

Planning Perspectives 4Q 2016

Integrity in Investing: Separating Knowledge from Noise for Informed Planning



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PROFESSIONAL
FINANCIAL
Integrative Wealth Management

"The difficulty lies, not in the new ideas, but in escaping from the old ones."

—John Maynard Keynes, *The General Theory of Money, Interest & Employment* (1936)

People are overwhelmed with an almost daily overload of digital information flowing from television, cellphones and computers. Financial channels may show ten price tickers, a scrolling headline chryon, digital swooshes, sound effects, and live interviews simultaneously. It's really entertainment disguised as education. Still, some believe that they are not properly informed about their investments unless they are checking the computer quarterly, monthly, daily, or even hourly to get the latest price and market data, and stay abreast of their *Wall Street Journal* or *Money*.

Media watchers fixate on market trends, or monitoring the latest headlines concerning U. S. elections, GDP, the Fed, China, Russia, Brexit—each followed a steady stream of opinions from media pundits, prognosticators and other talking heads about how that news or politician or crisis will somehow impact stock prices or interest rates.

So, from minute to minute, market sentiment shifts in reaction to news—news about the economy, companies, governments and politics, social movements and the wider world. Security prices of stocks and bonds and related investing vehicles rise and fall in response to this news, which by definition of being "new" is unpredictable.

Just as with watching weather forecasts, financial news can provide a conversation starter in social encounters to fill an awkward silence, our very human focus on the day-to-day or monthly focus common in internet account reporting can frequently encourage people in bad times to make bad decisions that negatively impact their wealth.

Investors tend to add risky assets to portfolios after the media reports on various markets or securities where prices have increased, and tend to sell after markets or familiar investments have declined. Without an integrative investment management approach guiding how to evaluate news and numbers, the very way portfolio summaries may be typically framed by brokers and financial advisors in clients reports can become yet another source of noise.

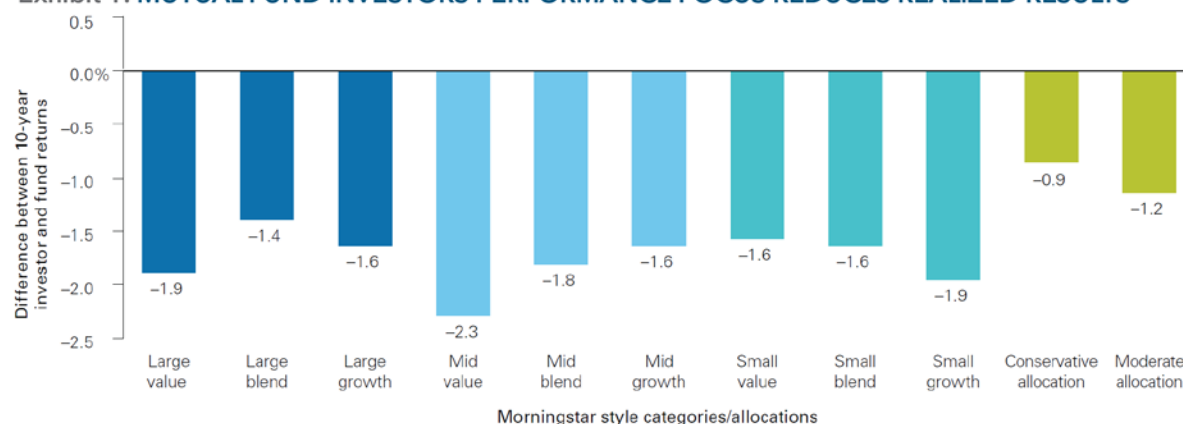
CONFIRMATION BIAS: A MIND SELECTING THOSE FACTS WHICH SUPPORT IT'S IDEA



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Investment advisors such as Professional Financial are required by regulation to send out quarterly reports to clients consolidating multiple account results as well as disclosure information. Of course, a detailed custodial portfolio statement is available to any client who opens their monthly envelope mailed to them. Or, for those who with urgent need for the latest figures, internet custodial portals are available 24/7. While we still provide annual portfolio benchmarking and detailed studies as part of that reporting, some clients have requested benchmarking quarterly. While figures don't lie, they are easy to misinterpret. Access to, or familiarity with information resources does not necessarily translate into knowledge and then wise action without a proper framework to understand the numbers. Wisdom is needed to interpret that data. Otherwise all those with internet access to Google and a trading account should be rich, as many E-trade or Ameritrade glossy advertisements seem to imply.

Exhibit 1: MUTUAL FUND INVESTORS PERFORMANCE FOCUS REDUCES REALIZED RESULTS



Notes: Data as of December 31, 2015, based on Morningstar style and asset allocation categories. Morningstar Investor Return assumes the growth of a fund's total net assets for a given period is driven by market returns and investor cash flow. To calculate investor return, a fund's change in assets for the period is discounted by the return of the fund, to isolate how much of the asset growth was driven by cash flow. A proprietary model, similar to an internal rate-of-return calculation, is then used to calculate a constant growth rate that links the beginning total net assets and periodic cash flows to the ending total net assets.

Sources: Vanguard calculations, based on data from Morningstar, Inc.

Exhibit 1 illustrates how much the typical investor **reduces** their returns by publicized fund returns—about 1.5% and 2.0% annually. And this is *before considering* the higher costs of actively managed mutual fund which average another 1.5% to 2.0% annually. Those figures do not consider possible higher tax costs related to actively managed funds. By committing to a Dimensional-only strategy, clients are positioned to avoid costs of such a behavior gap.

Occasionally clients get a notion that popular index benchmarks like the S&P 500 Index allocated with a bond index should determine evaluating their portfolio performance. But should the benchmark, however objectively designed or selected based on certain criteria, *control* the construction of our dimensional strategies or simply *confirm* the effectiveness of those strategies in the context of many other conditions, including the special situations such as job loss. For instance, tax planning alone saves many clients more than their fee, but that is not practical to show in performance percentages, but certainly is a very real part of their outcomes as more money can be saved each year.

Clients should be reminded that multifactor strategy do not attempt to mimic an index in their construction or management. Therefore, even though historically and based on economic science, such tilts should add substantial value, there will be periods of modest underperformance. Second, as with tax planning, wealth management enhances outcomes with Social Security or pension coordination, and simply disciple reinforcement. Our Investment Policy Statements and FinaMetrica for risk profiling and benchmark guidance help promotes an informed way to evaluate outcomes over time that set sensible expectations for funding essential financial goals.

As we annually examine the behavior of different clients over the years as part of our annual reporting process, we find over and over that clients prone to frequently checking their accounts or often second-guessing their repositioned account or who delayed or deferred making transfers or contributions (particularly in times when noticing the market was dropping), usually have poorer results over time than clients committed to their planning.

Such behavior systematically leads to outcomes similar to Exhibit 1: failing to rebalance timely or withhold additions for equity positions when past returns disappointed or somehow did not meet their expectations, or the worst being an insistence on changing investment policy during a market decline, rather rebalancing as planned.

A bizarre episode in my career occurred after a retired engineer panicked during the Global Financial Crisis years. We convinced him, at what turned out to be the low point of 2008, rather than cash out, to change to a lower equity allocation. We never convinced him to resume his old plan. About four years later, he began modeling a fantasy index portfolio on a Vanguard website. Based on his specially selected arbitrary starting point, he discovered he could have had so much more in his IRA! He was pretending a higher level of equity risk greater than he ever owned—and of course, never changing his allocation. Rather than accept responsibility, he blamed us.

Many things, including simply unlucky sequencing risk due to client starting dates, might show a worse outcome relative to popular benchmarks for quarters and occasionally years as we recall the growth and tech bubble of the 1990s. Without a sensible plan for guidance, attributing an apparent disappointing outcome simply from a set of performance calculations either a failure of multifactor portfolios or advisor judgement can be a serious mistake.

A Text Without a Context is a Con

While never checking account statements is a mistake (trust, but verify in the words of a great U.S. President), watching account figures too closely, whether month-by-month or even quarter-by-quarter, will lead eventually to worries or loss of peace of mind at best, or an emotional decision to take undisciplined action at worst. Without ability to benchmark true multifactor strategies adjusted for the specific client conditions, an emotional response such as changing investment policy strategy reacting to numbers or news almost invariably will be a costly mistake.

Preparing this quarter's reports offered an unusual "real-time" educational moment for Professional Financial clients. A performance calculation quarter-by-quarter below shows how potentially hazardous projecting from past performance can be, and dramatically demonstrates why annual benchmarking in complete context is needed.

Exhibit 2 asks readers to select between two groups of portfolio strategies using only numbers. All you know are one-year performance returns, such as you might find from Google or Morningstar searches. We break these strategies down by asset class. Now, if forced to choose between only owning Brand X and Brand Z beginning July 1 of 2015 until September 30 of 2016, with NO opportunity to change funds afterward, which would you choose?

Exhibit 2: WHICH BRAND WOULD YOU SELECT IN MID-2015?

Actual One-Year Mutual Fund Returns as of Quarter-End in 2016

Asset Class Portfolio	Brand X	Brand Z
Global Market Strategy	(5.6)	12.4
US Market Strategy	(1.9)	13.6
US Value Strategy	(0.8)	15.1
US Small Value Strategy	(5.7)	14.0
International Market Strategy	(8.3)	9.9
International Value	(16.5)	6.1
International Small Value	(9.3)	10.5
Emerging Markets Equity Strategy	(8.8)	18.1
Emerging Markets Value Strategy	(11.7)	19.8
Shorter-Term Fixed Income Strategy	2.8	5.9

Actually, this is a trick question. These are the *very same* or similar Dimensional funds that many clients already own measured one year as of June 30, 2016 or as of September 30, 2016—**only one calendar quarter different**.ⁱ Yet, few investors with substantial holdings cannot help but feel poorly about owning Brand X but happy about owning Brand Z! Yet all that differs is the measurement period. The technical concept is "sequence risk." Price movements

statistically are random “noise.” “Noise” has no expected return. Only factor premiums do. The expected returns of Dimensional strategies, if they were shown, would be identical for both periods. Figures don’t lie, but liars figure.

This Advisor is no smarter because of different client portfolio allocations owning Brand Z, than he is dumber for client portfolios owning Brand X. Strict index comparisons might show Brand X underperforming, and Brand Z outperforming, but so what? What cannot be measured is how fixed income adjustments during the early Brand X period permitted more aggressive equity allocation repositioning during one several 15% declines from August 2015 to February 2016, enhancing Brand Z outcomes not shown in Exhibit 1. At least two years likely will be needed to decide if that technique beneficial, but no client is likely to be worse off if not. Moreover, those with systematic monthly portfolio withdrawal (or nearing such a period due to retirement), benefitted from increased stability had declines continues or become more severe. Without a reliable way to estimate expected return, knowing only returns of a month, a quarter or even a year is of extremely limited value without a much larger time span. The frequently someone checks their portfolio, subconsciously, the shorter their evaluation period eventually becomes.

The Problem of Long Tail Dispersions in Prices

The regulatory notice in small print where it is likely to be ignored required when specific performance is published for general circulation, whether in advertisements or educational exhibits, states: “Past performance is not a guarantee of future results.” So familiar are investors with such warning notices, just as on cigarette packages, readers rarely take notice, their attention distracted usually by impressive returns numbers somewhere on the page. Past performance isn’t necessarily informing the reader as it appears to do on the surface, and what it seems to imply, that is the supposed skill of the fund managers. Consider the selection bias: funds, ETFs and securities with the promoter with periods of poor performance quite legally are not shown. Closed investments are definitely not shown in advertisements or media publications. Out of sight, out of mind. What you don’t know, can hurt you.

Selection bias is not limited to which securities are shown: it frequently involves selecting particular periods to show. To illustrate this extremely important idea, **Exhibit 3**, we will use a conventional index representing 98% of American equity market capitalization: the Russell 3000 Index of U. S. stocks. The Russell 3000 is an significant barometer of the U. S. stock market. In 2016 the mutual fund indexing giant Vanguard is attracting record amounts of investor money into its popular mutual funds and EFTs, especially the familiar their “S&P 500 Index” was as well as a series of indexes based on the Russell 3000 and other Russell indexes. Traditional brands such as Fidelity or Blackrock promoting “actively managed” fund and ETFs have lost huge amounts of money. Vanguard’s mutual funds and ETFs are noted as “low cost,” which is technically true—but does low cost translate into low or no risk?

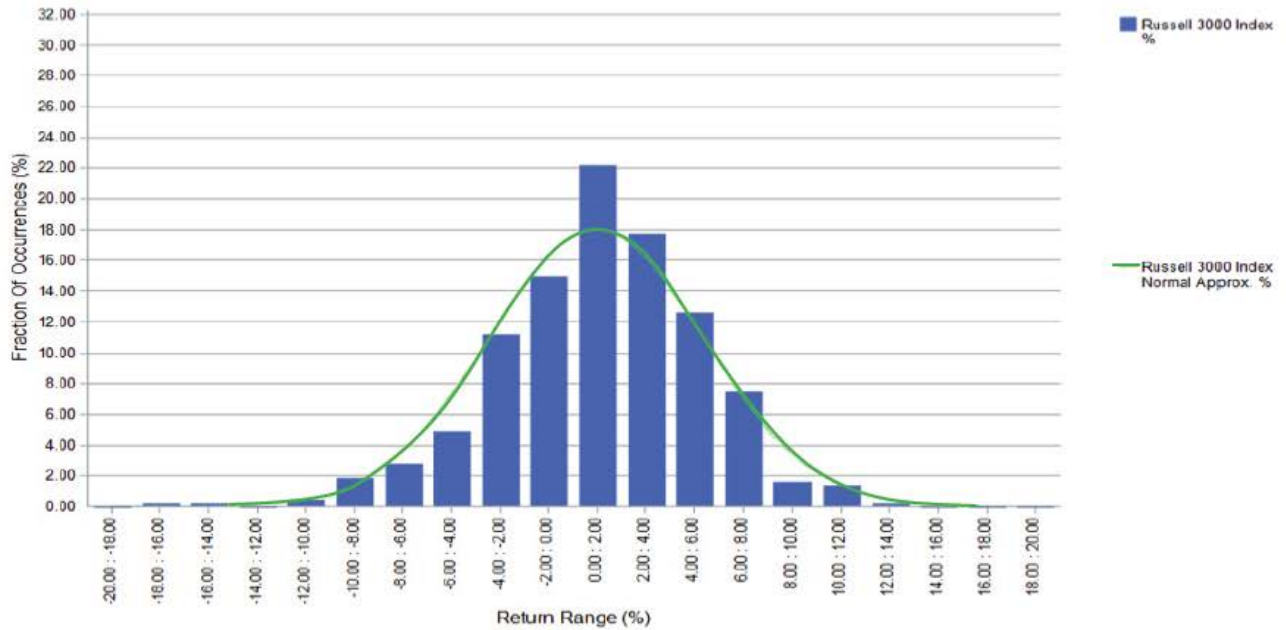
The financial media on web or in print has made the public aware that US index mutual funds such as those Vanguard promotes have done well in the aftermath of the Global Financial Crisis. Russell 3000 index returns have been 16.4% annualized with an 11.4% annualized standard deviation (a measure of relative price volatility) for the last five years ending September 2016. A 16.4% figure certainly captures attention when bank accounts pay factions of a percent yield. Also, owning these funds is cheap: one fund is a mere 0.08% annualized plus brokerage costs to trade. (That figure does not include indirect “market impact” or style drift costs, but that is another lesson.)

For the Russell 3000 Index from January 1981 to September 2016, the return was 10.8% with a standard deviation of 15.4% for someone invested that entire time period. But is it sensible to really believe that thirty-five or even the last five years of returns should inform how to plan decades into the future? Moreover, realizing those outcomes assumes the investors never sells, through thick and thin, and pays no tax. How realistic is that, when Morningstar tells us the average mutual fund is held for 3.5 years? Since Russell data only begins in 1979, consider the academic Fama/French Total US Market Index Portfolio with 90 years of data history: 9.9% with 18.4% standard deviation.

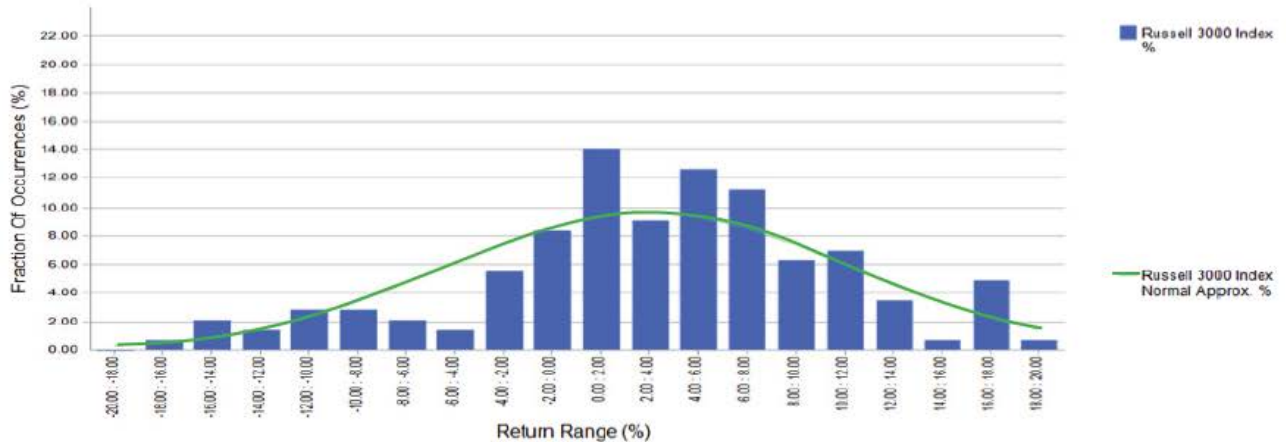
Exhibit 3 consists of three histograms each showing monthly, quarterly and annual period returns for a period from 1981 to 2016. Histograms graphically represent the distribution of numerical returns data, providing a visual estimate of the probability distribution of a continuous variable. To construct a histogram, the first step is to “bin” the range of values—that is, divide the entire range of values into a series of intervals—and then count how many values fall into each interval. The bins are specified as consecutive, non-overlapping intervals of a returns variable. Our histograms are normalized and display “relative” frequencies using a thin green line. The final result shows the proportion of cases that fall into each category of the returns range, with the sum of the heights equaling one.

Exhibit 3: HISTOGRAM FOR BROAD U. S. MARKET INDEX

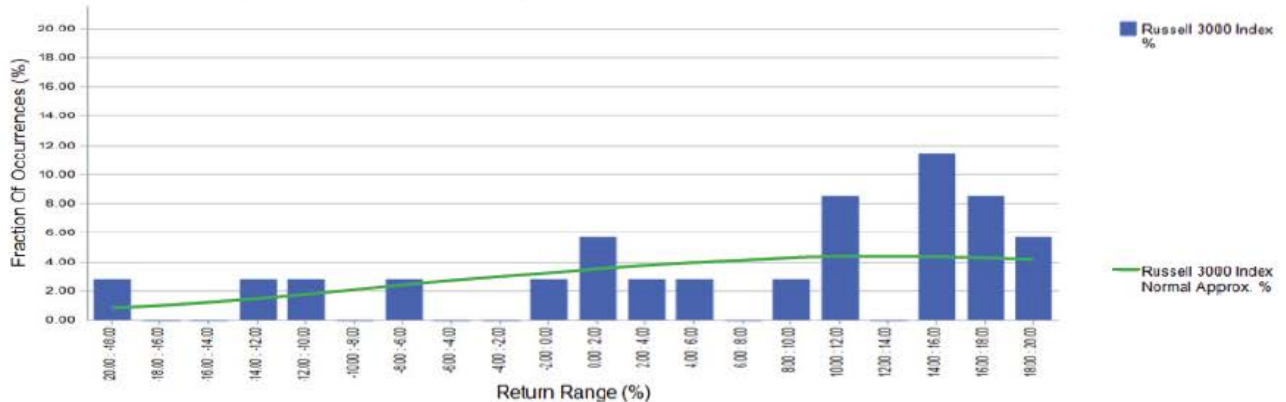
January 1981 - September 2016, Monthly



January 1981 - September 2016, Quarterly



October 1981 - September 2016, Annually



Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. Past performance is not a guarantee of future results. Source: Russell Investment Group

In USD. The Russell 3000 Index (gross of dividends). Line represents Russell 3000 Index normal approximation percentage.

As we examine the third histogram based on annual returns in Exhibit 3, I am reminded of the old joke about the statistician: while on a fly fishing excursion, he waded into a river that, on average, was only three feet deep. Sadly, the uninformed man drowned due to sequence risk related to any natural creation: the depth of this rushing flow of water varied from six inches to sixteen feet in depth. While averaging about 1% per month, the top histogram shows normally distributed monthly returns, ranging from about 16% to a low of almost -20%. Illustrated quarterly, the downside now begins to look worse, while the upside also appears more compelling. Finally, illustrating returns annually, any semblance of normally distributed returns has disappeared—half of the “bin” shows values of zero or less. Only a small proportion of annual outcomes is above a 10% annual return. An investor who theoretically stayed invested over a 35 year period in this fanciful illustration would have disappointed during half of those years, and that would have sorely tested an investor’s discipline to remain invested for the good years.

The Quixotic Search for Winners

“Recency bias” is another consideration as investors evaluate successive return calculations in small increments. Recency bias is the behavioral phenomenon or more easily remembering something that has happened recently, compared to remembering those things occurring further back. For instance, if a person is asked to recall names of 30 people that they just met, they will usually remember the names of the people that they most recently met first.

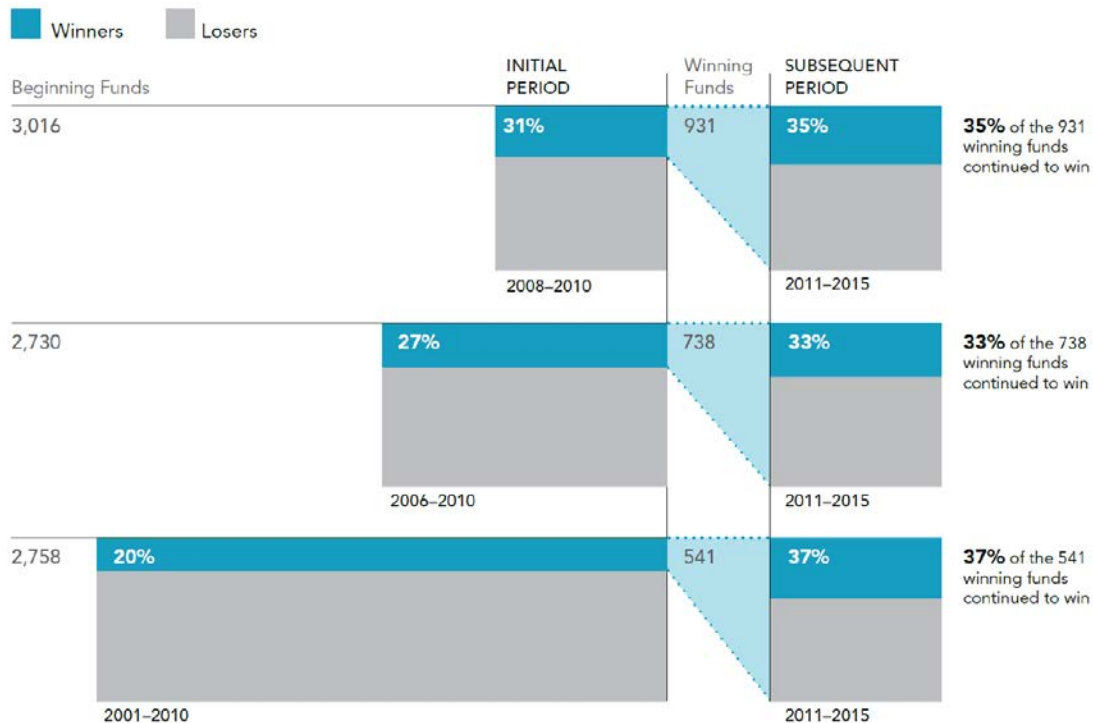
For those investor without a strong education in financial history, and for those investor with limited experience of historical markets (either those younger, or having no investments years ago, so any losses were not personal) constant media advertising and continuous social media exposure selectively focus attention on those stocks, mutual funds or ETFs doing well, playing on greed to motivate action. Attention targets those investments with a series of good years clustered to form an attractive performance series. In financial jargon, the fund or manager has a “track record.” If a fund or manager has a track record earning them a Morningstar “4 Star” or even better “5 Star” rating (or rating service equivalents), this become a lucrative payday for the manager and the fund family because now with smart advertising, they can suck in maybe even billions of investor dollars, making the sponsors rich.

However, how likely is this selectively presented information, calculated from 3, 5 and even 10 year returns make *investors* rich? The competitive landscape makes any search for future winners a formidable challenge. The past winners are known from historical data calculated by Morningstar and published in financial magazines—but how reliable is past performance for investors to identifying future winners? Security prices reflect all publically available information as intense competition among market participants drives prices toward fair value. Confronted with so many mutual fund and ETF choices—and lacking an economic philosophy to inform their search—most investors over-rely on performance records for evaluating and selecting funds, ETFs and their index counterparts, speculating that the manager’s or index’s past performance must surely continue into the future. Yet with many thousands of managers and funds, a few long winning track records should occur simply as a result of chance.

Exhibit 4 offers strong evidence that chance and luck indeed is at work. Only a small percentage of the beginning equity funds outperformed in the initial period—and subsequent performance was not much better. For example, only 25% of the equity funds with past performance during the initial three-year period (2007-2009) continued to beat their benchmarks in the subsequent five-year period (2010-2014). For those with five-year histories (2006-2010), it was still only 33% (2011-2015). Using a ten-year period, only 37% beat benchmarks for five more years.

Some over-confident investors will ignore the evidence and continue selecting funds and EFTs because of realized returns that occurred sometime in the past, but not necessarily within the 3, 5 and ten year periods we selected. Elaborate schemes involving technical charts and graphs try to exploit the markets with various forms of market timing. Certainly a few participants will do well just by chance, but such outcomes are not likely to persist. Prices in “efficient market” depend on the *marginal participant* who is smarter, owning faster computers using specially wired connections implementing cheap programmed trades in milliseconds. No human finger is that quick. The investor’s problem, even with a Vanguard index fund modeling the Russell 3000 index and the like, our studies and many formal academic research studies show that even an index investor will have losing performance for a multiple series of years due to random sequence risk, tempting an investor with a concentrated strategy to switch to another strategy before the group stocks comprising that underlying asset class suddenly become winners.

Exhibit 4: MOST PAST WINNERS DO NOT KEEP WINNING—EQUITY FUNDS PAST PERFORMANCE VS. SUBSEQUENT PERFORMANCE



The sample includes funds at the beginning of the three-, five-, and 10-year periods, ending in December 2010. The graph shows the proportion of funds that outperformed and underperformed their respective benchmarks (i.e., winners and losers) during the initial periods. Winning funds were re-evaluated in the subsequent period from 2011 through 2015, with the graph showing the proportion of outperformance and underperformance among past winners. Past performance is no guarantee of future results.

Source: CRSP Survivor-Bias-Free US Mutual Fund Database, provided by Center of Research in Security Prices, University of Chicago.

Weather vs. Climate

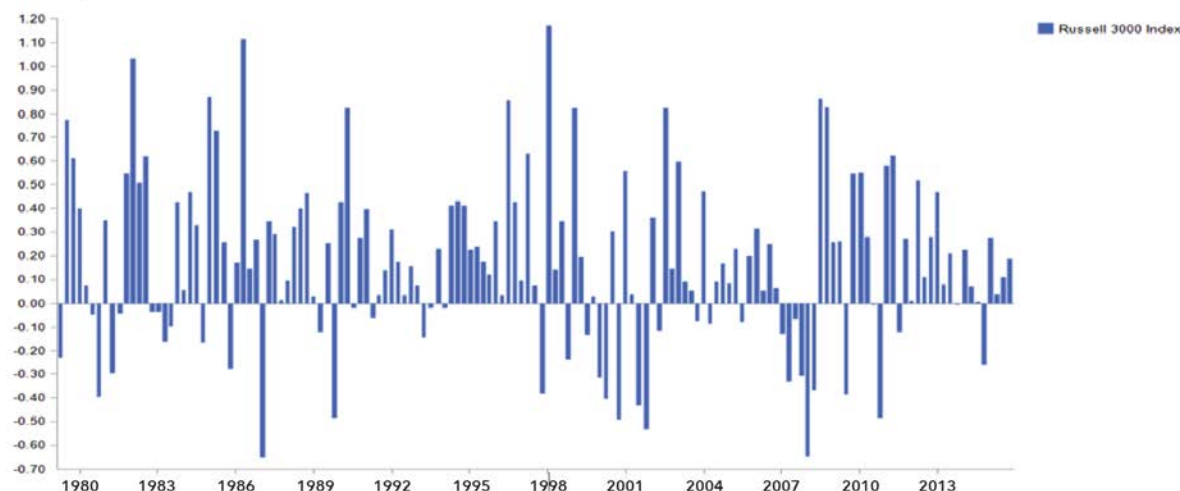
Let's suggest a better approach for portfolio strategy evaluation within the framework of planning so that greater confidence for important financial goals can be realized. Goals should not be based on getting return numbers; goals first should be personally defined, such as retiring at age 65 with \$100,000 of inflation-adjusted income for life, and with a reliable strategy structured to tax-efficiently accumulate and distribute income at age 65 over a lifetime.

So think about the flow of information from the internet on market prices. Market news, daily impacting stock and bond prices, is much like daily *weather*. One day it's sunny and markets are up. The next day it rains and markets are down. It's cool today and unseasonably warm the next. Prices are changing constantly. The shorter your frame of reference is, the greater returns seem to change due to price fluctuations. **Exhibit 5** reframes our Russell 3000 Index study, this time as quarterly returns. Although we substitute quarterly for monthly as a measurement period over 35 years, quarterly ups and downs still appear to change widely—with large seasonal variations like “the weather.”

Exhibit 6 reframes our measurement period to a annual period, typical of most client reviews and what investors traditionally have been conditioned to expect for the financial media. Every year, the “news” people willingly buy from the financial media is annual performance data in comparative formats, displayed as winners and losers. Portrayed annually, Russell 3000 index results may appear less volatile than they did presented as quarterly returns, but no trends or “cycles” present themselves for market timing opportunities. What seems to repeat are unusually high return years followed by very poor years. The obvious investing problem for a speculator is to know, in advance, which year will do unusually well so that money sidelined in safe money market funds can be invested. The problem is that when price performance drives the investing decision, since stock prices change in very short spurts, usually most of the returns end up being made by someone who stayed invested all along. The media, by virtue of publication schedules, must focus on the short-term. They need a different story every day, so they respond to events, not forecast them. So whatever information they provide, like Morningstar, is always backward looking.

Exhibit 5: THE WEATHER: ROLLING QUARTERLY CHANGES FOR BROAD U.S. MARKET INDEX

January 1980 – September 2016

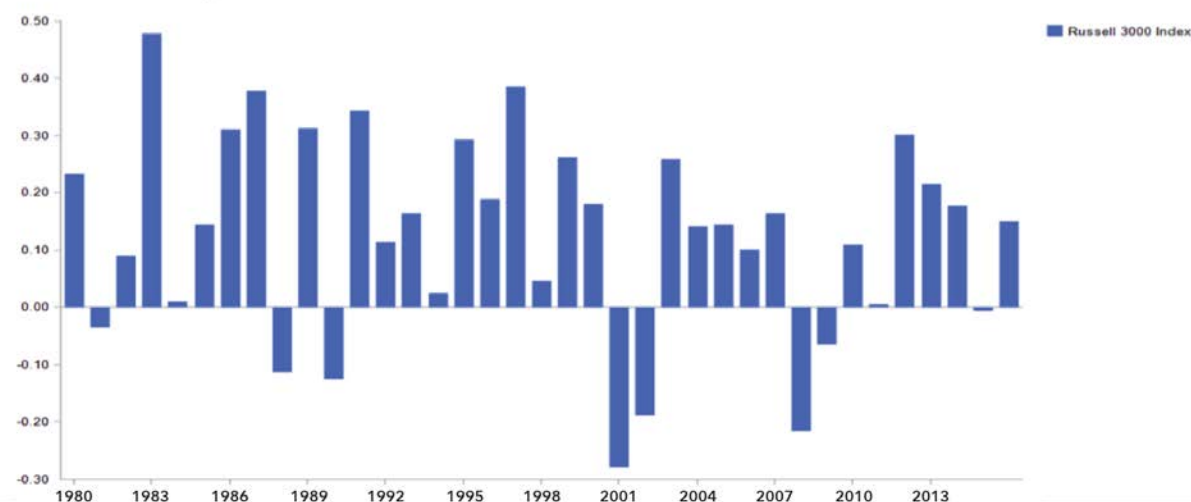


Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. Past performance is not a guarantee of future results. **Source:** Russell Investment Group.

In USD. The Russell 3000 Index (gross of dividends) with a rolling span of 3 months, step interval of 3 months.

Exhibit 6: THE WEATHER: ROLLING ANNUAL CHANGES FOR BROAD U.S. MARKET INDEX

October 1980 – September 2016



Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. Past performance is not a guarantee of future results. **Source:** Russell Investment Group.

In USD. The Russell 3000 Index (gross of dividends) with a rolling span of 1 year, step interval of 1 year.

Exhibit 7 better reframes Russell 3000 Index data for disciplined investors with a long-term planning perspective. This presentation clearly illustrates the *climate* of investing in U. S. stocks over the last 35 years. Viewing returns in this manner focuses on the positive cumulative growth of wealth rather than negative market volatility year-by-year or quarter-by-quarter. Rather than distract the investor and keep drawing their attention to the often painful periodic declines, even if their duration may be relatively short, this way of looking at returns focuses on how wealth accumulates through time—and eventually recovers after occasional serve declines—and how much the investor can benefit by just staying invested, and not worry about the inevitable ups and downs. Over a much longer evaluation horizon, the negative periods made no difference. Cumulative gains, not volatility, are what matters for funding financial and retirement targets. These two ways of looking at the market are like the difference between the weather and the climate. The former changes constantly, the latter more gradually. For planning long-term investment strategy, it's the climate that matters, and that's the wise framework for evaluating performance.

Exhibit 7: THE CLIMATE: CUMULATIVE GROWTH OF WEALTH FOR BROAD U. S. MARKET INDEX

January 1980 - December 2015



Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. Past performance is not a guarantee of future results. Source: Russell Investment Group

In USD. The Russell 3000 Index (gross of dividends) growth of \$1 by monthly returns. Non-logarithmic scaling.

Measurements that Matter for Investment Evaluation

An investment policy is a written statement describing a professional investment philosophy and process specific to the client's risk preferences for planning. An investment policy enables informed decision-making and effective communication between client and advisor. Among other things, the investment policy articulates parameters for guiding investment management, such as asset allocation ranges. Importantly, it describes protocols regarding how the client should periodically evaluate portfolio performance, indicating a range of returns and time horizons for evaluation. In most cases, that time period is *at least* five years. It is never one year unless the asset allocation is using index funds specifically matching the investment policy's benchmark.

Previous exhibits demonstrated how substantially an equity asset class index, simply accepting the market returns of its asset class, can vary monthly, quarterly and annually. We now look specifically how calculations relative to the last quarter will change when measurement periods vary by a quarter and a year. So using the past year as our starting point, we will show how much even relatively small, but actually obviously arbitrary, adjustment for periods to calculate performance can dramatically change the results we see in unexpected ways. This illustrates why quarterly calculations do not matter for making informed investment evaluations.

Exhibits 9 and 10 imply dramatically different conclusions from the performance return calculations if the investor only used returns for planning in the absence of a well-thought-out investment asset allocation strategy. Not only do these exhibits illustrate the hazard of return calculations against an asset class indexes over arbitrary periods not described in their investment policy, but help explain why many investor, by not following through or second-guessing their investment policy strategy due to disappointing results for even just a year or even a quarter, have substantially reduced their total wealth outcome, and hindered achieving their long-term financial goals.

Let's select the familiar U. S. S&P 500 Index for close examination. The initial reaction to these numbers is disorientation. The S&P 500 Index return for 1 year, ending September 30 is 15.4%. The 15 year return is 7.1% annualized, or *less than one-half* of the one year result. Now, let's adjust our 1 year calculation periods by only one quarter (three months) to of June 30. The 1 year return drops a huge 74% to 4.0%, and the 15 year return also drops 18% to 5.8%. Let's take this exercise another step, and simply move our measurement period **back twelve months**

to September 2015. The S&P 500 Index return now drops down to 0.6% for 1 year and down to 4.0% annualized for 15 years. No manager selection issues can be involved because these are simply unmanaged conventional asset class indexes. This returns effect occurs in greater or lesser degrees for all the equity asset class indexes in our exhibit. Since *only the measurement period* used for calculation purposes has change, we must look for another explanation. Here is where decades of research based on the science of capital markets can guide our way and provide direction.

Exhibit 9: COMPARING 1 YEAR INDEX PERFORMANCE PERIOD CALCULATIONS

Shifting Calculation periods back by one Quarter and one Year

Conventional Asset Class Indexes	1 Year 10/2015 - 9/2016	1 Year -1Q 7/2015 - 6/2016	1 Year -1 Yr 10/2014 - 9/2015	1 Year Return Difference
MSCI All Country World Index	12.6	(3.2)	(6.2)	18.8%
Russell 1000 Growth Index	13.8	3.0	3.2	10.6%
S&P 500 Index	15.4	4.0	(0.6)	16.0%
Russell 1000 Value Index	16.2	2.9	(4.4)	20.6%
Russell 2000 Growth Index	12.1	(10.8)	4.0	8.1%
Russell 2000 Index	15.5	(6.7)	1.2	14.2%
Russell 2000 Value Index	18.8	(2.6)	(1.6)	20.4%
MSCI EAFE Growth Index	9.9	(4.4)	(4.3)	14.2%
MSCI EAFE Index	7.1	(9.7)	(8.3)	15.3%
MSCI EAFE Value Index	4.2	(14.9)	(12.2)	16.3%
MSCI Emerging Markets Index	17.2	(11.7)	(19.0)	36.2%
Bloomberg Barclays US Aggregate Bond Index	5.2	6.0	2.9	2.3%
Bloomberg Barclays US Govt Bond Index Interm	2.4	3.9	3.0	-0.6%
BofA Merrill Lynch 1-Year US Treasury Note Index	0.5	0.6	0.3	0.3%

Exhibit 10: COMPARING 15-YEAR INDEX PERFORMANCE PERIOD CALCULATIONS

Shifting Calculation periods back by one Quarter and one Year

Conventional Asset Class Indexes	15 Years 10/2001 - 9/2016	15 Years -1Q 7/2001 - 6/2016	15 Years -1 Yr 10/2000 - 9/2015	1 Year Return Difference
MSCI All Country World Index	7.0	5.5	3.9	100.0%
Russell 1000 Growth Index	7.4	5.5	2.2	151.3%
S&P 500 Index	7.1	5.8	4.0	102.6%
Russell 1000 Value Index	7.5	6.4	5.7	63.5%
Russell 2000 Growth Index	8.9	5.9	4.2	175.4%
Russell 2000 Index	9.3	7.0	6.5	119.9%
Russell 2000 Value Index	9.4	7.7	8.5	42.7%
MSCI EAFE Growth Index	6.5	5.0	2.7	108.0%
MSCI EAFE Index	6.3	4.8	3.5	82.2%
MSCI EAFE Value Index	6.0	4.5	4.1	55.2%
MSCI Emerging Markets Index	11.9	9.5	7.8	232.1%
Bloomberg Barclays US Aggregate Bond Index	4.8	5.1	5.3	-14.9%
Bloomberg Barclays US Govt Bond Index Interm	3.7	4.1	4.4	-17.6%
BofA Merrill Lynch 1-Year US Treasury Note Index	1.8	2.0	2.4	-10.3%

Indicies are not available for direct investment, therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. All returns gross of dividends. In USD. Past performance is not a guarantee of future results.

Sources: Russell data from Russell Investment Group; S&P data from Standard & Poors Index Services Group; MSCI data from Morgan Stanley Capital Indicies; BofA Merrill Lynch data Merrill Lynch Fenner & Smith, all rights reserved.

These exhibits provide enormous insight into the opportunity cost of investing. An opportunity cost refers to a benefit that a person could have received, but gave up, to take another course of action. Stated differently, an opportunity cost represents an alternative given up when a decision is made. This cost is therefore most relevant for two mutually exclusive events, whereby choosing one event, a person cannot choose the other. One opportunity cost here is the loss of wealth an investor incurred back in September 2015 by keeping their money “safe” in a bank, or postponing a contribution to an IRA the previously planned because they did not “like” the prior quarter figures or the last year’s figures? The investor did nothing wrong; they did nothing, that what’s wrong, as learned only from hindsight. Our clients are smart enough not to market-time. Yet all too often they choose to “contribution-time.”

The opportunity cost in lost wealth with an S&P 500 index for the 1-year period is 16.0%; for those who missed emerging markets allocations, it was an effective loss of 36.2%—returns there for the taking, but not for uninvested funds! For the 15 year period, it is a shock: 102.6%! And for Emerging Markets, even with five years of no returns, it is a whopping 232.1%.

Now, for investors who cut back their equity exposures a year ago or limited their investing after listening to fearful media news or talking heads prognosticating a market decline due to high valuations, Brexit, election uncertainty, *ad nauseum*, missed out on returns for the taking just by sitting in place, following their plan. Fifteen years ago was the first year of the terrible tech bust. Someone who invested then, or remained invested endured another full year of decline. How many who sold out and went to cash, went back after that second year? Very few. Your best wealth management strategy continues to be diversifying both across and within asset classes, spreading risk across different stocks, sectors, industries and countries, consistent with your asset allocation and risk preferences.

Adding Longitude to Latitude for Planning Strategy

Anyone alive in the eighteenth century would have known that “the longitude problem” was the thorniest scientific dilemma of the day—and had been for centuries. The inability to solve the longitude problem had dire consequences. If a ship didn’t know how far east or west it had traveled, say due to storm or clouds, then it didn’t know where land was or even likely to be. Lacking the ability to measure longitude, sailors always had been at risk of being lost at sea as soon as they lost sight of land. Circumnavigating the globe was impossible. Thousands of lives were lost over the centuries, and the future and the fortunes of nations such as England, hung on a resolution.ⁱⁱ

While today we take precise GPS location with our cell phones for granted today, the scientific establishment of Europe—from Galileo to Sir Isaac Newton—had mapped the heavens in both hemispheres in a misguided pursuit of a celestial answer. The wisest minds of the world had not solved the problem. In fact, so frustrating was finding a solution that “finding longitude” became proverbial as synonymous with impossibility. One man and his son, however, took an entirely different approach, and imagined a mechanical solution—that would keep precise time within seconds on turbulent and humid seas, something no clock had ever done before even on land. Working out and proving his chronometer took forty years, but he and his son won fame and a prize worth a king’s ransom.

Decades of building academic quality securities databases at the University of Chicago, Nobel-prize winning research by empiricists like Eugene Fama, and the vision and tenacity of David Booth and this team developing financial solutions constructed around that research, and now a 9-Factor regression of expected returns for investment management and planning, and are part of a never-ending story. A 9-Factor regression of expected returns with the ability to implement reliably is the equivalent of measuring longitude with a chronometer. After the adoption of computing in the 1970s, performance calculations finally became relatively easy. With my Morningstar Direct, I can compute over a hundred thousand securities around the world with histories from inception. Calculations comparing different investments today are easy; by contrast, calculating forward-looking expected return proved an immensely difficult, monumental task. The difference is, you can’t own past returns.

Exhibit II is a study in expected returns using the 9-factor model for the for the earlier indexes. “Expected return” is the amount of profit or loss anticipated on an investment that has various known or expected rates of return. It is calculated by multiplying potential outcomes by the probabilities of them occurring, and summing these results. Expected return is not an estimated return; based on multifactor studies from vast a vast database, it the *most likely forward looking return* for modeling portfolio strategy. The “R2” statistics are close to 1. What these numbers can tell you is where you are on a vast and dangerous ocean, and how close to land you are, relative to all other choices.

Exhibit 11: 9-FACTOR REGRESSION OF EXPECTED RETURNS BY ASSET CLASS

Major Global Asset Class Indices	E(R)%	R ²	E(R)%	R ²	E(R)%	R ²
	1/1988 - 12/2001		1/2002 - 8/2016		1/1988 - 8/216	
MSCI All Country World Index	7.88	1.00	5.37	0.97	6.62	0.98
Russell 1000 Growth Index	12.87	0.98	5.22	0.95	8.98	0.96
S&P 500 Index	13.01	1.00	5.25	0.98	9.07	0.99
Russell 1000 Value Index	12.96	0.98	5.86	0.91	9.35	0.94
Russell 2000 Growth Index	10.47	0.95	6.92	0.85	8.68	0.89
Russell 2000 Index	11.82	0.96	7.36	0.83	9.56	0.89
Russell 2000 Value Index	13.07	0.93	7.68	0.76	10.34	0.86
MSCI EAFE Growth Index	2.65	0.98	4.90	0.96	3.83	0.96
MSCI EAFE Index	4.76	1.00	5.02	0.98	4.92	0.98
MSCI EAFE Value Index	6.90	0.99	5.13	0.96	6.02	0.97
MSCI Emerging Markets Index	12.26	0.88	10.14	0.62	11.20	0.72
Bloomberg Barclays US Aggregate Bond Index	6.79	0.83	2.67	0.93	4.71	0.83
Bloomberg Barclays US Govt Bond Index Intermediate	6.07	0.73	1.60	0.82	3.81	0.73
BofA Merrill Lynch 1-Year US Treasury Note Index	4.64	0.29	-0.40	0.48	2.09	0.28
Estimated Market Premium added to Excess Expected Return	8.00		6.00		7.00	

Loading Factors for 9-Factor regression estimating expected returns: Fama/French Total US Market Research Factor (MKT-BR), Continental Market minus T-Bills (MKT-CO), Asia Pacific Market minus T-Bills (MKT-PR), United Kingdom Market minus T-Bills (MKT-UK), Japan Market minus T-Bills (MKT-JP), World Size Premium (small minus big, includes US) (SMBWD), World Style Premium (includes US) (HMLWD), Term Factor (Term) and US Default Premium (Defau). Courtesy of Kenneth R. French and Dimensional Fund Advisors LP.

Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. All returns gross of dividends. In USD. Past performance is not a guarantee of future results.

Sources: Russell data from Russell Investment Group; S&P data from Standard & Poors Index Services Group; MSCI data from Morgan Stanley Capital Indices; BofA Merrill Lynch data Merrill Lynch Fenner & Smith; Barclays data from Bloomberg. All rights reserved.

Recently *The Wall Street Journal* published an article, [“The Active-Passive Powerhouse”](#) about Dimensional Fund Advisors as part of a series called “The Passivists.” Dimension had the second-largest inflows of US mutual funds in 2016, and now is 6th in size of all funds. Twenty years ago, Dimensional was not in the top 100. Dimensional was founded on a set of economic ideas, bigger than the firm itself. Dimensional identifies compelling academic research and apply it to the world of practical investing. Decades of research and rigorous testing underpin their approach to pursuing higher expected returns. Their goal has been to add value over benchmarks and industry peers through an integrated and robust process. They have long history managing time-tested investment strategies for clients. Professional Financial has constructed its strategies primarily based on their portfolios for nearly twenty years.

Many firms and advisors come up with interesting investing models, today even applying from some of the same factor research that Dimensional employs, to say “we can do this.” Over the last twenty years Professional Financial has worked closely with Dimensional to refine a new investment management approaches with their portfolios, integrated with financial planning into what we now call wealth management. We endured rejection among peers and prospective clients in the early years. But looking back at what Dimensional has accomplished, and what we accomplished through them as we put our clients’ goals first, we can say proudly say with them, “We’ve done it.”

ⁱ We will not identify the specific funds due to compliance requirements, but those readers with an inordinate interest in such matters can match them against returns on the Dimensional Fund Advisors website: www.Dimensional.com/Strategies

ⁱⁱ Latitude lines stay parallel to each other as they surround the globe in a series of concentric circles. Meridians of longitude also are imaginary lines looping from the North Pole to the South in great circles, converging at the poles. The difference is that latitude is fixed by nature and the equator; zero-degree meridian is where science and custom place it (now Greenwich, England). Whereas calculating latitude is relatively easy, longitude depends on knowing the precise time relative to zero-meridian as well as the time aboard ship to convert the hour difference to geographical separation. Measuring the moons of Jupiter on a rocking ship at sea was not a practical solution. See Ava Sobel, *Longitude* (1995).