INVESTIGATING THE IMPACT OF DUAL MOMENTUM STRATEGIES ON GLOBAL ETF PORTFOLIO PERFORMANCE

Danica Pavlović[1]*, iD

Boris Korenak[2], iD

Nikola Stakić[3] iD

[1]Belgrade Banking Academy,
 Union University,
 Belgrade, Serbia

[2]Investometrix Group,
 Toronto, Canada

[3]Singidunum University,
 Belgrade, Serbia

Abstract:

Modern-day investors have a plethora of options to choose from when it comes to investing, as financial products are becoming increasingly available. While institutional investors have the required expertise to tackle the problem of data abundance and complexity, many retail investors need a simpler solution. One possibility is to use a market index ETF, in order to obtain exposure to market risk while retaining a significant degree of diversification in a cost-efficient manner. However, it might be possible to achieve better results on a risk-adjusted basis by using simple strategies. This study used a dual momentum investing approach for different global sector ETFs, including a "flight-to-safety" mechanism represented through the notion of risk-free assets. The results showed that the risk-adjusted performance of analyzed strategies that include the "flight-to-safety" mechanism can be superior over passive index investing.

Keywords:

global ETFs, dual-momentum strategy, portfolio performance measurement, sector investing.

1. INTRODUCTION

As a relatively new form of investment, ETFs have drawn the attention of investors, and the process of the cash flow migrations from traditional investments, such as direct investment to stocks or indirect via mutual funds have been gradually replaced by ETF investments (Korenak, Stakić, & Vesić, 2023). To simplify the investment process, but retain the diversification benefits, many investors are turning to the ETFs, often through holding a market index ETF. Recent studies showed that investors can achieve superior results by using a simple sector momentum strategy rather than the mean-variance optimization or holding a benchmark index ETF (Korenak & Pavlovic, 2023). While these results can already be used by investors, there is a question that remains: is there a way to further improve the momentum strategy? Just like in the mentioned studies, we would like to only examine if this goal is attainable through a decision-making process that can be easily deployed by any investor, including retail investors who cannot perform complex analyses. The proposed strategy is analysed in order to investigate whether it is possible to reduce the losses that occasionally occur as a consequence of positive market exposure by "fleeing to safety", i.e. by holding the risk-free asset if the market or some sectors are in a downturn. If successful, it could be used by investors to improve the performance of their portfolios.

Correspondence:
Danica Pavlović

e-mail:
danica.pavlovic@bba.edu.rs

The remainder of the paper is structured as follows: Section 2 furnishes extant literature on momentum investing, with an emphasis on dual momentum. Section 3 specifies the data and employed methodology for the empirical analysis. Section 4 discusses the results obtained from various models. In the end, the conclusion, research limitations, as well as future prospects are addressed.

2. LITERATURE REVIEW

The rise of the ETF fund industry largely rests on its business fundamentals, based on the application of Fama's Efficient Market Theory and Markowitz's Modern Portfolio Theory, through the use of passive investment strategies such as indexing (Pavlović, Korenak, & Stakić, 2024). On the other hand, ETF's market versatility has provided a plethora of options when it comes to the implementation of different investment strategies, trying to exploit market inefficiencies and generate alpha. The academic body of literature has shown significant interest in those strategies, among which momentum is having one of the most recognizable research outputs. The momentum effect is one of the strongest and most pervasive financial phenomena (Jegadeesh & Titman, 1993). Although not a journal article, the book of Antonacci (2014) is seminal in its detailed explanation of the dual momentum strategy, which combines absolute momentum (trend following) and relative momentum (cross-sectional performance) to enhance portfolio returns and reduce risk. In addition to cross-sectional or relative strength momentum, momentum also works well on an absolute, or time series basis, in which an asset's own past return indicates its future performance (Moskowitz, Ooi, & Pedersen, 2012).

Momentum has exhibited international presence across different asset classes (Rouwenhorst, 1998 & 1999; Asness, Liew, & Stevens, 1997; Moskowitz & Grinblatt, 1999; Okunev & White, 2003), with the notion of the idea that financial market momentum offers significant explanatory power concerning future financial market returns. However, momentum has also had the worst crashes, making the strategy unappealing to investors who dislike negative skewness and kurtosis, with the risk of momentum being highly variable over time and predictable (Barroso & Santa-Clara, 2014).

With respect to dual momentum (or relative strength) investing strategies, different findings imply return outperformance over passive index investing. Antonacci (2017) showed significant performance improvement in four areas - equities, credit risk, real estate, and economic stress, as well as with an equally weighted composite portfolio of all the modules. A dual momentum approach bears market risk when it makes the most sense, i.e., when there is positive absolute, as well as relative, momentum.

Furthermore, Seokkeun and Fabozzi (2022) found that the dual momentum strategy at the asset allocation level outperforms the benchmark for a historical simulation, however with the limitation that the statistical significance of outperformance is not strong in all formation periods.

3. DATA AND METHODOLOGY

The investment opportunity set is limited to 11 sector ETFs, one risk-free asset, and a benchmark market index ETF. For the sector ETFs, we used 10 iShares Global Sector ETFs[1] as well as iShares International Developed Real Estate ETF[2]. The risk-free asset is represented by PIMCO Global Bond Opportunities Fund (PGBIX), and the benchmark ETF is Vanguard Total World Stock ETF (VT). We constructed 13 portfolios based on this investment opportunity set. The 13th portfolio was the benchmark portfolio that consisted of buying and holding the Vanguard Total World Stock ETF over the whole period. The portfolios were rebalanced monthly, and the research covered the period starting in January 2009 and ending in September 2024.

There are 11 portfolios that follow a dual-momentum strategy, each with a different number of winning sectors (from 1 to 11). Each of these strategies follows the same steps:

- identifying one or more sectors (depending on the number of winners for every sub-strategy) that achieved the highest return(s) over the previous three months,
- comparing the returns of the winning sectors with the return of the risk-free asset,
- investing all the available funds in the winning sectors (1 to 11) with geometrically decreasing weights, except when they had negative excess returns in comparison to the risk-free asset over the same period,
- if the winning sectors underperformed, redirecting the funds that were meant to be invested in those ETFs to the risk-free asset.

Additionally, there was a portfolio that was constructed as an equally weighted portfolio of all 11 sectors. However, it also included the "flight-to-safety" mechanism, as it replaced the underperforming sectors with risk-free assets.

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1   iShares Global Comm Services ETF, iShares Global Consumer Discr ETF, iShares Global Consumer Staples ETF, iShares Global Energy ETF, iShares Global Financials ETF, iShares Global Healthcare ETF, iShares Global Industrials ETF, iShares Global Materials ETF, iShares Global Tech ETF, iShares Global Utilities ETF.

2   Real Estate was the only sector being analyzed for developed markets due to a lack of data for global real estate ETF products.

4. RESULTS AND DISCUSSION

Graph 1 presents the performance of all portfolios. At first glance, only one momentum sub-strategy, targeting a winning sector, marginally outperformed the benchmark ETF (with a compound annual growth rate of 10.98% versus 10.91%). The other momentum sub-strategies delivered slightly lower but comparable returns, ranging from 10.39% to 10.73%, while the equally weighted portfolio lagged significantly, earning just 8.21%.

Positioned alongside the benchmark Vanguard Total World Stock ETF, the equally weighted portfolio across 11 sectors demonstrates cumulative underperformance relative to various momentum-based portfolios. Given that all portfolios maintained long-only exposure, their performance was heavily shaped by broader market dynamics. Notably, momentum-based strategies began to perform exceptionally well starting in 2020, capitalizing on rapid market recoveries in the wake of the COVID market correction, which resulted from widespread uncertainty and economic disruptions due to the pandemic. The 2022 market correction further highlighted the resilience of these strategies amid rising interest rates, rampant inflation, and geopolitical tensions, which contributed to increased market volatility.

Additionally, the dual momentum strategy demonstrated a strong performance during "in-market" periods, with a portfolio of three winning sectors achieving positive excess returns 83% of the time, resulting in an average excess return of 0.83%. In contrast, when the strategy was "out of market" 9.5% of the time, it underperformed the benchmark by -10.08%. During the "partially in-market" phase, which accounted for 7.5% of the time, the strategy produced the highest excess return of 1.46%.

However, analysing the performance on a risk-adjusted basis gives a different impression. Every single momentum portfolio outperformed the benchmark portfolio when it comes to Sharpe, Sortino, Treynor and Calmar ratios (Graph 2). Moreover, the equally weighted portfolio with a "flight-to-safety" mechanism achieved the highest values of Sharpe, Sortino and Treynor ratios. Still, its Calmar ratio was among the lowest, as only the dual-momentum strategy with 2 winners and the benchmark portfolio attained lower scores.

On the other hand, the equally weighted portfolio exhibited better Sharpe and Sortino ratios, primarily due to its substantially lower standard deviation. However, it faced a significant relative drawdown, resulting in the lowest Calmar ratio among all observed momentum strategies.

Overall, while the duo momentum strategy delivered a slightly lower compound annual growth rate, for the previously mentioned example of the portfolio with three winners, of 10.73% compared to the benchmark's 10.91%, it achieved this with a lower standard deviation of 13.44% versus 16.04%. This resulted in superior performance metrics, including the Sharpe, Sortino, Treynor, Calmar, and Modigliani–Modigliani ratios.
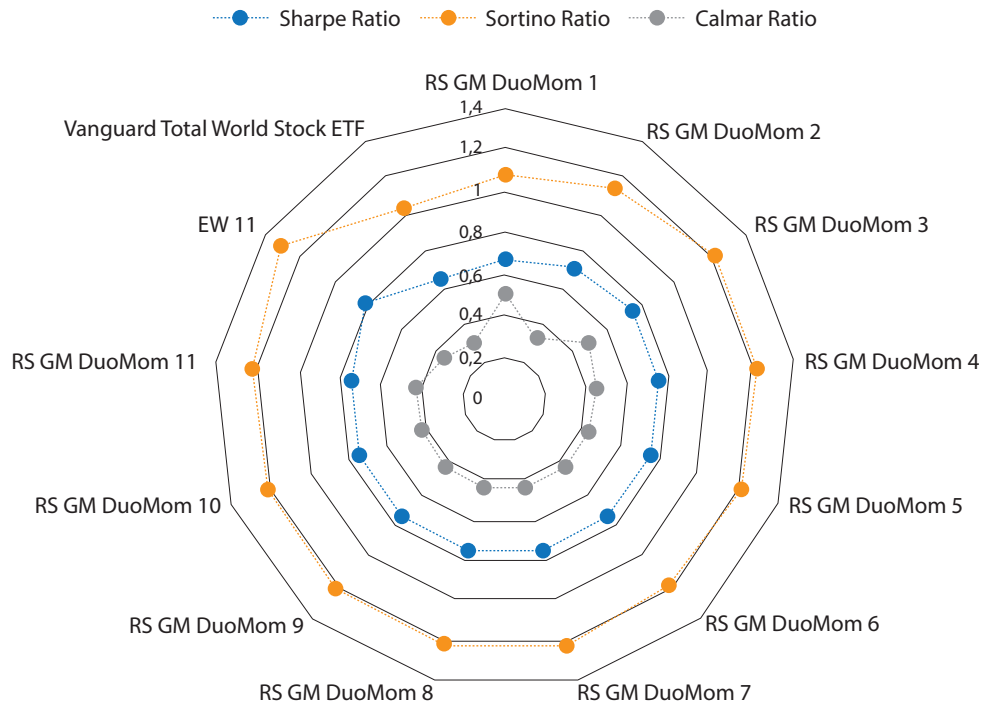
Graph 1. Hypothetical Performance of a $10,000 Portfolio Across Different Investment Strategies.
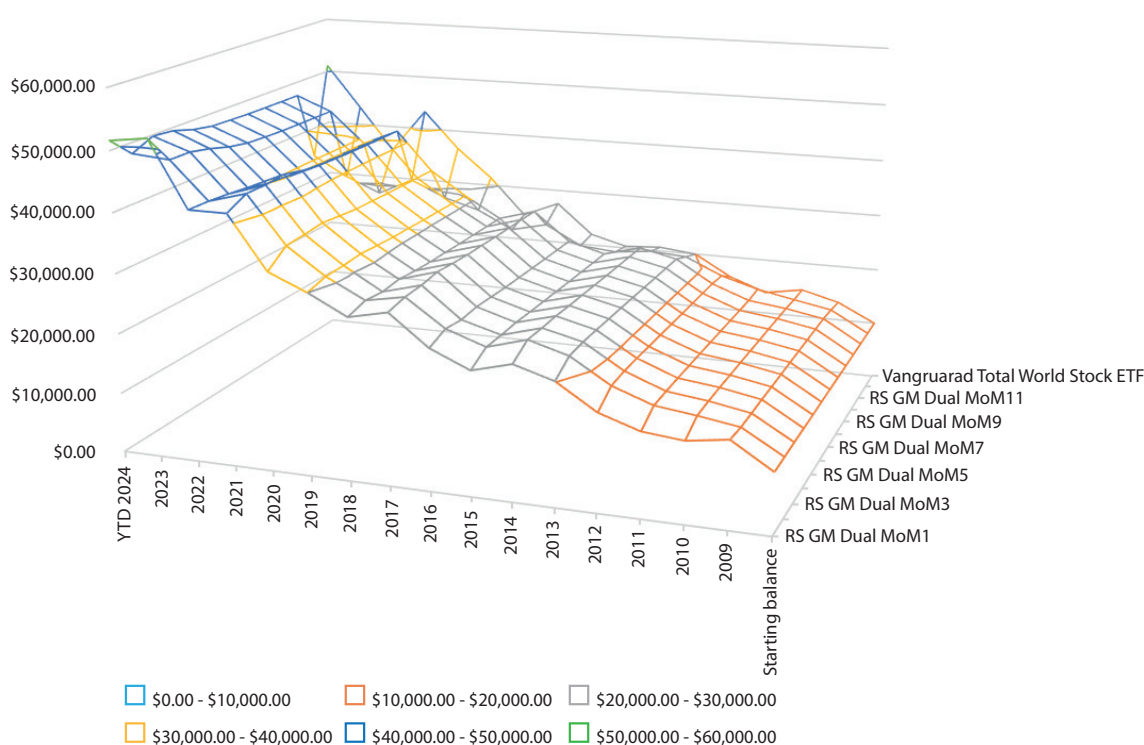
Source: Authors' data.

Graph 2. Investment Performance Appraisal Metrics for Different Investment Strategies.
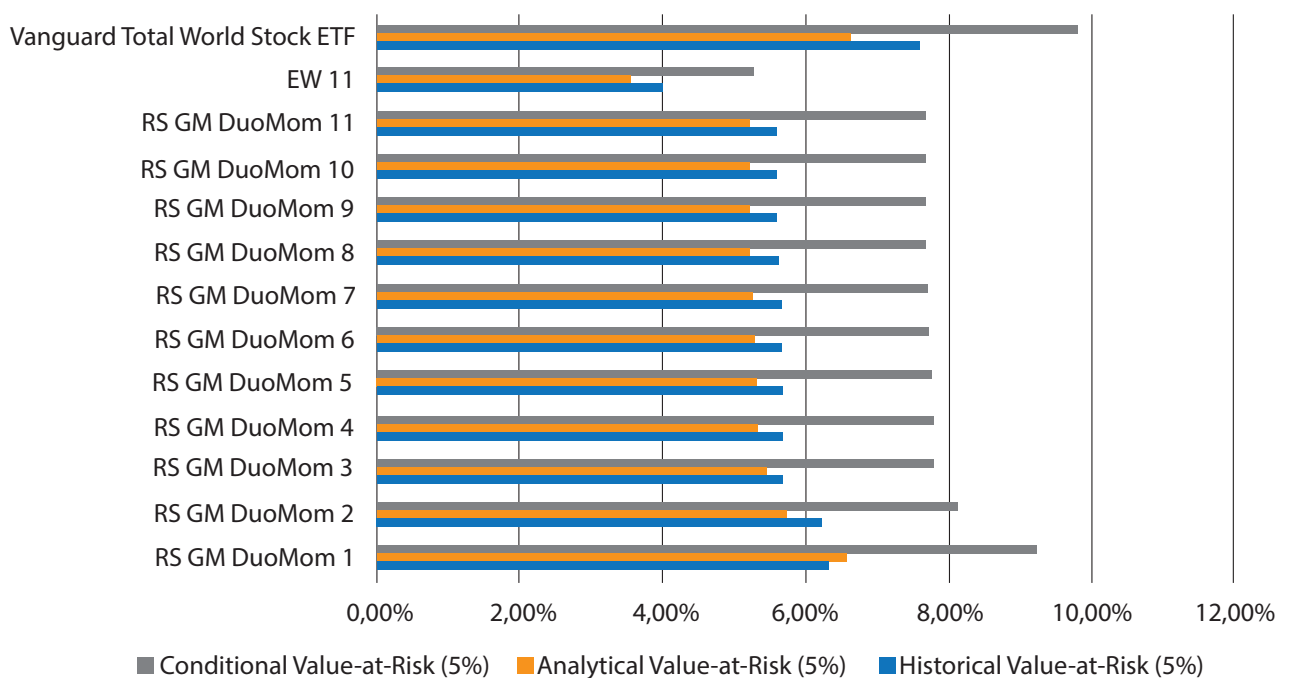

Source: Authors' data.

Table 1. Treynor Ratio for Different Investment Strategies

RS GM DuoMom 1	RS GM DuoMom 2	RS GM DuoMom 3	RS GM DuoMom 5	RS GM DuoMom 7	RS GM DuoMom 9	RS GM DuoMom 11	EW 11	Vanguard Total World Stock ETF
16.37%	15.84%	16.22%	16.05%	15.95%	15.96%	15.97%	16.77%	10.61%

Source: Authors' data.

Graph 3. Value-at-Risk (VaR) Measures for Different Investment Strategies.

Source: Authors' data.

When total risk was replaced with systematic risk, the outperformance on a risk-adjusted basis became more pronounced, as evidenced by the Treynor ratio (Table 1). The Treynor ratio is an important measure to consider when evaluating the investment unit of a fund managed by these strategies for inclusion in a well-diversified global portfolio. It offers valuable insights into the fund's performance relative to systematic risk, highlighting its potential contribution to overall portfolio efficiency.

All dual momentum strategies exhibited lower values for Analytical VaR, Conditional VaR, and historical VaR, indicating a reduced level of risk (Graph 3). Among these strategies, the equally weighted portfolio achieved the lowest measures across all VaR categories. This finding suggests that the equally weighted approach not only mitigates potential losses and strengthens overall risk management but also results in lower returns, which may be less appealing for investors seeking higher performance in volatile markets.

The lower VaR metrics highlight the portfolio's resilience against extreme losses, which is particularly advantageous for those aiming to maintain a well-balanced and robust investment strategy. Given these benefits, dual momentum strategies emerge as an optimal solution for global equity investors seeking a favorable risk-return profile while effectively addressing market challenges.

5. CONCLUSION

The study aimed to demonstrate that there are ways to improve the investment results for retail investors through a simple decision-making process. It analysed the performance of 12 strategies in comparison to holding a benchmark market index ETF, which is a popular choice for many investors.

The results showed that the risk-adjusted performance of strategies that include the "flight-to-safety" mechanism can be superior. This pertains both to the momentum sub-strategies, as well as to the equally weighted portfolio. However, the absolute returns were generally lower than those achieved by the benchmark. This result is different from the ones obtained in the previous studies (Korenak & Pavlovic, 2023), where the "flight-to-safety" mechanism was not considered. Therefore, it can be concluded that using this additional step might be suitable for investors who value safety and better risk-adjusted performance but should be avoided by those who are seeking the highest absolute returns.

This study has its limitations. It only considers a specific set of rules, which could be changed to achieve different results (for instance using different time intervals to assess the winning sectors, changing the weighting method or changing the "flight-to-safety" trigger). Additionally, it covers a limited time period and a limited investment opportunity set. Further studies could be performed to address some of these limitations.

6. LITERATURE

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