Factor Diversification

From Morningstar:

The Case for Multifactor Funds

Ben Johnson, CFA 15 Aug 2018

The case for multifactor funds is essentially the case for diversification, which Nobel Prize winning economist Harry Markowitz has described as the only “free lunch” in investing. Investors shouldn’t put all their “eggs” in one factor. But just because the argument for factor diversification is simple doesn’t mean that selecting and sticking with a multifactor strategy is easy. In fact, in light of the proliferation of multifactor funds, choosing from the now-expansive menu is becoming more difficult by the day.

Multifactor Funds Are Multiplying
The number of multifactor funds has mushroomed. As of May 31, 2018, there were 300 U.S.-domiciled index mutual funds and exchange-traded funds that were assigned the multifactor strategic-beta attribute in Morningstar’s database. [1] A total of 199 of those 300 were launched in the preceding five years. Assets in these funds have grown commensurately. As of the end of May 2018, their collective assets under management stood at $63.9 billion. Ten years ago, this collection of funds collectively held just $2.2 billion of investors’ money. Much of this growth has been organic. Over the decade through May 2018, these funds amassed an estimated $49.3 billion in net new flows.

All by Myself
Academics and practitioners have documented hundreds of individual factors, though few are widely accepted as being credible. [2] By our count, the ones that best hold water amount to five: value, momentum, size, quality, and low volatility. Each of these factors has been vetted by multiple scholars and professional investors. Many are present across asset classes and in different markets around the world. They have been subsequently tested out of sample and still pass muster. They are, in a word, legit.

Exhibit 1 shows the performance of some of these factors in a long-only implementation as represented by their corresponding variants of the MSCI World Index during the past 15 years. Over this span, each of these indexes has outperformed its market-cap-weighted parent. Furthermore, all but one of them also produced superior risk-adjusted returns, as measured by Sharpe ratio. Are these factors a free lunch? Hardly.

Exhibit 1 Trailing 15-Year Returns for MSCI World Index and Factor Variants

	Return (%)	Std Deviation (%)	Sharpe Ratio	Tracking Error (%)
MSCI World Small Cap	11.76	18.15	0.67	5.84
MSCI World Momentum	9.91	15.19	0.65	6.94
MSCI World Quality	9.77	12.97	0.71	4.12
MSCI World Minimum Volatility	9.14	11.02	0.77	6.81
MSCI World Value Weighted	8.72	16.66	0.53	2.61
MSCI World	8.62	15.18	0.56	0.00

Source: Morningstar Direct. Data from May 2003 through April 2018. Tracking error calculated relative to the MSCI World Index.

What Exhibit 1 doesn't adequately depict is the cyclicality of these factors' performance. While each of the factor variants of the MSCI World Index delivered better absolute—and in most cases risk-adjusted—performance relative to their parent benchmark during the period in question, it was not smooth sailing. This is apparent in Exhibit 2, which is a "quilt" of these factor indexes' calendar-year returns over the past 10 years.

Exhibit 2 Annual Returns for MSCI World Index Factor Variants

Source: Morningstar Direct.

Each of these factors has and will continue to experience its own unique cycles. Stretches of marketbeating performance will invariably be followed by prolonged droughts. For example, value—as defined here by the corresponding variant of the MSCI World Index—is in the midst of a decade-long dry spell during which it has lagged the market by a wide margin.

One piece of data that is also useful as a crude proxy for this cyclicality is each factor's tracking error relative to its parent index. The further, on average, the performance of each factor index strays from that of its parent, the more discomfort an investor might experience. If past behavior is any guide (I think it is), then discomfort will often lead investors to abandon sound strategies at precisely the wrong time.

Owning a proven factor on a stand-alone basis has the potential to deliver better risk-adjusted returns relative to owning the market, but it is hardly a free lunch. Bouts of underperformance can lead to buyer's remorse, which in turn can create the risk of bad investor behavior.

Better Together

Value, momentum, size, quality, and low volatility are members of the factor "A-Team." ... Each member of this factor A-Team contributes its own unique and complementary talents in a team setting. The key to getting the chemistry right is sensible diversification—pairing factors that zig with teammates that zag under a given set of market conditions.

Exhibit 3 is a matrix that shows the correlations of the excess returns among the factor variants of the MSCI World Index that are also featured in Exhibits 1 and 2. It is apparent that some factors, measured strictly in terms of their historical correlations, are more complementary than others. Value and momentum work like peanut butter and jelly, while quality and minimum volatility are more like peanut butter and cashew butter. (Within academia there is currently a debate as to whether Fama and French's adding the Quality Factor, via Profitability and Investment, in 2015 to their three-factor model subsumes the Low Volatility Factor. While their five-factor model doesn't include Momentum, Cliff Asness, Fama's former PhD student and co-founder of AQR Capital has convincingly made the case for its inclusion.)

Exhibit 3 Correlations of Excess Returns

	Value Weighted	Minimum Volatility	Quality	Momentum	Small Cap
MSCI World Value Weighted	1.00	—	—	—	—
MSCI World Minimum Volatility	−0.49	1.00	—	—	—
MSCI World Quality	−0.72	0.51	1.00	—	—
MSCI World Momentum	−0.59	0.26	0.36	1.00	—
MSCI World Small Cap	0.27	−0.32	−0.48	−0.02	1.00

Source: Morningstar Direct. Data from May 2003 through April 2018. Excess return calculated versus the MSCI World Index.

Diversifying across complementary factors makes sense. Doing so will mitigate the aforementioned cyclicality associated with owning any one factor in isolation. While this could result in inferior long-term results relative to owning the best-performing factors in isolation, no one knows what those factors will be on an ex ante basis and few have the stomach to stick with them for decades. Perhaps the single most compelling reason to opt for a multifactor strategy is that it will minimize the biggest risk of all: that investors will bail on a factor, manager, or strategy when it experiences an inevitable period of underperformance.

What Matters

For most investors, owning a multifactor ETF is preferable to trying to build a do-it-yourself multifactor model, combining single factors on one's own. The "do-it-for-me" approach will likely be more efficient from a cost, tax, and behavioral perspective.

Combining stand-alone factors in a multifactor format is a sensible strategy to the extent that the factors in consideration are 1) credible, 2) well-constructed, and 3) combined in such a way as to improve the overall risk/reward profile of the resulting portfolio relative to owning any of the factors in a stand-alone format.

Portfolio construction matters. It is vital that investors parse the specifics of these strategies to understand their selection universe, how they choose stocks, how they weight them, and the constraints they put in place. Simplicity is likely to trump complexity. The more opaque and overwrought the process, the more likely it is a product of back-testing alchemy and the more likely it may be tweaked should its live performance not live up to its back-tested track record—a record that never looks bad.

Costs also matter. Many of these funds, while competitively priced versus actively managed peers, are more expensive relative to ETFs tracking broad, cap-weighted benchmarks. High fees will ultimately erode long-term gains and should be examined carefully.

Expectations might matter most. These funds are no magic elixir. Many have limited track records. No matter how sensible their process may seem, nor how low their fees, there's no guarantee they will deliver better risk-adjusted returns than a plain-vanilla cap-weighted index fund over a full market cycle. Much like single factors or good active managers, these funds will experience their own performance cycles (albeit potentially more-muted ones). Ultimately, investors' ability to reap the prospective rewards these funds might offer is positively correlated to their ability to stick with them through their inescapable ups and downs.

[1] This figure represents the global universe of index-tracking multifactor mutual funds and ETFs and does not include quantitative active equity funds.

[2] Harvey, C.R., Liu, Y., & Zhu, C. 2015. "…and the Cross-Section of Expected Returns." //ssrn.com/abstract=2249314 or // dx.doi.org/10.2139/ssrn.2249314

Our thoughts

As shown above, MSCI's poorest performing Factor index over the past 15-years was their World Value Weighted. However, as we shared on 8-10-16 in "MSCI's Factor Indexes", which is available on our website:

MSCI's Value Weighted index results from dividing their universe in half between Value and Growth based on "book value to price, 12-month forward earnings to price and dividend yield." The Valuation metric(s) used matters. "Book value to price" is a holdover from the original Fama French 3 factor model and has historically been one of the least effective Valuation Metrics (UPDATE ON THE VALUATION METRIC HORSERACE: 2011-2015 April 6, 2016 Wesley R. Gray, Ph.D.). In their November 2011 paper titled "Analyzing Valuation Measures: A Performance Horse-Race over the past 40 Years", Wesley Gray and Jack Vogel found that "High E/M (earnings yield) and low B/M stocks generate the lowest average annual gross returns ... with no alpha." ... Portfolio construction (HOW PORTFOLIO CONSTRUCTION AFFECTS VALUE FUNDS May 13, 2016 Jack Vogel, Ph.D.) also matters. Using EBIT/TEV as the Valuation Metric the table below shows "the compound annual growth rates for the various strategies from 1970-2015 for equal-weighted portfolios. The monthly rebalanced 50 stock value strategy earns 16.43% CAGR, whereas the annually rebalanced 500 stock portfolio earns 13.86% CAGR. It is important to note that all of these results are GROSS of transaction costs. There is a clear relationship between absolute returns and the number of firms, the holding period, and portfolio weightings. In general, it appears that 1) a more frequent rebalance, 2) a more concentrated portfolio, and 3) equal-weighting seem to increase returns, and do so independently."

EW CAGRs								
	Number of Stocks Selected each month							
Holding Period for each Stock	50	100	150	200	250	300	500	Universe
1	16.43%	16.33%	16.29%	15.81%	15.52%	15.11%	14.05%	11.22%
2	15.95%	15.79%	15.77%	15.38%	15.14%	14.89%	13.91%	11.22%
3	15.87%	15.60%	15.58%	15.16%	15.03%	14.79%	13.87%	11.22%
4	15.41%	15.38%	15.34%	15.01%	14.88%	14.70%	13.86%	11.22%
5	14.92%	15.04%	15.06%	14.76%	14.70%	14.56%	13.80%	11.22%
6	14.57%	14.79%	14.82%	14.54%	14.54%	14.44%	13.77%	11.22%
7	14.32%	14.60%	14.70%	14.51%	14.46%	14.37%	13.77%	11.22%
8	14.28%	14.57%	14.66%	14.46%	14.44%	14.36%	13.79%	11.22%
9	14.31%	14.54%	14.62%	14.42%	14.41%	14.33%	13.81%	11.22%
10	14.42%	14.58%	14.62%	14.41%	14.43%	14.33%	13.84%	11.22%
11	14.45%	14.58%	14.61%	14.43%	14.43%	14.33%	13.86%	11.22%
12	14.53%	14.61%	14.62%	14.42%	14.42%	14.33%	13.86%	11.22%

Our Website details the importance of diversifying across Factors. From Corey Hoffstein's January 11, 2016 **If you're going to sin, sin systematically**:

Asset classes and strategies will always ebb and flow through periods of out and underperformance. There is no holy grail in investing. No strategy will beat the market year in and year out. It just won't happen. ...

Recently, Clifford Asness, Antti Ilmanen, and Thomas Maloney of AQR wrote a piece for *Institutional Investor* titled *Market Timing Is Back in the Hunt for Investors*.

In the introduction they attribute a quote to the late Paul Samuelson, who during the technology bubble of 1999-2000 said something along the lines of, "Market timing is an investing sin, and for once I recommend you sin a little."

The rest of their article provides ample evidence for the use of value- and momentum-based market timing methodologies within a broader asset allocation framework.

We would add to this statement that *if investors are going to sin, they should do so systematically.*

One of our favorite examples of sinning with consistency is Warren Buffett. In an interview with Bloomberg TV, Cliff Asness had this to say regarding Warren Buffett and his phenomenal success:

"I used to think being great at investing long-term was about genius. Genius is still good, but more and more I think it's about doing something reasonable, that makes sense, and then sticking to it with incredible fortitude through tough times.

Of course [AQR] found [Warren Buffet] was fantastic – but not quite as fantastic. His track record was phenomenal…but human phenomenal.

What was beyond human was him sticking with it for 35 years and rarely, if ever, really retreating from it.

That was a nice little lesson that you have to be good, even very good, but sticking with it and not getting distracted is much more the job."

In 2015, Warren Buffett's Berkshire Hathaway A shares underperformed the S&P 500 by nearly 14%. Remember 2009 when the market rallied after its significant 2008 losses? Those same A shares underperformed the market by more than 20%.

Has Warren lost his magic touch? Probably not. He was up 27% in 2014 when the market was only up 13%.

His *style*, however, can sometimes be uncomfortably idiosyncratic. But that's nothing new. Any time you go off benchmark, that's going to be the result. To significantly out-perform, you have to be willing to be significantly different.

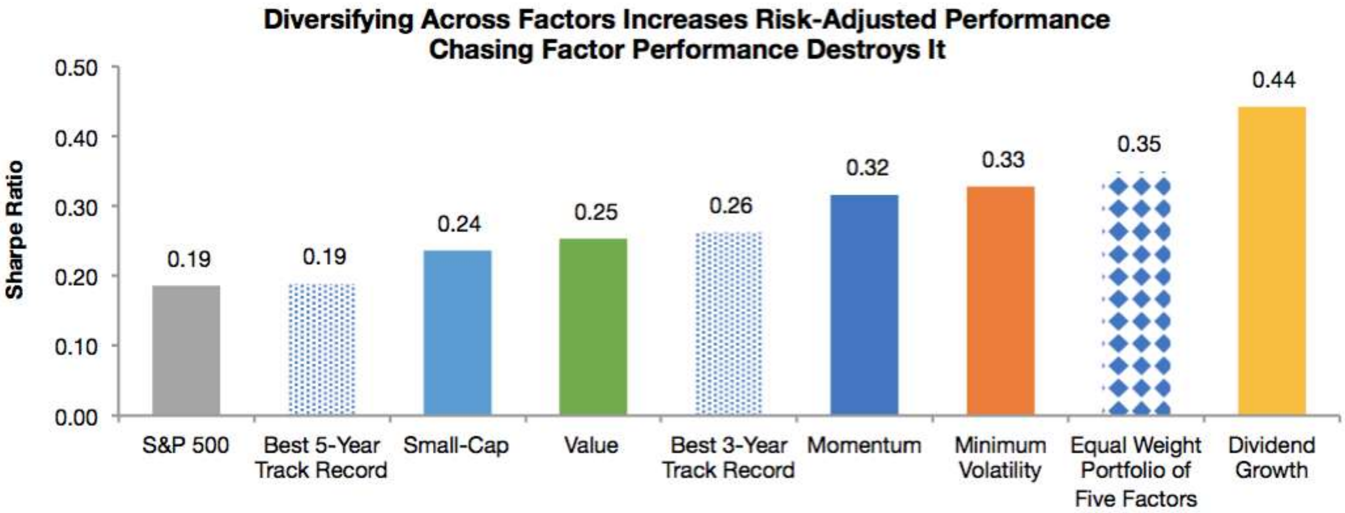
We can take a look at how different investment styles have performed throughout the years to see that they can go through short-term periods of significant under-performance.

Value is a striking example in 2015. Most investors believe that buying cheap stocks will help them out-perform the broad market over long horizons: but "cheap" significantly under-performed the market this year. We doubt this will cause broad investor sentiment to change from the belief that value will still out-perform in the long run, but it may cause some investors to take some value exposure off the table.

And this is a problem, because investing is a team sport. A manager needs to have the conviction to stick with his approach, but it is equally important that the client has the discipline to stick with the manager.

Continuing with the Buffett theme, consider that an investor that sold Berkshire every time it underperformed the U.S. equity market for a year would have only captured about a quarter of Buffett's gains.

The same is true for almost any of the broad factor approaches above. While each of the five factors outperformed domestic equities over the full period, an investor who constantly rotated to the approach with the best 3- or 5- year track record would have eroded most, if not all, the benefit.



The above chart reflects Sharpe Ratio for these different investment strategies/styles from 1997 through 2015.

Instead of trying to figure out which style was the best, simply equally diversifying across all of them helped achieve their long-term out-performance while limiting exposure to short-term relative volatility. ...

... long-term evidence still suggests that there are many active approaches that can be used by investors to achieve superior risk-adjusted returns.

The key, of course, is having the discipline to stick with those approaches when they under-perform in the short-run. At the very least, investors must not be tempted to chase what has been working well recently, as this consistently erodes any performance benefit from the active strategy.

Finally, diversification once again proves to be one of the simplest techniques investors can apply to tilt odds in their favor. Whether across equity styles or asset allocation methods, diversification can help investors achieve the long-term relative out-performance offered without necessarily suffering the full brunt of short-term underperformance.