Analysis of the Short-Term Reversal Trading Phenomenon

I. Introduction

The short-term reversal strategy is a contrarian investment style that involves purchasing stocks based on the short-term history of the stock's performance, and specifically, purchasing stocks with the expectation of a reversal of that stock's performance. In order to follow this strategy, one should purchase stocks that have had short-term negative returns and short stocks that have had short-term positive returns, in order to generate positive returns on the expected reversal in performance. Typically, portfolios formed according to this strategy will track a stock's performance over the past month, identify those stocks as either overperformers or underperformers, stake a respective short or long position in the stock, and then hold that position for one month, after which positive returns are generally expected (Da, Liu, Schaumburg, 2014).

Beyond this framework, additional variants for the short-term reversal strategy may involve identifying stocks to make a trade with by comparing the stock's performance with similar stocks in its respective industry, or even hedging the strategy with a momentum-based portfolio. A portfolio of this type could involve establishing a momentum-based portfolio wherein a long position is taken in the industry portfolio that is performing the best and a short position is taken in the industry portfolio that has the worst performance. Then, to hedge this strategy, a short-term reversal strategy is applied by taking a long position in the worst performing stock in the best performing industry, and similarly, a short position is taken in the best performing stock in the industry performing the worst. (Simpson, Giudici, Emery, 2011).

The viability of this trading strategy has been established for decades (Da, Liu, Schaumburg, 2014) and has proven capable of producing 2% profits per month through a one-month reversal strategy (Jegadeesh, 1990). Despite the clear evidence of returns from the strategy, the specific conditions that act as a precursor for the reversal of stock performance are not fully clear. There are various explanations for why the phenomenon around the short-term reversal of stock performance occurs, with different research indicating an overreaction by the market to new information, personal and behavioral biases, or even that the reversal of stock performance reflects an imbalance in the liquidity of the market-maker (Gulen, Woeppel, 2024).

Given the first explanation, the short-term reversal of stock performances are explained as a result of market inefficiency and the inefficiency and overreaction of market participants in their reactions to firm-specific news (Jegadesh, Titman, 1995). For example, a slight overperformance or underperformance of a firm's quarterly earnings may result in an immediate, dramatic overreaction by investors that excessively drives a stock's price up or down, respectively. However, following this immediate overreaction, the market should then correct the stocks' price to its market efficient level, making for an apparent 'short-term reversal' of the stocks' performance. Similarly, personal biases towards how elections, new regulations, or new management may impact the performance of a stock could similarly cause an immediate overreaction yet correct to a market efficient level to show a short-term reversal in performance.

Alternatively, some research shows that the primary causes of the short-term reversal phenomenon are errors in the measurement of stock prices, where this error appears to result from the bid-ask spread, the difference in prices a buyer and seller are willing to trade a stock (Kaul, Nimalendran 1990,). So, when there exists an imbalance between the number of informed, active participants that are making trades and market-makers that make trades on their knowledge of the pricing of stocks, the opportunity for a short-term reversal is present (Cheng, et. al, 2014). The research demonstrates that the return reversal phenomenon is particularly related to the liquidity imbalance of market makers when a stock's price rapidly drops and then reverses in the short term. This is a result of a decrease in large, institutional investor participation when stock prices decline, and subsequently, the capacity of market-makers adjust, profits from short-term reversals are realized (Cheng, et. al, 2014).

Overall, the phenomenon in the temporary and short-term reversal of stock performance, as well as the long-term viability and success of trading on this strategy has raised questions about the true level of efficiency of the market, the behaviors market participants have that create such phenomena, and how the mechanics of stock trading and liquidity allow for inefficiencies in the pricings of stocks to arise.

II. Sub-Period Analysis

Equal Weighted Portfolio

Period	Decile 1 Mean	Decile 10 Mean	Spread Mean (Dec10 - Dec1)
1960s	0.0193	0.0037	-0.0156
1970s	0.0304	-0.0051	-0.0355
1980s	0.0182	0.0004	-0.0177
1990s	0.0281	0.0063	-0.0218
2000s	0.0161	0.0034	-0.0127
2010s	0.0081	0.0057	-0.0024

Equal Weighted Portfolio : Recessionary Periods

Recession Period	Decile 1 Mean	Decile 10 Mean	Spread Mean (Dec10 - Dec1)
196004-196102	0.0194	0.0128	-0.0065
196912-197011	-0.0113	-0.0352	-0.0239
197311-197503	0.0375	-0.0335	-0.0711
198001-198007	0.0464	0.0114	-0.0350
198107-198211	0.0120	-0.0107	-0.0227
199007-199103	0.0255	-0.0056	-0.0311
200103-200111	0.0125	-0.0086	-0.0211
200712-200906	0.0085	-0.0195	-0.0281
202002-202004	0.0455	-0.0313	-0.0768

Equal Weighted Portfolio: Sub-Period, Recessions and Expansions

Mean Returns	1960s	1970s	1980s	1990s	2000s	2010s	2020s	Recessions	Expansions
Dec 1 (low)	0.01933917	0.03043	0.01815667	0.028115	0.01605583	0.00812	0.01099474	0.01813269	0.01956449
Dec 10 (High)	0.00373583	-0.0050567	0.00044583	0.00632333	0.0033825	0.00571333	0.00061228	-0.0148558	0.00494086
Dec 10-Dec 1	-0.0156033	-0.0354867	-0.0177108	-0.0217917	-0.0126733	-0.0024067	-0.0103825	-0.0329885	-0.0146236

Equal Weighted Portfolio Analysis

Decade-by-Decade Trends:

1960s to 2000s: Decile 1 consistently outperforms Decile 10, resulting in negative spread portfolio returns across all decades. The disparity is most pronounced in the 1970s, where Decile 1's mean return of 3.04% sharply contrasts with Decile 10's -0.51%, producing a large negative spread (-3.55%).

2010s: While the spread portfolio remains negative, the magnitude of the underperformance is smaller (-0.24%), indicating a narrowing gap between Decile 1 and Decile 10 in this decade.

Recessionary Periods:

The spread portfolio performs particularly poorly during recessionary periods, such as 1973-1975 (-7.11%) and 2020 (-7.68%), indicating that smaller portfolios (Decile 1) remain more resilient during economic downturns, while larger portfolios (Decile 10) experience steeper losses. Conversely, during milder recessions (e.g., 1960-1961 and 1981-1982), the spread portfolio shows relatively better performance, suggesting fewer extreme differences between small and large portfolios.

Expansionary Periods:

During expansions, market conditions are generally favorable, and investor risk aversion is lower. This allows low-performing (or smaller and distressed) stocks to perform relatively well as capital flows into riskier asset classes. However, high-performing stocks may not see substantial additional gains because their prices often already reflect their growth potential, limiting further upside.

Conclusion:

The negative spread portfolio implies that investing in smaller, equal-weighted portfolios underperforms compared to larger ones. The underperformance intensifies during recessions, likely reflecting increased risks associated with smaller firms in turbulent markets.

Value Weighted Portfolio

Period	Decile 1 Mean	Decile 10 Mean	Spread Mean (Dec10 - Dec1)
1960s	0.0097	0.0039	-0.0058
1970s	0.0135	0.0037	-0.0099
1980s	0.0140	0.0077	-0.0063
1990s	0.0112	0.0151	0.0039
2000s	-0.0003	-0.0025	-0.0022
2010s	0.0128	0.0093	-0.0035

Value Weighted Portfolio: Recessionary Periods

Recession Period	Decile 1 Mean	Decile 10 Mean	Spread Mean (Dec10 - Dec1)
196004-196102	0.0199	0.0215	0.0016
196912-197011	-0.0148	-0.0141	0.0007
197311-197503	0.0093	-0.0218	-0.0311
198001-198007	0.0426	0.0164	-0.0262
198107-198211	0.0035	0.0051	0.0015
199007-199103	-0.0111	0.0233	0.0343
200103-200111	-0.0102	-0.0097	0.0005
200712-200906	-0.0343	-0.0239	0.0104
202002-202004	0.0124	-0.0127	-0.0251

Value Weighted Portfolio: Sub-Period, Recessions and Expansions

Mean Returns	1960s	1970s	1980s	1990s	2000s	2010s	2020s	Recessions	Expansions
Dec 1 (low)	0.00970833	0.01353083	0.01401083	0.011225	-0.000275	0.0127575	0.01326316	-0.0023856	0.01236107
Dec 10 (High)	0.00393167	0.00366917	0.00767083	0.01510917	-0.0024533	0.009265	0.01618596	-0.0045346	0.00870327
Dec 10-Dec 1	-0.0057767	-0.0098617	-0.00634	0.00388417	-0.0021783	-0.0034925	0.00292281	-0.002149	-0.0036578

Value Weighted Portfolio Analysis

Decade-by-Decade Trends:

The value-weighted portfolio exhibits smaller disparities between Decile 1 and Decile 10 compared to the equal-weighted portfolio.

The 1990s stand out as the only decade with a positive spread portfolio (0.39%), indicating superior performance by Decile 10 portfolios. This contrasts sharply with the negative spreads observed in other decades.

Recessionary Periods:

Unlike the equal-weighted portfolio, the value-weighted portfolio demonstrates more balanced spread performance during recessions. For instance:

During the 1960-1961 recession, the spread portfolio is slightly positive (0.16%), suggesting similar returns for small and large portfolios.

In other periods, such as 1973-1975 (-3.11%) and 2020 (-2.51%), the spread is negative, but the magnitude is smaller compared to the equal-weighted portfolio.

Expansionary Periods:

During expansions, improved liquidity conditions and reduced risk aversion often allow distressed or undervalued stocks (Decile 1) to perform better, as investors seek higher returns in riskier assets. Meanwhile, high-performing stocks (Decile 10) may face profit-taking or rebalancing, as their valuations often reflect prior performance and leave limited room for further gains.

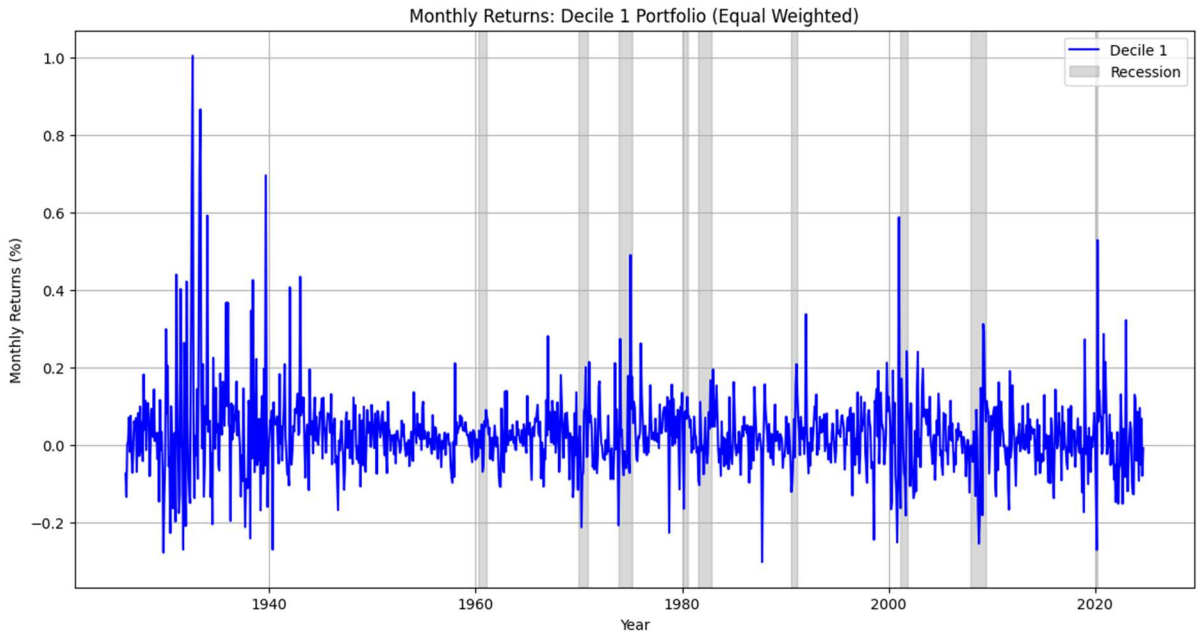
Conclusion:

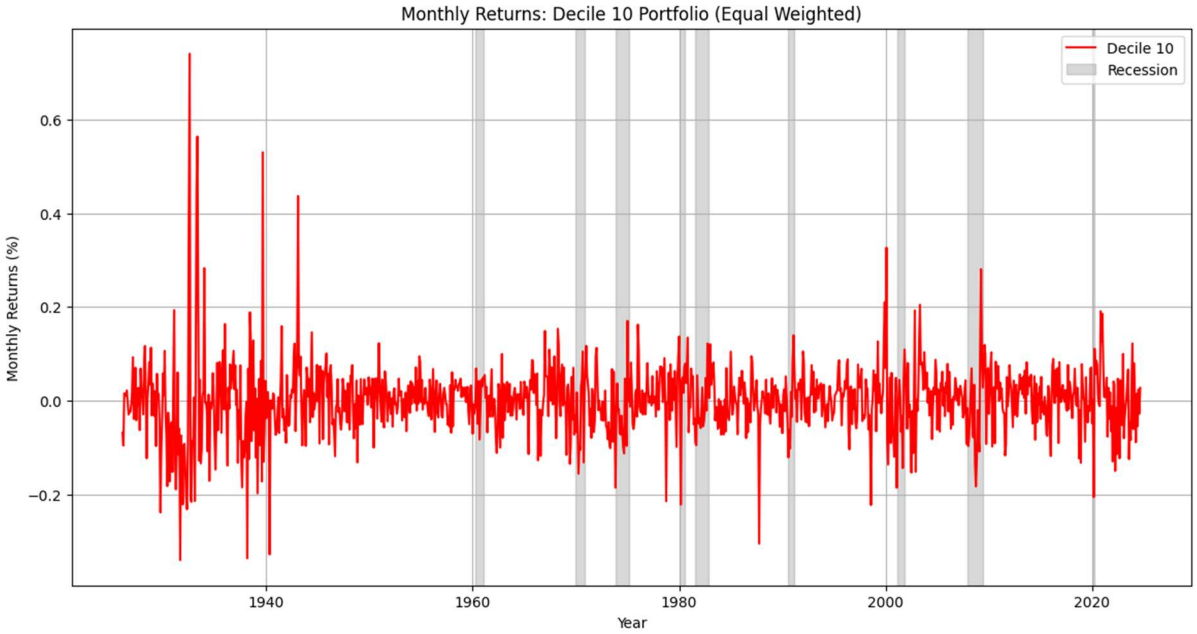
Value-weighted portfolios show more consistent performance across deciles and are less sensitive to market cycles. Larger portfolios (Decile 10) appear to stabilize overall returns during both recessions and expansions. The spread mean becomes smaller than the spread mean of equal-weighted portfolio.

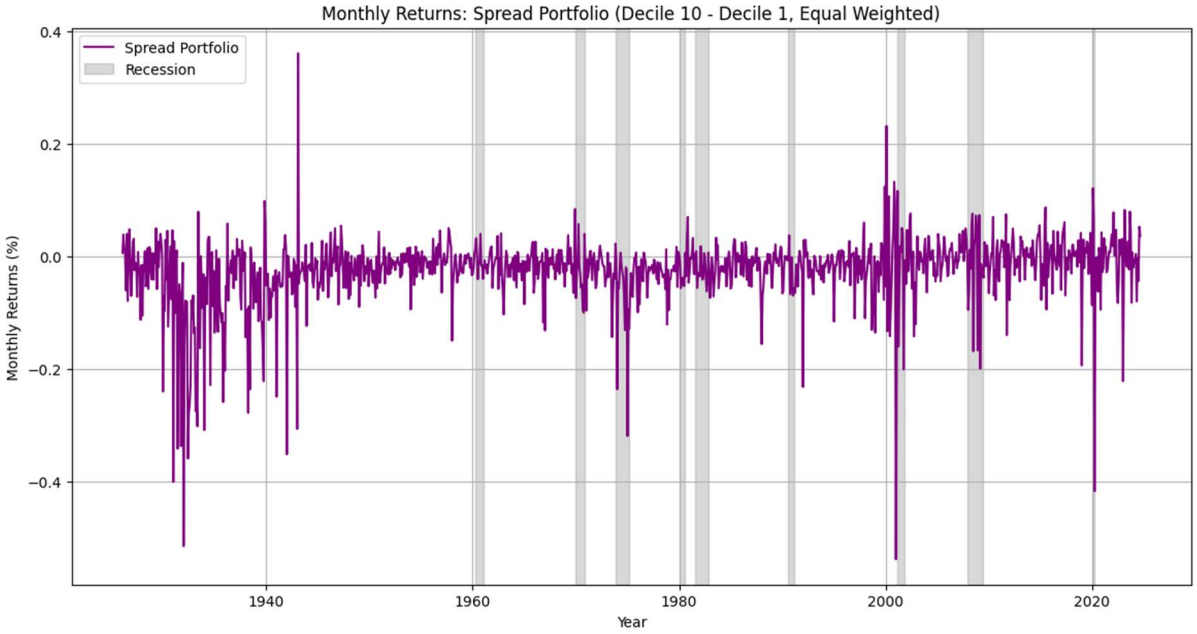
Equal-weighted portfolios give equal importance to all stocks, which amplifies short-term reversal effects due to the greater influence of small-cap stocks. These smaller, low market-cap stocks tend to be more volatile, illiquid, and prone to large price movements, leading to sharper rebounds caused by liquidity shocks, price corrections, or overreaction reversals. In equal-weighted portfolios, such rebounds have a larger impact as small-cap stocks contribute equally to the overall return. Conversely, value-weighted portfolios, dominated by large-cap stocks, exhibit muted short-term reversal effects because large-cap stocks are more liquid and efficient, with less extreme price adjustments. Additionally, low-performing small-cap stocks (Decile 1), which drive reversal effects, have a much smaller weight in value-weighted portfolios, reducing their impact. Research consistently shows that short-term reversal effects are strongest among smaller stocks, and equal weighting amplifies these effects by giving smaller stocks, with their higher percentage price swings, equal representation in the portfolio compared to larger stocks.

III. Time Series Plots

Equal weighted:



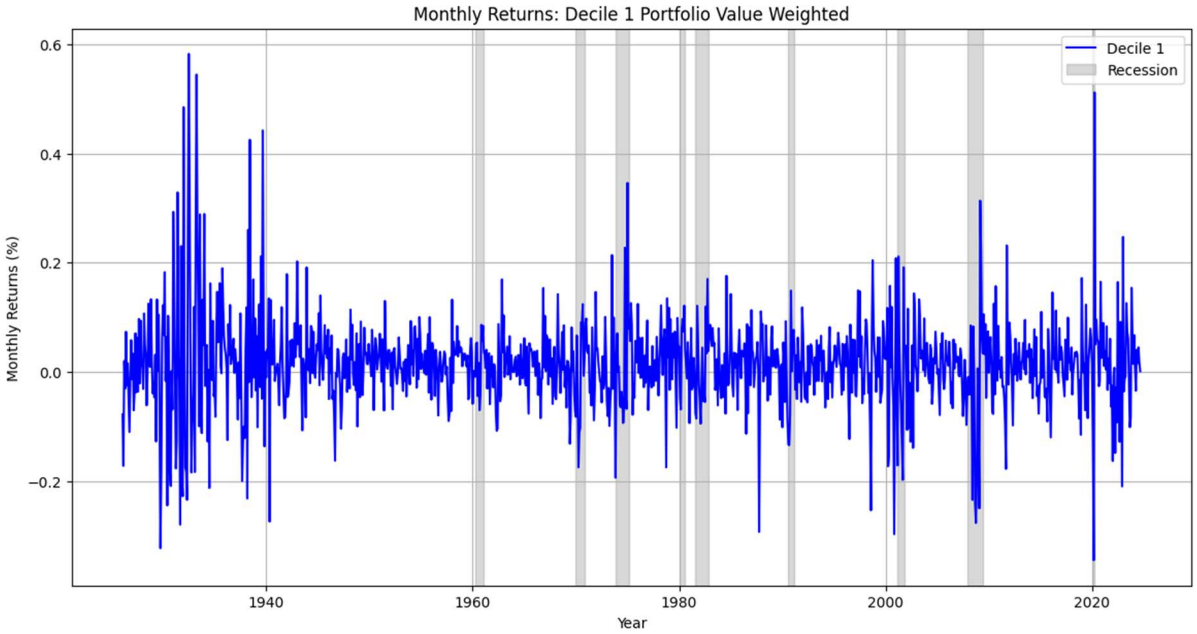


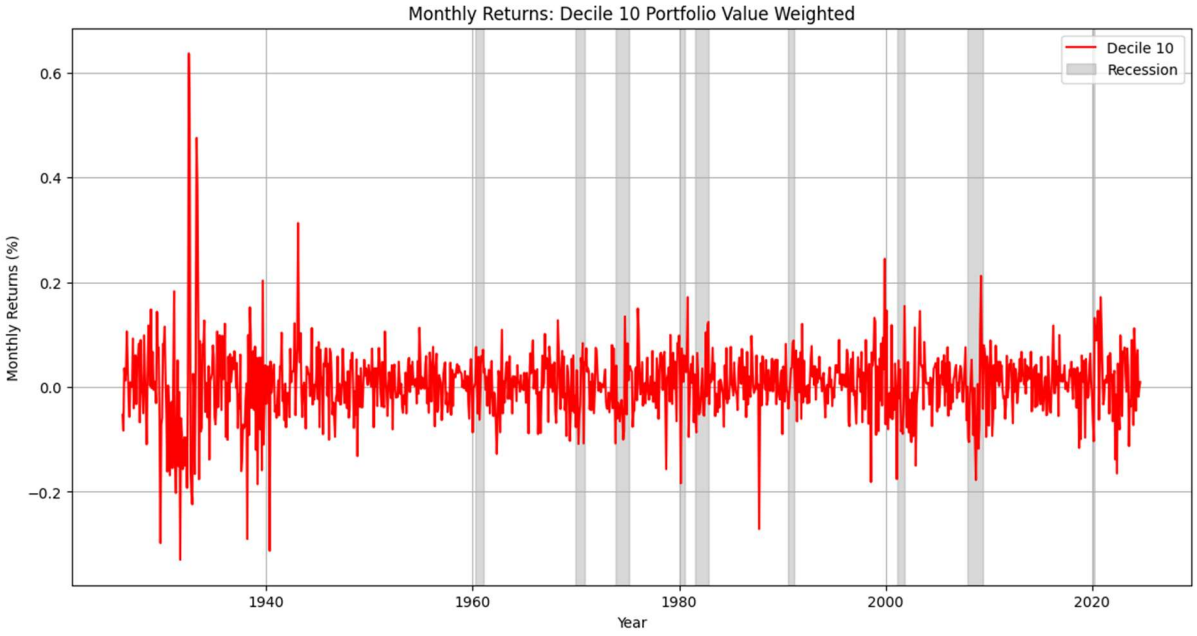


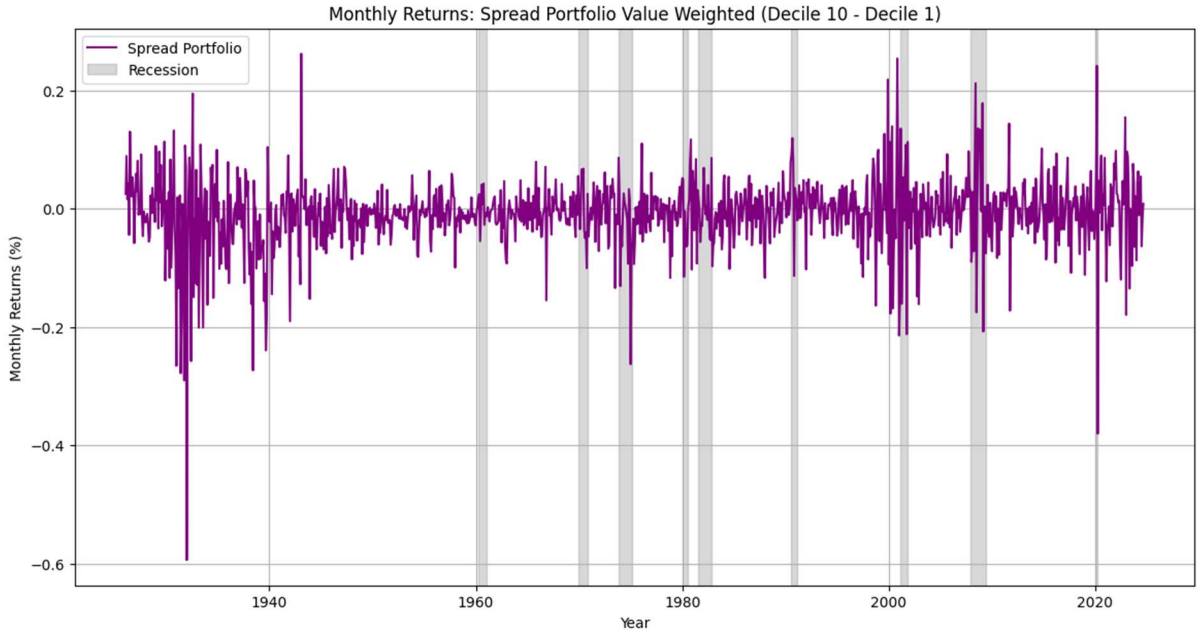
Negative spread count, negative spread percentage:

(811, 68.49662162162163)

Value Weighted:







Negative spread count, negative spread percentage:

(662, 55.91216216216216)

Relevance of Decile Portfolios

Loser (Decile 1) and Winner (Decile 10) Portfolios:

In short-term reversal strategies, Decile 1 represents past losers expected to rebound, while Decile 10 represents past winners anticipated to underperform.

The observed data aligns with short-term reversal principles, where Decile 1 portfolios often outperform Decile 10 during periods of market stress (recessions) due to corrections of overreaction or price pressures.

Spread Portfolio and Short-Term Reversal

The spread portfolio (Decile 10 minus Decile 1) reflects the return from a contrarian strategy, which profits if short-term reversal is strong.

The higher frequency of negative spread portfolio returns for equal-weighted portfolios (~68.5%) suggests that small-cap or illiquid stocks (common in equal-weighted strategies) are particularly prone to short-term reversals.

In contrast, value-weighted portfolios show a lower frequency of negative spread returns (~55.9%), indicating that large-cap stocks exhibit weaker short-term reversal effects.

Behavior During Recessions

Stronger Reversals in Recessions:

Short-term reversal strategies tend to perform better during recessions due to heightened market volatility and overreactions. Panic selling or liquidity shocks often push prices of underperforming stocks (Decile 1) excessively low, setting the stage for sharp rebounds.

The negative performance of the spread portfolio (Decile 10 - Decile 1) during recessions supports this phenomenon. It indicates that Decile 1 (past losers) outperformed Decile 10 (past winners), reflecting stronger short-term reversal effects during downturns.

Expansions vs. Recessions

Reversals Weaken in Expansions:

During expansions, short-term reversal effects may weaken as market mispricings diminish and momentum effects dominate. This aligns with the better performance of the spread portfolio in expansions when Decile 10 outperforms Decile 1.

Short-Term Reversal as a Crisis Hedge:

Short-term reversal strategies, particularly equal-weighted ones, can serve as a hedge during market downturns since they capitalize on the rebound of distressed assets.

Risk Implications

High Transaction Costs:

Short-term reversal strategies require frequent trading to rebalance portfolios, especially in equal-weighted strategies where smaller-cap, illiquid stocks dominate. Transaction costs can erode returns, making implementation challenging in real-world settings.

Volatility Exposure:

The greater negative spread portfolio frequency for equal-weighted strategies highlights their exposure to volatility and liquidity constraints, both critical factors for short-term reversal effects.

Market Cycles:

The cyclical nature of short-term reversals means they are not consistent across market phases, reinforcing the need for dynamic portfolio adjustments.

The results validate the presence of short-term reversal patterns, particularly in equal-weighted portfolios where smaller-cap stocks exhibit stronger reversals. During recessions, contrarian strategies leveraging these reversals can generate returns, but they come with significant risks in terms of volatility and trading costs. This underscores the importance of considering market conditions, transaction costs, and portfolio weightings when implementing short-term reversal strategies.

IV. Additional statistics-January Effect

Mean Returns	January	Others
Dec 1 (low)	0.03031538	0.00856798
Dec 10 (High)	0.00377538	0.00721952
Dec 10-Dec 1	-0.02654	-0.0013485

Decile 1 (low):

January's Mean Return: 3.03%

Other Months' Mean Return: 0.86%

The mean return for Decile 1 (low-performing stocks) in January is significantly higher compared to other months. This indicates that poorly performing stocks tend to experience a strong rebound in January, aligning with the January Effect, where smaller or distressed stocks see a surge in returns. This may be a sign of window dressing, where institutional investors sell

underperforming stocks at the end of the year to improve the appearance of their portfolios. In January, they might repurchase these or similar stocks, driving prices higher.

Decile 10 (high):

January Mean Return: 0.38%

Other Months Mean Return: 0.72%

The return for Decile 10 (high-performing stocks) in January is lower compared to other months. This suggests that momentum-driven stocks do not benefit as much from the January Effect or may even underperform in comparison to other periods.

Spread Portfolio (Dec 10 - Dec 1):

January Mean Return: -2.65%

Other Months Mean Return: -0.13%

The negative spread in January implies that low-performing stocks (Decile 1) outperform high-performing stocks (Decile 10) to a greater extent during January compared to other months. This supports the theory of short-term reversal being amplified during January, as underperforming stocks recover sharply while high-performing stocks lag.

Behavior in January: As noted in the reading (*Hameed and Huang*), short-term reversals often arise due to liquidity shocks or price corrections rather than firm-specific overreactions. In January, the reversal effect becomes amplified due to end-of-year tax-loss selling and window dressing in December, where investors sell losing stocks to realize tax benefits or improve portfolio appearances. These stocks (Decile 1) often rebound strongly in January as they are repurchased, driving up their returns. This phenomenon aligns with the "January Effect," where smaller or distressed stocks typically outperform.

Contrasting Decile 10: High-performing stocks (Decile 10) see less benefit during January because they are less affected by tax-loss selling and window dressing. Instead, they may face selling pressure as investors rebalance portfolios or lock in profits from gains realized in the prior year. This dynamic reduces their relative performance compared to low-performing stocks.

Spread Portfolio Dynamics: The significantly negative spread portfolio return (-2.65%) in January reflects the dominance of reversal forces. The strong recovery in low-performing stocks (Decile 1) outpaces any gain in high-performing stocks (Decile 10), resulting in a pronounced reversal pattern. This behavior supports the short-term reversal theory, highlighting the impact of seasonal liquidity and trading strategies rather than firm-specific fundamentals.

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