



## Investment Perspectives

# The Benefits of Price and Operating Momentum in Equity Portfolios

Lord Abbett experts explain the potential advantage of applying a fundamental factor to a momentum investing strategy.



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The momentum factor is a well-known phenomenon. In its simplest form, it is predicated on the notion that established trends will persist into the future. Therefore, stocks that have performed well will continue to do so for extended periods, and those that have underperformed will also continue to do so. To date, most of the interest in momentum has focused on cross-sectional, otherwise known as medium-term price momentum, a variant with overwhelming evidence but also with some serious drawbacks, as we will discuss.

We have found that incorporating variants of price momentum in concert with operating momentum, a concept we refer to as confirmed momentum, may limit the downside volatility associated with cross-sectional price momentum, while still capturing the significant upside benefits of trend following.

And although momentum strategies can conjure notions of amplifying risk in pursuit of short-term profits, we will highlight a different role that momentum can play, both as a framework for decision making and a means for pursuing strong upside gains (“letting winners run”) with less downside volatility (“cutting decliners efficiently”). In this paper, we discuss: (1) why momentum exists; (2) the greater reliance practitioners should place on absolute (time-series) momentum over relative (cross-sectional) momentum; and (3) why momentum can be most effective when paired with operating momentum.

## The Efficacy of the Momentum Factor

As mentioned, momentum investing is based on the concept that established trends will continue into the future. Empirically, the success of the momentum factor is well documented. Jegadeesh and Titman (1993) were among the first to uncover that cross-sectional momentum resulted in higher returns.<sup>1</sup> More specifically, their model found that buying stocks with higher returns over the past three to twelve months and shorting stocks with poor returns over the same time period translated to profits of approximately 1% per month over the subsequent year. On a global scale, Griffin, Ji, and Martin (2003) studied the momentum factor across 40 countries with data from 1975 to 2000 and found that, on average, momentum persisted across the world.<sup>2</sup> As seen in Exhibit 1, when compared to other factors, it is increasingly clear why the momentum factor has drawn such attention—it typically outperforms other common factors such as small-capitalization (cap) stocks and value stocks on both an absolute and risk-adjusted basis.

**Exhibit 1. The Momentum Factor Versus Market Cap and Value Factors**

Returns and Sharpe Ratios of Factor Portfolios								
Sample	Returns				Sharpe Ratios			
	RMRF	SMB	HML	UMD	RMRF	SMB	HML	UMD
1927-2013	7.7%	2.9%	4.7%	8.3%	0.41	0.26	0.39	0.50
1963-2013	6.0%	3.1%	4.5%	8.4%	0.39	0.29	0.45	0.57
1991-2013	8.2%	3.3%	3.6%	6.3%	0.54	0.29	0.32	0.36

The gross returns and Sharpe ratios for the UMD (up-minus-down) portfolio are persistently higher than the other factors observed. These studies imply what we already know—the momentum factor works.

**Factor:** Sample Portfolio Holdings

**RMRF** the equity market risk premium

**SMB** long small-capitalization stocks and short large-capitalization stocks

**HML** long low price-to-book stocks and short high price-to-book stocks

**UMD** long stocks with high relative performance over the past 12 months, skipping the most recent month's return, and short stocks that have low relative returns over the same period

Source: Adapted from "Fact, Fiction and Momentum Investing" by Clifford Asness, Andrea Frazzini, and Tobia Moskowitz, 2014, The Journal of Portfolio Management.<sup>3</sup> **Past performance is not a reliable indicator or guarantee of future results.** The historical data shown in the chart above are for illustrative purposes only and do not represent any specific portfolio managed by Lord Abbett.

**What is Driving the Momentum Anomaly?**

The potential to earn abnormal profits and the consistent profitability of the momentum factor have drawn attention from practitioners and academics alike, and yet not nearly enough for this abnormality to be arbitrated away. While consensus has not been reached on why the momentum anomaly exists, many have pointed to both behavioral and risk-based explanations.

The behavioral explanation is rooted in biases investors exhibit, such as anchoring, a form of under-reaction bias. The study by Barberis et al. (1998), argues that under-reaction causes momentum when investors change their beliefs too slowly despite meaningfully new information, and as a result, do not react sufficiently to the evidence.<sup>4</sup> Anchoring is a possible driver of this underreaction, as market participants exhibit an overreliance on an initial reference point when forming opinions. This, in turn, often leads to the stock being bid up over a much longer, delayed period of time as investors eventually fully incorporate the new information into the stock price. The disposition effect may also feed this delayed price adjustment, as owners of a stock have been shown to often sell too early, again relying on past prices as an unreliable mental anchor.

The risk-based explanation is predicated on an investor's need for compensation for risk, primarily related to the fear of sharp crashes. Daniel and Moskowitz (2016) show that despite robust, positive returns on average, momentum investing is punctuated with infrequent but pronounced drawdowns, shown in Exhibit 2.<sup>5</sup>

**Exhibit 2. Worst Monthly Momentum Returns Between 1927 and 2013**

Rank	Month	Returns (%)		
		WML <sub>t</sub>	MKT-2y	Mkt <sub>t</sub>
1	1932:08*	-74.36	-67.77	36.49
2	1932:07*	-60.98	-74.91	33.63
3	2001:01‡	-49.19	10.74	3.66
4	2009:04†	-45.52	-40.62	10.20
5	1939:09*	-43.83	-21.46	16.97
6	1933:04*	-43.14	-59.00	38.14
7	2009:03†	-42.28	-44.90	8.97
8	2002:11‡	-37.04	-36.23	6.08
9	1938:06*	-33.36	-27.83	23.72
10	2009:08†	-30.54	-27.33	3.33
11	1931:06*	-29.72	-47.59	13.87
12	1933:05*	-28.90	-37.18	21.42
13	2001:11‡	-25.31	-19.77	7.71
14	2001:10‡	-24.98	-16.77	2.68
15	1974:01	-24.04	-5.67	0.46

The table lists the 15 worst monthly returns for the winner-minus-loser (WML) momentum portfolio over the 1927:01-2013:03 time period. Also tabulated are Mkt-2y, the two-year market returns leading up to the portfolio formation date, and Mkt<sub>t</sub>, the contemporaneous market return. The dates between July 1932 and September 1939 are marked with an asterisk (\*), those between April and August of 2009 with †, and those from January 2001 and November 2002 with ‡.

Source: Adapted from “*Momentum Crashes*” by Kent Daniel & Tobias J. Moskowitz, 2016, Journal of Financial Economics. **Past performance is not a reliable indicator or guarantee of future results.** The historical data shown in the chart above are for illustrative purposes only and do not represent any specific portfolio managed by Lord Abbett.

As a result of the magnitude of prior drawdowns, investors have exhibited a tendency to avoid these stocks, leading to higher excess returns. Ruenzi and Weigert provide evidence of this phenomenon in a 2017 study showing high tail-risk stocks meaningfully outperform.<sup>6</sup> The “fat tail” of momentum returns may inhibit leveraged investors from exploiting the momentum anomaly, a capital restriction that may contribute to the phenomenon’s persistence.

## Types of Momentum

### Cross-Sectional Momentum

Cross-sectional momentum is what the well-established, quantitative momentum factor is based on, and what most investors identify when they seek to incorporate pure momentum exposure. We would argue that this measure of momentum is directionally powerful and can be a useful tool, particularly in bear markets when one needs to determine which stocks are performing best (i.e., relative strength) versus peers.

However, we would also note some shortcomings in practice that require attention. First among these is the common implementation of cross-sectional momentum, which leverages the “12-1” construction methodology. The determination of the “12-1” portfolio is predicated on performance over the last 12 months, excluding the most recent month to eliminate a reversal effect over that time period. This approach fits the past return data well but lacks some intuitive appeal. We would argue that the most recent month likely contains relevant and informative data about potential changes in direction for one stock, an industry, or the whole market, and that the exclusion of that month may lead to an inability to respond to new and meaningful information in a timely fashion.



Another shortcoming is the tendency for the momentum factor to crash following extended trends and manias, and it is one of the key reasons why, as noted above, one could argue the momentum factor has not been arbitrated away. Crashes are difficult to avoid, when following a pure price momentum strategy based on cross-sectional momentum, because of the lag effects in trading rules compared to the potential for a sharp correction down in stock prices during liquidity events and other market shocks. Notably, some newly developed ETFs (exchange traded funds) have sought to capture this factor, but liquidity limitations and imprecise rebalancing frequency, which is generally infrequent and lagging, make the actual date and time of rebalance a significant variable and source of volatility. Additionally, according to Jegadeesh and Titman (2001), much of the cross-sectional momentum factor return is generated in the first few months after portfolio formulation, an event that is typically frequent in academic studies and suggests real-life lagged portfolio formation would forfeit some of this factor's return.<sup>7</sup>

### Time-Series Momentum

Much less known is time-series momentum, otherwise known as absolute momentum or trend following, which is generally an assessment of a security's performance against its own history. This kind of trend following has fans among practitioners but is less well documented in empirical finance, partly due to a lack of standardization in implementation and data limitations.

Technical analysis has historically been derided by academics as not being evidence based or well motivated from a behavioral perspective, but that is beginning to change. A groundbreaking study published in the *Journal of Financial Economics*, "*Time Series Momentum*" (Moskowitz, Ooi and Pedersen, 2012) documents the strong correlation of future returns with past returns in dozens of futures and forwards, including broad country equity indices, currencies, commodities, and sovereign bonds over 25 years.<sup>8</sup> They found the findings to be robust across a number of sub-samples, look-back periods and holding periods. The 12-month time series momentum returns were positive for every asset contract examined.

From an intuitive perspective, time-series momentum strategies may allow investors to make more real-time assessments of changes that are observable but not fully incorporated into the current price of a security. We have found that time-series momentum works most effectively through comparisons via moving averages and categorizing stocks into distinct phases of their lifecycle that enable rational buy-and-sell decisions based on stock price trends and reversals.

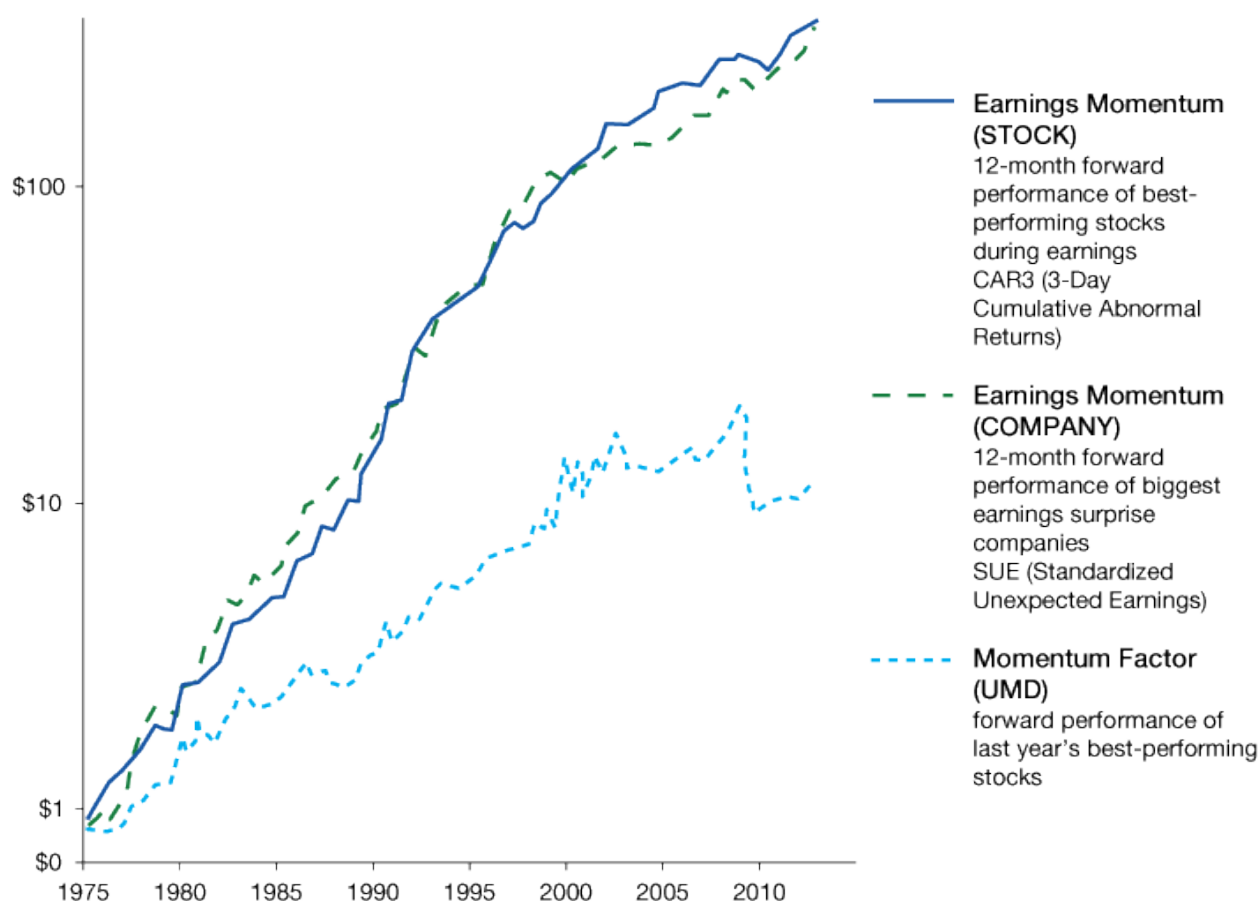
The one piece of the puzzle still missing from all of this that can help bring further strength to an investment strategy seeking exposure to momentum is "why"—why are stock prices behaving a certain way? What is ultimately driving stock prices in the short, intermediate, and long term? Which brings us to fundamental, or operating, momentum.

### Operating Momentum

While price momentum can likely be attributed to the readily observable manifestation of anchoring, fundamental changes in a business, such as customer adoption or new product rollouts, can lead to meaningful changes in the intrinsic value of the stock. These underlying operating changes may present themselves in different metrics— whether they are accelerating revenue or earnings growth. And while the applicability of these metrics may vary by industry, these fundamental changes are generally observable to an analyst who is closely monitoring the stock, and those changes may precede or be concurrent with the price movement that gives the analyst a buy signal.

Here again, data limitations have inhibited adoption by the academic community, but that is starting to change. Chan, Jegadeesh, and Lakonishok demonstrated the efficacy of operating momentum as early as 1996 in "*Momentum Strategies*".<sup>9</sup> Another important study on the operating momentum concept came from Robert Novy-Marx in 2014, titled "*Fundamentally, Momentum is Fundamental Momentum*". Novy-Marx found that fundamental momentum measured through earnings surprises explained a large portion of cross-sectional price momentum's anomalous returns.<sup>10</sup>

A chart from Novy-Marx's study is shown in Exhibit 3. UMD ("up minus down") represents cross-sectional price momentum returns from a portfolio consisting of holding the last 12-month winners (minus biggest losers), excluding the most recent month (12-1), and shorting the last 12-month losers, excluding the most recent month.

**Exhibit 3. Earnings Momentum Strategies Outperform Price Momentum**

Source: Adapted from “Fundamentally, Momentum is Fundamental Momentum” by Robert Novy-Marx, 2014, National Bureau of Economic Research. **Past performance is not a reliable indicator or guarantee of future results.** The historical data shown in the chart above are for illustrative purposes only and do not represent any specific portfolio managed by Lord Abbett.

The line labeled “SUE”, Standardized Unexpected Earnings, shows the 12-month forward stock performance of the top decile of companies that have just experienced the biggest earnings surprises relative to sell-side expectations (and shorting the worst 10%). As seen in Exhibit 3, the forward performance of the cohort of stocks with the biggest earnings surprises results is far superior to that of cross-sectional price momentum (UMD) with more limited drawdowns.

“CAR3”, which represents the concept of Cumulative Abnormal Returns over 3 Days on Exhibit 3, is another way Novy-Marx isolates the anchoring bias that drives momentum. This CAR3 metric is the performance of a portfolio constructed by sorting from best-performing to worst-performing stocks over a day prior to an earnings announcement to the day following and then holding (thus, three days around earnings) for 12 months. In essence, the data are showing how well the stocks of companies around earnings perform after a big run-up, along with shorting those that perform worst around earnings.

The high correlation between the more fundamentally driven “SUE” time series and the entirely stock price-driven time series “CAR3” suggests that these are similar forces, both driven by investors not responding to new information quickly enough.



## Confirmed Momentum: The Intersection of Time-Series Momentum and Operating Momentum

At the start of this paper, we identified two drivers of the momentum factor's outperformance: a behavioral inefficiency characterized by investors not reacting to new information quickly enough and compensation for the crash risk in momentum. By integrating the various momentum signals discussed, we believe an active practitioner can strive to exploit that behavioral inefficiency while avoiding the cost of the crash.

We believe price momentum is key to this avoidance. In both its cross-sectional and time series variants, price trends can alert investors to changes in investor perception. That perceptive regime will likely determine the extent to which the market acknowledges operating changes. A company with improving operating metrics, which are recognized by a receptive market environment, is an environment in which momentum can achieve multiples of upside. In a market environment that is not receptive, excellent operating changes and great results will likely not be enough to move the stock. A manager can use price momentum to recognize which environment we are in.

The lesser-known operating momentum is the real driver of value in a momentum strategy. The change that's happening at a growth company that is disruptive, investing in itself, and taking share is often undervalued. We believe analysts who spend their careers delving into the mechanisms for change and competitive advantage can recognize this operating momentum as it is happening. And when operating momentum is confirmed with price momentum, we believe there is a potential for outperformance. When one of the two is not present, we believe shifting to more secular, steady growth stocks can help preserve value.

And so, we propose the concept of *confirmed momentum*, which is the intersection of price and operating momentum. In our view, elements of momentum, and specifically confirmed momentum should be viewed as not only an attractive exposure, but also as a multi-dimensional tool kit for risk management. By linking buy-and-sell decisions to agreement of price and operating momentum, an active manager can potentially stay invested in stocks that continue to do well and recognize early warning signals from either a price or fundamental perspective.

<sup>1</sup>Jegadeesh, N., & Titman, S. (1993). *Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency*. The Journal of Finance, 48(1), 65-91.

<sup>2</sup>Griffin, J. M., Ji, X., & Martin, J. S. (2003). *Momentum Investing and Business Cycle Risk: Evidence from Pole to Pole*. The Journal of Finance, 58(6), 2515-2547.

<sup>3</sup>Asness, Cliff, Frazzini, Andrea, Moskowitz, Tobias J. (2014). *Fact, Fiction and Momentum Investing*. The Journal of Portfolio Management Special 40th Anniversary Issue, 40 (5) 75-92.

<sup>4</sup>Barberis, Nicholas, Andrei Shleifer, and Robert Vishny (1998). *A Model of Investor Sentiment*. Journal of Financial Economics 49 (3): 307-343.

<sup>5</sup>Daniel, Kent & Moskowitz, Tobias J. (2016). *Momentum Crashes*. Journal of Financial Economics 122 221-247.

<sup>6</sup>Ruenzi, Stefan and Weigert, Florian, (2017). *Momentum and Crash Sensitivity*. University of St. Gallen, School of Finance Research Paper No. 2018/1, Economics Letters, Forthcoming.

<sup>7</sup>Jegadeesh, N., & Titman, S. (2001). *Profitability of Momentum Strategies: An Evaluation of Alternative Explanations*. The Journal of Finance, 56(2), 699-720.

<sup>8</sup>Moskowitz, Tobias J. and Moskowitz, Tobias J. and Ooi, Yao Hua and Pedersen, Lasse Heje, (2011). *Time Series Momentum*. Chicago Booth Research Paper No. 12-21, Fama-Miller Working Paper.

<sup>9</sup>Chan, Louis K.C. and Jegadeesh, Narasimhan and Lakonishok, Josef (1996). *Momentum Strategies*. The Journal of Finance, 51(5), 1681-1713.

<sup>10</sup>Novy-Marx, Robert, (2015). *Fundamentally, Momentum is Fundamental Momentum*. NBER Working Paper No. w20984.





## Glossary & Index Definitions

**Anchoring** refers to a behavioral bias where investors adjust their expectations too slowly when new information emerges. This bias can lead to an underreaction. As a result, stock prices adjust gradually rather than immediately.

**Arbitrage** generally refers to exploiting price discrepancies across markets or instruments to earn risk-free or low-risk profits. It can also involve capitalizing on inefficiencies in how quickly market participants react to new information.

A **basis point (bp)** is equal to one one-hundredth of a percentage point.

**Book value** represents the net worth of a company and is calculated by taking total assets minus total liabilities.

**Cross-sectional momentum** is an investment strategy that ranks securities within a given universe based on their past returns over a specific period, usually 12 months, excluding the most recent month. The top-performing securities compose the buy portfolio, and the bottom-performing securities compose the sell portfolio.

**Disposition effect** is a well-documented behavioral bias where investors tend to sell winning positions too early and hold losing positions too long.

**Downside volatility** is a measure of the variation in the negative returns generated by a security or investment.

**Drawdown** refers to a decline in the price of a stock.

**Earnings** refer to a company's net income, which is the profit remaining after all expenses, taxes, and interest have been deducted from revenue. It's a key indicator of a company's financial health and profitability.

**Earnings per share (EPS)** is a measure of a company's profitability allocated to each share of common stock.

**Earnings surprise** refers to when a company's reported earnings per share (EPS) significantly differ—either positively or negatively—from research analysts' consensus expectations. These expectations are typically based on models that the analyst develops using historical performance, industry trends, and information from the company.

**Exchange traded fund (ETF)** is a type of investment fund that holds a collection of assets, such as stocks, bonds, or commodities, and is traded on public stock exchanges.

**Fundamental analysis** attempts to identify stocks offering strong growth potential at a good price by examining the underlying company's business, as well as conditions within its industry or in the broader economy.

**Intrinsic value** refers to what a stock or other investment security may be worth based on its fundamental characteristics, such as the company's ability to generate future cash flow, its assets, earnings, competitive position. It is not based on the stock's current market price.

**Market liquidity** refers to the ease and efficiency with which an asset, such as a stock, bond, or other security, can be bought or sold in the market without significantly affecting its price. A liquidity event can cause the ease and efficiency to decline and can result in deeply lower prices to sell a security.

**Long stock position** refers to the ownership of shares in a company with the expectation that their value will increase over time. When an investor is "long" a stock, they have purchased the shares.

**Market capitalization** is the total market value of a company's outstanding shares of stock. It is calculated by multiplying the current share price by the total number of shares outstanding.

**Price momentum** refers to the tendency of a stock's price to continue moving in the same direction—up or down—based on its recent performance. It is a core concept in momentum investing, which assumes that trends persist and that past winners will continue to outperform while past losers will continue to underperform.

**Price-to-book (P/B) ratio** is a financial measure that compares a company's market value to its book value. It helps investors assess whether a stock is undervalued or overvalued relative to the company's net assets.

**Risk-adjusted return** is a measure of how much profit an investment generates relative to the amount of risk taken to achieve it. Unlike absolute return, which looks only at gains, risk-adjusted return accounts for the volatility, downside exposure, or market risk associated with the investment.

**Risk premium** is the additional return investors expect to earn from investing in securities, such as stocks, over a risk-free asset, such as U.S. Treasury bills. It compensates investors for taking on the higher risk associated with investments that are riskier compared to safer investments.

**Sell-side** refers to the segment of the financial industry that creates, promotes, and sells financial instruments, such as stocks, and bonds to investors. The sell side generally includes investment banks, broker-dealers, and equity research firms.

**Sharpe ratio** measures the performance of an investment such as a security or portfolio compared to a risk-free asset, after adjusting for its risk.

**Short stock position** is an investment strategy where an investor sells shares they do not own, with the intention of buying them back later at a lower price.

**Standard deviation** is a measure of the dispersion or variability of a set of values. It tells you how much individual data points differ from the mean (average) of the dataset.

**Strategic asset allocation** is a long-term investment approach that establishes a target mix of asset classes based on an investor's goals, risk tolerances, and time horizon.

**Tactical asset allocation** is a short- to medium-term investment approach that adjusts the asset mix based on market conditions, economic forecasts, or perceived opportunities.

**Technical analysis** is a trading discipline employed to evaluate investments and identify trading opportunities by analyzing statistical trends gathered from trading activity, such as price movement and volume.

**Upside volatility** is a measure of the variation in the positive returns generated by a security or investment.

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