

## RESEARCH

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# Myth-Busting with Momentum: How to Pursue the Premium

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Nov 05, 2021

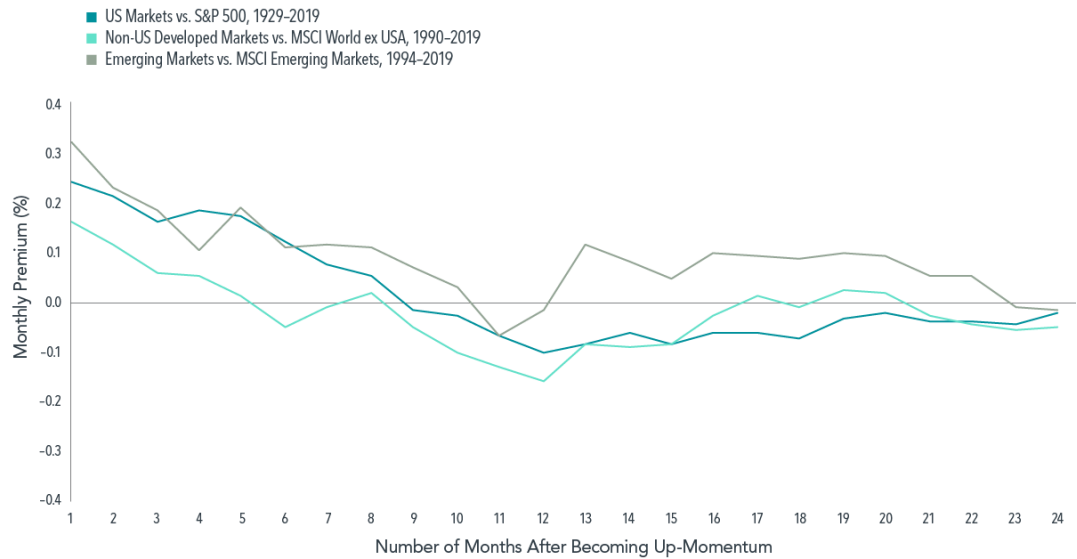
Nearly 30 years after its formal discovery,<sup>1</sup> the appeal of stock price momentum<sup>2</sup> remains in the eye of the beholder. Some see its outsize historical premium, 9.1% per year in the US,<sup>3</sup> as validation for investing in momentum-focused strategies. Others point to the extreme turnover and occasional catastrophic outcomes<sup>4</sup> for the premium as insurmountable hurdles to real-world implementation. As with many things in life, the truth is somewhere between the extremes: While both simulated and real-world data suggest momentum may not be suitable as a driver of long-term asset allocations, we believe momentum considerations can be integrated in a cost-effective way to help inform daily portfolio management decisions.

## A MATTER OF TIME

Prior return characteristics contain meaningful information about expected stock returns, but only over short time horizons. In the first month following a sort on past-year return, US up-momentum stocks outperformed the S&P 500 Index by 0.24%. However, this return advantage tends to decay rapidly: As we see in **Exhibit 1**, the excess return for US up-momentum stocks nearly fell by half, to 0.13%, just six months after being classified as up-momentum and by nine months was no longer positive. Similar behavior is observed in non-US market momentum premiums as well.

**Exhibit 1****Fall From Grace**

Average excess returns for up-momentum stocks vs. large cap market indices following rebalancing



Past performance, including simulated performance, is no guarantee of future results. Actual results will vary.

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*In USD. Source: Dimensional, using data from CRSP and Bloomberg. In the US, the up momentum group includes stocks across NYSE, AMEX, and NASDAQ with greater momentum than the top 30% momentum stock within NYSE. Outside the US, the up-momentum group represents the top 30% of the stocks in the large cap universe based on momentum. In the US, large caps include stocks listed on NYSE, AMEX, and NASDAQ with market capitalization greater than the median market capitalization of NYSE-listed stocks. Outside the US, large cap stocks are defined as the top 90% of market capitalization. The monthly returns on the up momentum group are examined relative to the relevant benchmark over the subsequent two years. Momentum is evaluated over the trailing one year, skipping the most recent month. Up-momentum groups are rebalanced monthly. REITs, tracking stocks, and investment companies are excluded from the universe. In addition, to be included in the international analyses, stocks need to meet certain minimum market capitalization and liquidity requirements. Returns of MSCI indices used in this analysis are gross of dividend withholding taxes.*

Rapid decay in the premium implies high turnover to capture it. Since up-momentum stocks typically are no longer contributing to the premium 9–12 months following their prior return ranking, momentum strategies may be likely to hold stocks for less than a year on average. This implies turnover exceeding 100% for a continuous focus on the premium.

Momentum-focused strategies are banking on the sheer size of the premium outweighing the costs of that turnover. Unfortunately, our research indicates that the real-world outcomes for live momentum strategies do not support this outlook. A study of 24 momentum equity funds shows that a majority have underperformed their Morningstar Category Index after fees and expenses despite, in many cases, benefiting from strong realized momentum premiums. For example, as shown in **Exhibit 2**, Funds G and H are approaching a decade of live results and have underperformed their category

indices by 3.00% and 1.21% per year, respectively, despite an average Fama/French US Momentum Factor return over that time of 3.43%. So anecdotal evidence suggests that momentum-focused funds generally have not helped investors outperform even during environments when the momentum premium was favorable.

## Exhibit 2

### Real-World Disappointment

Performance of live momentum-focused equity strategies since each fund's first full month through December 31, 2020

		First Full Month	Momentum Premium	Annualized Excess Return vs. Category Index
US Market	Fund A	2005-04	0.84%	-2.70%
	Fund B	2005-04	0.84%	-0.07%
	Fund C	2007-04	0.83%	0.81%
	Fund D	2007-09	0.64%	-1.90%
	Fund E	2009-08	2.55%	-0.16%
	Fund F	2009-08	2.55%	0.23%
	Fund G	2012-02	3.43%	-3.00%
	Fund H	2012-02	3.43%	-1.21%
	Fund I	2012-08	1.97%	1.40%
	Fund J	2012-11	2.45%	-0.38%
	Fund K	2013-05	2.73%	-1.16%
	Fund L	2014-04	2.40%	-1.81%
	Fund M	2015-11	-0.06%	-3.67%
	Fund N	2016-01	-1.19%	-1.14%
	Fund O	2016-10	2.04%	-8.26%
Developed ex-US Markets	Fund P	2017-03	3.93%	-5.13%
	Fund Q	2017-12	2.20%	-6.66%
	Fund R	2008-01	5.97%	1.47%
	Fund S	2009-08	8.57%	0.23%
	Fund T	2012-02	9.05%	-1.54%
	Fund U	2012-03	9.64%	2.42%
Emerging Markets	Fund V	2015-02	6.01%	-1.03%
	Fund W	2016-01	4.98%	-1.65%
	Fund X	2008-01	7.60%	-2.20%

Past performance, including simulated performance, is no guarantee of future results. Actual results will vary.

*In USD. Source: Dimensional, using data from Morningstar and Ken French's website: [Kenneth R. French - Data Library \(dartmouth.edu\)](#). Sample includes funds in the US equity category as of December 31, 2020, with momentum appearing in the name. Multifactor funds that do not primarily focus on momentum and funds with fewer than 36 monthly returns as of December 31, 2020, are excluded. Data for funds with multiple share classes is aggregated at the fund level using the asset weighted average of individual share class observations. Momentum coefficient shows how correlated the fund's returns were to the momentum premium. Momentum premium is the average return of the Fama/French US Momentum Factor times 12. Annualized return vs. category index is the difference in annualized returns between the fund and the Morningstar category index since the first month of returns for the fund. Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio.*

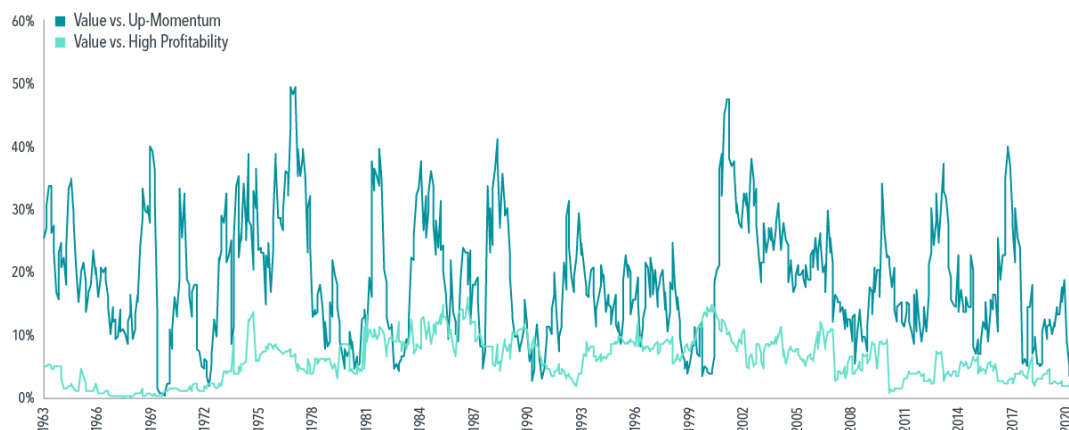
## COMPLEMENT OR INSULT?

Some investors believe momentum is a good complement to value due to the low historical correlation between the premiums. However, the overlap between momentum

and value strategies has fluctuated to an extent that may be inappropriate for such an objective. As shown in **Exhibit 3**, the percent of market cap in common between value stocks and up momentum stocks has frequently exceeded 30%. Contrast this with high profitability stocks, which have exhibited lower and more stable overlap with value. Considering the relatively low turnover required to capture profitability premiums,<sup>5</sup> we believe high profitability strategies make a more compelling case as an asset allocation complement to value.

### Exhibit 3 Lapped by the Competition

Overlap weight of value vs. high profitability and value vs. up-momentum, US Market, July 1963–December 2020



Source: Dimensional, using CRSP and Compustat. The overlap weight of two sorted groups of stocks in each month is measured by summing across all the holdings of both groups the minimum between the weights of a stock in these sorts. The sorted groups are rebalanced monthly. The value group targets the bottom 30% of the market capitalization based on price-to-book. The high profitability and momentum groups target the top 30% of the market capitalization based on profitability and momentum, respectively.

Variability in the overlap between momentum and value may lead to substantial uncertainty in one's total portfolio exposure to value when momentum is pursued in a standalone strategy. **Exhibit 4** shows marked inconsistency in valuation characteristics for the three largest US equity momentum funds during the value premium rally of late 2020 through early 2021. Price-to-book ratios for all three surged briefly in the fourth quarter of 2020 before dropping precipitously during the second quarter of 2021. The largest of the three funds (Fund A), in particular, finished Q2 slightly value-tilted compared to the overall market (Russell 3000 Index).

## Exhibit 4

### Inconsistent Values

Aggregate price-to-book ratios for three largest US equity momentum funds and the US market

	Fund A	Fund B	Fund C	Russell 3000 Index
As of 9/30/2020	7.76	7.79	9.95	3.37
As of 12/31/2020	10.62	9.66	11.51	3.80
As of 3/31/2021	9.97	8.91	11.31	3.95
As of 6/30/2021	3.40	5.55	6.91	4.17

*Holdings are subject to change. Source: Dimensional, using data from Morningstar. Momentum fund selections represent three largest of momentum fund sample constructed for Exhibit 2, based on AUM as of 12/31/2020. The Russell 3000 Index, included as a proxy for the US market, tracks the 3,000 largest US stocks, representing approximately 98% of all US incorporated equities. Indices are not available for direct investment. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes.*

## LOVE IT OR LEAVE IT

Implementation challenges do not obviate the need to consider momentum when designing and managing portfolios. Rather, they highlight the need for a framework that governs how one can efficiently use different signals about expected returns. One such framework is to categorize variables by the horizon over which they contain information about differences in expected returns. We believe long-term drivers of returns, such as market capitalization, relative price, and profitability, are reliable foundations of portfolio structure, as research has shown they are relatively stable variables enabling low-turnover, cost-effective portfolio design.

Incorporating additional variables into portfolio asset allocation entails trading off exposure to an existing one. We believe this is an undesirable outcome for a short-term driver of expected returns, such as momentum, because of the increase in expected turnover it will exert.

Fortunately, research shows that we can increase expected returns by considering momentum characteristics among the many inputs when buying and selling stocks. Buy and sell decisions can be made to result in portfolios that favor stocks with upward-momentum characteristics. For example, given a set of stocks with equally attractive size, relative price, and profitability characteristics, buys can be delayed on securities that exhibit downward momentum until that effect has dissipated. Conversely, sales can be delayed for securities exhibiting upward momentum.

As the all-cap core simulations in **Exhibit 5** demonstrate, momentum screens have meaningfully increased the returns of marketwide strategies that overweight smaller, lower relative price, and higher profitability stocks. Of course, one might expect even greater impact for asset class strategies focused on small cap or value stocks, as recent underperformance associated with downward momentum may send stocks disproportionately into low-price segments of the market.

**Exhibit 5****Screen Time**

Performance for simulated all-cap core allocations with and without momentum screens

	With Momentum Screen	Without Momentum Screen	Difference
US 1975–2020	14.0	13.9	0.1
Non-US Developed 1990–2020	6.3	6.0	0.3
Emerging Markets 1994–2020	7.1	7.0	0.1

Past performance, including simulated performance, is no guarantee of future results. Actual results will vary.

*Backtested model performance is hypothetical (it does not reflect trading in actual accounts) and is provided for informational purposes only. See Appendix “Important Information for Simulations” for additional details. Not live strategies managed by Dimensional.*

*Source: Dimensional, using data from CRSP and Compustat for US stocks and data from Bloomberg for non-US developed and emerging market stocks. Momentum is measured for each stock as the cumulative return over the previous 12 months excluding the most recent month. “Without momentum screens” simulations include all eligible stocks in the relevant geography and emphasize the size, value, and profitability premiums but do not consider momentum characteristics. “With momentum screens” simulations are constructed similarly, but consider momentum; emphasis on stocks based on size, value, and profitability is maintained (neither increased or decreased) for stocks ranking in the top or bottom groups of momentum at the time of rebalancing. The simulations are rebalanced at the beginning of each quarter. REITs and investment companies are excluded from the universe.*

Using momentum this way generally does not increase expected turnover because its application potentially delays buy and sell transactions. This implies a lower opportunity cost than incorporating momentum as a driver of asset allocation. For example, had the momentum premium been flat during the sample period of analysis in Exhibit 5, the net effect on performance would have been zero. Contrast that with how many momentum-focused funds underperformed even with the benefit of positive momentum premiums.

**OBJECT IN MOTION**

One of the challenges with systematic investing is the uncertainty around premiums. We believe portfolio design must take into account the possibility that targeted premiums do not show up for long periods of time. This is arguably even more important with a premium such as momentum, which requires high turnover to pursue and lacks a consensus story for what drives it. Rigorous research combined with decades of systematic investing expertise help inform portfolio design and management by identifying efficient uses for the many sources of information about expected returns.

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1. Narasimhan Jegadeesh and Sheridan Titman, "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency," *Journal of Finance* 48, no. 1 (1993).
  2. Stock price momentum generally refers to the tendency of stocks with relatively high prior returns to continue their relative outperformance.
  3. Based on average annual return for Fama/French US Momentum Factor over the period 1927–2020, available from the data library of Ken French.
  4. See, for example, the Fama/French US Momentum Factor's return of –83.16% in 2009.
  5. Gerard O'Reilly and Savina Rizova, "Expected Profitability: A New Dimension of Expected Returns" (white paper, Dimensional Fund Advisors, June 2013).

## GLOSSARY

**Core:** Marketwide asset allocation that emphasizes stocks with smaller market capitalization, low relative price, and higher profitability.

**Downward momentum:** Stocks ranking low on prior return compared to the market.

**Expected returns:** The percentage increase in value a person may anticipate from an investment based on the level of risk associated with the investment, calculated as the mean value of the probability distribution of possible returns.

**Market capitalization:** The total market value of a company's outstanding shares, computed as price times shares outstanding.

**Momentum:** Stock price momentum generally refers to the tendency of stocks with relatively high prior returns to continue their relative outperformance.

**Overlap:** The percentage of stocks, by market capitalization, in common between two strategies.

**Premium:** A return difference between two assets or portfolios

**Price-to-book:** The ratio of a firm's market value to its book value, where market value is computed as price multiplied by shares outstanding and book value is the value of stockholder's equity as reported on a company's balance sheet

**Profitability:** A company's operating income before depreciation and amortization minus interest expense scaled by book equity

**Relative price:** Refers to a company's price, or the market value of its equity, in relation to another measure of economic value, such as book value.

**Turnover:** Measures the portion of securities in a portfolio that are bought and sold over a period of time.

**Up-momentum:** Stocks ranking high on prior return relative to the market.

## APPENDIX: IMPORTANT INFORMATION FOR SIMULATIONS

Simulated strategy returns are based on model performance. The performance was achieved with the retroactive application of a model designed with the benefit of hindsight; it does not represent actual investment performance. Backtested model performance is hypothetical (it does not reflect trading in actual accounts) and is provided for informational purposes only. The securities in the model may differ significantly from those in client accounts. Model performance may not reflect the impact that economic and market factors might have had on the advisor's decision making if the advisor had been actually managing client money.

The simulated performance is "gross performance," which includes the reinvestment of dividends and other earnings but does not reflect the deduction of investment advisory fees and other expenses. A client's investment returns will be reduced by the advisory fees and other expenses that may be incurred in the management of the advisory account. For example, if a 1% annual advisory fee were deducted quarterly and a client's annual return were 10% (based on quarterly returns of approximately 2.41% each) before deduction of advisory fees, the deduction of advisory fees would result in an annual return of approximately 8.91% due, in part, to the compound effect of such fees. **Past performance, including simulated performance, is no guarantee of future results, and there is always the risk that a client may lose money.**

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