Don't Mix What Should Be Separated:
Why Combining Value and Momentum Signals Destroys Alpha

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Abstract

Factor investing has established itself as a foundational framework in modern portfolio management, offering systematic exposure to well-documented sources of excess returns while mitigating the behavioral biases that often impair discretionary decision-making. Among the most extensively studied factor combinations is the pairing of value and momentum, whose well-documented negative correlation provides substantial diversification benefits. However, while the merits of combining these two factors are broadly recognized, the existing literature has devoted comparatively limited attention to the specific methodology by which such combination should be implemented. This paper addresses this gap by conducting a rigorous empirical comparison of two predominant approaches: the combined ranking method, which integrates value and momentum signals into a single composite scoring system, and the separate sleeves method, which maintains independent value and momentum long/short portfolios within a multi-strategy book. Using the Top 1,000 U.S. equities over the period 2000–2026, with long/short dollar-neutral portfolios, monthly rebalancing, and 100 positions per side, the study finds that the separate sleeves approach delivers superior risk-adjusted performance. While the combined ranking method produces a higher annualized return (**3.01%** versus **2.73%**), the separate sleeves approach achieves a higher Sharpe ratio (**0.168** versus **0.157**) with substantially lower volatility (**5.51%** versus **7.71%**) and a markedly shallower maximum drawdown (**−17.48%** versus **−26.61%**). A volatility-matched comparison confirms that the separate sleeves methodology outperforms by **52** basis points annualized when both strategies are equalized at the same risk level. These results are attributable to the separate sleeves framework's preservation of the negative correlation between value and momentum return streams (**−0.349**), which functions as an organic diversification mechanism that is structurally diluted under the combined ranking approach. The paper concludes by discussing practical implementation considerations, including the increased trading intensity and position count inherent to the separate sleeves method, the tail risks associated with shorting momentum losers, and the need for further validation across international markets.

Keywords: Factor Investing, Value Factor, Momentum Factor, Portfolio Management

1. Introduction

Factor investing has become a cornerstone of modern portfolio management, offering a systematic and transparent framework for constructing portfolios based on well-documented sources of excess returns. The foundational work of Fama and French (1992, 1993) formalized the existence of systematic risk premia beyond the market factor, identifying size and value as persistent drivers of cross-sectional stock returns. This framework was subsequently expanded to incorporate profitability and investment patterns (Fama & French, 2015), further enriching the set of tools available to practitioners. Concurrently, the momentum anomaly, first rigorously documented by Jegadeesh and Titman (1993), demonstrated that stocks exhibiting strong recent performance tend to continue outperforming in subsequent periods, a phenomenon later integrated into multifactor models by Carhart (1997).

One of the principal advantages of factor investing lies in its capacity to impose systematic discipline on the investment process, thereby mitigating the impact of behavioral biases that often plague discretionary decision-making. Research in behavioral finance has extensively documented how cognitive biases, such as loss aversion (Kahneman & Tversky, 1979), overconfidence (Daniel, Hirshleifer, & Subrahmanyam, 1998), and the disposition effect (Shefrin & Statman, 1985), can lead investors to make suboptimal decisions, particularly during periods of market stress or euphoria. By anchoring portfolio construction to predefined, evidence-based rules, factor-based strategies reduce the influence of panic-driven selling during drawdowns and greed-driven overallocation during speculative rallies (Ang, 2014).

Among the most extensively studied factor combinations is the pairing of value and momentum. These two factors exhibit a well-documented negative correlation, making their combination particularly attractive from a diversification standpoint (Asness, Moskowitz, & Pedersen, 2013). Value strategies, which seek to purchase underpriced securities and sell overpriced ones, tend to perform well during different market regimes than momentum strategies, which capitalize on the persistence of recent price trends. Asness (1997) was among the first to formally analyze the interaction between these two factors, demonstrating that their combination yields superior risk-adjusted returns relative to either factor in isolation.

However, while the benefits of combining value and momentum are well established, literature has devoted comparatively less attention to the methodology of combination itself. In practice, two predominant approaches exist. The first, referred to in this study as the "combined ranking" approach, integrates value and momentum signals within a single ranking system, selecting stocks that score favorably on both dimensions simultaneously. The second, referred to as the "separate sleeves" or "book" approach, constructs independent value and momentum portfolios and allocates capital across them as distinct strategies within a broader portfolio. Each methodology entails distinct trade-offs in terms of diversification, factor purity, drawdown characteristics, and implementation complexity.

This paper contributes to the factor investing literature by conducting a rigorous empirical comparison of these two combination methodologies, applied to the value and momentum factors within the Top 1,000 U.S. equities universe over the period 2000–2026. Using long/short dollar-neutral constructions with monthly rebalancing, the study evaluates both approaches across multiple dimensions, including cumulative returns, risk-adjusted performance, volatility-matched comparisons, and drawdown analysis. By examining the structural advantages and disadvantages of each approach, this research aims to provide practitioners and portfolio managers with actionable guidance on the optimal method for harnessing the complementary nature of value and momentum.

2. Literature Review

The theoretical and empirical foundations of factor investing have been developed over several decades, beginning with the observation that certain stock characteristics are systematically associated with excess returns. The Capital Asset Pricing Model (Sharpe, 1964; Lintner, 1965) established the market factor as the sole determinant of expected returns, but subsequent research revealed persistent anomalies that a single-factor framework could not explain. Banz (1981) first documented the size effect, showing that small-capitalization stocks tend to generate higher returns than their larger counterparts. Shortly thereafter, De Bondt and Thaler (1985) provided evidence that investors systematically overreact to past information, laying the groundwork for what would become the value premium. Fama and French (1992) formalized these findings by demonstrating that book-to-market equity and firm size jointly capture much of the cross-sectional variation in stock returns, leading to their influential three-factor model (Fama & French, 1993). This framework was later extended to incorporate profitability and investment factors (Fama & French, 2015), establishing a comprehensive multifactor paradigm that remains central to academic and practitioner discourse.

The value premium, the tendency for stocks with low prices relative to fundamentals to outperform those with high prices, has been one of the most extensively studied phenomena in financial economics. Lakonishok, Shleifer, and Vishny (1994) argued that value strategies generate superior returns not because they are fundamentally riskier, but because the market systematically underprices firms experiencing temporary distress or unfavorable sentiment. This behavioral interpretation was further supported by evidence of investor overreaction to negative earnings news and excessive extrapolation of past performance trends (De Bondt & Thaler, 1985). From a risk-based perspective, Fama and French (1993, 1996) maintained that the value premium reflects compensation for bearing systematic distress risk. More recently, Asness, Frazzini, Israel, and Moskowitz (2015) examined the relationship between value and other anomalies, arguing that a careful definition of value, using more timely price data, can substantially improve the performance and consistency of value strategies.

The momentum factor, initially documented by Jegadeesh and Titman (1993), represents the empirical regularity that stocks with strong recent performance continue to outperform over horizons of three to twelve months, while recent underperformers tend to continue declining. Carhart (1997) incorporated momentum into a four-factor asset pricing model, establishing it as a standard risk factor alongside market, size, and value. Unlike the value premium, for which both risk-based and behavioral explanations compete, momentum has proven particularly challenging to reconcile with rational asset pricing theory. Behavioral models have attributed momentum to initial underreaction to new information, followed by delayed overreaction driven by investor herding and confirmation bias (Barberis, Shleifer, & Vishny, 1998; Hong & Stein, 1999; Daniel, Hirshleifer, & Subrahmanyam, 1998). Notably, while momentum delivers strong average returns, it is also subject to severe and abrupt crashes, particularly during market reversals, as documented by Barroso and Santa-Clara (2015), who showed that momentum's risk is highly time-varying and can be partially managed through volatility scaling.

A critical insight for portfolio construction is the well-documented negative correlation between value and momentum factors. Asness (1997) was among the first to formally analyze this interaction, demonstrating that value and momentum strategies tend to produce offsetting return patterns across market cycles. This finding was substantially expanded by Asness, Moskowitz, and Pedersen (2013), who showed that the negative correlation between value and momentum is a pervasive phenomenon observed across asset classes, geographies, and time periods. The authors argued that this negative covariance is consistent with behavioral models in which the same underlying investor biases, particularly overreaction and underreaction, generate both the value and momentum premia simultaneously. From a portfolio construction standpoint, this

negative correlation implies that combining value and momentum yields diversification benefits that are difficult to replicate with other factor pairings, resulting in higher Sharpe ratios than either factor achieves independently (Ilmanen, 2011).

Despite the well-established benefits of combining value and momentum, the existing literature has devoted relatively limited attention to the specific methodology by which these factors should be integrated within a portfolio. In practice, two principal approaches have emerged. The first, commonly referred to as a composite or integrated ranking approach, combines value and momentum signals into a single scoring system that simultaneously evaluates stocks on both dimensions. This method tends to select securities that exhibit favorable characteristics on both factors concurrently, effectively creating a portfolio of stocks that are both cheap and exhibiting positive price trends. The second approach, frequently described as a multi-sleeve or book-of-strategies construction, maintains independent value and momentum portfolios, each constructed with its own ranking system, and combines them at the capital allocation level. This approach preserves the factor purity of each individual strategy and allows for more granular risk management across factor exposures.

The trade-offs between these methodologies are non-trivial and have implications for both return generation and risk management. The integrated approach benefits from potential synergies between signals, for example, avoiding value traps by requiring momentum confirmation (Novy-Marx, 2013), but may dilute individual factor exposures and reduce the diversification benefits that arise from the negative correlation between the two factors. Conversely, the separate sleeves approach preserves the independence and purity of each factor's return stream, maintaining the full diversification benefit of their negative covariance. However, this method may result in partially offsetting positions where a stock is held long in one sleeve and short in the other, potentially reducing net capital efficiency. Israel and Moskowitz (2013) examined related structural considerations, analyzing how implementation choices such as shorting, firm size, and rebalancing frequency affect the realized performance of factor strategies.

The behavioral finance literature provides additional context for understanding why systematic factor combination is valuable. Kahneman and Tversky (1979) demonstrated through prospect theory that individuals evaluate gains and losses asymmetrically, with losses weighted approximately twice as heavily as equivalent gains. This asymmetry can lead to panic selling during drawdowns and excessive risk-taking during bull markets. The disposition effect, identified by Shefrin and Statman (1985), further shows that investors tend to sell winners prematurely and hold losers too long, directly undermining the momentum premium. By embedding factor signals within a systematic framework, whether through integrated ranking or separate sleeves, portfolio managers can enforce disciplined rebalancing and reduce the impact of these well-documented cognitive biases (Ang, 2014).

This paper builds upon the existing literature by providing a direct empirical comparison between the integrated ranking and separate sleeves methodologies, specifically applied to value and momentum factors within the U.S. equity market. While prior research has established the theoretical rationale for combining these factors and documented their complementary nature, this study addresses the practical question of how they should be combined to maximize risk-adjusted performance and minimize drawdown exposure.

3. Methodology

Universe and Data

This study examines the Top 1,000 U.S. equities by market capitalization, a universe that provides broad coverage of the investable U.S. stock market while excluding micro-cap stocks, which are often subject to severe liquidity constraints and elevated transaction costs (Fama & French, 2008). All data retrieval, ranking system construction, portfolio simulation, and backtesting are conducted using the Portfolio123 platform, which provides point-in-time fundamental and pricing data, thereby mitigating look-ahead bias, a well-documented source of spurious backtest results (Banz, 1981; Lo & MacKinlay, 1990). The backtest period spans from January 2000 through early 2026, covering multiple complete market cycles including the dot-com collapse, the 2008 Global Financial Crisis, the post-2009 recovery, the COVID-19 drawdown, and the subsequent inflationary environment.

Portfolio Construction

All strategies in this study follow a long/short dollar-neutral construction, maintaining 100 equally weighted long positions and 100 equally weighted short positions. The dollar-neutral constraint ensures that the portfolio has zero net market exposure, effectively isolating factor-specific returns from broad market movements (Jacobs & Levy, 1993). This design choice is consistent with the standard methodology employed in the academic factor investing literature, where long/short portfolios are used to measure the pure return premium attributable to a given characteristic (Fama & French, 1993; Asness, Moskowitz, & Pedersen, 2013).

Portfolios are rebalanced on a monthly frequency. At each rebalancing date, the ranking systems are recalculated and the top-ranked stocks populate the long leg while the bottom-ranked stocks populate the short leg. Monthly rebalancing represents a common frequency in the factor investing literature, balancing the need for timely signal incorporation against excessive turnover (Jegadeesh & Titman, 1993). Transaction costs and slippage are excluded from the analysis, which is a standard simplification in academic studies that focus on isolating the pure factor premium rather than evaluating net-of-cost implementation (Fama & French, 2015; Asness, Moskowitz, & Pedersen, 2013). It should be noted that in live implementation, transaction costs would reduce realized returns, particularly for higher-turnover strategies such as momentum (Lesmond, Schill, & Zhou, 2004; Frazzini, Israel, & Moskowitz, 2015).

Value Ranking System

The value ranking system is constructed as an equally weighted composite of four fundamental metrics, each of which has been widely documented in academic literature as a robust predictor of cross-sectional stock returns:

Price-to-Book Value (lower is better) serves as the foundational value metric, consistent with the original Fama and French (1992, 1993) specification of High Minus Low (HML). Free Cash Flow Yield (higher is better) captures the cash-generative capacity of the firm relative to its market price, a metric that Lakonishok, Shleifer, and Vishny (1994) identified as a strong predictor of future returns and that has been shown to outperform earnings-based measures in certain market environments (Fama & French, 2015). Sales-to-Enterprise Value (higher is better) provides a revenue-based valuation measure that is less susceptible to accounting manipulation than earnings-based ratios, as emphasized by Novy-Marx (2013) in his analysis of

the complementary dimensions of value. Earnings Yield (higher is better) represents the inverse of the price-to-earnings ratio and constitutes one of the earliest documented value signals in the literature (Basu, 1977).

A critical feature of the value ranking system is that each factor is evaluated on a relative basis within the company's RBICS (Revere Business Industry Classification System) subsector rather than across the entire universe. This within-industry normalization addresses a well-known concern in the value investing literature: raw cross-sectional comparisons of valuation ratios can conflate genuine undervaluation with structural differences in capital intensity, growth expectations, and accounting conventions across industries (Asness, Frazzini, Israel, & Moskowitz, 2015; Fama & French, 1997). By comparing a technology firm's valuation only against other technology firms within the same subsector, and a financial institution only against its industry peers, the ranking system isolates stock-specific mispricing from sector-level valuation disparities. This approach is conceptually aligned with the industry-adjusted value measures advocated in the academic literature, which have been shown to enhance the predictive power of value signals (Cohen & Polk, 1998; Asness, Porter, & Stevens, 2000).

For the short leg, the same four value factors are applied with inverted rankings, such that the most overvalued stocks within each subsector receive the highest short scores. This symmetric construction ensures that both the long and short sides of the portfolio are driven by the same underlying value thesis.

Momentum Ranking System

The momentum ranking system employs an equally weighted combination of two price momentum signals: twelve-month momentum excluding the most recent month (12-1) and six-month momentum excluding the most recent month (6-1). The twelve-month lookback with a one-month skip is the canonical momentum specification established by Jegadeesh and Titman (1993), who demonstrated that the most recent month's return is negatively correlated with subsequent performance due to short-term reversal effects. This one-month exclusion has become standard practice in the momentum literature and is employed in the Carhart (1997) four-factor model, the Fama and French (2012) international factor tests, and the comprehensive cross-asset momentum study of Asness, Moskowitz, and Pedersen (2013).

The inclusion of the six-month momentum signal alongside the twelve-month measure serves to increase the portfolio's sensitivity to more recent price trends, capturing stocks with stronger short-to-medium-term price persistence. This dual-horizon approach is supported by research showing that intermediate-term momentum (typically three to six months) and longer-term momentum (six to twelve months) capture partially distinct sources of return predictability (Novy-Marx, 2012), and that combining multiple lookback windows can enhance the robustness and consistency of momentum strategies.

As with the value system, momentum factors are evaluated on a relative basis, though in this case the comparison is conducted at the RBICS sector level rather than the subsector level. This sector-relative normalization is designed to remove the influence of sector momentum from individual stock rankings. The distinction between sector momentum and stock-specific momentum is important: Moskowitz and Grinblatt (1999) demonstrated that a significant portion of individual stock momentum can be attributed to industry-level momentum effects. By comparing each stock's momentum only against peers within the same sector, this study isolates the idiosyncratic component of momentum, that is the portion of price persistence attributable to stock-specific information rather than broad sector rotation. This design ensures that the momentum strategy captures genuine stock selection alpha rather than passive sector exposure.

The short leg of the momentum portfolio applies inverted rankings, shorting stocks with the weakest relative momentum within their respective sectors.

Combination Methodologies

This study compares two distinct approaches to combining the value and momentum factors described above.

The first methodology, referred to as the "Combined Ranking" approach, integrates both the value and momentum signals into a single composite ranking system. Each stock in the universe receives a unified score that reflects its attractiveness on both dimensions simultaneously. The top-ranked stocks on this composite score populate the long portfolio, while the bottom-ranked stocks populate the short portfolio. This integrated approach implicitly selects stocks that are simultaneously undervalued and exhibiting positive momentum, a logic that has been advocated by practitioners seeking to avoid value traps, that is, cheap stocks that continue to decline, by requiring momentum confirmation (Novy-Marx, 2013; Asness, 1997).

The second methodology, referred to as the "Separate Sleeves" or "Book" approach, constructs independent long/short value and long/short momentum portfolios, each using its respective ranking system as described in Sections 3.3 and 3.4. These two independent portfolios are then combined at the capital allocation level into a multi-strategy book, with each sleeve receiving equal capital allocation. This approach preserves the factor purity of each individual strategy, maintaining the full negative correlation between value and momentum return streams that Asness, Moskowitz, and Pedersen (2013) identified as a principal source of diversification benefit.

The rebalancing frequency for both methodologies, as well as for the book-level allocation in the separate sleeves approach, is set at one month. All other parameters (universe, number of positions, dollar-neutral constraint, and factor definitions) are held constant across both approaches to ensure a fair and controlled comparison.

4. Empirical Results

Individual Factor Performance: Value and Momentum in Isolation

Before evaluating the two combination methodologies, it is instructive to examine the performance characteristics of the value and momentum factors individually, as the behavior of these underlying components fundamentally shapes the properties of any combined strategy.
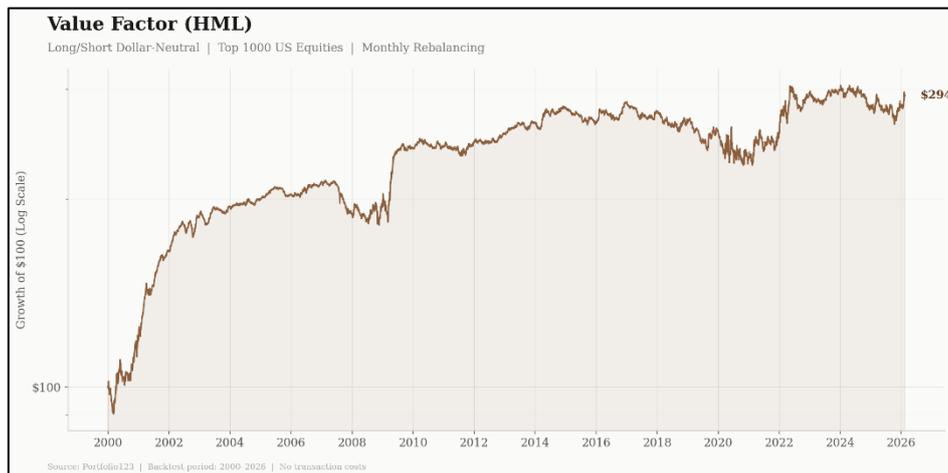

Figure 1: Value Factor LS Equity Curve

Value Factor LS

Ann. Return	4.07%
Ann. Volatility	6.97%
Sharpe Ratio	0.325
Max Drawdown	-20.94%

Table 1: Value Factor LS Metrics

The value factor, constructed as described in Section 3.3, delivered an annualized return of **4.07%** with an annualized volatility of **6.97%**, yielding a Sharpe ratio of **0.325** (assuming a risk-free rate of 1.8%). The maximum drawdown experienced over the sample period was **−20.94%**. The equity curve exhibits a strong and relatively steady upward trajectory from 2000 through approximately 2007, followed by a notable drawdown during the Global Financial Crisis, and a subsequent recovery that plateaued during the 2010–2020 decade before resuming its upward trend in the post-pandemic environment. This pattern is broadly consistent with the well-documented underperformance of value strategies during the prolonged growth-dominated regime of the 2010s, a period in which low interest rates and the outperformance of high-growth technology stocks compressed the value premium (Fama & French, 2021; Arnott, Harvey, Kalesnik, & Linnainmaa, 2021).
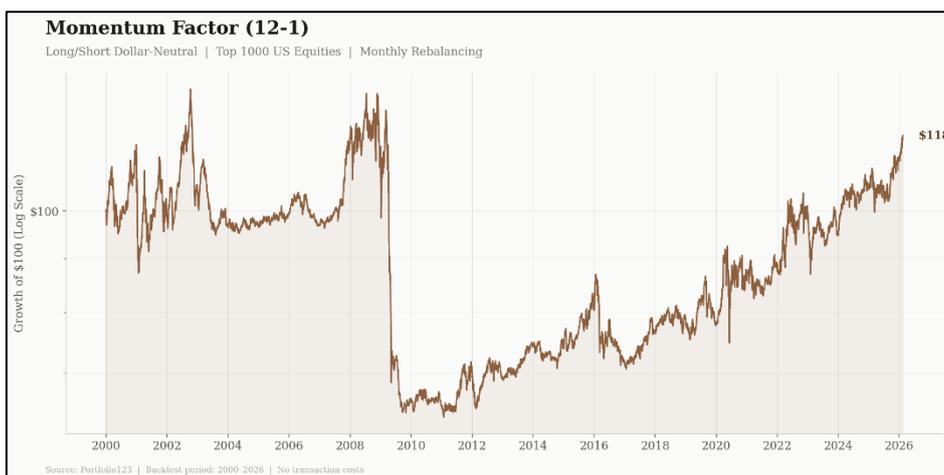
Momentum Factor (12-1)
Long/Short Dollar-Neutral | Top 1000 US Equities | Monthly Rebalancing

Growth of $100 (Log Scale)

$118

$100

Source: Portfolio123 | Backtest period: 2000-2026 | No transaction costs

Figure 2: Momentum Factor LS Equity Curve

Momentum Factor LS

Ann. Return	0.61%
Ann. Volatility	11.47%
Sharpe Ratio	-0.104
Max Drawdown	-51.29%

Table 2: Momentum Factor LS Metrics

The momentum factor presents a starkly different performance profile. Over the same period, it delivered an annualized return of only **0.61%** with considerably higher volatility at **11.47%**, resulting in a negative Sharpe ratio of **−0.104**. Most notably, the maximum drawdown reached **−51.29%**, reflecting the catastrophic momentum crash of 2009, a well-documented phenomenon in which momentum strategies suffered extreme losses during the rapid market reversal following the financial crisis (Barroso & Santa-Clara, 2015; Daniel & Moskowitz, 2016). The equity curve illustrates this dynamic vividly: after strong performance through the early 2000s, momentum suffered a devastating collapse in 2008–2009 from which it took over a decade to recover. This behavior underscores the asymmetric risk profile of momentum strategies, while they capture persistent price trends effectively in trending markets, they are vulnerable to abrupt reversals during regime changes.

The most critical observation for the purposes of this study, however, is not the individual performance of either factor but rather the relationship between them. The correlation between the value and momentum long/short portfolios over the sample period is **−0.349**. This strongly negative correlation is entirely consistent with the theoretical and empirical framework established by Asness, Moskowitz, and Pedersen (2013), who documented persistent negative covariance between value and momentum across asset classes and geographies. The authors attributed this phenomenon to common underlying behavioral mechanisms: the same investor biases, overreaction to long-term trends and underreaction to recent information, that generate the value premium simultaneously produce the momentum premium with opposite sign. From a portfolio construction standpoint, this negative correlation represents a powerful diversification opportunity. When value strategies underperform (typically during speculative, momentum-driven market environments) momentum strategies tend to compensate, and vice versa. This complementary behavior is the fundamental economic rationale for combining these two factors, and its empirical confirmation in our data validates the design of the combination methodologies evaluated in the following sections.

Combined Ranking versus Separate Sleeves: Return and Risk comparison

We now turn to the central empirical question of this paper: the comparison between the combined ranking and separate sleeves approaches to integrating value and momentum.
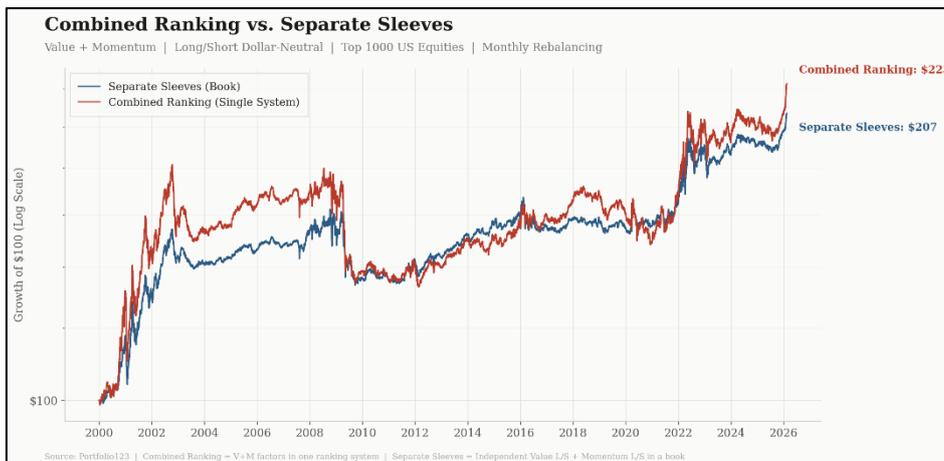

Figure 3: Combined Ranking vs. Separate Sleeves Equity Curves

	Combined Ranking	**Separate Sleeves**
Ann. Return	3.01%	2.73%
Ann. Volatility	7.71%	5.51%
Sharpe Ratio	0.157	0.168
Max Drawdown	-26.61%	-17.48%

Table 3: Combined Ranking vs. Separate Sleeves Metrics

The combined ranking approach, which integrates value and momentum signals into a single composite score, produced an annualized return of **3.01%** with an annualized volatility of **7.71%**, a Sharpe ratio of **0.157**, and a maximum drawdown of **−26.61%**. The separate sleeves approach, which maintains independent value and momentum portfolios and combines them at the capital allocation level, delivered a lower annualized return of **2.73%** but with substantially lower volatility at **5.51%**, a marginally higher Sharpe ratio of **0.168**, and a dramatically reduced maximum drawdown of **−17.48%**.

The correlation between the two methodologies is **0.912**, indicating that while they share a substantial common factor exposure (as expected given that they draw on the same underlying value and momentum signals) they are not identical strategies. The **0.088** residual correlation reflects meaningful structural differences in how the two approaches construct their portfolios, which in turn drive the divergence in their risk-return characteristics.

Several observations merit detailed discussion. First, the higher raw return of the combined ranking approach (**3.01%** versus **2.73%**) may initially suggest its superiority. However, this comparison is misleading without accounting for the substantial difference in volatility between the two approaches. The combined ranking strategy's annualized volatility of **7.71%** is approximately **40%** higher than the separate sleeves' **5.51%**, indicating that the additional return is achieved at a disproportionate cost in terms of risk. This is precisely the type of comparison where the Sharpe ratio, which normalizes returns by volatility (Sharpe, 1966), provides the appropriate metric. On a risk-adjusted basis, the separate sleeves approach marginally outperforms, with a Sharpe ratio of **0.168** versus **0.157**, a difference that, while modest in absolute terms, is consistent in direction with the theoretical expectation that preserving factor independence should enhance diversification.

Second, the drawdown profiles of the two strategies differ dramatically. The combined ranking approach experienced a maximum drawdown of **−26.61%**, compared to **−17.48%** for the separate sleeves. This represents a difference of over 900 basis points in peak-to-trough loss, which carries substantial practical significance for portfolio managers and allocators. Research on investor behavior has shown that large drawdowns are a primary driver of capital withdrawal and strategy abandonment, as loss aversion (Kahneman & Tversky, 1979) causes investors to disproportionately weight the experience of losses relative to gains. A strategy that generates marginally higher returns but subjects investors to drawdowns exceeding 25% is, in practice, more difficult to sustain through complete market cycles than one with shallower drawdowns, even at the cost of somewhat lower absolute returns.
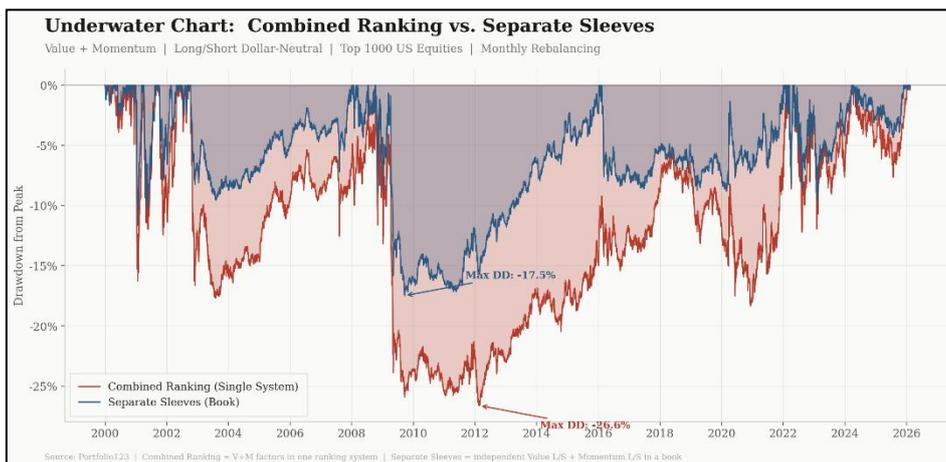

Figure 4: Combined Ranking vs. Separate Sleeves Underwater Chart

The underwater chart further illustrates this divergence. The combined ranking approach spends considerably more time in deep drawdown territory, particularly during the 2009–2013 period, where its drawdown reached **−26.6%** while the separate sleeves approach bottomed at **−17.5%**. The separate sleeves strategy consistently exhibits shallower and shorter drawdown periods, reflecting the diversification benefit of maintaining independent factor return streams with negative correlation.

Volatility-Matched Comparison

To isolate the pure skill differential between the two methodologies (their ability to generate returns per unit of risk) a volatility-matched comparison is conducted. Both strategies are scaled to a target annualized volatility of 5.51% (the historical volatility of the separate sleeves approach) by adjusting daily returns proportionally based on the ratio of target volatility to each strategy's realized volatility.
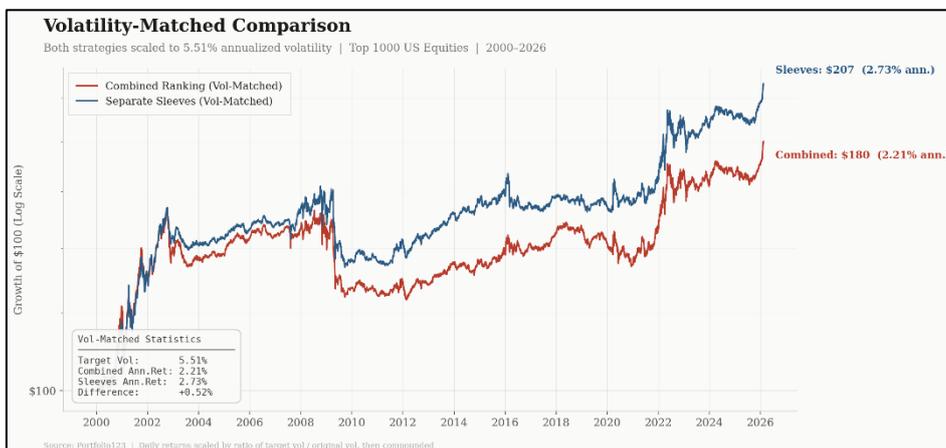

Figure 5: Volatility-Matched Comparison

Under this volatility-equalized framework, the performance differential becomes unambiguous. The separate sleeves approach delivers an annualized return of **2.73%**, while the combined ranking approach generates only **2.21%**, a shortfall of **52** basis points per annum. Over the full 26-year sample period, this annualized difference compounds to a meaningful divergence in terminal wealth: $100 invested in the volatility-matched separate sleeves strategy grows to **$207**, compared to **$180** for the volatility-matched combined ranking strategy. This result demonstrates that the combined ranking approach's higher raw return is entirely attributable to its higher volatility rather than superior stock selection or factor timing ability. When placed on an equal-risk footing, the separate sleeves methodology generates more return per unit of risk assumed, confirming the inference drawn from the Sharpe ratio comparison.

The economic intuition behind this finding relates directly to the factor correlation structure discussed in Section 4.1. The combined ranking approach, by blending value and momentum signals into a single score, implicitly selects stocks that score well on both dimensions simultaneously. While this avoids value traps (Novy-Marx, 2013), it also structurally reduces the portfolio's exposure to the negative correlation between the two factors. In the combined ranking framework, a pure value stock with weak momentum, or a pure momentum stock that is expensive, will be ranked in the middle of the distribution and excluded from both the long and short portfolios. As a result, the combined ranking portfolio is concentrated in a narrower intersection of the factor space, forfeiting the diversification that arises from holding distinct value and momentum exposures with offsetting cyclical patterns. The separate sleeves approach, by contrast, preserves the full independence of each factor's return stream, allowing the negative correlation between value and momentum to operate as an organic hedge within the book. This structural advantage manifests as lower volatility and shallower drawdowns without sacrificing, and indeed enhancing risk-adjusted returns.

5. Conclusion

This paper has conducted a rigorous empirical comparison of two methodologies for combining value and momentum factors within the U.S. equity market: the combined ranking approach, which integrates both signals into a single composite score, and the separate sleeves approach, which maintains independent value and momentum portfolios within a multi-strategy book. The results, evaluated over a 26-year backtest period spanning multiple complete market cycles, provide clear evidence in favor of the separate sleeves methodology on a risk-adjusted basis.

The separate sleeves approach delivered a Sharpe ratio of **0.168** compared to **0.157** for the combined ranking strategy, while simultaneously reducing maximum drawdown from **−26.61%** to **−17.48%**, a difference of over 900 basis points in peak-to-trough loss. When both strategies are scaled to equivalent volatility, the performance gap becomes even more pronounced: the separate sleeves methodology outperforms by 52 basis points annualized, demonstrating that the combined ranking approach's higher raw return is entirely explained by its greater risk exposure rather than by superior factor harvesting. The underlying mechanism driving this result is the preservation of factor independence within the separate sleeves framework, which allows the strongly negative correlation between value and momentum (**−0.349** in this sample) to function as an organic diversification engine, a benefit that is structurally diluted when both signals are merged into a single ranking system.

However, the separate sleeves approach should not be interpreted as a costless improvement. Several practical considerations temper the theoretical appeal of these results. First, maintaining independent value and momentum portfolios approximately doubles the number of portfolio positions, from 200 stocks (100 long and 100 short) in the combined ranking approach to approximately 400 stocks in the separate sleeves framework. While some degree of overlap between the two sleeves may exist, a stock that is simultaneously cheap and exhibiting positive momentum could appear in both the value long and momentum long portfolios, this overlap is likely to be modest given the negative correlation between the two factors. The increased position count carries direct implications for trading intensity: more positions require more frequent transactions at each rebalancing date, generating higher commission costs, greater market impact, and increased operational complexity. For smaller funds or strategies operating in less liquid segments of the market, these implementation frictions could erode a meaningful portion of the theoretical performance advantage. Conversely, it should be noted that the larger number of positions also expands the liquidity capacity of the strategy, distributing capital across a broader set of securities and reducing the portfolio's sensitivity to the market impact of any single trade. For larger institutional mandates, this characteristic may represent an additional practical advantage of the separate sleeves framework.

Second, the long/short dollar-neutral construction employed in this study, while standard in academic factor research, introduces significant practical risks that warrant careful consideration before live implementation. The short leg of the momentum strategy represents a concentrated source of tail risk. As documented in the results, the standalone momentum factor experienced a maximum drawdown of **−51.29%**, driven by the catastrophic reversal of momentum shorts during the 2008–2009 market recovery. In a live portfolio context, maintaining short positions in stocks with the weakest momentum, which are precisely the stocks most likely to experience sharp reversals during market turning points, can generate losses of a magnitude that threatens capital preservation, triggers margin calls, and may force involuntary liquidation at the worst possible time. Practitioners seeking to implement the separate sleeves framework in production should therefore evaluate whether the full dollar-neutral construction is appropriate for their risk tolerance, or whether modifications such as asymmetric gross exposure, dynamic hedging of the momentum short book, or the use of a long-only implementation might offer a more sustainable risk profile.

Third, the findings presented in this study are derived exclusively from the U.S. equity market, and their generalizability to other markets remains an open empirical question. While the negative correlation between value and momentum has been documented as a global phenomenon across multiple asset classes and geographies, the specific magnitude of the diversification benefit conferred by the separate sleeves approach, and whether it persists after accounting for the higher transaction costs, lower liquidity, and different market microstructure prevalent in international markets, has not been tested here. Future research should extend this analysis to European, Asian, and emerging market equities to assess the robustness and stability of the separate sleeves advantage across different institutional environments, regulatory frameworks, and liquidity conditions.

In summary, this paper provides evidence that the methodology by which factors are combined matters meaningfully for portfolio outcomes. The separate sleeves approach, by preserving the independence and negative correlation of value and momentum return streams, delivers superior risk-adjusted performance and substantially lower drawdowns relative to the combined ranking alternative. Nonetheless, practitioners must weigh these benefits against the increased trading complexity, the inherent risks of maintaining short momentum positions, and the need for further validation across international markets before adopting this framework in live portfolio management.

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