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FACTOR PERSPECTIVES

Befriend the Trend: Three Facts about Momentum Investing

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Momentum investing is about buying into trends. It is rooted in decades of academic research that shows that securities that have done well in the recent past have tended to perform well in the near future. Over the long run, high momentum securities have tended to drive better returns than the market: the MSCI USA Momentum Index has outperformed the market-cap weighted MSCI USA Index by about 80 basis points on an annualized basis over the past five years.[1] In fact, we see momentum's long-term outperformance in equities, bonds, commodities, foreign exchange, and even private markets like real estate. This makes momentum an investment factor—a broad, historically rewarded driver of returns within and across asset classes.

Momentum Investing

What Is It?
Following upward price trends in a systematic way

How We Measure It?
6 month price momentum
12 month price momentum

How Often the MSCI Index Rebalances
Semi-anually in May and November. Conditional rebalancing may be triggered by changes in monthly market volatility

Why It's Worked
- ☑ Rewarded Risk
- ☐ Structural Impediment
- ☑ Behavioral Bias

Exhibit 1: The MSCI USA Momentum Index has outperformed the broad U.S. equity market benchmark, the MSCI USA Index, over the past five years:

As of 12/31/2016	MSCI USA Momentum Index	MSCI USA Index	Excess
5 Year Annualized	15.4%	14.6%	0.8%
5 Year Cumulative	104.5%	97.4%	7.1%

Source: MSCI. **This analysis contains back-tested index data. For more information see the end of this document. Index returns are for illustrative purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index. Past performance does not guarantee future results.**

Like all investment factors, non-optimal implementations of momentum strategies can result in poor performance or unintended investment outcomes. In particular, momentum strategies can be vulnerable to painful volatility. Naïve implementations of momentum can exhibit excessive turnover, which can erode alpha through increased tax and transaction costs over time. Careful consideration of how a momentum strategy is constructed can help investors reap the strategy's return potential and avoid its pitfalls.

Fact #1: Not All Trends are Equal

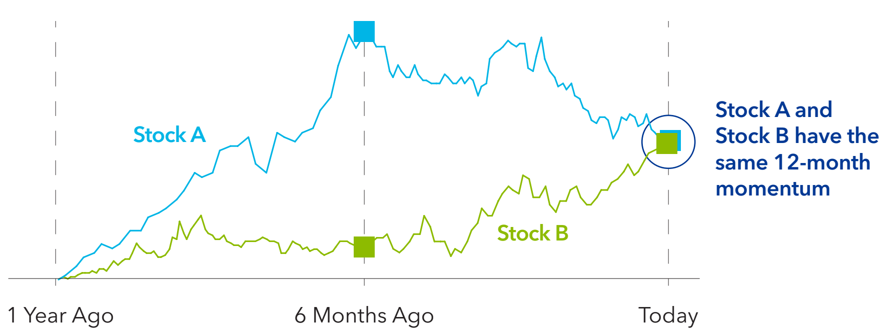
Like most trends, price trends don't last forever. Research has shown that assets that have been trending for six to 12 months have tended to continue to trend in the same direction for some time before generally reverting.[2] It is important to understand not only that a stock is trending, but also, how it is trending.

While some momentum strategies just focus on a 12-month trend, the magnitude of a six-month trend may be stronger than that of a 12-month trend or vice versa. We believe evaluating stocks based on both a six- and 12-month time horizon can help more consistently capture securities that are continuing to trend and avoid securities which are experiencing a shift in sentiment and reversion in performance.

We also prefer to evaluate price trends on a risk-adjusted basis: measuring how much risk is involved in generating a security's return in excess of the overall market. Using risk-adjusted return allows the strategy to assess a basket of stocks on an even playing field and prevents a momentum strategy from loading up on highly volatile names.

Consider Exhibit 2 below. Stock A is experiencing a reversion and is volatile. Stock B has been trending higher over the past 12 months and gathering momentum over the past six months on lower volatility than Stock A. We prefer Stock B in our momentum strategy.

Exhibit 2: Evaluating stock price trends on a risk-adjusted basis every six months can be a more effective way of capturing less volatile and strengthening price uptrends while avoiding stocks entering a downtrend.



For illustrative purposes only

Fact #2: Momentum Shouldn't Mean Excessive Turnover or Costs

Momentum investing is trend-following by nature, but an excessively short-term view can lead to high levels of turnover, boosting transaction costs and tax liabilities. The metrics employed to measure momentum as well as the frequency with which a strategy rebalances can impact turnover, transaction costs, and time-varying factor exposures.

To potentially reduce turnover and minimize transaction costs, a momentum strategy should consider long-term signals, like averaging both six- and 12-month metrics of price momentum. Determining the rebalancing frequency also requires a give and take between maximizing exposure to current trends, while trying to avoid overreacting to short-term noise. For example, the iShares® Edge MSCI Momentum Factor ETF (MTUM), which seeks to track the MSCI USA Momentum Index, stays attuned to current trends through a semiannual rebalancing in May and November.

In general, momentum strategies have relatively high levels of turnover, but careful construction rules can keep required trading to a reasonable level.

Exhibit 3: Over the past three years, iShares Edge MSCI USA Momentum Factor ETF has had minimal transaction cost and reasonable turnover.

Time Period	3 Years ended 12/31/2016 (annualized)
MTUM's Turnover	119.69%
MTUM Transaction Costs	0.01%

Source: BlackRock and MSCI. Turnover data reflects one-way turnover. **Past performance does not guarantee future results. For standardized performance, please see the end of this document.**

The higher level of turnover in Exhibit 3 is still reasonable for a momentum strategy, but it highlights the need for tax efficient trading: with the benefit of careful tax management and the natural tax advantages of an ETF structure, MTUM has never paid out a capital gain distribution.[3]

Fact #3: Opportunistic Rebalancing Matters

Changes in market sentiment can lead to sudden and occasionally deep drawdowns. Market inflection points – or a trend reversal – are a well-known Achilles heel of momentum strategies. Indeed, the momentum premium is in part a reward for bearing the risk of sharp, short-term reversals.

The inclusion of the faster six-month measure helps a momentum strategy recover more quickly by reacting to the market's new trend. Additionally, in most markets, a semiannual rebalance of the strategy has proven to keep momentum exposures sufficiently fresh.[4]

However, the benchmark rules followed by MTUM also allow for an opportunistic, off-cycle rebalancing if market volatility spikes. For example, an ad-hoc rebalancing in MTUM was triggered in September of 2015 when the market shifted from concerns around the Yuan's devaluation to a decidedly "risk-on" sentiment amid speculation of a delay in Fed action on interest rates.

Off-cycle rebalancing allows momentum strategies to adjust quickly to the new market environment and can help avoid a potentially painful reversal. In the period between the ad-hoc rebalance and the next scheduled rebalance, the stocks added to MTUM had a return of 10.1% compared to a return of 9.4% for the stocks that were deleted, resulting in an improvement in the fund's return.[5]

How to Implement a Momentum Strategy

Momentum strategies can be used tactically or as strategic allocations to help improve portfolio diversification. Many investors use sector funds as a way to express a short-term view: over-weighting pro-cyclical sectors to reflect bullish economic expectations, for example. Factor strategies can be used in the same way. For example, momentum strategies have tended to perform well when the economy is in expansion mode and risk-seeking sentiment is strong. Tactically increasing allocations to momentum strategies may be an effective way to take advantage of a strengthening economy.

Momentum strategies also can play a role in the long-term holdings of your portfolio. Consider that momentum has had a naturally low correlation with the "value" factor - momentum stocks that are trending up may not be cheap.[6] Some value stocks have low prices because their trends have gone in the opposite direction. Thus, adding a momentum strategy can help diversify a value-oriented portfolio.

Meanwhile, momentum strategies can potentially replace aggressive growth strategies as they deliver similar exposures -- by our estimates, many successful growth managers have harnessed momentum to drive a majority of excess returns.[7] In addition to potentially offering similar exposures, a momentum ETF can be an attractive alternative to an underperforming growth fund because it may provide more transparency and at a lower cost.

Conclusion

While the trend can be your friend, there are certain kinds of momentum strategies that may make them better friends to a portfolio than others. Consider momentum strategies like MTUM - a tax-efficient ETF, which incorporates both risk-adjusted six-month and 12-month price trends and that rebalances with a frequency that can help minimize transaction costs. For portfolios that are overweight value exposure, momentum exposures may add valuable diversification. Style box investors may also consider momentum strategies as alternatives to underperforming aggressive growth strategies.

1. Source: MSCI, as of Dec. 31, 2016
2. Source: Narasimhan Jegadesh, Sheridan Titman, (1993) "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency."
3. **Past distributions are not indicative of future distributions.**
4. Source: MSCI research
5. **Past performance does not guarantee future results.**
6. Source: MSCI research
7. BlackRock paper, Madhavan, Sobczyk, Ang (2016) "Estimating Time-Varying Factor Exposures with Cross-Sectional Characteristics with Application to Active Mutual Funds"

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This analysis contains back-tested index data. Index returns are for ilustrative purposes only. Indexes are unmanaged and one cannot invest directly in an index. Data for time periods prior to the index inception date is hypothetical and is provided for informational purposes only to indicate historical performance had the index been available over the relevant time period. Hypothetical data results are based on criteria applied retroactively with the benefit of hindsight and knowledge of factors that may have positively affected its performance, and cannot account for risk factors that may affect the actual fund performance. The actual performance of the fund may vary significantly from the hypothetical index performance due to transaction costs, liquidity or other market factors. This analysis uses back-tested index data from MSCI. Index methodology is available upon request.

Index Data as of 12/31/2016

Index Name	1-Year Returns	5-Year Returns	10-Year Returns	Index Launch Date	Dates of Back-tested Returns Used in Analysis	Associated iShares ETF
MSCI USA Momentum Index	5.13	15.38	7.70	2/15/13	1/1/2007 - 2/14/13	MTUM

Fund Performance as of 12/31/2016

Fund Name	Fund Inception Date	Gross Expense Ratio	1-Year Returns		5-Year Returns		10-Year Returns		Since Inception Returns	
			NAV	Mrkt Price	NAV	Mrkt Price	NAV	Mrkt Price	NAV	Mrkt Price
iShares Edge MSCI USA Momentum Factor ETF (MTUM)	4/16/13	0.15%	4.89%	5.00%	--	--	--	--	12.32%	12.35%

The performance quoted represents past performance and does not guarantee future results. Investment return and principal value of an investment will fluctuate so that an investor's shares, when sold or redeemed, may be worth more or less than the original cost. Current performance may be lower or higher than the performance quoted. Performance data current to the most recent month end may be obtained by calling toll-free 1-800-iShares (1-800-474-2737) or by visiting www.iShares.com.

Shares of ETFs are bought and sold at market price (not NAV) and are not individually redeemed from the Fund. Brokerage commissions will reduce returns. Market returns are based upon the midpoint of the bid/ask spread at 4:00 p.m. eastern time (when NAV is normally determined for most ETFs), and do not represent the returns you would receive if you traded shares at other times.

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There can be no assurance that performance will be enhanced or risk will be reduced for funds that seek to provide exposure to certain quantitative investment characteristics ("factors"). Exposure to such investment factors may detract from performance in some market environments, perhaps for extended periods. In such circumstances, a fund may seek to maintain exposure to the targeted investment factors and not adjust to target different factors, which could result in losses.

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