

Momentum: Our Reluctant Embrace

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IS MOMENTUM INVESTING DEAD? OR IS IT JUST PAINFUL?

September 7, 2016 Wesley R. Gray, Ph.D.

Sometimes even the best evidence-based active investment strategies can create a formidable challenge to investors seeking to exploit them.

Case in point — momentum investing.

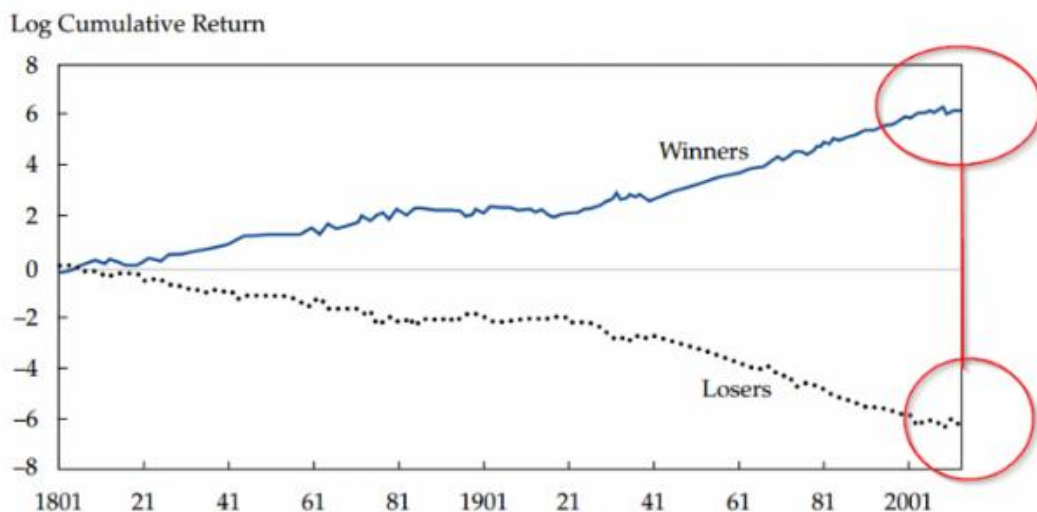
On the one hand, stock-selection momentum strategies ... can have the potential to generate excess expected returns over the long run; on the other hand, these strategies sometimes generate massive amounts of investor pain when they inevitably go through long bouts of poor relative performance. It's a kind of quid pro quo: in order to access the potential gain, you must be willing to accept the potential pain.

But how much momentum pain can one expect?

Among the academic anomalies, the momentum effect suffers bouts of horrific underperformance (i.e., “crashes”) that are legendary among academics and practitioners alike. The relative underperformance is even worse than those associated with deep value strategies. But relative “underperformance” is an abstract term. Just how bad can the “pain and anguish” associated with momentum actually get?

In a remarkable paper recently published in the FAJ, “Two Centuries of Price-Return Momentum,” by Chris Geczy and Mikhail Samonov, the authors examine an extremely long time series to see just how painful things have gotten in the past for momentum investors. ... The paper conducts an incredible “out of sample” back test on the so-called cross-sectional momentum phenomenon, which is traditionally measured via a L/S stock portfolio that goes long winners and short losers.

Figure 1. Cumulative Returns to Momentum Winner and Loser Portfolios, 1801–2012



Notes: This figure shows cumulative log scale excess returns of winner and loser portfolios. For each month t , the price-return momentum strategy uses top and bottom thirds of P_{t-2}/P_{t-12} to designate winners and losers. Momentum returns ($W - L$), $r_{mo,t}$ and market returns, $r_{ma,t}$ are equally weighted and rebalanced monthly. Excess return is defined as the return to the momentum portfolio minus the market return.

10 years of underperformance. Are you prepared?

First, let's look at the cumulative returns associated with the excess return performance of winners and losers. Of course, this chart shouts the question: "Why isn't everyone doing this?"

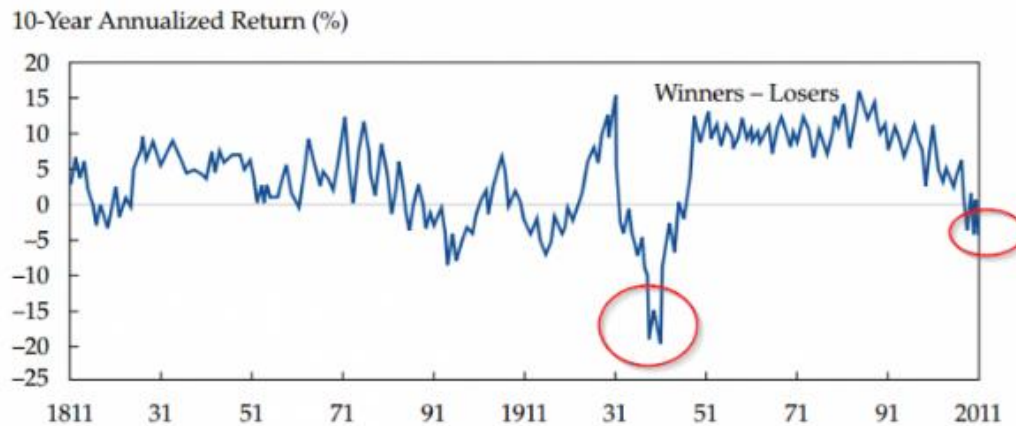
If you've read this blog enough you already know the answer as to why everyone else isn't doing this...IT SUCKS. But let me qualify that statement. It sucks to actually own this portfolio in a world where relative performance inflicts pain and we invest on a time scale that is day-to-day, week-to-week, and month-to-month. The long-horizon chart above doesn't highlight the actual short-term pain associated with sticking to a strategy that lags the broad index for multiple years. ...

So is momentum investing dead?

We hear a lot of investors talking about the death of various active strategies because they must have "stopped working." And while it is possible that a strategy can stop working, there is a certain irony to these claims — they can actually reinforce why a strategy will be sustainable in the future. ...

Prior to 2009, the only major long-term loser period for a long/short momentum strategy was during the Great Depression era, when the strategy had 10 years of compounded negative returns (and boy was it ugly!). The chart below shows 10-year rolling returns for a long/short momentum strategy, and demonstrates how painful it would have been to be a momentum investor in those days:

Figure 3. Ten-Year Annualized Returns to Momentum W – L Portfolio, 1801–2012



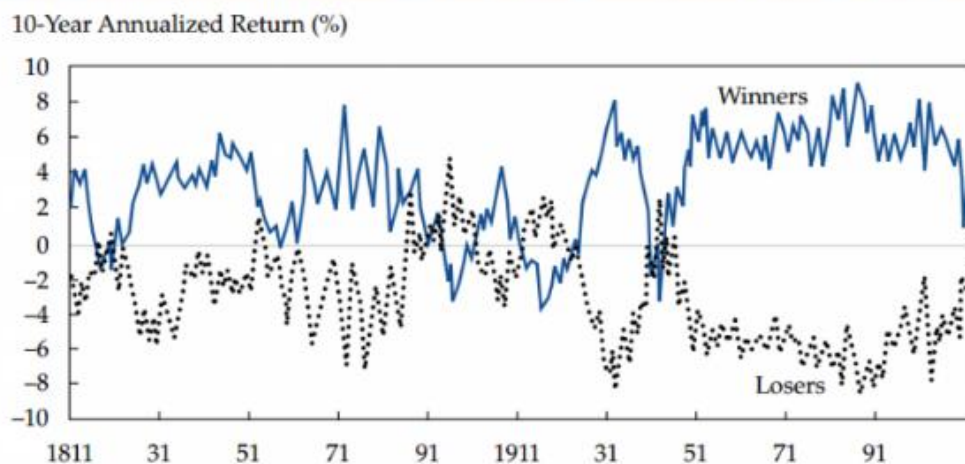
Notes: This figure shows 10-year rolling returns of (W – L) portfolios. For each month t , the price-return momentum strategy uses top and bottom thirds of P_{t-2}/P_{t-12} to designate winners and losers. Momentum returns (W – L), $r_{mo,t}$ and market returns, $r_{ma,t}$ are equally weighted and rebalanced monthly.

Ouch! That was a painful time to be a momentum investor. Yet, a decade of underperformance is not especially rare for momentum — as this paper highlights, it is actually pretty common.

Note that in three separate decades (ending 1890, 1900, and 1920) long/short momentum portfolios generated negative returns.

The last decade has also been rough for long/short momentum. From January 2002 to December 2012, the annualized spread between long and short portfolios was -2.1%. The chart below shows how 10-year rolling spreads collapsed in recent years (and went negative by 12/2012) and breaks the results out by the long leg and the short leg of the portfolio. Similar to episodes of L/S underperformance in the past, momentum pain is caused when buying winners stinks and buying losers turns out to be a winners game!

Figure 2. Ten-Year Annualized Returns to Momentum Winner and Loser Portfolios, 1801–2012



Notes: This figure shows the 10-year rolling excess returns of winner and loser portfolios. For each month t , the price-return momentum strategy uses top and bottom thirds of P_{t-2}/P_{t-12} to designate winners and losers. Momentum returns $(W-L)$, $r_{mo,t}$, and market returns, $r_{ma,t}$, are equally weighted and rebalanced monthly. Excess return is defined as the return to the momentum portfolio minus the market return.

The figure above also highlights that a long-only momentum investor (blue line in the “figure 2” above) will also have to suffer periods of long underperformance to reap the benefits of momentum. There are multiple periods of 10-year relative underperformance for a long-only momentum investor. That really stinks, but for those with the discipline to stick with the program, they were rewarded with compound annual growth rates that would put an investor in very rare company.

Momentum probably isn’t dead, but momentum investing IS painful

Saying that cross-sectional momentum — the undisputed king of market anomalies identified by academic researchers — is “dead,” based on the fact the strategy has underperformed over the past 5-10 years, is akin to saying to that Michael Phelps is a terrible swimmer because he didn’t win an olympic medal in one of his races. Momentum is the research-consensus champion when it comes to the stock anomaly race, but that doesn’t mean it wins the race all of the time. In fact, momentum has historically gotten its face ripped off many times over relative to the passive buy and hold market. But horrific relative pain is something to be expected for robust “open secret” anomalies. Trying to arbitrage long duration anomalies like momentum requires a discipline and dedication that are extraordinary and uncommon and therefore, we can expect that these strategies will be successful in the future (at least relative to strategies that currently have Sharpe ratios of 3+ and never lose). In contrast, if a strategy mints money every day relative to the market and never creates pain, there can never be a sustainable gain. These “too good to be true” situations lead to rich proprietary trading groups, Madoff scams, hidden tail risks, and hyper-active portfolio transitions — none of these outcomes are positive for the long-term taxable investor that doesn’t run a super-computer filled room with math and physics PhDs trading their own capital.

But we’ll leave the last words to the authors:

"The most recent underperformance [of momentum] raised practical questions about the “anomalous outlier” assumption and what the actual distribution of momentum profits is, which by their nature have influenced and will continue to influence theory about this powerful characteristic in returns. By extending our analysis of equity momentum returns to 1801, we have created a more complete picture of the potential outcomes of momentum strategy returns. In doing so, we discovered seven additional decade-long negative periods before the Great Depression."

Bottom line: Historical profits associated with momentum are real and anyone denying this fact may want to reconsider the broad body of research on the topic. However, on the flip side, those who claim that momentum is “easy” are denying the reality that active momentum investing is quite possibly the most painful anomaly to exploit. (not to mention the scalability might be limited, but this is another debate).

Editor note: one can replace “momentum” with “value” throughout the post without loss of integrity.

ABOUT THE AUTHOR

Wesley R. Gray, Ph.D.

After serving as a Captain in the United States Marine Corps, Dr. Gray received a PhD, and was a finance professor at Drexel University. Dr. Gray’s interest in entrepreneurship and behavioral finance led him to found Alpha Architect. Dr. Gray has published three books: EMBEDDED: A Marine Corps Adviser Inside the Iraqi Army, QUANTITATIVE VALUE: A Practitioner’s Guide to Automating Intelligent Investment and Eliminating Behavioral Errors, and DIY FINANCIAL ADVISOR: A Simple Solution to Build and Protect Your Wealth. His numerous published works has been highlighted on CBNC, CNN, NPR, Motley Fool, WSJ Market Watch, CFA Institute, Institutional Investor, and CBS News. Dr. Gray earned an MBA and a PhD in finance from the University of Chicago and graduated magna cum laude with a BS from The Wharton School of the University of Pennsylvania.

Our thoughts:

We are bottom feeders. Our primary stock selection system requires heavy Insider Buying, lowest decile Valuation and avoids stocks with negative Earnings Estimate Trends. High-momentum stocks rarely have Insider Buying or meet our Value criteria. IVE System opportunities usually occur when the market enters correction or bear territory. Our typical allocation for clients focused on Capital Appreciation or Income for IVE System and Insider Buying Theme stocks is 40%. That takes time, so new clients are placed in Transitional Funds that are sold off when individual stock opportunities emerge.

We believe in a Quantitative, Factor driven approach to investing. All of our clients with IRAs are invested in OBIOX for Foreign Small/Mid Cap exposure. OBIOX’s process includes Momentum. Our clients transitioning to Capital Preservation have a Core holding in AQR’s QMNIX, a Global Long/Short OEF whose 3 Factor approach includes Momentum. So, should Momentum, which appears to have a synergistic relationship with Value, be a Core holding for Foreign exposure and/or a Transitional holding for Domestic allocation? Until recently, the answer was no. High turnover with Momentum favors ETFs over OEFs, and the available ETFs were more tilt toward than embrace of the Factor. Add in poor relative performance, and investors were better off waiting. However, the proliferation of Smart Beta Funds over the last few years has changed the landscape.

Alpha Architect added both Domestic (QMOM) and Foreign (IMOM) Momentum ETFs to compliment their existing Value ETFs (QVAL for Domestic, and IVAL for Foreign stocks). IVAL was already a Core holding and QVAL a Transitional Fund for Capital Appreciation accounts. Despite lingering liquidity concerns, IMOM is now considered a Core holding. However, for now we prefer MTUM as a Transitional Domestic Momentum ETF, due to its current superior relative performance, lower management fee (.15% vs. .79% for QMOM) and far higher liquidity (1.77 bil Total Assets vs. 23.45 mil), as shown below. The S&P 500’s performance (orange line) has been added to Morningstar’s chart for comparison:

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Quote **Chart** ETF Analysis Distributions Performance Ratings & Risk Portfolio Fees & Expenses Tax Ownership Filings

Last Price \$77.69	Day Change ↓ -0.37 -0.47%	NAV 77.72	Open Price 77.95	Day Range 77.61-77.96	52-Week Range 63.92-78.78	12-Mo. Yield 1.01%	Total Assets 1.77 bil USD	Expenses 0.15%
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As of Thu 09/08/2016 4:00 PM EST | USD

Intraday Indicative Value
\$77.72 ↓ -0.38 | -0.49%

As of Thu 09/08/2016 6:59 PM EST | USD

Prem/Discount -0.03%	Volume 648589	Avg Vol. 244,923	SEC Yield% 1.06	Bid/Ask/Spread 75.69/ 79.70/ 5.16%	Category Large Growth
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A cost-efficient momentum strategy.

by Alex Bryan 8/2/2016

Suitability

iShares Edge MSCI USA Momentum Factor MTUM offers low-cost exposure to stocks with strong recent performance. It is based on the premise that recent relative performance tends to persist in the short term. There is strong evidence for this effect in nearly every market studied over long horizons. It could arise because investors may under react to new information in the short run and herd into a trade after a trend is established. This well-crafted strategy efficiently takes advantage of this effect and should offer attractive performance against its large-growth Morningstar Category peers over the long run.

The fund targets large- and mid-cap stocks with strong risk-adjusted price performance over the past seven and 13 months, excluding the most recent one. This focus on risk-adjusted performance may help moderate the fund's volatility. It also may give a better signal of directional price movements. Traditional momentum strategies studied in the academic literature do not apply this risk adjustment. The fund weights its holdings according to both their market capitalization and risk-adjusted momentum to strengthen its momentum orientation, while tilting toward the largest names. The resulting portfolio lands squarely in large-growth territory. It should effectively complement value-oriented holdings because momentum tends to work well when value doesn't, and vice versa.

In order to mitigate turnover, the fund only reconstitutes twice a year and applies a wide buffer around the stocks it targets. These adjustments reduce the fund's style purity, especially since momentum can shift from month to month. But they also improve cost efficiency. The fund can still experience high turnover. In the fund's most recent fiscal year, turnover was 106%. However, it has not yet distributed a capital gain. The exchange-traded fund structure allows the managers to transfer holdings out of the portfolio through a nontaxable in-kind transaction with the fund's authorized participants.

While the fund has a limited record, its approach has worked well so far. From its inception through June 2016, it outpaced the Russell 1000 Growth Index by 1.6 percentage points annually, with comparable volatility. This was largely due to its overweighting of the healthcare sector, and differences in stock exposure within the technology, industrial, and consumer cyclical sectors.

Fundamental View

In theory, investors should arbitrage any predictable price pattern away. Yet, simple momentum strategies have historically worked (on paper) in nearly every market studied. A compelling explanation is that investors may anchor their investment thesis to old information and react slowly to new information, causing prices to adjust more slowly than they should. For instance, event studies have demonstrated that stocks which beat earnings expectations have historically tended to offer excess returns for many weeks after the announcement. Similarly, stocks that miss expectations have tended to continue to underperform.

Investors may also be reluctant to sell losers in the hopes of breaking even and quick to sell winners in order to lock in gains. This behavior could also prevent stock prices from quickly adjusting to new information. Once a trend is established, investors may pile onto a trade or extrapolate recent results too far into the future, pushing prices away from their fair values, which may contribute to the long-term reversals underlying the value effect (the tendency for stocks trading at low valuations to outperform).

While momentum strategies have a good long-term record, they may struggle during periods of high volatility or market reversals, as momentum is less likely to persist during those periods. As a result, the fund can underperform when it is most painful. For instance, its benchmark lagged the MSCI USA Index by 3.8% during 2008. Heading into a bear market, momentum strategies tend to have an overweighting in riskier stocks, which may underperform during a correction. After a market downturn, they tend to load up on defensive stocks, and they may miss out on some of the upside during a sharp recovery.

In order to improve performance when volatility spikes, the fund's benchmark rebalances in between the scheduled reconstitution dates if market volatility significantly increases. When this rebalancing is triggered, the index focuses on more-recent momentum to construct the portfolio. This adjustment may help, but it isn't a panacea. There is also a risk that momentum may become less profitable as more investors attempt to take advantage of it. That said, the momentum effect hasn't gone away even though it was first published in the academic literature in 1993. Like any strategy, momentum can underperform for years. This risk may limit arbitrage and allow momentum to persist.

The fund's moderate style-tilt takes some juice out of the strategy. However, it still captures the essence of the style at a lower cost than if it pursued a more aggressive rebalancing approach. It has a good chance of beating the market if momentum continues to pay off. But even if momentum doesn't pan out, the fund's low expense ratio doesn't hurt performance much.

The portfolio includes around 120 names, including Amazon.com AMZN, Facebook FB, and Visa V. The composition of the portfolio and its sector weightings can change dramatically over time. Relative to the Russell 1000 Growth Index, the fund currently has greater exposure to the utilities and consumer defensive sectors and less exposure to consumer cyclical and technology stocks. There are no limits on the fund's sector tilts.

Portfolio Construction

The fund tracks the MSCI USA Momentum Index, which draws stocks from the large- and mid-cap-oriented MSCI USA Index. In May and November, MSCI calculates the ratio of each stock's price returns over the past 13 and seven months (excluding the most recent one) to its volatility over the past three years. There isn't a great theoretical reason to use price returns rather than total returns, but it shouldn't make a big difference. The one-month exclusion addresses the tendency for performance to reverse over that horizon. The index averages these two scores and selects the highest-scoring stocks until it reaches a fixed target number of stocks. In order to reduce turnover, new constituents must rank in the top half of the index's target number of securities to get priority over stocks that were previously in the index. Stocks already in the index only have to rank within 1.5 times the target number of securities to remain in the index. Holdings are weighted according to both the strength of their risk-adjusted momentum and their market capitalization, subject to a 5% cap. In addition to the scheduled semiannual reconstitution, MSCI may rebalance the index when the month-over-month change in the trailing three-month volatility of the market is larger than the 95th percentile of such monthly changes historically. When this occurs, the index only uses each stock's seven-month risk-adjusted momentum score.

Fees

The fund's 0.15% expense ratio makes it a bargain, giving it a very low-cost hurdle to overcome. Over the trailing 12 months through June 2016, the fund has lagged its benchmark by 16 basis points.

Alternatives

AQR Momentum AMOMX (0.45% expense ratio) is a solid strategy, but it may be less tax-efficient than MTUM. This fund ranks the largest 1,000 U.S. stocks by their momentum characteristics and targets the highest ranking third. It refreshes the portfolio every month, but it applies an adjustment to smooth out changes. Stocks receive weightings according to both the strength of their momentum and market capitalization. Overall, AMOMX has exhibited a slightly stronger momentum tilt than MTUM. While AQR Momentum's \$5 million minimum investment may seem a little steep, there is no minimum investment for investors who gain access to the fund through a financial advisor.

PowerShares DWA Momentum ETF PDP (0.63% expense ratio) takes a slightly different approach. It targets large- and mid-cap stocks with the best relative strength and rebalances its portfolio quarterly. PDP weights its holdings according to their relative strength, which tilts the portfolio toward mid-cap stocks. Historically, PDP has been less sensitive to the standard momentum factor documented in the academic literature than MTUM and AMOMX. Therefore, it's difficult to justify its higher expense ratio.