



Losing the Forest for the Trees

How the Active vs. Passive Debate Misses the Point

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ACTIVE VS PASSIVE

The battle between stock-picking active and index-based passive management has been raging for years, but in 2016 the momentum was all on the side of passive managers. BlackRock, Vanguard, and State Street occupy the top spots on the AUM tables, each passively managing trillions of dollars. Meanwhile, traditional stock-picking active managers¹ have been hemorrhaging assets. According to Morningstar research², U.S. passive mutual funds added \$492bn in 2016, whereas active managers have shed \$204bn. These numbers are for open-ended mutual funds and don't include ETFs or the shift in institutional assets, where the same trends are underway.

In a circle-the-wagons moment, the leaders of some of the world's largest active managers recently gathered in New York for "The Seismic Shift Senior Leadership Forum³" to discuss the challenges facing their industry. Almost all expect the trend to passive to continue. In addition to investors "voting with their feet", passive management is buffeted by the tailwinds of the robo-advisor movement and the Department of Labor's proposed fiduciary rule.

By now the arguments for and against picking stocks and indexing are well documented. Oceans of ink have been spilled on either side. As a brief synopsis, here are the points people tend to make regarding active and passive management:

- The Case for Passive Management/Against Active Management
 - Management fees are close to zero
 - Most active managers fail to outperform their benchmarks after fees
 - Identifying active managers likely to outperform is difficult
- The Case Against Passive Management/For Active Management
 - Passive investing doesn't allow for the efficient allocation of capital
 - No attention paid to valuations,

fundamentals, etc.

- "Herding" into overbought asset classes
- No chance of outperforming the benchmark

At Swan Global Investments, our take on the whole passive-versus-active debate is a bit different.

Active or passive: it doesn't matter.

Some clarification on our stance is certainly in order. It is our opinion that the debate is focused upon the wrong thing. The passive/active argument is about relative performance, not absolute performance. By focusing upon differences measured in basis points, the investor risks losing the forest for the trees.

Yes, there will be differences between the relative performance of active and passive managers. But in terms of absolute performance, the one thing both active and passive management strategies share is systematic risk. And systematic risk is the biggest threat to an investor's wealth.

By definition, systematic risk is the risk that cannot be diversified away. Also known as market risk, systematic risk is the price that is paid for being in the game.

And how can one quantify systematic risk? What does it look like? Well, during the dot-com bust of 2000-02, systematic risk was a loss of 47.4%. From the market peak on September 2, 2000, to the market bottom of October 9, 2002, the S&P 500 shed almost half of its value. Moreover, it wasn't until October 23, 2006, months after the bottom, that the market recovered all of its losses⁴.

Of course, only a few short years later systematic risk again reared its ugly head, but this time the market losses exceeded 50%. During the financial crisis of 2007 to 2009, the S&P 500 index was down 55.2% between October 10, 2007 and March 9, 2009⁵. Meanwhile, the debate between active and passive is usually measured as a percentage point or two.

¹ For the purposes of this paper, "active management" refers to stock-picking strategies that seek to outperform a given benchmark through superior stock selection, rather than any type of top-down sector rotation or tactical asset allocation strategy.

² Morningstar Asset Management Quarterly, 1Q 2017

³ The Wall Street Journal, "Anxious Mutual Fund Industry Holds 'Seismic Shift Senior Leadership Forum'", December 13, 2016

⁴ All drawdown information from Morningstar Direct.

⁵ All drawdown information from Morningstar Direct.

The bottom line is that a traditional, stock-picking active manager will not be able to stock-pick his way out of systematic risk during a full blown bear market. Moreover, a passive manager is systematic risk, by definition. If the market sells off by 30%, 40%, 50% or more, an index manager is designed to go down with the ship. A passive manager is entirely, 100%, systematic risk.

It is our opinion that if market risk cannot be diversified away, it must be hedged away. The Defined Risk Strategy (DRS) was built on this premise. But before we discuss the DRS, let us look at how systematic risk impacts active and passive money managers across the industry.

SYSTEMATIC RISK: THE 800-POUND GORILLA

In the following section, we will see how systematic risk impacts the following classifications of managers:

1. Index funds within the large cap blend space
2. Active managers classified as Large Blend by Morningstar
3. Active managers classified as Large Value, Large Growth or Large Blend by Morningstar

4. Active managers across all nine Morningstar style boxes- Large, Mid, and Small and Value Blend and Growth

The field of managers was scrubbed to include only those funds with an inception date prior to January 1st, 2007. Also, duplicate share classes were removed, leaving only the primary share class. The count of funds across these categories is as follows:

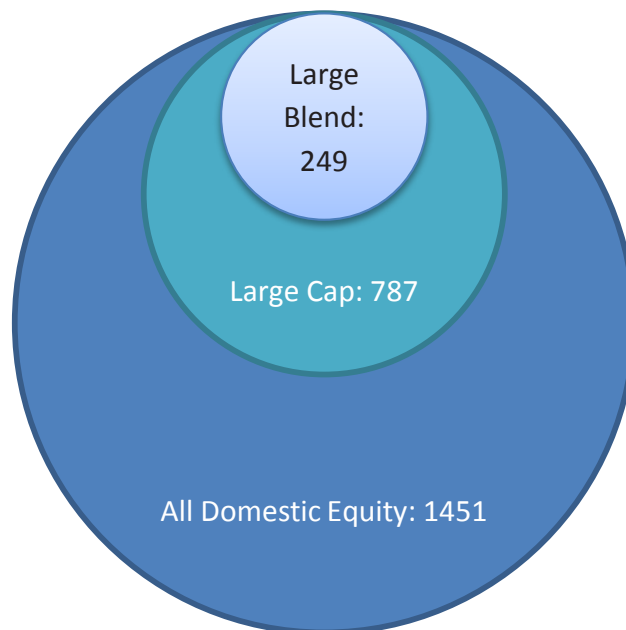


Chart 1 Source: Morningstar Direct, Swan Global Investments

The first metric we will look at is maximum drawdown. From peak-to-trough, how much did these managers lose? When the markets collapsed

between mid-2007 and early-2009, were any of the funds in this study successful at mitigating the losses? What were the ranges of outcomes?

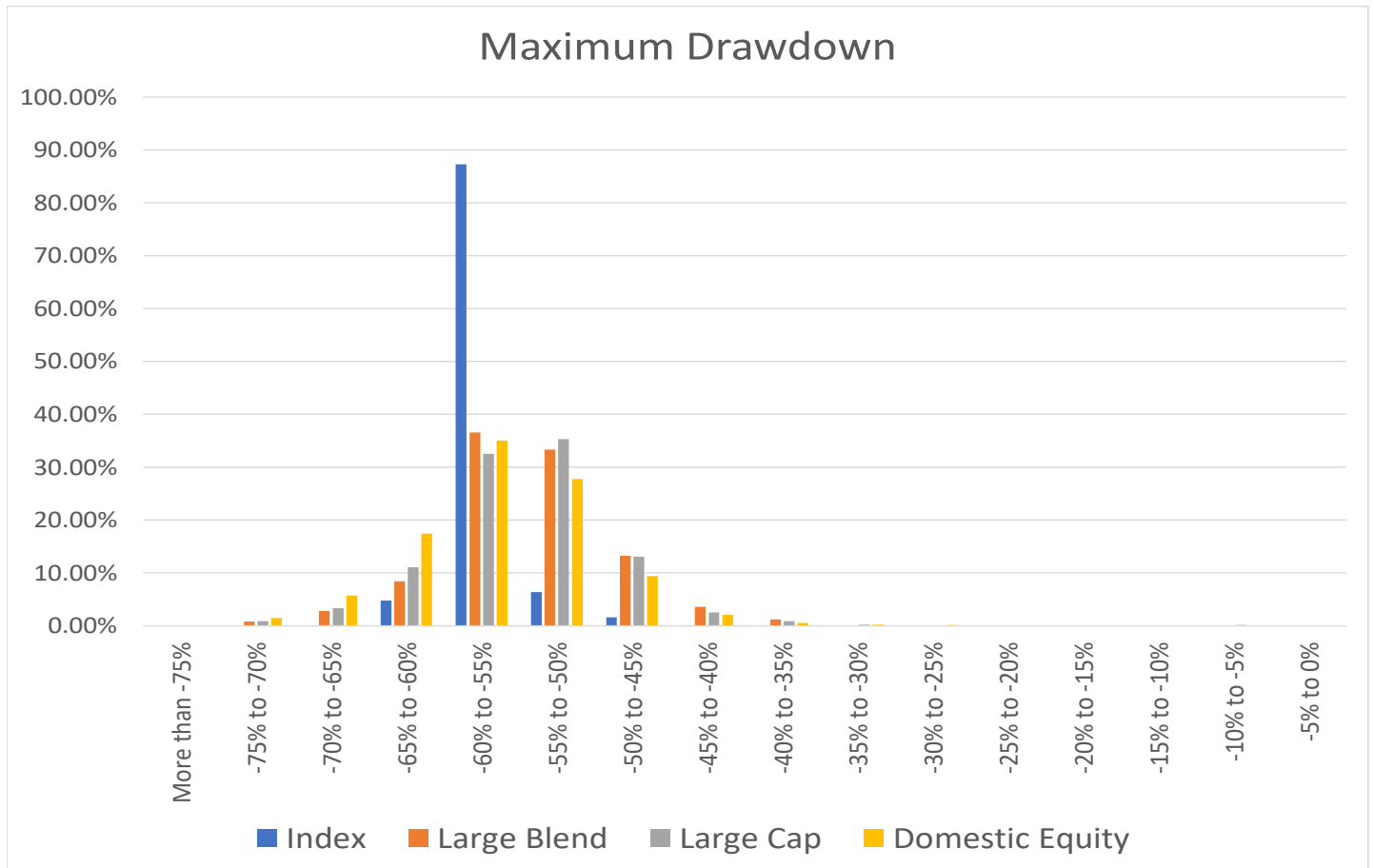


Chart 2 Source: Morningstar Direct, Swan Global Investments

Max Drawdown	Index	Large Blend	Large Cap	Domestic Equity
More than -75%	0.00%	0.00%	0.00%	0.07%
-75% to -70%	0.00%	0.80%	0.89%	1.45%
-70% to -65%	0.00%	2.81%	3.30%	5.72%
-65% to -60%	4.76%	8.43%	11.05%	17.44%
-60% to -55%	87.30%	36.55%	32.53%	35.08%
-55% to -50%	6.35%	33.33%	35.32%	27.77%
-50% to -45%	1.59%	13.25%	13.09%	9.44%
-45% to -40%	0.00%	3.61%	2.54%	2.07%
-40% to -35%	0.00%	1.20%	0.89%	0.55%
-35% to -30%	0.00%	0.00%	0.25%	0.21%
-30% to -25%	0.00%	0.00%	0.00%	0.14%
-25% to -20%	0.00%	0.00%	0.00%	0.00%
-20% to -15%	0.00%	0.00%	0.00%	0.00%
-15% to -10%	0.00%	0.00%	0.00%	0.00%
-10% to -5%	0.00%	0.00%	0.13%	0.07%
-5% to 0%	0.00%	0.00%	0.00%	0.00%

Table 1 Source: Morningstar Direct, Swan Global Investments

During the Financial Crisis of 2007 to 2009, the vast majority of passive and active funds lost over half their value in a very short time span. Only one fund out of 1,451 was able to lose less than 25%. This is the impact of systematic, market risk. *When things go wrong, the relative advantages or disadvantages in the active versus passive debate are rendered irrelevant.*

Another factor we can look at is R-squared, also known as the coefficient of determination. R-squared is often used as a “goodness of fit”, but its official definition is the percent of a data series’ variance that is attributable to the variance in another data series. For the purposes of our discussion here, R² is used to determine the percentage of an active manager’s variance and is driven by the variance in the market, as defined by the S&P 500. In other words, what percentage of an active manager’s variance is driven by systematic risk?

It should be no surprise that the vast majority of active and passive funds within the large blend space have R² of at least 90%. The market drove

most of the variation of returns. But as we expand the circle to include first value and growth, and then mid cap and small, we don’t see the overall picture change very much. Almost 90% of large cap growth, blend, and value funds have at least 80% of their return-variation driven by the S&P 500. When it comes to all domestic equity funds, 83% of them have R² of 80% or higher.

Of course, many investors experienced this firsthand during the Financial Crisis of 2007-09. Prior to the event many investors using Modern Portfolio Theory pursued what I call “[false diversification](#).” By allocating their equity investments across many mutual funds covering all the styles and sub-styles of the equity spectrum investors thought they were properly diversified. As the above data indicates, equity investors had nowhere to hide.

The bottom line is that systematic risk is the 800-pound gorilla. Whether one chooses to invest actively or passively is moot - if systematic risk is not addressed head-on, how one picks stocks is beside the point.

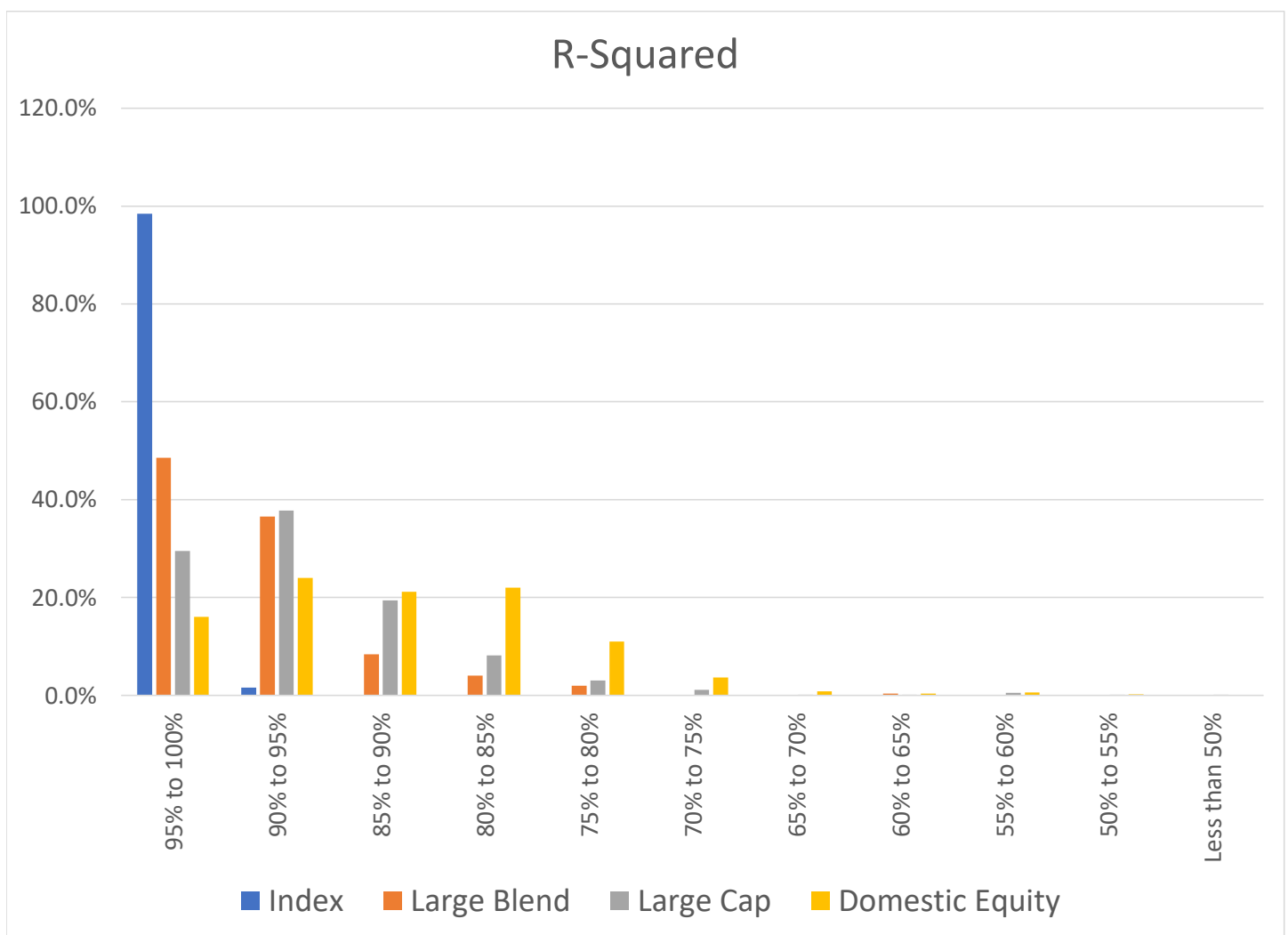


Chart 3 Source: Morningstar Direct, Swan Global Investments

R-squared	Index	Large Blend	Large Cap	Domestic Equity
95% to 100%	98.4%	48.6%	29.5%	16.1%
90% to 95%	1.6%	36.5%	37.7%	24.0%
85% to 90%	0.0%	8.4%	19.4%	21.2%
80% to 85%	0.0%	4.0%	8.1%	22.1%
75% to 80%	0.0%	2.0%	3.0%	11.0%
70% to 75%	0.0%	0.0%	1.1%	3.7%
65% to 70%	0.0%	0.0%	0.1%	0.8%
60% to 65%	0.0%	0.4%	0.1%	0.3%
55% to 60%	0.0%	0.0%	0.5%	0.6%
50% to 55%	0.0%	0.0%	0.1%	0.2%
Less than 50%	0.0%	0.0%	0.1%	0.1%

Table 2 Source: Morningstar Direct, Swan Global Investments

WHAT ABOUT “SMART BETA?”

Over the last decade or so there has been an explosion in “smart beta” strategies. Also called strategic beta, fundamental indexing, factor investing, or enhanced indexing, the idea is usually the same: that there is a “third way” that combines the best of active and passive management. However, we would argue that smart beta suffers from the same flaws afflicting passive and active managers, namely, systematic risk is still pervasive in smart beta strategies.

In order to understand smart beta strategies, it is useful to understand where they came from and how they evolved. In fact, even the simple duality of passive and active is better understood if we look back to where it all started: the Capital Asset Pricing Model.

The Capital Asset Pricing Model and Passive Investing

Although it has been over half a century since William Sharpe, Jack Treynor, and John Lintner developed the CAPM, its implications still reverberate to this day. The original model was simple. Under the CAPM, the expected return of an asset, any asset, was simply a function of its sensitivity to a single factor. That factor was “the market”, or systematic risk as we’ve been calling it. The sensitivity or coefficient in a single-factor regression is of course beta. The excess return of any asset over the risk-free rate was theorized to simply be its sensitivity to market movements.

$$R_i = R_{rf} + \beta_i[R_{mkt} - R_{rf}] + \alpha_i$$

Where:

- R_i = Return of investment
- R_{rf} = Return of risk free investment
- β_i = Beta of investment to market
- R_{mkt} = Return of market
- α_i = Alpha of investment

The last term, alpha, was an afterthought. Originally it was expressed as an error term to set the two sides of the equation in balance. After all, if sensitivity to systematic risk explained all of the movements of an asset, then any differences in the equation would just be statistical noise.

However, those in the active management camp didn’t see things that way. They believe that there is a premium, a level of return that the intelligent and diligent investor can reap in excess of the systematic risk taken. This is why those on the active management side frequently refer to alpha as “skill”.

Of course, those on the passive side of the debate would prefer to call alpha “luck.” For them, alpha is an error term. It is random, negligible, and after accounting for active management fees, negative.

When John Bogle first started evangelizing the simple-and-cheap market-average model, no one would have predicted Vanguard would have grown to be one of the largest money managers in existence. But essentially this whole active-vs-passive debate can essentially be boiled down to a black-and-white question: after accounting for systematic risk/beta, is the remainder something that can be reliably harvested? Or is it just noise? Obviously Vanguard was built around the latter argument.

The Fama-French Three Factor Model and Enhanced Indexing

It was the simplicity of the CAPM that later academics targeted. In the single-factor model, alpha seemed to be too large to be random. Were there simply a lot of skillful active managers in the 1980’s picking stocks? Or was there a systematic flaw not being picked up by the CAPM?

The next big leap forward was developed by Eugene Fama and Kenneth French, and was a modification upon the original CAPM. Published in the early

1990's, Fama and French identified two additional factors that seemed to be statistically significant and persistent. Their findings indicated that smaller stocks tended to outperform larger stocks and value stocks tended to outperform growth stocks. After quantifying this difference or "premium", Fama and French released what became known as the "three factor model".

It is quite similar to the CAPM, but includes these two new independent variables. A few years later Mark Carhart literally added a fourth term to the equation, momentum.

$$R_i = R_{rf} + \beta_i^* [R_{mkt} - R_{rf}] + \beta_s [SMB] + \beta_v [HML] + \alpha_i^{FF}$$

Where:

- R_i = Return of investment
- R_{rf} = Return of risk free investment
- β_i^* = Beta of investment to market after accomodating new factors
- R_{mkt} = Return of market
- β_s = Sensitivity to "small minus big" factor
- SMB = The small cap premium; "small market capitalization minus big"
- β_v = Sensitivity to "high minus low" factor
- HML = The value premium; "high book to market minus low"
- α_i^{FF} = Fama – French alpha of investment

It should be noted that if you add more independent variables to the equation and if these variables actually do increase the explanatory power of the equation, then inevitably the error term – alpha – will decrease.

For example, assume an active manager favors value stocks and small cap stocks in their portfolio. Using the single-factor CAPM model, the alpha might be 3.5. However, if one were to use the more robust Fama-French three factor model and the systematic bias towards value and small could be quantified, the manager's alpha might drop from 3.5 to 1.0.

It was upon these theories that Dimensional Fund Advisors built their highly successful fund family. DFA commercialized the idea of the multi-factor model and has converted many financial advisors and investors to their creed. Instead of paying active managers hefty salaries to research companies and assemble portfolios, DFA instead simply assigned "value" and "small" scores to stocks, sorted them

from highest to lowest, and built their portfolios around those biases⁶.

Factor Models and Smart Beta

Once the concept of factor-based investing and cheap computing power became widely available 20 years ago, the floodgates opened. There was a surge in quantitative money managers, many using Barr Rosenberg's Barra Risk Factor Analysis platform to construct portfolios. Out the window went old-fashioned fundamental stock analysis, and a whole new breed of "quants" spent their days trying to identify new explanatory factors or design optimization algorithms. "Enhanced indexing" was a term that was en vogue 15 years ago; these days it's called "smart beta."

This idea of factor-based investing eventually merged with nascent exchange traded fund industry to coalesce into the "smart beta" movement. The basic thesis behind smart beta is that indices based solely upon market capitalization are lacking⁷. The idea is systematic biases exist that would generate excess relative returns if they were over- or under-weighted relative to the cap-weighted market.

Every deviation from the original Capital Asset Pricing model is some variation on this basic premise. Fama-French, Carhart, BARRA, factor analysis, smart beta...it's all variations on the same theme.

That said, there are two old sayings that one should keep in mind when analyzing a quantitative, factor-based strategy. The first is, "garbage-in, garbage-out." If the inputs into a model are unreliable, the outputs might turn out to be worse than useless. The second saying is, "if you torture the data long enough, it will confess to anything." With so many data points available and the immense computing power at everyone's fingertips, the danger of false positives making their way into a factor model is very real. One should make sure qualified statisticians are generating the quant models, not just a guy who knows how to run a computer.

⁶ Of course, building a factor-based portfolio isn't as simple as clicking "sort" on a spreadsheet. Top-down risk controls are frequently in place to control the aggregate risks.

⁷ An interesting, often over-looked side note: the S&P 500 isn't passively constructed. The actual construction of the index is conducted by a committee of humans, choosing stocks that they believe best represents the U.S. economy.

Another broader point to make is that statistical models of any type are often wrong. In 2016 most statistical models said the United Kingdom would remain within the European Union, Hillary Clinton would be president of the U.S. and the Atlanta Falcons had an insurmountable lead over the New England Patriots at halftime of Super Bowl LI. Statistical models are far from bullet proof.

Finally, I do find it amusing that there is a certain disconnect in perceptions when it comes to smart beta. Many people accept “smart beta” as a viable investment strategy but “closet indexers” are regarded as charlatans unworthy of the title “portfolio manager.” If one uses a common measuring stick like the S&P 500 and compares the typical smart beta portfolio against a typical benchmark-relative stock picker, one won’t see a whole lot of difference between their active bets.

Third way or the same road?

However, the main objection Swan Global Investments has with all these strategies is that systematic risk remains unaddressed. In all of the CAPM-based models, the biggest factor is always simple market risk. Market risk represents absolute risk: the risk of catastrophic loss, the risk of running out of money. This risk is especially relevant for the investors of the baby boom generation as they

transition from the accumulation to distribution stages of their life cycle, and are drawing down their account values to fund retirement.

In this section we will analyze the impact of systematic risk on four types of strategies, namely:

1. A pure passive manager, represented by Vanguard 500 Index
2. A traditional active manager, Growth Fund of America
3. A factor-driven/smart beta strategy, DFA US Large Cap Value
4. A hedged equity approach, Swan’s Defined Risk Strategy

The technique we will use for this analysis is referred to as linear regression. It’s called a linear regression because you literally draw a straight line through a plot of manager’s returns (the dependent variable) and the benchmark (the independent variable). The goal of the linear regression is to get a line that best-fits the data. As a matter of fact, the commonly used metrics like alpha, beta, and R^2 are generated via a linear regression.

From a statistical standpoint, this is a well-established technique. But from an investing standpoint, does it really make in any sense to track that line of best fit? If the market is down -30%, -40%, or -50%, shouldn’t the investor try to be as far away from that market line as possible?

Below we see a linear regression for the Vanguard 500 fund (VFINX) from July 1997 to December 2016, using quarterly returns. There are no surprises here. The returns of the passive fund track the S&P 500 index as closely as possible; the fund is doing

exactly what it should be doing. But the problem is when the market tanks the fund tracks it down in lock-step. In essence, it IS the market.

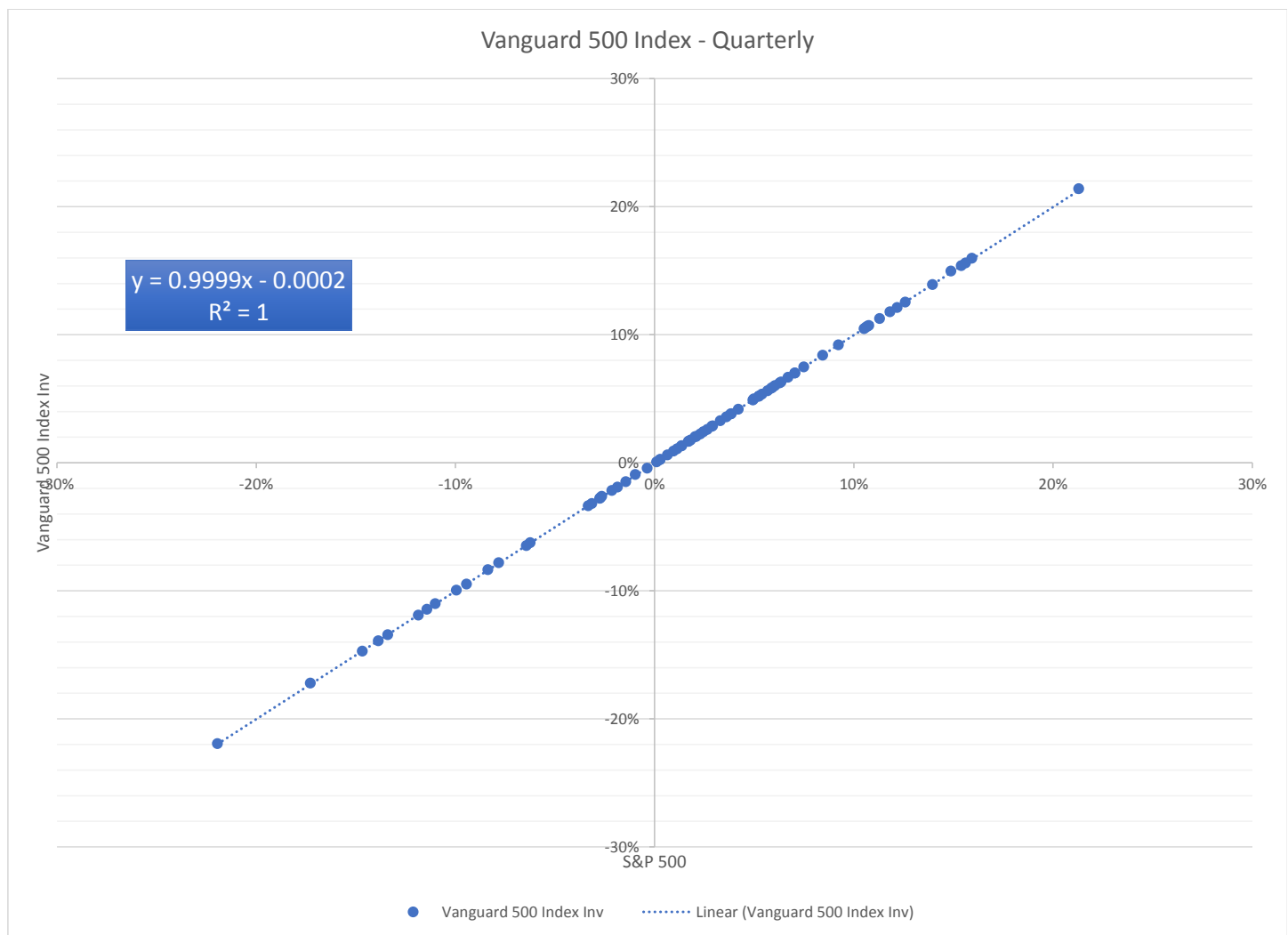


Chart 4 Source: Zephyr StyleADVISOR, Swan Global Investments

The equation for the regression essentially is the capital asset pricing model we saw previously. The 0.9999 coefficient is the slope of the line, known as beta in financial circles. The error term of -0.0002 is the quarterly alpha, which is slightly negative due to fees. We see the R^2 as a perfect 1 (or 100%) meaning that 100% of the variance of returns in the

fund is explained by the variance of returns in the benchmark.

Let us now look at a traditional active manager. In this case, we are looking at one of the most popular funds in existence, the Growth Fund of America (AGTHX). Again, we will use the time frame July 1997 to December 2016 and quarterly returns.

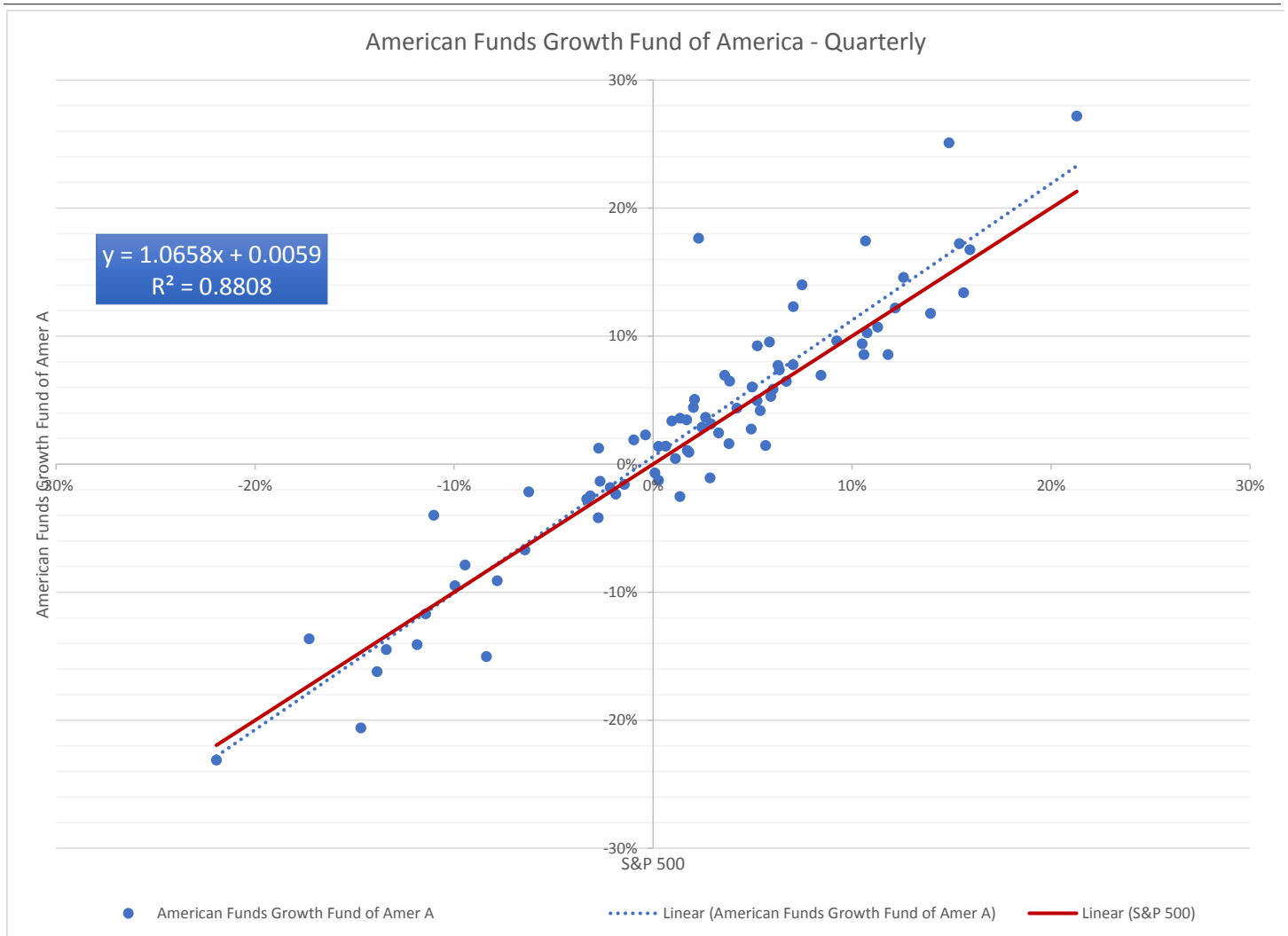


Chart 5 Source: Zephyr StyleADVISOR, Swan Global Investments

Unlike the Vanguard index fund, the straight red line of the S&P 500 does not perfectly fit this data. However, it isn't very difficult to draw the blue dotted line through the scatterplot and come up with a solution that captures 88.08% of the variance of returns. We see Growth Fund's beta being slightly above 1.0 as the coefficient is 1.067 and we see a small positive quarterly alpha, even after taking into account fees. But seeing how closely the individual quarterly dots hug the red line of the S&P 500, we can conclude that systematic risk is the primary driver of performance.

What about a factor-driven, "smart beta" strategy, like DFA US Large Value (DFLVX)? Even though this is classified as a large cap value fund, the majority of its returns can be explained by the S&P 500 (red line). There is slightly more dispersion from the best fit line than we saw with Growth Fund of America, and there is a small amount of alpha in this regression. But it is still safe to say by looking at the blue dotted line that the DFA fund has a linear relationship with market, for better or worse.

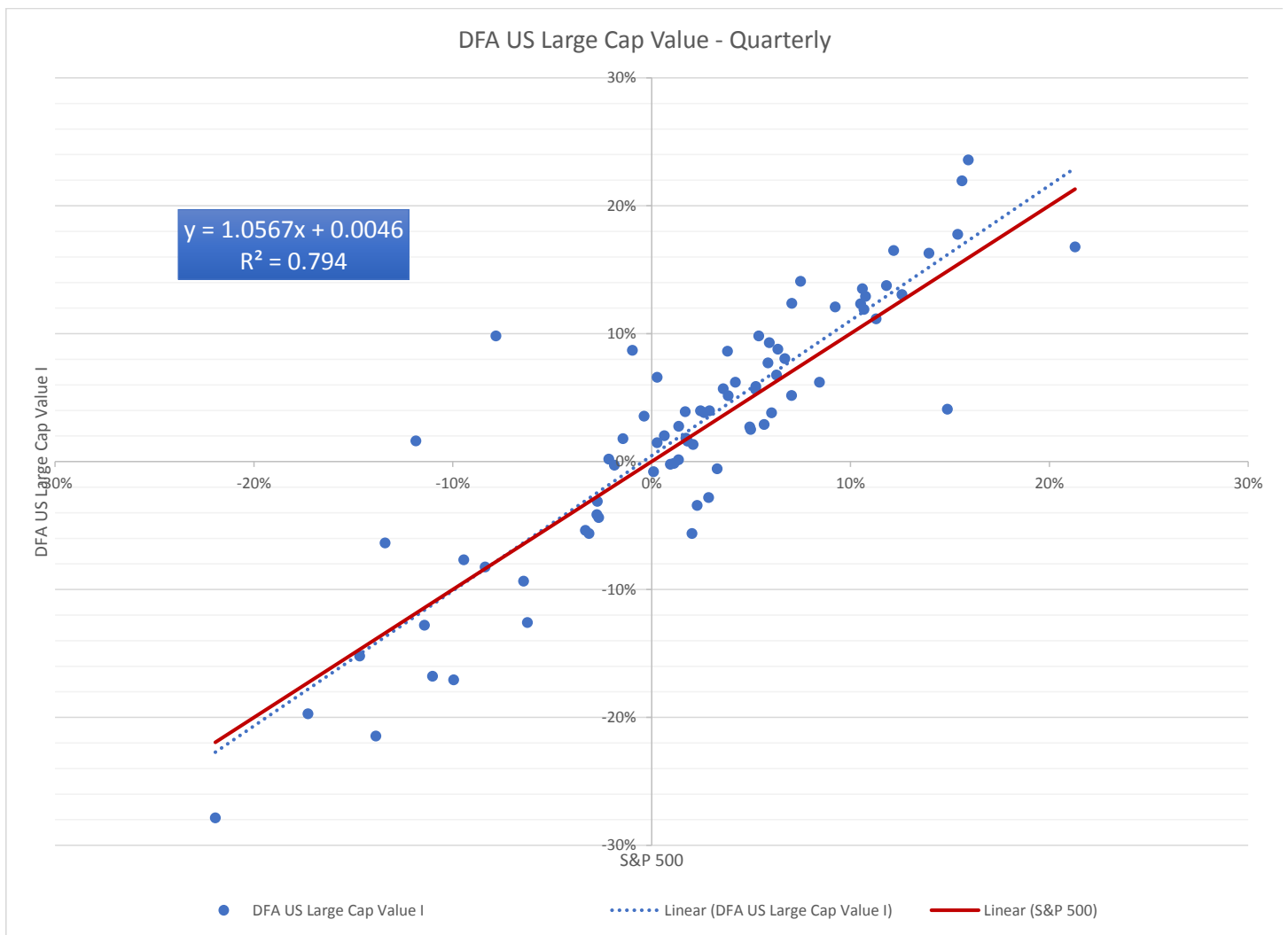


Chart 6 Source: Zephyr StyleADVISOR, Swan Global Investments

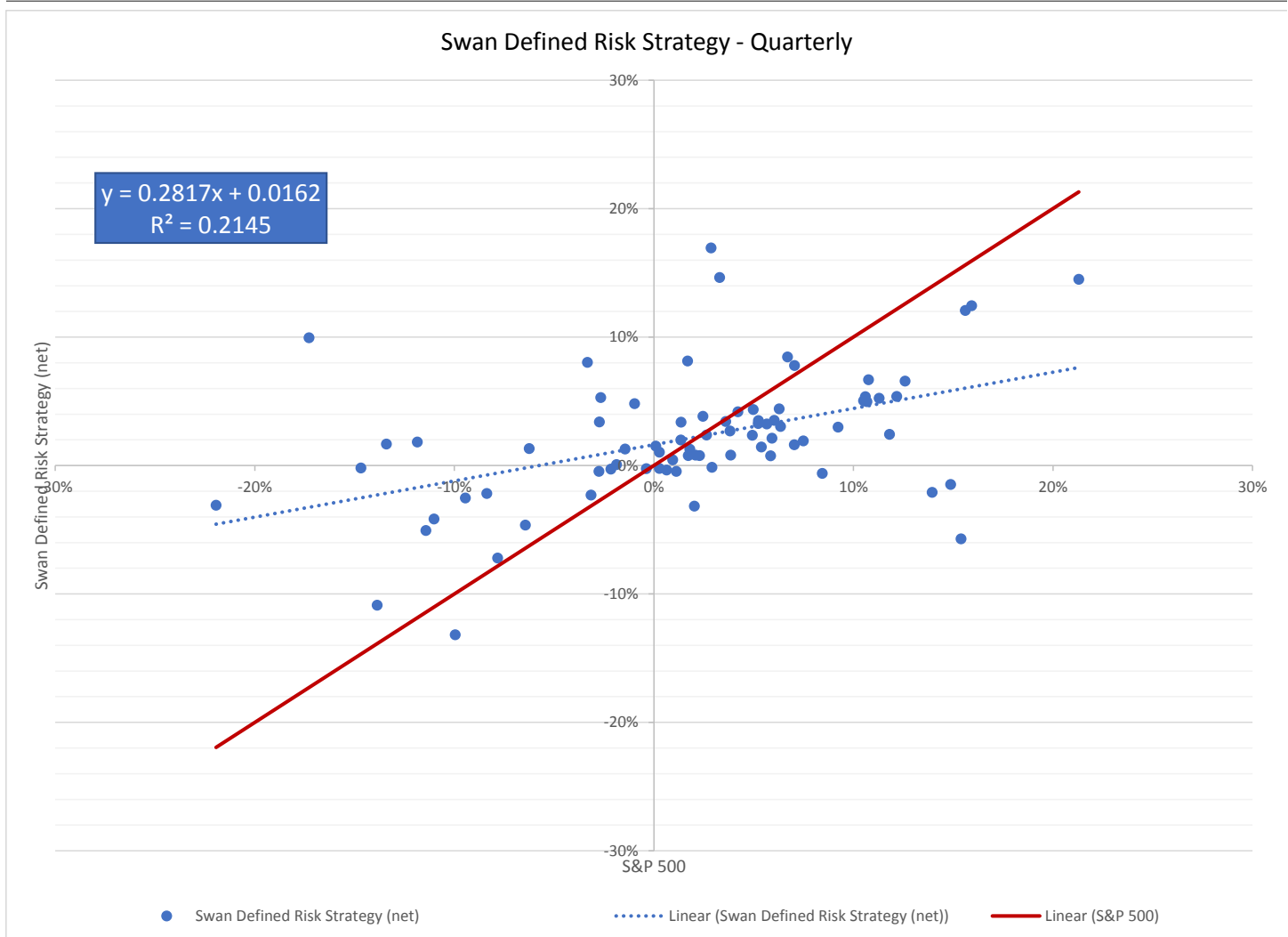


Chart 7 Source: Zephyr StyleADVISOR, Swan Global Investments. DRS returns are from the Select Composite, net of all fees. NOTE – this chart is for illustration purposes, not a guarantee of future performance. The charts and graphs contained herein should not serve as the sole determining factor for making investment decisions.

Finally, let's turn our attention to the Defined Risk Strategy. The dots of the scatterplot resemble more of a cloud than a straight line. It is possible to draw a line through the data, but the blue, dotted regression line doesn't do a very good job of explaining the DRS's performance.

The R^2 "goodness of fit" is only 21.5%. The slope of the line is flat-ish, and the quarterly beta is thus low. There is positive alpha, meaning there has been an excess return harvested for the amount of risk taken.

Vanguard, American and DFA were chosen as representatives for the different investment approaches due to their popularity with investors and their long track records. However, based upon

the results seen in the first section, I could have run similar regression analysis on just about any of the 1,451 mutual funds in the domestic equity space, and the vast majority of funds would have had scatterplots that looked very similar to American or DFA. This is why at the outset of the paper we made the claim that the decision between active and passive management is not the debate we should be having. Real risk, the risk we should be focused upon, is systematic risk.

Although using monthly or quarterly data gives us more robust regressions and coefficients, people often think of markets in terms of calendar years. Let us review the same strategies, this time using calendar years as plot points rather than quarterly returns.

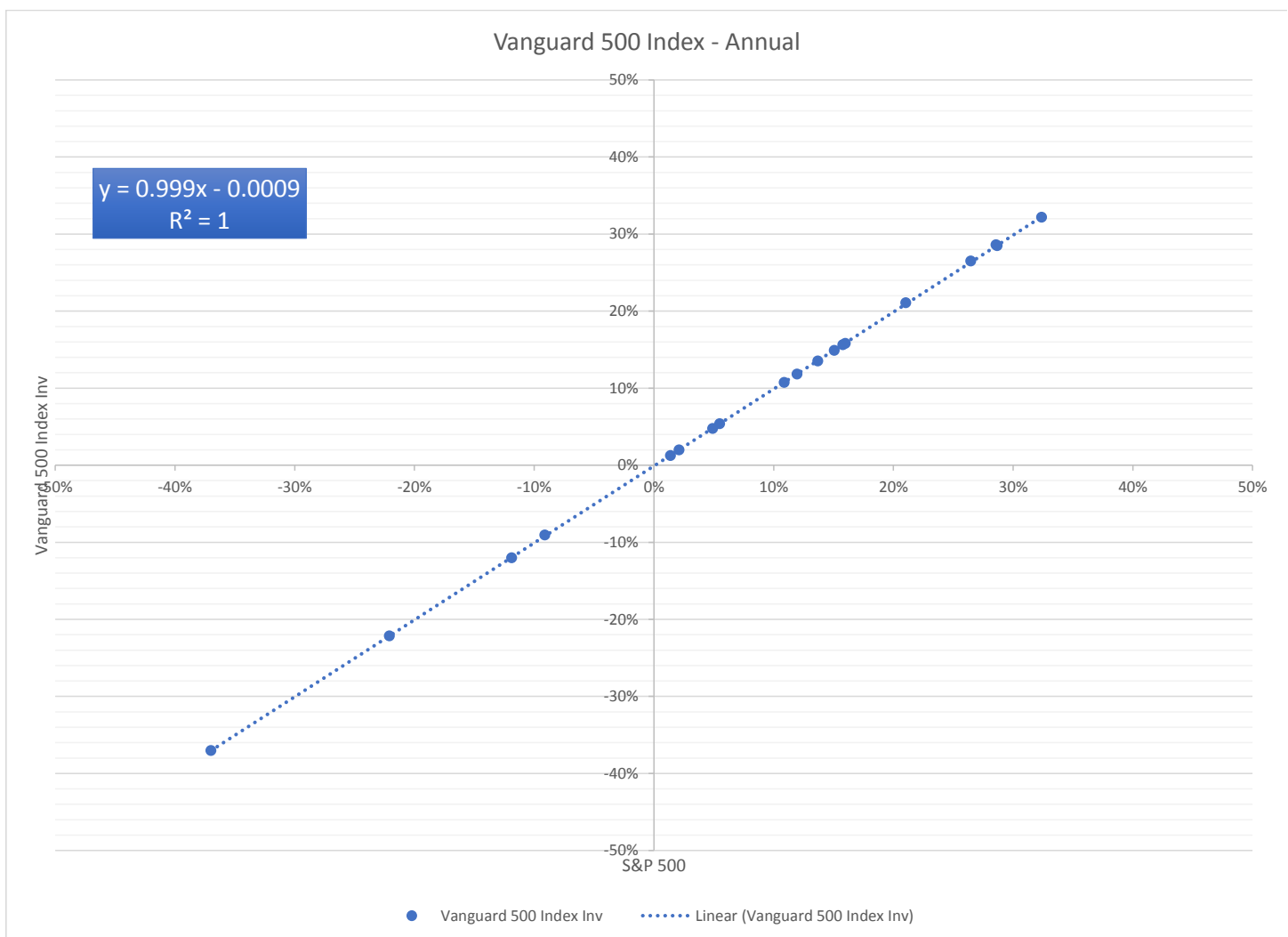


Chart 8 Source: Zephyr StyleADVISOR, Swan Global Investments

Again, the Vanguard 500 fund holds no surprises, but its plot points are immediately recognizable.

The -37.02% return was 2008, the +32.18% return was 2013, et cetera.

It is also easier to interpret a graph with fewer data points. With both the Growth Fund of America from American Funds and the DFA US Large Value fund we see that the market risk is the primary

driver of both positive and negative returns.

Broadly speaking, a bad year in the market equates to a bad year for the stock-picker or the factor fund. On the flip side of the coin, a good year in the market will mean a good year for either strategy.

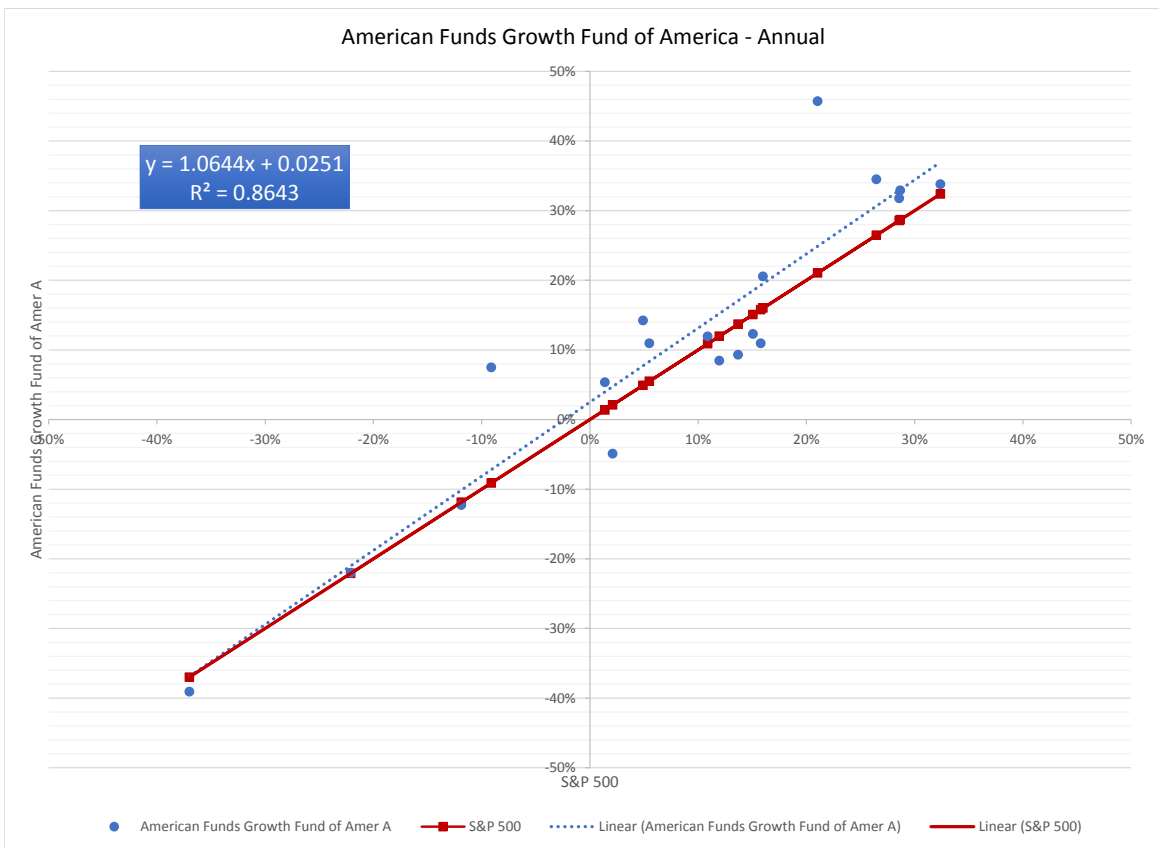


Chart 9 Source: Zephyr StyleADVISOR, Swan Global Investments

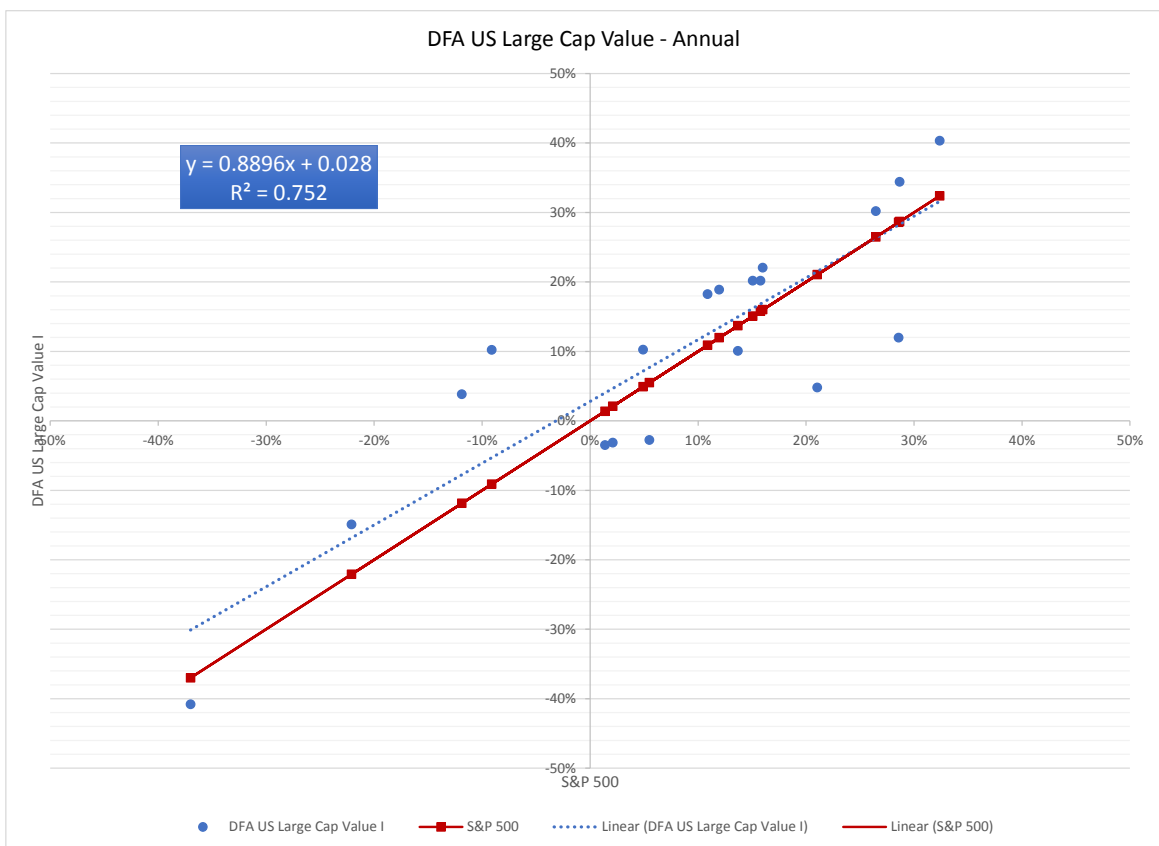


Chart 10 Source: Zephyr StyleADVISOR, Swan Global Investments

Finally, with the DRS we see the impact of our hedging. The scatterplot for the DRS is unique. Even though the markets were down in 2000, 2001, 2002 and 2008, the DRS participated little in those bear markets. There haven't been any double-digit calendar year losses. Two of the negative years occurred during flat years in the

market when the carrying cost of the hedge wasn't offset by gains in the equity market or premium collection income (2011 and 2015). There haven't been many years of extremely outsized returns, but most of the annual returns fall into a rather tight range, regardless of market conditions.

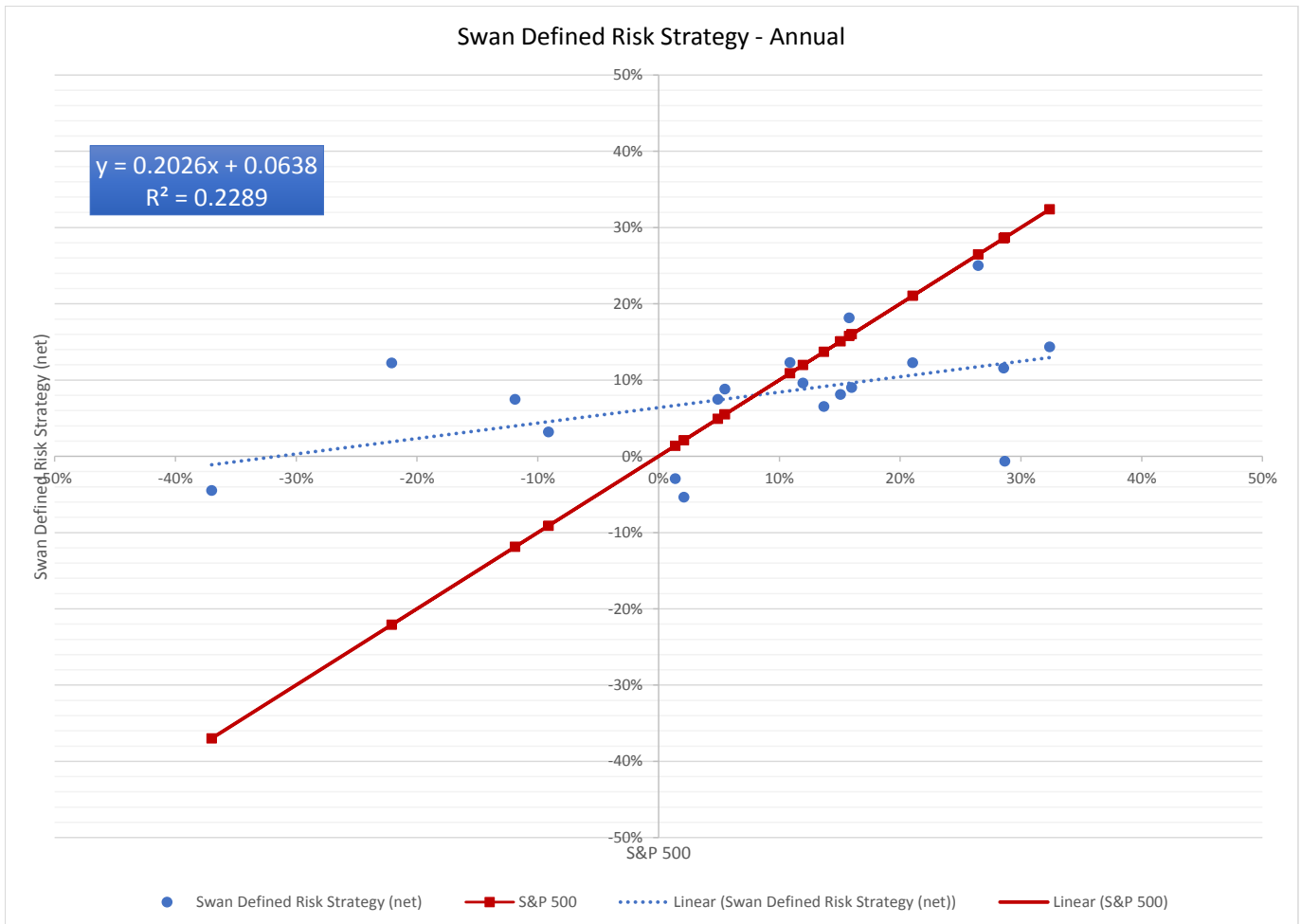


Chart 11 Source: Zephyr StyleADVISOR, Swan Global Investments. DRS returns are from the Select Composite, net of all fees. NOTE – this chart is for illustration purposes, not a guarantee of future performance. The charts and graphs contained herein should not serve as the sole determining factor for making investment decisions.

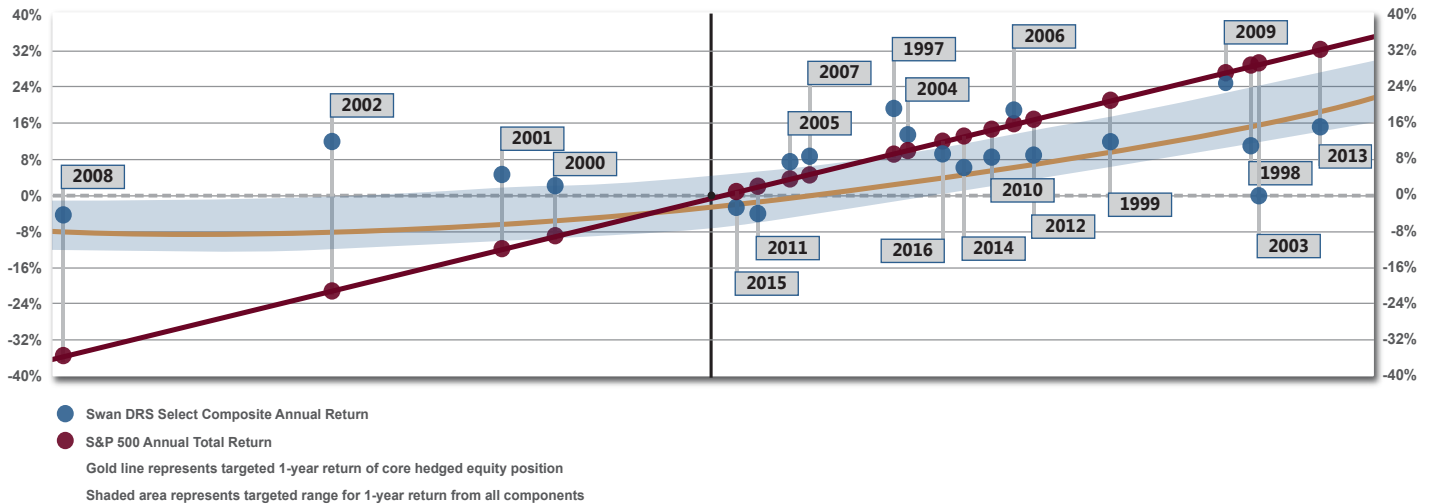


Chart 12 Source: Source: Swan Global Investments and Morningstar; the S&P 500 Index is an unmanaged index, and cannot be invested into directly. DRS returns are from the Select Composite, net of all fees. NOTE – this chart is for illustration purposes, not a guarantee of future performance. The charts and graphs contained herein should not serve as the sole determining factor for making investment decisions.

This, of course, is all by design. The goal of the DRS is illustrated by a target return band. The target return band is one of the key concepts or tools in use at Swan. The DRS does not want a linear relationship to the market. The DRS seeks to participate in markets when they are rising, but actively hedges against downward moves.

The diagonal red line is the profit-loss diagram for the S&P 500. The curved gold line represents the return profile of the DRS's hedged equity position; that is, the buy-and-hold position in the market combined with the protective elements of the hedge. The gold line lags the S&P 500 in up markets but is

still upward sloping. In down markets, the hedged equity positions flatten out as the S&P 500 continues to drop. The blue area around the gold curve is the targeted range of impact from overlaying Swan's short-term premium collection trades over the hedged equity position. It is our goal that returns of the DRS will be within or above the blue shaded area. In 19 of 20 years, they have been.

For an in-depth discussion of Swan's target return band please refer to a blog post titled, ['What Return Are You Targeting? Setting Expectations and Benchmarking in a Myopic World'](#).

KEEPING AN EYE ON THE BALL

In Swan's 2015 paper, "[Math Matters](#)" by Micah Wakefield, we identify four mathematical principles that we believe are key lynchpins to an investor's long-term success. These are:

1. compounding
2. drawdowns
3. volatility
4. shape of the distribution

Notice what is not represented on this list - whether or not active stock picking adds value after expenses. The raging debate that is consuming the money management industry does not make our "keys to success" list. To return to the original point of this paper, we believe that the debate between passive, active, and smart beta misses the point. A difference in relative performance between active and passive managers of a hundred basis points or two doesn't matter when a bear market hits.

For the record, Swan does utilize passively managed ETFs to gain exposure to the markets. We don't profess to be skilled stock-pickers and tend to fall into the camp that believes that superior stock-pickers are hard to identify in advance and any excess returns generated by stock-picking are likely to be whittled away by fees over time. Therefore, we seek our systematic exposure as cheaply as possible through the use of index-based ETFs.

However, we believe the real value the Defined Risk Strategy brings to the table is cost-efficient hedging of market risk, so that is where our focus lies. In fact, we believe the hedging of the DRS can be applied to many asset classes. The long-term strategic plan of Swan Global Investments is to offer exposure to many of the world's primary asset classes, but with the DRS process overlaid on top of it. This effort is already underway with the DRS available as pure plays on U.S. small cap, foreign developed, and emerging markets. In each of those solutions, the baseline exposure to the asset class is via passively managed ETFs, and the DRS process is applied. For more discussion, refer to our paper on [Diversifying with the DRS](#).

Finally, we realize that the argument between active and passive is far from settled. There are still many

investors who do believe active stock-picking managers can add value over passive. But as we've seen throughout this paper, stock-picking offers little defense against systematic risk. Another leg of Swan Global Investment's strategic vision is to offer the Defined Risk Strategy as an overlay to an existing portfolio of active managers.

In such a scenario, a client will specify how he or she would like to obtain their systematic exposure to the market - their "beta", if you will. For example, they might have a multi-manager portfolio with significant assets already in place. The client hopes their active managers add value in the traditional way, by making active management, stock-selection or sector-tilting decisions.

However, the client is rightfully concerned about systematic risk. In such a scenario Swan would analyze the systematic risks to the portfolio and propose a customized overlay to hedge systematic risk. The active managers focus upon their skills, while Swan constructs downside protection using the hedging skills acquired having managed the DRS for 20 years. Such efforts are ongoing, but we welcome discussions with any interested parties.

CONCLUSION

The debate between active and passive has dominated headlines in the money management industry over the last several years. With smart beta/factor investors throwing their two cents into the fray there are reams of analysis from every side to support their positions. But forgotten in this discussion is the fact that these debates are occurring in the midst of the second longest equity bull market in U.S. history. Since bottoming out in early March 2009, markets have gained over 300% and have been setting all-time highs.

During such a frothy environment, arguing over the relative merits of active or passive investing is almost a luxury. It is our opinion that the real value a money manager can provide is the preservation of capital. It is our opinion that neither passive management nor active stock-picking is capable of addressing systematic risk and that hedging is the best defense.

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Swan Global Investments, LLC ("Swan") is an independent Investment Advisory headquartered in Durango, Colo. registered with the U.S. Securities and Exchange Commission under the Investment Advisers Act of 1940. Being an SEC-registered advisor implies no special qualification or training. Swan offers and manages its Defined Risk Strategy to individuals, institutions and other advisory firms. All Swan products utilize the Defined Risk Strategy ("DRS"), but may vary by asset class, regulatory offering type, etc. Accordingly, all Swan DRS product offerings will have different performance results due to offering differences and comparing results among the Swan products and composites may be of limited use. There are eight DRS Composites offered: 1) The DRS Select Composite which includes non-qualified accounts; 2) The DRS IRA Composite which includes qualified accounts; 3) The DRS Composite which combines the DRS Select and

DRS IRA Composites; 4) The DRS Institutional Composite which includes high net-worth, non-qualified accounts that utilize cash-settled, index-based options held at custodians that allow participation in Clearing Member Trade Agreement (CMTA) trades; 5) The Defined Risk Fund Composite which includes mutual fund accounts invested in the S&P 500; 6) The DRS Emerging Markets Composite which includes mutual fund accounts invested in emerging markets; 7) The DRS Foreign Developed Composite which includes all research and development account(s), and mutual fund accounts invested in foreign developed markets; 8) The DRS U.S. Small Cap Composite which includes all research and development account(s), and mutual fund accounts invested in U.S. small cap issues. Additional information regarding Swan's policies and procedures for calculating and reporting performance returns is available upon request. Swan claims compliance with the Global Investment Performance Standards (GIPS) and has prepared and presented this report in compliance with GIPS standard. Swan's compliance with GIPS has been independently verified from its inception on July 1, 1997 through December 31, 2015. A copy of the verification report is available upon request. To receive copies of the report please call 970.382.8901 or email operations@swanglobalinvestments.com. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and performance in compliance with the GIPS standards. Verification does not ensure the accuracy of any specific composite presentation.

The Defined Risk Strategy Select Composite demonstrates the performance of all non-qualified assets managed by Swan Global Investments, LLC since inception. It includes discretionary individual accounts whose account holders seek the upside potential of owning stock, and the desire to eliminate most of the risk associated with owning stock. The composite relies on LEAPS and other options to manage this risk. Individual accounts own S&P 500 exchange-traded funds, LEAPS associated with the ETFs, as well as option strategies based on other widely traded indices. The Defined Risk Strategy Select Composite includes all non-qualified discretionary accounts which are solely invested in the Defined Risk Strategy. The Defined Risk Strategy was designed to protect investors from substantial market declines, provide income in flat or choppy markets, and to benefit from market appreciation. Stock and options are the primary components of the strategy. The performance benchmark used for the Defined Risk Strategy is the S&P 500 Index comprised of 500 large-capitalization stocks, and which does not charge fees. 074-SGI-032317

ABOUT SWAN GLOBAL INVESTMENTS

Randy Swan started Swan Global Investments in 1997 looking to supply investment management services that were not available to most investors. Early in his financial career, Randy saw that options provided an opportunity to minimize investment risk.

His innovative solution was the proprietary Swan Defined Risk Strategy, which has provided market leading, risk-adjusted return opportunities through a combination of techniques that seek to hedge the market and generate market-neutral income.



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