# Index Fund Advisors' Turn

The following analysis was prepared for a prospective client who passed away last week at the age of 56. Although Index Fund Advisors' book and video was published in 2015, a careful review of their website indicated that the advise contained therein hasn't changed:

August 27, 2018

Thank you for sending me Mark T. Hebner's "Index Funds - The 12-Step Recovery Program for Active Investors." The book and video contain a lot of useful information for my class and provide an excellent opportunity to discuss indexing more in depth. Below are my four biggest takeaways, followed by brief thoughts on each of his 12 steps.

## Tiptoeing around Factors

Here is a key chart from "Your Complete Guide to Factor-Based Investing", one of the texts I use in my Advanced Topics in Investments class at the University of Oklahoma. Across the top are 6 Factors: Beta (aka the market return), Size, Value, Momentum, Profitability, and Quality. The first row shows the average annual percentage return they provided in Long/Short portfolios from 1927 to 2015. The second row is their Sharpe ratio (higher is better). The remaining rows show what percent of the time the Premium they provide is positive.

| | Beta | Size | Val. | Mom. | Prof. | Qual. |
|---|---|---|---|---|---|---|
| Annual Premium | 8.3 | 3.3 | 4.8 | 9.6 | 3.1 | 3.8 |
| Sharpe Ratio | 0.40 | 0.24 | 0.34 | 0.61 | 0.33 | 0.38 |
| 1 year | 66% | 59% | 63% | 73% | 63% | 65% |
| 3 year | 76% | 66% | 72% | 86% | 72% | 75% |
| 5 year | 82% | 70% | 78% | 91% | 77% | 80% |
| 10 year | 90% | 77% | 86% | 97% | 85% | 89% |
| 20 year | 96% | 86% | 94% | 100% | 93% | 96% |

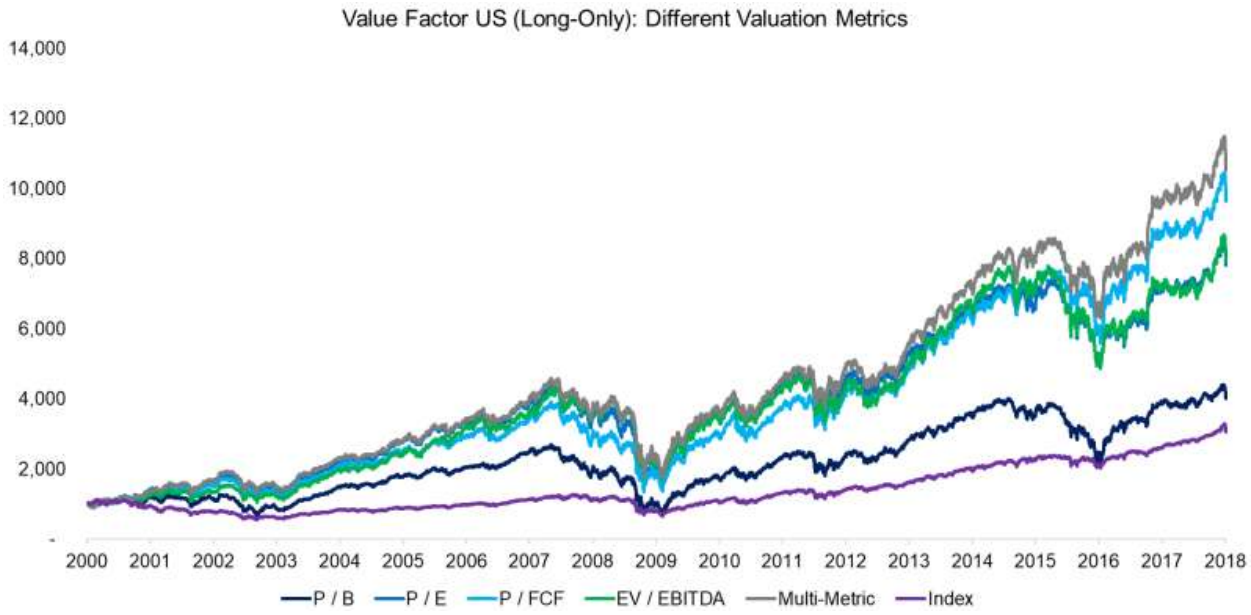
The strategy the author and his firm "Index Fund Advisors" (IFA) employ dips its toe into the Size and Value Factors, but this "tilting" will at best only capture a fraction of their premiums, and ignores the Momentum and other Factors entirely.

## Out of date research

The author and his firm continue to use Fama and French's 3 Factor model (Beta, Size, and Value) despite it being published in 1993. In 2014, Fama and French added an additional 2 Factors (Profitability and Investment, both of which fall under the jurisdiction of Quality) to their model, yet the author and his firm have not updated their approach. They also don't address the significant academic literature outside of Fama and French that documents Factors such as Momentum. Using an evidence based approach (that the author highlights as one of the fundamental characteristics to look for in an Investment Advisor) means staying on top of the academic literature.

Further, in staying purely with Fama and French's 3 Factor model, the author misses the importance of how a Factor is constructed. Fama and French use the Price/Book ratio to measure value. However, there is significant

academic evidence that indicates Price/Book is one of the weakest measures of value, and to capture Value one is better off investing in the cheapest decile. Another way to capture Value is to use multiple metrics to verify that a stock is in fact a Value play. The graph below from Nicolas Rabener's "Value Investing Portfolios are Not Dead, But Some Have Done Better than Others" uses deciles for each of the metrics:




## Being tied to DFA's Funds

I suspect the primary reason that the author sticks with the 3 Factor model and merely "tilts" towards Size and Value (rather than embracing them) is that his firm exclusively uses Dimensional Fund Advisor (DFA) products. These products were based on Fama and French's original work, and have not evolved since. While DFA funds certainly aren't bad, there are better alternatives. Because HCM is not wedded to a single family of funds, we are able to take advantage of the best funds, no matter who may offer them.

**SMLF** - We use this ETF for a significant portion of most client's U.S. equity exposure. As shown in Morningstar's chart below, SMLF has outperformed both DFSTX (DFA's U.S. Small Cap OEF) and DFSVX (DFA's U.S. Small Cap Value OEF) since inception, and has lower Expenses (0.30%) then DFSTX (0.37%) and DFSVX (0.52%).

From "For Factor Investors, It Pays to Go Small" by Morningstar's Alex Bryan, CFA on 12-6-17: "For those who do want to profit from momentum in the small-cap arena, it would probably be best to get that exposure through a multifactor fund, like iShares Edge MSCI Multifactor USA Small-Cap ETF .... This is because 1) it will have lower turnover than a stand-alone momentum fund, and 2) it should better diversify risk. This fund targets small-cap stocks with strong value, momentum, quality, and small size characteristics under constraints that mitigate sector bets and turnover. Its holistic approach and demanding selection criteria should give it potent exposure to the factors it targets."


**ISCF** - Likewise, we use SMLF's sibling for a significant portion of most client's International equity exposure. As shown in Morningstar's chart below, ISCF has outperformed both DFISX (DFA's Int'l Small Company OEF) and DISVX (DFA's Int'l Small Cap Value OEF) since inception, and has lower Expenses (0.40%) then DFISX (0.54%) and DISVX (0.69%).

The iShares Edge MSCI Multifactor Intl Small-Cap ETF seeks to track the investment results of an index composed of global developed market small-capitalization stocks, excluding the U.S., that have favorable exposure to the Value, Quality, and Momentum Factors.


**MTUM** - In an interview, Eugene Fama (the father of the Efficient Market Hypothesis) admitted that "…the one thing that causes lots of trouble is the evidence that there's some short-term momentum in returns…. in my view that's the biggest challenge to market efficiency." While we don't recommend Large Cap exposure per se, most of our clients end up with it via this ETF. We have added DFUSX (DFA's U.S. Large Company OEF) to MTUM's chart and provided Morningstar's analysis below.

# This is a cost-efficient momentum strategy.

by Alex Bryan, CFA
4/18/2018

**Suitability**

IShares Edge MSCI USA Momentum Factor MTUM is one of the most attractive momentum funds available. This low-cost strategy targets stocks with strong recent performance, based on the observation that recent performance tends to persist in the short term. It effectively captures this phenomenon, while keeping costs in check, which should set up attractive category-relative performance over the long run, supporting its Morningstar Analyst Rating of Silver.


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 should moderate the fund's volatility and reduce the fund's exposure to stocks that may struggle when the market changes direction. Stocks that make the cut are weighted according to both their market capitalization and momentum. This can lead to some large positions in individual names, but the fund caps these weightings at 5%. 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.

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, 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 129%. 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.

The fund's approach has worked well so far. From its inception in April 2013 through March 2018, it outpaced the Russell 1000 Growth Index by 140 basis points annually, with comparable volatility. This was largely due to its overweighting in the healthcare sector and more-favorable 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. One plausible explanation is that investors under-

react to new information, causing prices to adjust more slowly than they should. For instance, event studies have demonstrated that stocks beating 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 (disposition effect). This behavior could also prevent stock prices from quickly adjusting to new information. Once a trend is established, investors may pile into 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 relative performance 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 percentage points 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.

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 the fund will likely still struggle during periods of high market volatility. 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 Microsoft MSFT, Netflix NFLX, and Bank of America BAC. 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 financial-services sector and less exposure to technology and healthcare stocks. There are no limits on the fund's sector tilts.

**Portfolio Construction**

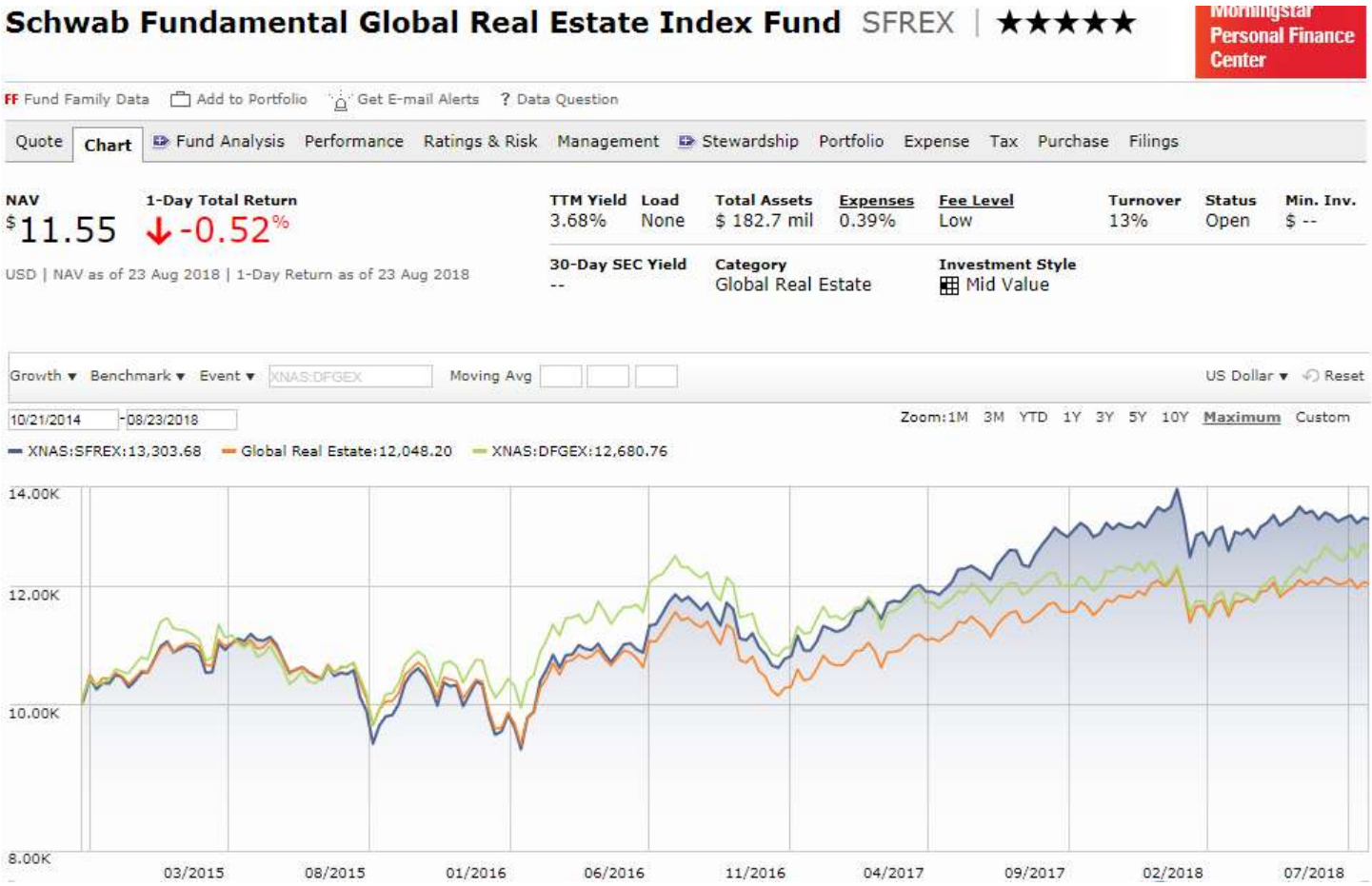
The fund tracks the MSCI USA Momentum Index, which draws stocks from the large- and mid-cap-oriented MSCI USA Index. This strategy captures momentum in a cost-efficient way, supporting the Positive Process Pillar rating. In May and November, MSCI calculates the ratio of each stock's price returns over the past 13 and seven months (excluding the most recent one) to its volatility over the past three years. 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. 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 cap, subject to a 5% cap. In addition to the scheduled semiannual reconstitution, MSCI may do an off-cycle rebalance of 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. Therefore, it earns a Positive Price Pillar rating. Over the trailing three years through March 2018, the fund lagged its benchmark by 22 basis points annually.

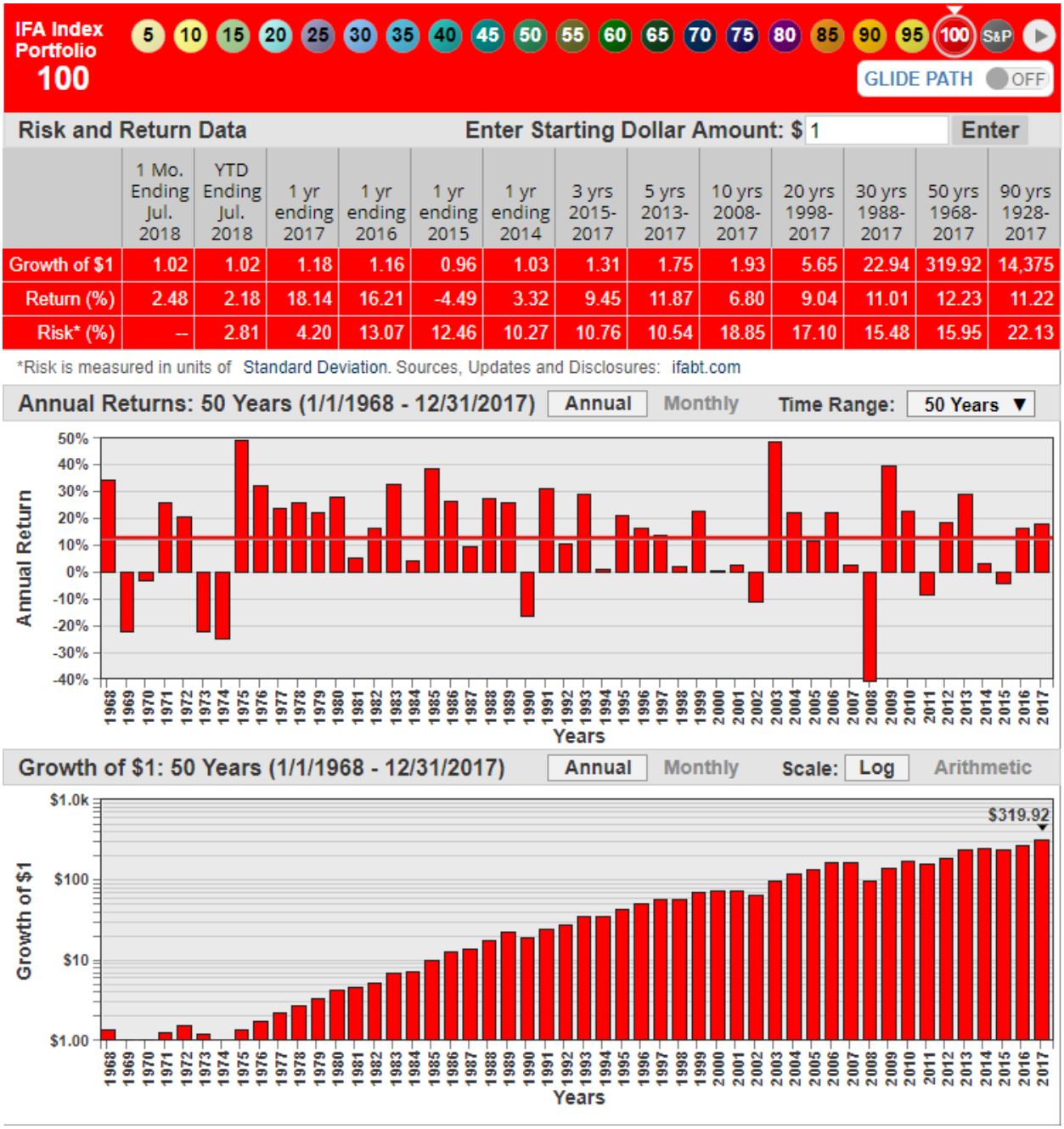
**SFREX** - We consider Real Estate to be a separate Asset Class, and usually recommend at least a 10% exposure via REITs to our clients. While our preference for SFREX over DFGEX (DFA Global Real Estate Securities) is primarily based on Process, SFREX has outperformed DFGEX since inception.

SFREX is a passively managed OEF primarily invested in stocks that are included in the Russell RAFI Global Select Real Estate Index developed by Rob Arnott's Research Affiliates. The index measures the performance of real estate companies, including real estate investment trusts (REITs), in U.S. and non-U.S. markets, including both developed and emerging. It ranks and weights global real estate securities by three fundamental measures of company size: adjusted sales, retained operating cash flow, and dividends plus buybacks rather than by market capitalization.



## Backtested returns

One of the major red flags I've written about before is firms presenting backtested results (https://medium.com/@DevinLHughes/when-is-it-time-to-shop-for-a-new-investment-advisor-f39776dbd729) without indicating that they are in fact hypothetical and not real returns. The author founded IFA in 1999. Here are performance results they have posted on ~~his~~ their website, starting in 1968:




While this isn't the most egregious example I've seen and I have no evidence that IFA is using these backtested results to directly sell the portfolios, it is problematic that you have to click on a small link that then goes to a page with a mountain of fine print to discover that the results before 1999 are not real. Incidentally, if you move the default time range from 50 years to 20 years (to eliminate the hypothetical backtested returns), the average annual return drops from 12.23% to 9.04%. While showing backtested results isn't inherently a bad thing, it should be clearly marked.

## Hebner's 12 Steps

### Step 1: Active Investors

Although I largely agree with his critique of certain forms of active investing (market timing, stock picking that doesn't focus on company fundamentals), his bright line between active and passive investing is a little fuzzy. For example, there are "rules-based" strategies that he would likely consider active investing (stock picking based on valuation in combination with other Factors; trading based on the Momentum Factor) that do provide superior risk adjusted returns (equating risk with standard deviation here) than the broader market average. Also, it isn't just active investors that are prone to emotional and cognitive biases.

Of the 3 Investment Advisor responsibilities (controlling the client's emotions, keeping the client invested, and rebalancing), I agree with the first 2, and quibble with the third. I would see the third objective more as keeping the portfolio properly diversified, which can mean letting winning positions run for a while without paring them back.

### Step 2: Nobel Laureates

Stock prices do not follow a Random Walk. Markets are not efficient. And Modern Portfolio Theory based on the Capital Asset Pricing Model (CAPM) of Harry Markowitz is broken.

The Momentum Factor, for example, is based purely on price history and provides a premium over the broader market. In fact, Eugene Fama once stated that Momentum was the "biggest embarrassment to the [Efficient Markets Hypothesis] theory." Further, it is extremely hard to explain the entire premium Momentum provides as risk-based. The same holds for the Quality Factor, which is the tendency of higher quality stocks (usually defined as companies with stronger and more stable earnings) to outperform lower quality stocks. There is no reasonable risk-based explanation I've encountered to explain this phenomenon. Same goes for the fact that over sufficiently long time horizons, more profitable companies provide higher returns on average than less profitable companies (the Profitability Factor is now included in Fama and French's Model).

While risk-based explanations do explain some portion of Factors such as Size and Value, it does not explain all of it as the author implies. The rest lies in the realm of Behavioral Finance (a topic I examine intensively along with Factor-based Investing in my class at OU), which argues that financial markets, while somewhat efficient, play host to what Keynes coined as "Animal Spirits."

### Step 3: Stock Pickers

While I certainly agree with the author's premise that individual investors should avoid stock picking (and there are much simpler ways to invest), it doesn't mean it can't be done. Consistent results such as those by Warren Buffet, Peter Lynch, Renaissance Technology, and so on are very difficult to chalk up to luck. Process matters, and there are strategies that have been shown over time to provide superior returns to the Market.

Further, while the author recognizes the role emotional and cognitive biases play for the individual investor, the sum of a bunch of biased individuals (aka the Market) does not equate to a highly efficient information processing machine. Markets can get prices spectacularly wrong. See the 2008 Financial Crisis and now Bitcoin (which I have written about on HCM's website) for the latest in a long serious of Market bubbles that certainly were not rational. **"I can calculate the movement of stars, but not the madness of men." -** Sir Isaac Newton after losing a fortune in the South Seas stock bubble of 1718– 1721 by buying too late and holding on too long.

The analogy the author uses to illustrate stock picking is trying to find a needle in a haystack. Instead, he recommends just buying the entire haystack. However, to extend the analogy, if there is significant evidence that certain portions of the haystack are better than other portions, why not just buy the good portions of the stack and leave the rest? That is the point of Factor based investing.


**ESTIMATES OF THE BEHAVIOR GAP**

*The behavior gap measures the loss that the average investor incurs as a result of emotional responses to market conditions. Several academics have studied and estimate the gap to be between 1.17% and 4.30% per annum.*

**Step 4: Time Pickers**

I completely agree that market timing is a fool's errand. **"I don't know anyone who's got it right. In fact, I don't know anyone who knows anyone who's ever got it right."** - Jack Bogle, founder of the Vanguard Group, on the ability of investors to successfully time the market.

**Step 5: Manger Pickers**

The author is correct that chasing manager performance is not a good idea. However, process does matter, and there is significant evidence that managers with a good process (such as Factor based investing) can outperform.

**Step 6: Style Drifters**

I agree, but this should not be a problem if you choose a fund/manager with a clear, Quantitative Factor based approach to investing.

**Step 7: Silent Partners**

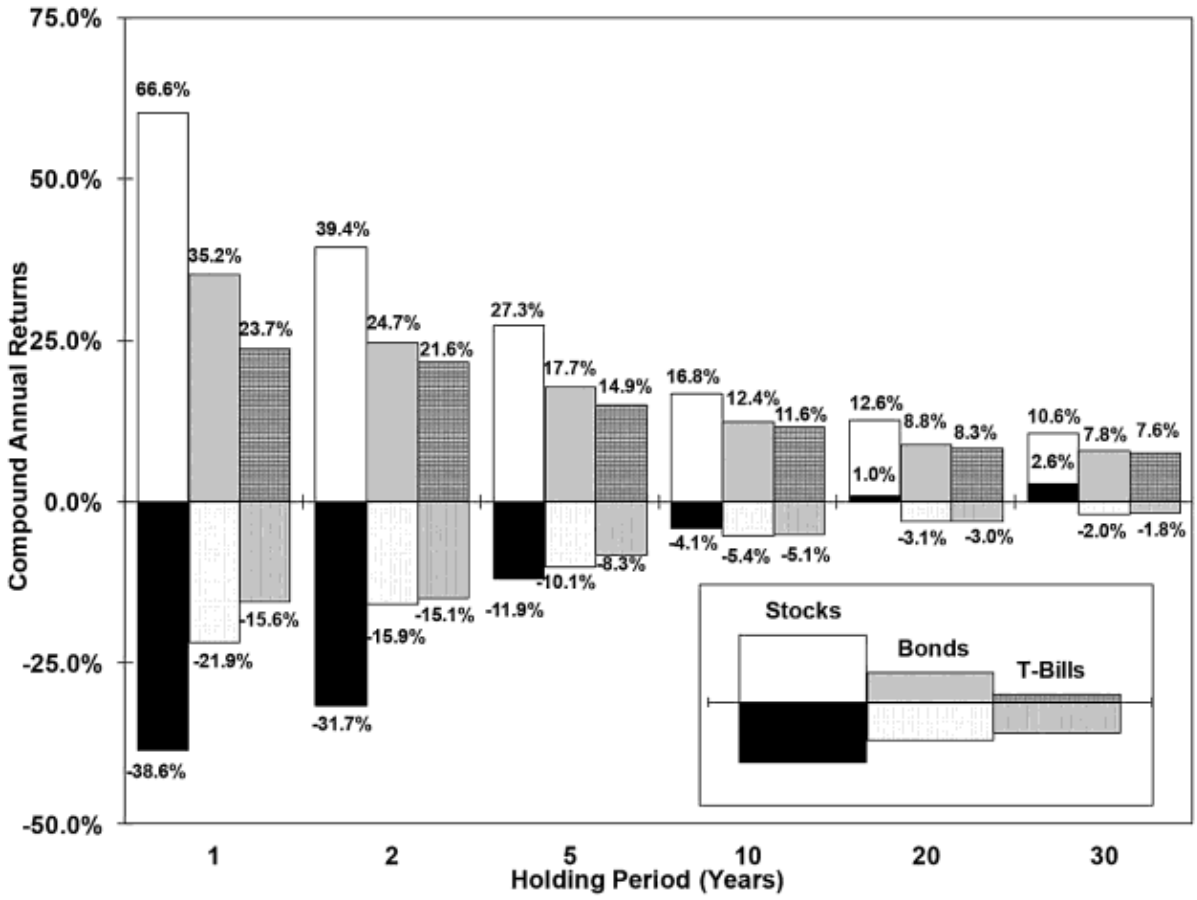
I completely agree. Fees and taxes need to be minimized as much as feasible.

**Step 8: Riskese**

At the risk of speaking in Riskese, the author's equation of risk with volatility/standard deviation is incomplete at best. Time horizon plays a massive (and largely overlooked) role in determining relative risk. Over a short time horizon for instance, bonds are less risky (based on volatility) than stocks. Yet over a 20 year time horizon as Jeremy Siegel explains in "Stocks for the Long Run," stocks become less risky than bonds as shown below:

**FIGURE 6–1**

Highest and Lowest Real Returns on Stocks, Bonds, and Bills over 1-, 2-, 5-, 10-, 20-, and 30-Year Holding Periods 1802–2012




This is why HCM measures risk as Maximum drawdown (peak to trough in a correction or bear market) relative to the S&P 500. In a market downturn, correlations have a habit of going to 1, and "less volatile" stocks in normal times can have quite painful falls. By looking at Maximum drawdown, we see the worst possible case for a portfolio at the time investors are most prone to panic, helping us manage client expectations and mitigate the risk of pulling out of the market at the worst possible moment.

For more on Risk, please see our website: http://www.hughescapitalmanagement.com/risk/

**Step 9: History**

I agree that time period is important (which is also why I'm nervous when an advisor portrays backtested results).

**Step 10: Risk Capacity**

Agree on how important Risk Capacity is, though I'm very skeptical about being able to place a solid "score" on it. For many of the investors I work with Risk Tolerance turns out to be the limiting consideration. As we note on our website: "It is important to understand the difference between Risk Capacity and Tolerance. Assume you have a $2,000,000.00 portfolio and sometime over the next 5 years you suffer a 30% drawdown in a bear market. Now that $600,000.00 "loss", which has historically been transitory given at least a 5-year investment horizon, should not affect your future lifestyle. That relates to "Risk Capacity". However, the psychological cost of that $600,000.00 can be substantial. That is Risk Tolerance, which contributes to investors' historical underperformance," as seen in the above graphic from AdvicePeriod.

**Step 11: Risk exposure**

I agree on the importance of a globally diversified equity portfolio as well as including Real Estate. At this time however, Bonds provide return free risk. Further, by using the full array of Factors (and not merely tilting towards a couple), you can gain risk management benefits by counterbalancing Factors such as Value and Momentum that have a low correlation with each other.

**Step 12: Invest and Relax**

I feel it is important to note that Indexing with tilting is a significant step up over the usual investment advice. However, Factor investing is a significant improvement over IFA's approach.