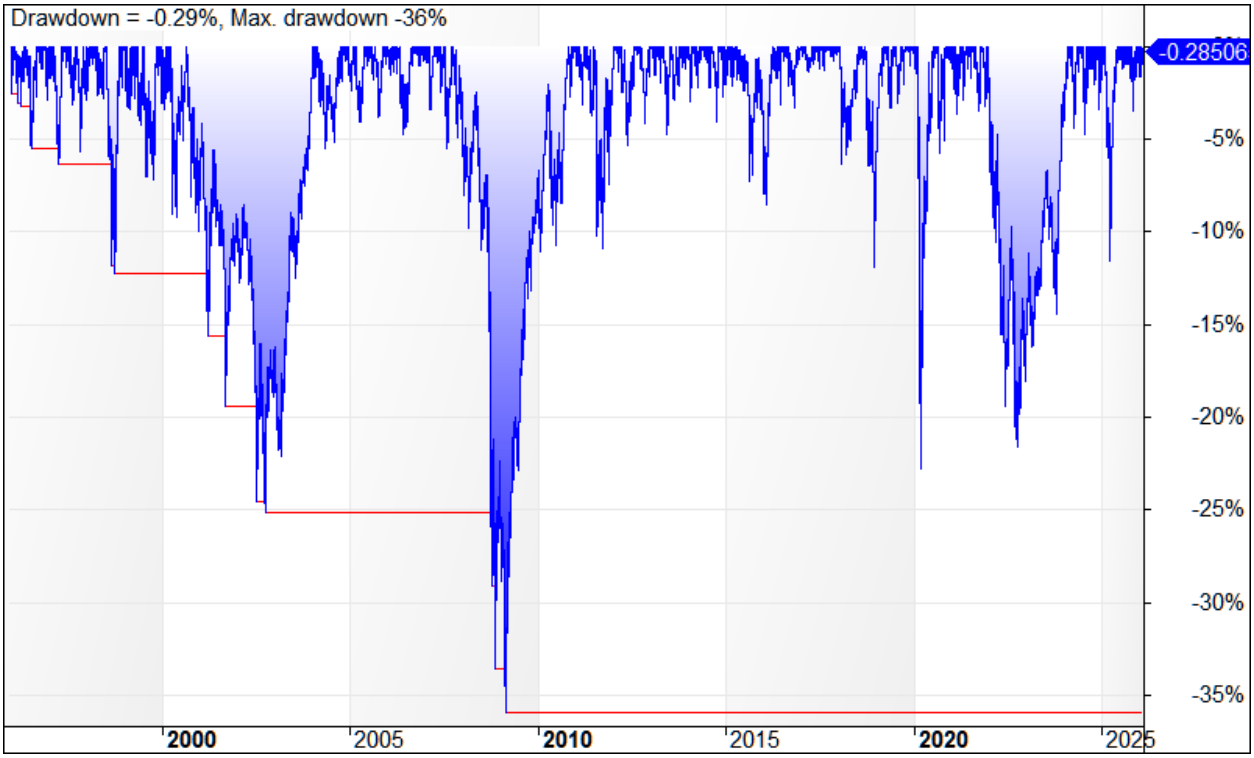
Hypothetical Risk:

Max. trade drawdown	-171816.16
Max. trade % drawdown	-35.97
Max. system drawdown	-171816.16
Max. system % drawdown	-35.97%
Recovery Factor	5.46
CAR/MaxDD	0.22
RAR/MaxDD	0.22
Profit Factor	inf
Payoff Ratio	nan
Standard Error	87501.94
Risk-Reward Ratio	0.29
Ulcer Index	7.51
Ulcer Performance Index	1.07
Sharpe Ratio of trades	inf
K-Ratio	0.03

At one point since its inception the classic 60/40 portfolio experienced a -35.97% decline from an earlier peak (highlighted above in red). A greater than 35% loss is a significant level of discomfort for any investor—especially a portfolio widely considered to be *the* benchmark for a typical portfolio.

From our report we see that the drawdown occurred, not surprisingly, in the depths of the Great Financial Crisis. Prior to that there was a roughly -25% decline during the dot-com crash. In addition, there were two recent declines of more than 20%--the COVID selloff and the 2022 inflation shock that weighed on

both equities *and* fixed income.



Part 4: Diversification with Momentum

While many investors could be served by allocating to one of these four funds, we believe outcomes and client engagement can be enhanced by incorporating a momentum-based framework into the planning conversation. Using firm-approved risk-tolerance assessments, an advisor can first select the LifeStrategy fund that most closely aligns with the client's long-term profile. From there, the client can be introduced to the concept of momentum—positioning it as a disciplined method for adjusting exposure across market environments. Specifically, during periods of sustained market strength, the client may shift more growth-oriented (e.g., from a 60/40 fund to an 80/20 fund), while during periods of elevated market stress, the client may shift one step more defensive (e.g., from a 40/60 fund to a 20/80 fund). This methodology, grounded in academic research, has the potential to improve the client experience significantly.

For the theoretical framework above to be implemented in practice, the advisor must be able to identify—on a timely basis—periods of "**sustained market strength"** and "**elevated market stress"**.

Let's revisit the concept of momentum as it pertains to financial instruments. In the depths of a bear market, fixed income instruments have generally shown significant relative strength to both domestic and foreign equities. It is during these times that the LifeStrategy Income Fund will show the highest momentum and therefore the highest relative strength among its peers. As the market begins a new uptrend, domestic and international equities are most likely to lead the way. This will lead to strength and higher momentum in the LifeStrategy Growth and Moderate Growth funds. As the bull market matures, equities will begin to consolidate near their highs and fixed income will begin to show strength. Major market tops generally occur with a significant period of consolidation where bears and bulls struggle for dominance before the market rolls over into a decline. During these periods, the LifeStrategy Conservative Growth and Income funds will generally start to outperform as their heavier weighting in fixed income lifts them above their higher equity-allocated peers. Using all-in-one diversified funds **and** momentum, it *is* possible to get a consistent read on the state of the market and whether it's in growth mode or under stress.

We see this play out in the late 1990's as the market rallied during the internet boom before rolling over into what would become known as the 'dot com crash'. As the bull market began to age and consolidate in 1998, momentum in the LifeStrategy Growth fund (green line) was exceeded by momentum in the LifeStrategy Moderate Growth fund (yellow line). Its lower allocation to equities and higher allocation to fixed income translated to a higher momentum score at the time of the monthly ranking. After a final push higher in 1999 the market began to roll over in 2000 and the model went full defensive into the LifeStrategy Income fund where it remained for the majority of the ensuing decline.



Once the market began to recover in 2003, the model rotated into the LifeStrategy Growth fund as conditions began to improve and equities continued to strengthen. Note the brief periods in 2004 and 2005 where slight market declines led to reallocations into the more defensive Moderate Growth and Conservative Growth funds. As these were only short-term pullbacks the model reallocated to Growth as the market improved.

Part 5: The Momentum 60/40 Model

A key disadvantage of rotational trading strategies is the increased trading frequency. Indeed, if we were to rotate among the 4 funds using each day's momentum score the number of transactions increases by a factor of 10—and the increased trading does nothing to improve either the overall compound annual return or the maximum drawdown. Even restricting the trading to once per week shows little improvement. This strategy is designed to be traded just once per month. On the first trading day of the month, the momentum score is calculated for each of the four funds and that fund is then selected for the remainder of the month. A monthly trade schedule allows the system to react quickly enough to major changes in market regime—without reacting to every single minor ebb and flow of the markets. Furthermore, using one of the 4 funds means that we *always* have at least some portion allocated to equities, and we *always* have at least some portion allocated to fixed income.

Some readers may note that the model didn't rotate one fund at a time up from risk-off to risk-on and vice versa in the above graphic. There are two reasons for this. First, since this model only reallocates monthly, the switching of the funds from more conservative to more aggressive (and vice-versa) is often apparent in the daily data, but does not appear in the monthly data. Second, sometimes the market moves very quickly—the COVID crash of 2020 is a perfect example. With such quick market regime changes from growth to defensive, going from the most aggressive fund to the most defensive fund in one reallocation is the most prudent move. Still the data supports a monthly reallocation schedule. Not only do the shorter reallocation intervals lead to higher trading costs and effort—they also have poorer performance.

Daily reallocations (12-31-1995 to 2-23-2026):

- 8.42% CAGR
- -20.48% maximum drawdown
- 349 trades in 30 years, ~11.6 trades per year

Net % Profit	Exposure %	CAR	Max. Sys % ...	CAR/...	# Trades	% of Winn...	% of Losers
1,042.86	99.75	8.42	-20.48	0.41	349	58.45	41.55

Weekly reallocations (12-31-1995 to 2-23-2026, statistics based on daily data, trades restricted to one per week):

- 8.39% CAGR
- -20.59% maximum drawdown
- 106 trades in 30 years, ~3.5 trades per year

Net % Profit	Exposure %	CAR	Max. Sys % ...	CAR/...	# Trades	% of Winn...	% of Losers
1,032.76	99.82	8.39	-20.59	0.41	106	69.81	30.19

Monthly reallocations (12-31-1995 to 2-23-2026, statistics based on daily data, trades restricted to one per month):

- 9.5% CAGR
- -22.7% maximum drawdown
- 62 trades in 30 years, ~2 per year

Net % Profit	Exposure %	CAR	Max. Sys % ...	CAR/...	# Trades	% of Winn...	% of Losers
1,441.07	99.69	9.50	-22.70	0.42	62	74.19	25.81

Historical testing indicates that a monthly reallocation schedule improved overall returns relative to higher-frequency approaches, while maintaining comparable drawdown characteristics. It allows time for the underlying trends to become clearer without trading through the noisy periods of regime changes. Note that the choice of monthly rebalancing is informed by historical testing and does not guarantee future outperformance.

Beyond performance statistics, the practical value of the model lies in its ability to provide a rules-based framework for adjusting risk exposure during prolonged market stress. By systematically rotating toward more defensive allocations when equity momentum deteriorates, the model may help reduce the emotional strain clients experience during major drawdowns, potentially improving long-term adherence to the investment plan.

Important Disclosure: The results presented herein are based on a hypothetical backtest and are for illustrative purposes only. They do not represent actual trading and do not reflect the performance of any specific client account. The analysis uses four Vanguard LifeStrategy mutual funds—VASGX, VSMGX, VSCGX, and VASIX—which have existed since the mid-1990s. Returns shown are gross of transaction costs, advisory fees, and taxes. While no transaction costs or slippage were assumed—given that mutual funds transact once daily at net asset value (NAV)—investors would incur each fund's internal expense

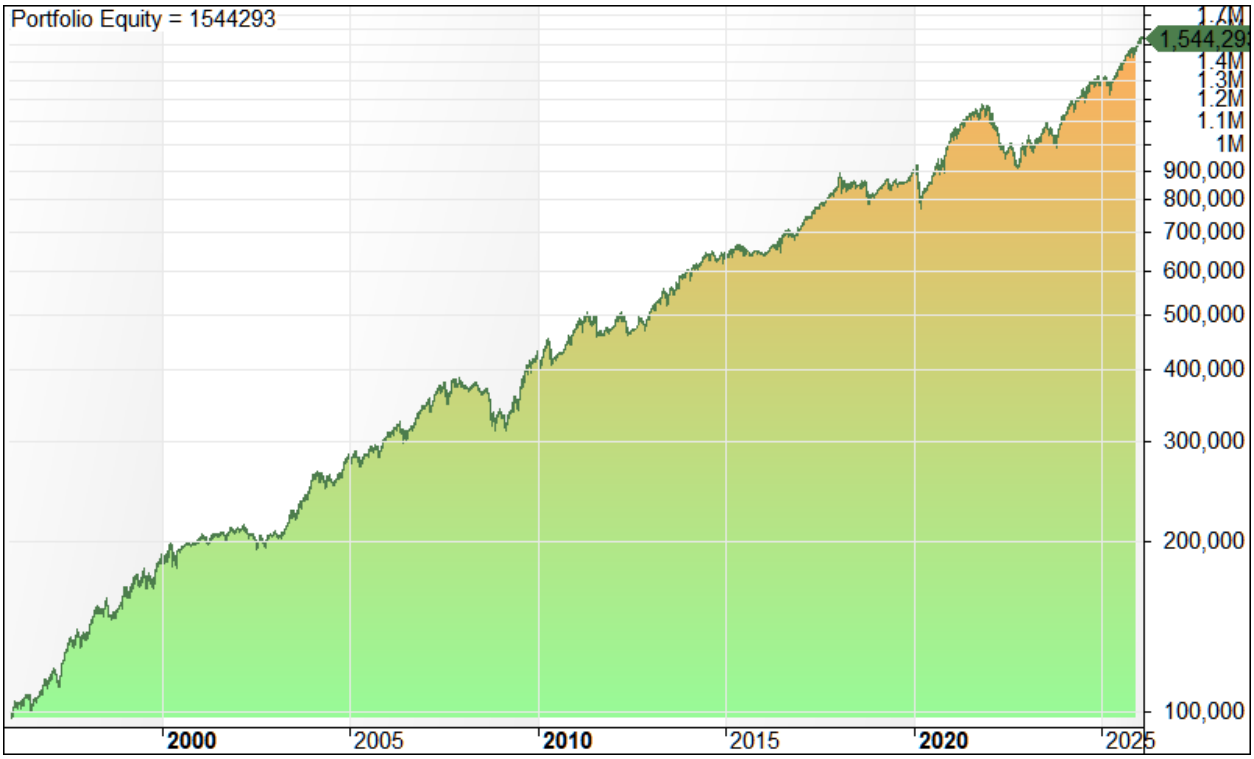
ratio, and taxable investors may realize capital gains from periodic reallocations. The strategy is intended for use within discretionary advisory accounts where tax considerations and client-specific constraints are evaluated prior to implementation. Past performance, whether actual or hypothetical, does not guarantee future results.

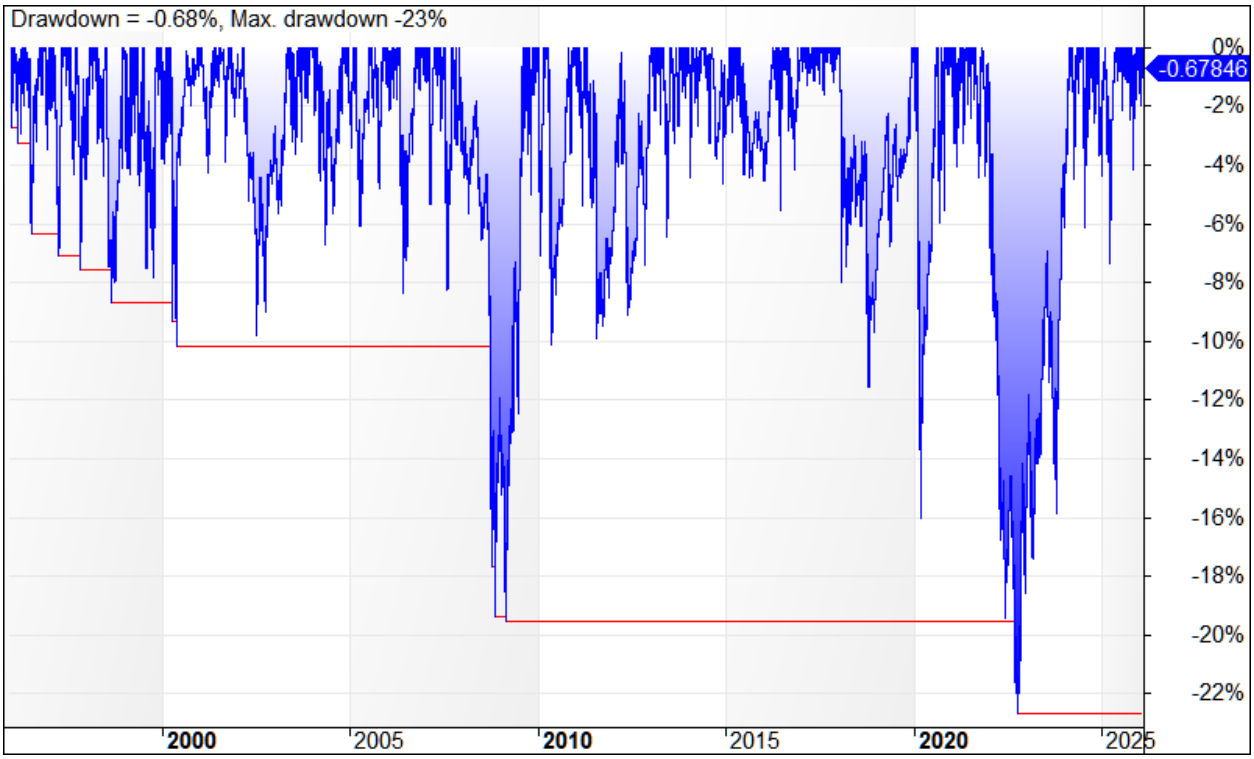
Part 6: Key Statistics and Charts (1/2/1996-2/23/2026)

Statistics			
	All trades	**Long trades**	**Buy&Hold (VBINX)**
Initial capital	100000	100000	100000
Ending capital	1544292.77	1544292.77	1037533.14
Net Profit	1444292.77	1444292.77	937533.14
Net Profit %	1444.29%	1444.29%	937.53%
Exposure %	99.69%	99.69%	100.00%
Net Risk Adjusted Return %	1448.84%	1448.84%	937.53%
Annual Return %	9.50%	9.50%	8.06%
Risk Adjusted Return %	9.53%	9.53%	8.06%
Transaction costs	0	0	0
All trades	62	62 (100.00 %)	1
Avg. Profit/Loss	23295.04	23295.04	937533.14
Avg. Profit/Loss %	4.88%	4.88%	937.53%
Avg. Bars Held	123.34	123.34	7587
Winners	46 (74.19 %)	46 (74.19 %)	1 (100.00 %)
Total Profit	1793411.46	1793411.46	937533.14
Avg. Profit	38987.21	38987.21	937533.14
Avg. Profit %	7.67%	7.67%	937.53%
Avg. Bars Held	140.76	140.76	7587
Max. Consecutive	7	7	1
Largest win	228755.9	228755.9	937533.14
# bars in largest win	420	420	7587
Losers	16 (25.81 %)	16 (25.81 %)	0 (0.00 %)
Total Loss	-349118.69	-349118.69	0
Avg. Loss	-21819.92	-21819.92	-nan(ind)
Avg. Loss %	-3.12%	-3.12%	-nan(ind)%
Avg. Bars Held	73.25	73.25	-nan(ind)
Max. Consecutive	3	3	0
Largest loss	-81062.75	-81062.75	0
# bars in largest loss	21	21	0
Max. trade drawdown	-105712.35	-105712.35	-171816.16
Max. trade % drawdown	-18.04	-18.04	-35.97
Max. system drawdown	-267160.34	-267160.34	-171816.16
Max. system % drawdown	-22.70%	-22.70%	-35.97%
Recovery Factor	5.41	5.41	5.46
CAR/MaxDD	0.42	0.42	0.22

RAR/MaxDD	0.42	0.42	0.22
Profit Factor	5.14	5.14	inf
Payoff Ratio	1.79	1.79	nan
Standard Error	97610.37	97610.37	87558.38
Risk-Reward Ratio	0.41	0.41	0.29
Ulcer Index	5.31	5.31	7.51
Ulcer Performance Index	1.79	1.79	1.07
Sharpe Ratio of trades	0.78	0.78	inf
K-Ratio	0.04	0.04	0.03

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr%
1996	1.4%	0.6%	0.9%	1.6%	1.4%	0.1%	-3.7%	1.5%	2.7%	1.4%	5.6%	-1.4%	12.4%
1997	3.1%	0.3%	-3.2%	3.6%	5.6%	3.9%	6.1%	-4.3%	4.9%	-2.9%	2.2%	1.6%	22.2%
1998	1.2%	4.3%	3.6%	1.0%	-1.5%	2.6%	-1.1%	-4.3%	2.8%	1.5%	1.7%	4.9%	17.6%
1999	2.5%	-3.3%	3.4%	3.7%	-2.4%	3.8%	-1.8%	-0.5%	-1.2%	4.5%	2.4%	5.5%	17.3%
2000	-3.3%	2.1%	5.0%	-3.9%	-2.4%	4.8%	0.6%	2.2%	-0.4%	0.3%	-0.1%	1.5%	6.0%
2001	2.0%	-1.6%	-1.1%	1.5%	0.8%	-0.0%	1.6%	-0.5%	-1.2%	1.9%	0.8%	-0.2%	4.0%
2002	0.3%	0.2%	0.4%	-3.0%	0.6%	-1.5%	-1.4%	1.2%	-2.3%	2.2%	1.8%	-0.2%	-1.9%
2003	-0.6%	0.4%	0.3%	3.0%	2.7%	1.0%	1.6%	2.0%	0.2%	5.0%	1.3%	4.6%	23.5%
2004	1.9%	1.6%	-0.6%	-2.3%	0.9%	1.8%	-2.8%	1.1%	1.0%	2.0%	4.1%	3.4%	12.3%
2005	-2.0%	2.2%	-1.8%	-1.8%	2.5%	0.7%	2.5%	-0.1%	1.2%	-2.0%	3.4%	0.9%	5.7%
2006	3.4%	-0.0%	1.6%	1.6%	-2.9%	0.1%	0.4%	1.7%	1.3%	3.2%	2.3%	1.3%	14.8%
2007	1.4%	-1.1%	1.3%	3.6%	3.0%	-1.1%	-2.4%	1.0%	3.6%	2.4%	-1.7%	0.1%	10.4%
2008	-1.3%	-0.8%	-0.1%	1.2%	0.1%	-2.6%	-0.2%	0.8%	-3.9%	-6.8%	-0.1%	2.2%	-11.2%
2009	-2.4%	-3.3%	3.5%	3.0%	3.3%	0.1%	7.1%	3.2%	3.8%	-1.9%	4.7%	1.3%	24.4%
2010	-2.7%	2.2%	5.0%	1.4%	-6.6%	0.4%	2.3%	0.1%	2.2%	2.6%	-0.7%	5.7%	11.9%
2011	1.4%	2.8%	0.2%	3.3%	-1.2%	-1.6%	-1.8%	-3.2%	-1.5%	2.4%	-0.4%	0.9%	1.0%
2012	1.8%	2.6%	1.4%	-0.6%	-6.0%	-0.6%	1.3%	0.5%	2.5%	-0.8%	0.9%	1.6%	4.6%
2013	3.7%	0.5%	2.4%	2.0%	0.2%	-1.9%	4.2%	-2.1%	4.0%	3.3%	1.6%	1.7%	21.2%
2014	-2.6%	4.0%	0.4%	0.5%	1.8%	1.9%	-1.5%	2.8%	-2.5%	0.1%	1.8%	-0.8%	5.8%
2015	-0.1%	2.4%	-0.8%	1.4%	0.4%	-1.8%	0.8%	-1.8%	-0.0%	1.6%	-0.1%	-0.8%	1.0%
2016	0.1%	0.5%	2.2%	0.5%	1.0%	0.2%	3.5%	0.3%	0.5%	-1.8%	1.0%	1.6%	9.9%
2017	2.1%	2.4%	0.9%	1.3%	1.6%	0.6%	2.0%	0.4%	1.7%	1.7%	1.7%	1.2%	19.2%
2018	4.2%	-3.6%	-1.0%	0.3%	0.8%	-0.3%	0.4%	1.0%	0.1%	-6.3%	1.5%	-0.1%	-3.3%
2019	2.4%	0.5%	1.9%	1.8%	-4.6%	3.3%	-0.2%	0.2%	0.0%	0.5%	1.1%	2.7%	9.8%
2020	-0.7%	-5.8%	-3.6%	3.5%	1.4%	1.2%	3.6%	4.6%	-2.3%	-1.8%	10.0%	4.0%	14.1%
2021	-0.3%	1.9%	2.0%	3.5%	1.2%	1.2%	0.7%	1.9%	-3.5%	4.0%	-2.0%	3.0%	14.3%
2022	-4.2%	-2.4%	-1.7%	-7.9%	0.9%	-2.9%	3.4%	-3.1%	-4.9%	0.6%	8.5%	-3.9%	-17.1%
2023	5.6%	-3.1%	2.6%	1.1%	-1.1%	4.6%	3.0%	-2.5%	-3.8%	-2.6%	7.3%	5.1%	16.7%
2024	-0.3%	3.4%	2.7%	-3.3%	3.8%	1.4%	2.2%	2.1%	2.1%	-2.3%	3.4%	-2.6%	13.0%
2025	2.3%	0.4%	-2.2%	1.1%	2.0%	3.1%	0.6%	2.6%	3.0%	1.7%	0.3%	0.8%	16.7%
2026	2.7%	0.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7%
Avg	0.7%	0.4%	0.9%	0.8%	0.3%	0.7%	1.0%	0.3%	0.3%	0.5%	2.1%	1.5%	





**Note that maximum drawdown was less than 20% for the entire history of the model until 2022 when both equities and fixed income declined.

Trade List:

Symbol	Date	Price	Ex. date	Ex. Price	% chg	Cum. Profit	# bars
VASGX	1/3/1996	5.160951	8/2/1996	5.417923	4.98%	4979.16	149
VSMGX	8/2/1996	4.418981	9/4/1996	4.37649	-0.96%	3984.54	23
VASIX	9/4/1996	3.512379	10/2/1996	3.62091	3.09%	7195.05	21
VASGX	10/2/1996	5.643845	1/5/1998	7.280663	29.00%	38176.29	318
VSMGX	1/5/1998	5.752717	3/3/1998	6.033995	4.89%	44911.52	40
VASGX	3/3/1998	7.772357	8/4/1998	7.878636	1.37%	46893.04	108
VASIX	8/4/1998	4.550254	12/2/1998	4.794788	5.37%	54787.18	85
VASGX	12/2/1998	8.419015	6/2/2000	10.42843	23.87%	91676.46	379
VASIX	6/2/2000	5.129395	3/4/2002	5.658853	10.32%	111030.2	437
VASGX	3/4/2002	8.963619	5/2/2002	8.713923	-2.79%	105173.68	43
VASIX	5/2/2002	5.611052	6/3/2003	5.957333	6.17%	117835.79	274
VASGX	6/3/2003	8.266294	8/3/2004	9.626323	16.45%	153537.85	295
VSCGX	8/3/2004	6.51809	9/2/2004	6.626424	1.66%	157751.78	23
VASGX	9/2/2004	9.81821	10/4/2004	10.02609	2.12%	163190.54	22
VSMGX	10/4/2004	8.231935	11/2/2004	8.270425	0.47%	164417.23	22
VASGX	11/2/2004	10.0634	5/3/2005	10.47509	4.09%	175228.17	126
VSMGX	5/3/2005	8.546885	6/2/2005	8.810467	3.08%	183716.34	22
VASIX	6/2/2005	6.684809	7/5/2005	6.670074	-0.22%	183092	23
VASGX	7/5/2005	10.89681	8/2/2006	12.06373	10.71%	213385.39	273
VASIX	8/2/2006	6.926767	9/5/2006	7.044778	1.70%	218687.67	24
VASGX	9/5/2006	12.40809	11/2/2007	14.75441	18.91%	278950.22	294
VASIX	11/2/2007	7.797501	12/4/2007	7.813734	0.21%	279737.31	22
VSMGX	12/4/2007	11.21137	1/3/2008	11.15978	-0.46%	277989.91	21
VASIX	1/3/2008	7.829927	5/4/2009	7.128452	-8.96%	244126.19	336
VASGX	5/4/2009	9.664702	6/2/2010	11.7746	21.83%	318522.96	273
VASIX	6/2/2010	8.076173	10/4/2010	8.440907	4.52%	337058.53	87
VSMGX	10/4/2010	10.60908	11/2/2010	10.96593	3.36%	351759.55	22
VASGX	11/2/2010	13.06395	6/2/2011	14.24619	9.05%	392346.52	147
VSMGX	6/2/2011	11.74536	7/5/2011	11.88273	1.17%	398104.85	23
VASGX	7/5/2011	14.4671	8/2/2011	13.71581	-5.19%	372237.81	21
VASIX	8/2/2011	8.836819	2/2/2012	9.075982	2.71%	385018.47	128
VASGX	2/2/2012	14.10067	6/4/2012	13.42621	-4.78%	361835.25	85
VASIX	6/4/2012	9.080116	9/5/2012	9.364491	3.13%	376298.95	66
VASGX	9/5/2012	14.58129	10/2/2014	19.10804	31.04%	524165.54	522
VASIX	10/2/2014	10.2498	11/4/2014	10.34702	0.95%	530085.79	24
VASGX	11/4/2014	19.53296	1/5/2015	19.47215	-0.31%	528124.21	42
VASIX	1/5/2015	10.45938	2/3/2015	10.62774	1.61%	538234.85	21
VASGX	2/3/2015	19.95226	8/4/2015	20.30032	1.74%	549368.63	127
VASIX	8/4/2015	10.57523	5/3/2016	10.82114	2.33%	564468.66	189
VASGX	5/3/2016	19.87192	7/3/2018	25.22812	26.95%	743566.97	547
VASIX	7/3/2018	11.56433	8/2/2018	11.61713	0.46%	747418.5	22
VASGX	8/2/2018	25.8558	11/2/2018	24.74413	-4.30%	710983.74	66
VASIX	11/2/2018	11.44563	4/2/2019	12.06408	5.40%	754804.2	102
VASGX	4/2/2019	26.19741	6/4/2019	25.84592	-1.34%	743342.7	44
VASIX	6/4/2019	12.21177	7/2/2019	12.48023	2.20%	761641.74	21
VASGX	7/2/2019	27.06365	8/2/2019	26.59009	-1.75%	746592.7	23

VASIX	8/2/2019	12.52714	11/4/2019	12.77321	1.96%	763222.28	66
VASGX	11/4/2019	27.87659	3/3/2020	27.31821	-2.00%	745931.56	82
VASIX	3/3/2020	13.09704	7/2/2020	13.31988	1.70%	760324.69	86
VASGX	7/2/2020	28.1041	3/2/2022	35.59941	26.67%	989080.59	420
VASIX	3/2/2022	13.73713	4/4/2022	13.55868	-1.30%	975065.89	24
VASGX	4/4/2022	36.38975	5/3/2022	33.64076	-7.55%	894003.14	21
VASIX	5/3/2022	12.9312	11/2/2022	12.02576	-7.00%	824722.5	128
VASGX	11/2/2022	30.20271	1/4/2023	31.94869	5.78%	878179.53	43
VSMGX	1/4/2023	22.68638	2/2/2023	24.08486	6.16%	937865.85	21
VASGX	2/2/2023	34.28212	11/2/2023	33.93528	-1.01%	927439.69	190
VSMGX	11/2/2023	23.68969	12/4/2023	24.88739	5.06%	978536.71	22
VASGX	12/4/2023	35.83976	1/3/2025	42.68423	19.10%	1184509.4	273
VSMGX	1/3/2025	29.89137	4/2/2025	30.01481	0.41%	1189772.17	61
VSCGX	4/2/2025	19.60069	6/3/2025	20.1343	2.72%	1224763.75	43
VSMGX	6/3/2025	31.21123	7/2/2025	32.16264	3.05%	1265108.34	21
VASGX	7/2/2025	46.47508	2/13/2026	52.48	12.92%	1441069.46	158

**Note the column on the far right. While some trades were as few as 21 market days (1 month), there were several that lasted over 100 days, i.e. 5 months and longer.

Executive Summary

This paper presents a simple, implementable "Momentum 60/40" allocation model that combines two ideas with deep support in both investor practice and academic finance: **momentum** and **diversification**. Momentum—described by Fama and French as the market's "premier anomaly"—captures the tendency for assets that have been strong to remain strong, and for weak assets to remain weak. Diversification—formalized by Markowitz—reduces portfolio risk by combining assets with imperfect correlation, potentially improving the investor's experience through lower portfolio-level volatility and drawdowns.

Rather than applying momentum to individual stocks or complex multi-asset portfolios, the model applies momentum to a practical, client-friendly universe: Vanguard's **LifeStrategy** family of all-in-one diversified funds. These funds represent four "risk steps" along a continuum from aggressive to defensive—**Growth (VASGX, 80/20)**, **Moderate Growth (VSMGX, 60/40)**, **Conservative Growth (VSCGX, 40/60)**, and **Income (VASIX, 20/80)**—and provide broad global equity and fixed income exposure with automatic rebalancing and index-based implementation.

The strategy is straightforward: **once per month**, on the first trading day, the model ranks the four LifeStrategy funds by a momentum metric and holds the top-ranked fund for the remainder of the month. This monthly schedule is intentional: it reacts to meaningful regime shifts (risk-on vs. risk-off) without overtrading through short-term noise. Testing shows that moving too fast (daily or weekly reallocations) increases transactions without improving results, while monthly rotation produces the best overall balance of responsiveness and stability.

From 12/31/1995 through 2/23/2026, the monthly model generated a **9.50% CAGR** with a **-22.70% maximum drawdown**, compared with a traditional buy-and-hold balanced benchmark (VBINX) that produced **8.08% annual return** with a **-35.97% maximum drawdown**. Over the full period, $100,000 hypothetically grew to approximately **$1.54M** under the model versus about **$1.04M** for the benchmark. The system completed **62 trades** over roughly 30 years (about **2 trades per year**) with a high win rate (**~74% winners**) and an average trade gain of **~4.88%**.

Importantly, the trade history demonstrates that this is not a hyperactive strategy: while some allocations lasted about one month, many persisted for **multiple months**, allowing the model to stay invested through sustained trends while shifting more defensive when market stress rises—particularly when equities weaken and bond-heavy allocations begin to lead.

Overall, **momentum-driven rotation among diversified "risk-step" portfolios may improve long-term outcomes and investor experience relative to static allocation approaches**—not by predicting the future, but by systematically aligning exposure with prevailing market strength, using a disciplined, low-maintenance process that fits naturally into real-world client allocation conversations.

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