THE ACADEMIC ADVANTAGE

The Evidence and Research Behind IFA’s Advice

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We take an academic approach to investing at Index Fund Advisors, Inc. We utilize an evidence-based strategy that relies on objective, peer-reviewed research that has been published in academic financial and economic journals. Using this research, we have created portfolios designed to maximize expected return for risk taken.

The peer-review process ensures that academic articles are only published after a high level of scrutiny by qualified members of the profession within the relevant field. After publication, such articles are subject to further scrutiny by the journal’s professional readership. Further research in subsequent years may confirm, modify, or refute prior research. However, it is all subject to the peer-review process and publication in academic journals. This assures that any such research represents the state of the art at any given time.

Given the increased fiduciary liability for institutional investors tasked with investing assets in the best interest of others, it is our opinion that such a strategy is, for many reasons, both prudent and proper for public funds.

In contrast, any Wall Street firm can publish “research reports” making unsubstantiated claims (e.g., “Apple’s share price will hit $1,000 by the end of the year”). Such forecasting “research” can be authored and published in a matter of days, compared to academic research which often takes years to complete, be reviewed, and published. Such industry-related, proprietary “research” is not subject to the peer-review process or published in reputable, academic journals. It is considered invariably biased, and is not even considered at all when guidelines are published by academic professional organizations.

Here we briefly review but a few of the many seminal research papers from which IFA has developed its investment philosophy. While the research presented in these papers spans 60+ years, and may have been subsequently refined, for the most part, the findings put forth in these papers have stood the test of time. Several have resulted in Nobel prizes for their authors.

After this review, we will explain how IFA has used such research to formulate its investment policy, and used it to create low-cost portfolios that deliver the highest expected return for the risk taken; then why it is our advice that those responsible for investing public funds should make it a cornerstone of the investment plans.
PORTFOLIO SELECTION

By Harry Markowitz; Journal of Finance (1952)

This Nobel Prize-winning paper introduced the now widely accepted notion that when putting together a portfolio, it is not sufficient to focus on returns alone. Risk must be considered as well. Specifically, once we have available historical data, we can make assumptions about expected returns, variances, and correlations of different securities (or asset classes). We can then construct a portfolio that maximizes expected return for a given level of risk, or minimizes risk for a given level of required return. The set of portfolios that meets these criteria is known as “the efficient frontier.”

As an aside, Markowitz was a former academic consultant to IFA. Markowitz is noted to highlight the importance of investors following the advice of academics rather than Wall Street professionals.


For IFA Portfolio information, please see the attached disclosures.
2 CAPITAL ASSET PRICES - A THEORY OF MARKET EQUILIBRIUM UNDER CONDITIONS OF RISK

By William Sharpe; Journal of Finance (1964)

This is another Nobel Prize-winning paper. It took Harry Markowitz’s “Portfolio Selection” one step further. Rather than trying to select an optimal portfolio of individual equities from the thousands of securities in the market, Sharpe showed that investors should simply hold the full market (that is, all equities offered) as the risky part of their allocation. If markets are efficient and investors can act in a completely unconstrained manner, then the market portfolio, which weighs each security according to its market capitalization, is inherently the most efficient possible portfolio. Hence, the model is known as the Capital Asset Pricing Model.


3 THE BEHAVIOR OF STOCK MARKET PRICES

By Eugene Fama; Journal of Business (1965)

This seminal paper presented the Efficient Market Hypothesis (EMH), which later earned Fama a Nobel Prize. The EMH asserts that security prices reflect all readily available information. Thus, investors cannot consistently achieve returns in excess of market average returns on a risk-adjusted basis.

While EMH is something that technically cannot be proven, there is no evidence that successfully refutes it.

This paper created the field of behavioral economics and finance. This later earned a Nobel Prize for Kahneman (Tversky was deceased by that time). It proposed the notion that human beings are not the “super-rational utility maximizers” that they might be assumed to be under the EMH and CAPM. When faced with probabilities of different outcomes, people do not necessarily make the choices that we would expect from a purely mathematical analysis. Rather, they take extraordinary measures to avoid or limit losses, which curtails their chances of achieving gains. This tendency is known as loss aversion or regret avoidance.

Some practitioners may claim that behavioral finance disproves the EMH, and that all the sub-optimal behavior creates exploitable opportunities for gain. However, the EMH does not presuppose that the information investors act on is reliable and/or accurate. Nor does it state that investors are rational in all their actions. It elegantly and simply states that investors as a group act on all the information that is available; and that individual investors (rational or not), cannot do better than the market itself.

Andrew Lo (of Massachusetts Institute of Technology) has synthesized the two fields in his adaptive market hypothesis.

We should note that the founding fathers of behavioral finance—Kahneman in particular—strongly advocate index funds for most institutions and investors at large.

LINK: http://bit.ly/1JKHH76
These authors asked a simple question: What are the factors that explain the returns of managed portfolios such as pensions and endowments? The possibilities are security selection (stock-picking and bond-picking), market-timing, and asset allocation. In reviewing the returns data for 91 large pension plans over a ten-year period. They found that asset allocation alone was found to explain about 94% of the variation of returns (not the same as the absolute value or total return) of any particular fund.

Roger Ibbotson later expanded on this work, noting that asset allocation explained about 40% of the difference in returns among funds, but 100% of the level of returns gross of fees, on average, across funds.

LINK: http://cfa.is/2kOZFTb
THE CROSS-SECTION OF EXPECTED STOCK RETURNS


COMMON RISK FACTORS IN THE RETURNS ON STOCKS AND BONDS


(See summary on paper #8.)
SIZE AND BOOK-TO-MARKET FACTORS IN EARNINGS AND RETURNS

By Eugene Fama and Kenneth French; Journal of Finance (1994)

This series of papers from Fama (University of Chicago) and French (Dartmouth University) established the 3-Factor Model for equity portfolios, and the 5-Factor Model for balanced portfolios of equities and bonds.

The Fama/French Three-Factor Model says the expected return of a broadly diversified stock portfolio in excess of a risk-free rate is a function of that portfolio's sensitivity or exposure to three common risk factors. They are: (1) a market factor, as measured by the excess return of a broad equity market portfolio relative to a risk-free rate; (2) a size factor, as measured by the difference between the returns of a portfolio of small stocks and the returns of a portfolio of large stocks; and (3) a value factor, as measured by the difference between the returns of a portfolio of high book-to-market (or value) stocks and the returns of a portfolio of low book-to-market (or growth) stocks.

MARKET TIMING ABILITY AND VOLATILITY IMPLIED IN INVESTMENT NEWSLETTER ASSET ALLOCATION RECOMMENDATIONS

By John Graham and Campbell Harvey;

The authors analyzed over 15,000 asset allocation recommendations from 237 investment newsletters from 1980 to 1992. Once adjusted for risk, they found that over 75% of the newsletters produced negative abnormal returns. To quote them, “Some recommendations are remarkably poor. For example, the (once) high profile Granville Market Letter-Traders produced an average annual loss of 5.4% over the past 13 years. This compares to 15.9% average annual gain on the S&P 500 index.”

LINK: http://bit.ly/2kmQztG
10

VALUE VERSUS GROWTH: THE INTERNATIONAL EVIDENCE

*By Eugene Fama and Kenneth French; Journal of Finance (1998)*

This paper tested the applicability of the Fama-French Three-Factor Model to international equity returns. The model was found to be valid here also. In addition, besides having a higher expected return over time, there is an additional benefit of a lower correlation with the U.S. market, which provides a diversification benefit.


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**Large, Small, Value and Growth Indexes Around the World**

**Annualized Returns and Standard Deviations Over Various Periods**

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<td><strong>Annualized Return (%)</strong></td>
<td>10.41% S&amp;P 500 Index 9.32%</td>
<td>13.36% U.S. Small Value 11.76% U.S. Small Blend 8.94%</td>
<td>13.96% Int'l Value Index 15.19% Int'l Small Index 9.98%</td>
<td>13.60% Emerg. Market Value 11.12% Emerg. Market Blend 10.19%</td>
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<tr>
<td><strong>Risk</strong></td>
<td>25.90% 18.78% 18.47%</td>
<td>29.57% 26.10% 27.83%</td>
<td>18.00% 17.44% 16.95%</td>
<td>24.39% 22.28% 21.93%</td>
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<td><strong>Annualized Standard Deviation (%)</strong></td>
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FALSE DISCOVERIES IN MUTUAL FUND PERFORMANCE: MEASURING LUCK IN ESTIMATING ALPHAS

By Laurnet Barras, Olivier Scaillet and Russ Wermers; Journal of Finance (2010)

When a mutual fund manager has a statistically significant different performance than the fund’s benchmark (i.e., a statistically significant positive or negative alpha), there are two possible explanations: skill or luck. The authors define a “false discovery” as a mutual fund that exhibits significant alpha by luck alone. Using a sample of 2,076 actively managed US equity funds between 1975 and 2006, the authors found that total observed alpha is consistent with the following breakdown: 75.4% of the funds had a true alpha of zero after costs. Also, 24.0% had a true alpha that was negative. That left only 0.6% with a true positive alpha, a number that the authors considered to be “statistically indistinguishable from zero”.

LINK: http://bit.ly/2rCHkLH
The authors examined the performance of investment managers before and after they were either hired or fired by institutional plan sponsors. This study was based on an analysis of almost 8,800 hiring decisions by more than 3,400 plan sponsors from 1994 to 2003. The sample also included 869 firing decisions made by 482 institutions. Newly hired managers tended to have excess returns that were statistically significant before hiring and then became statistically indistinguishable from zero after hiring. In an ironic twist, fired managers tended to have higher returns than the managers hired to replaced them.

This study is similar to the Goyal and Wahal study described above. However, rather than looking at hiring and firing decisions, the authors examined changes in asset allocations made by plan sponsors. Such changes automatically necessitate hiring and firing decisions. The authors found that only in two out of the eighteen years from 1985 to 2002 did plan sponsor decisions add value over the next five years.

Performance-chasing was felt to be the primary underlying cause of this underperformance. The authors noted that plan sponsors are more likely to throw money at the asset class that has recently had high returns, only to be disappointed. The authors estimated the economic impact of these ill-fated decisions to be $170.2 billion for the full sample period.

LINK: http://cfa.is/2kTtQs2

**Value Gained or Lost When Moving Assets From One Manager to Another**

18 Years (1985 - 2002)

- 5-Year Annualized Return of Top Inflow Quintile Minus Top Outflow Quintile

Conclusion: In only two out of eighteen years did plan sponsor decisions add value over the next five years.
LUCK VERSUS SKILL IN THE CROSS SECTION OF MUTUAL FUND RETURNS


This study was influential in how we could decipher luck from skill in the context of the entire universe of actively managed mutual funds. Given the thousands of actively managed mutual funds that exist, there is the potential for extreme returns based on random chance alone. The authors examined the 3-Factor (Fama/French 3 Factor Model) adjusted excess returns (alpha) of 3,156 actively managed mutual funds between 1984 to 2006. They then compared these aggregate results to a distribution of potential 3-factor (Fama/French Three Factor Model) adjusted excess returns (alpha) based on random outcomes. They concluded that the net excess returns (after fees) of the active fund management community were no better than what would be expected by random chance. If there are some skilled managers who can produce enough risk-adjusted outperformance to cover their costs, they are hidden by the mass of managers with insufficient skill.


WE HAVE MET THE ENEMY...AND HE IS US: LESSONS FROM TWENTY YEARS OF THE KAUFFMAN FOUNDATION’S INVESTMENTS IN VENTURE CAPITAL FUNDS AND THE TRIUMPH OF HOPE OVER EXPERIENCE

By Diane Mulcahy, Bills Weeks, and Harold S. Bardley; Ewing Marion Kauffman Foundation (2012)

The authors examined the performance of nearly 100 venture capital funds their own $1.83 billion endowment invested in from 1992-2011. They found that the majority of funds—62 out of 100—failed to exceed returns available in public markets, after fees and carry were paid. Only 4 of the 30 venture capital funds with committed capital of more than $400 million delivered returns better than those available from a publicly traded small cap common stock index. The cumulative effect of fees, carry, and the uneven nature of venture investing ultimately left them with 78% of their funds that did not achieve returns sufficient to reward them for their patient, expensive, and long-term approach to investing in their endowment.

THE OTHER SIDE OF VALUE: THE GROSS PROFITABILITY PREMIUM

*By Robert Novy-Marx (2012)*

This groundbreaking article found an additional dimension of expected return using a proxy labeled “gross profitability.” The author found that gross profitability, defined as gross profits-to-assets, had approximately the same power as book-to-market, a common proxy for “value,” in predicting the cross-section of average returns. From a portfolio perspective, controlling for profitability was shown to dramatically increase the performance of value strategies, especially among the largest, most liquid stocks in the market. Because strategies based on profitability are typically growth strategies, they provide an excellent complement to value strategies, thus improving an investor’s overall opportunity set.


THE PROFITABILITY AND INVESTMENT PREMIUM

*By Sunil Wahal (2016)*

The author builds on the profitability and investment premium research done by Robert Novy-Marx, Eugene Fama, and Kenneth French by extending the sample time period back to 1940. Mr. Wahal concludes that the profitability premium is similar in magnitude to the post 1963 period, which further strengthens the argument for the existence of the profitability premium by demonstrating that the research is not subject to sampling bias. The author also concluded that the five-factor model from Fama and French is still useful for measuring the style tilts of managed portfolios.

PRIVATE EQUITY PERFORMANCE: RETURNS, PERSISTENCE AND CAPITAL FLOWS

By Steve Kaplan and Antoinette Schoar (2003)

Authors investigated the performance and capital flows of 746 private equity partnerships and concluded that the average fund returns (net of fees) approximately equal the S&P 500 over the time period over the 18 year period from 1980 to 1997. Weighted by committed capital, venture funds outperform the S&P 500 before fees while buyout funds do not. The authors also acknowledge the limitations of their conclusions given problems arising from differences in market risk and the possibility of selection bias, a common problem also found when examining the performance of hedge funds.


*Comment on downside risk/returns: active vs passive

Before proceeding to how we implement the above, we would like to note one further research finding. Or, rather, its lack thereof. Proponents of active management claim to be able to minimize downside risk during falling markets compared to similarly allocated but passively managed portfolios. However, we can find no academic research to support the claim that actively managed portfolios minimize losses compared to passively managed portfolios. Such a claim appears to be a myth perpetuated by active managers to assure a stream of income—for themselves.

We challenge any active fund manger to present peer-reviewed, academic articles refuting any of the above research.
OUR PHILOSOPHY

IFA relies on Modern Portfolio Theory (MPT) in the construction of its portfolios. We start with a default market portfolio (in other words, owning the entire market) then successively add asset classes that historically either increase expected returns or reduce risk. IFA does not utilize a technological “optimizer” or automatic algorithm in the construction of its portfolios. Any such resulting asset allocations would be extremely sensitive to the assumptions, which, if even slightly off, could lead to significantly different outcomes. IFA does not consider it prudent to attempt to forecast future returns, risks, and correlations for different asset classes for public fund managers. While the efficient frontier is easily found in hindsight, it is unknowable in advance.

The CAPM robustly reinforces the idea that risk and return are inseparable. However, it does not do a very good job of explaining the returns of diversified portfolios. Fama and French solved this by noting the increased returns from small cap and value stocks. IFA deviates from the market portfolio by, among other means, tilting towards small cap and value stocks in the equity portion of its portfolios, resulting in higher expected returns than the market as a whole, as seen in the chart below.
IFA adheres to the philosophy that once investors have found and implemented a risk-appropriate portfolio, their best course of action is to avoid becoming emotionally involved. For instance, if investors scrutinize the market over any short-term period (daily, weekly, monthly, or quarterly), and the market makes a large move, they are more likely to overreact inappropriately and do more harm than good.

That said, IFA reminds investment committee members that appropriate risks are a reliable source of long-term returns. Indeed, there is no such thing as excess return without risk. Of course, investors need to understand that only some risks are compensated. IFA warns investors to avoid all types of active investing, be it stock-picking, time-picking, manager-picking, economic or political forecasting, etc.

To quote Benjamin Graham, “The investor’s chief problem—and even his worst enemy—is likely to be himself.”

IFA takes the position that the single most important decision investment committee members can make is the asset allocation of their portfolios dictated by a prudent Investment Policy Statement (for an excellent resource please read the 1985 classic book “Investment Policy,” by Charles D. Ellis). Security selection and market timing are unlikely to add any value and usually incur unnecessary costs. Instead, IFA captures the risk premiums of market, size, value, term, and default as modelled by academics Fama and French.

IFA has studied in detail the practical applications of these multi-factor models to its portfolios. Thus, IFA constructs its portfolios based on the Three and Five Factor Models.

IFA encourages public fund investment committee members to avoid investment strategies involving stock picking, marketing timing, active manager picking, or style drifting. These strategies have been shown through academic evidence to not provide the consistent excess market returns that they are seeking to capture. A much more prudent strategy would be to buy, hold, and rebalance a globally diversified portfolio of index funds that properly matches the public fund’s capacity for risk.

“The deeper one delves, the worse things look for actively managed funds,” wrote Dr. William Bernstein more than 15 years ago. IFA agrees, and will continue relying on long-term historical data and research such as those cited above to inform our evidence-based approach that has stood the test of time.
Disclosure for Backtested Performance Information, the IFA Indexes, and IFA Index Portfolios
(updates can be found at www.ifabt.com):

1. Index Fund Advisors, Inc. (IFA) is an SEC registered Investment Adviser. Information pertaining to IFA's advisory operations, services, and fees is set forth in IFA's current Form ADV Part 2 (Brochure), a copy of which is available upon request and at www.adviserinfo.sec.gov. The performance information presented in certain charts or tables represent backtested performance based on combined simulated index data and live (or actual) mutual fund results from January 1, 1928 to the period ending date shown, using the strategy of buy and hold and on the first of each year annually rebalancing the globally diversified portfolios of index funds. Backtested performance is hypothetical (it does not reflect trading in actual accounts) and is provided for informational purposes only to indicate historical performance had the index portfolios been available over the relevant time period. IFA refers to this hypothetical data as a Simulated Passive Investor Experience (SPIE). IFA did not offer the index portfolios until November 1999. Prior to 1999, IFA did not manage client assets. The IFA indexing investment strategy is based on principles generally known as Modern Portfolio Theory and the Fama and French Three Factor Model for Equities and Two Factor Model for Fixed Income. Index portfolios are designed to provide substantial global diversification in order to reduce investment concentration and the resulting potential increased risk caused by the volatility of individual companies, indexes, or asset classes.

2. A review of the IFA Index Data Sources (ifaindexes.com), IFA Indexes Time Series Construction (http://www.ifa.com/disclosures/charts/#timeseries) and several of the Dimensional Indexes (http://www.ifa.com/disclosures/charts/#ifaindex) is an integral part of this disclosure and should be read in conjunction with this explanation of backtested performance information presented. IFA defines index funds as mutual funds that follow a set of rules of ownership that are held constant regardless of market conditions. An important characteristic of an index fund is that its rules of ownership are not based on a forecast of short-term events. Therefore, an investment strategy that is limited to the buying and rebalancing of a portfolio of index funds is often referred to as passive investing, as opposed to active investing. Simulated index data is based on the performance of indexes and live mutual funds as described in the IFA Indexes Data Sources page. The index mutual funds used in IFA's Index Portfolios are IFA's best estimate of a mutual fund that will come closest to the index data provided in the simulated indexes. Simulated index data is used for the period prior to the inception of the relevant live mutual fund data and an equivalent mutual fund expense ratio is deducted from simulated index data. Live (or actual) mutual fund performance is used after the inception date of each mutual fund. The IFA Indexes Time Series Construction goes back to January 1928 and consistently reflects a tilt towards small cap and value equities over time, with an increasing diversification to international markets, emerging markets and real estate investment trusts as data became available. As of January 1928, there are 4 equity indexes and 2 bond indexes; in January 1970 there are a total of 8 indexes, and there are 15 indexes in March 1998 to present. See (http://www.ifa.com/disclosures/charts/#IFA_evolution) to see the analysis of the evolution of these portfolios. This names the indexes used in the IFA Portfolios for each period, and shows the Time Series Construction of the IFA indexes. If the original 4 equity indexes from 1928 (IFA US Large Company Index; IFA US Large Cap Value Index; IFA US Small Cap Index; IFA US Small Cap Value Index) are held constant until December 2012, the annualized rate of return of this simplified version of IFA Index Portfolio 100 is 10.67%, after the deduction of a 0.9% IFA advisory fee and a standard deviation of 23.59%. The evolving IFA Indexes over the same period have a 10.99% annualized return for IFA Index Portfolio 100 after the same IFA advisory fees and a standard deviation of 22.66%. The stitching together of index and live fund data and adding international markets, emerging markets and REITs only had a slight impact on risk and return over this 85 year period. Instead, it demonstrates the value of a small cap and value tilt in global equity markets, since over the same period a Simulated S&P 500 Index only had a return of 9.53% (with no fees deducted), at a standard deviation of 19.19%. Backtested performance is calculated by using a computer program and monthly returns data set that start with the first day of the given time period and evaluates the returns of simulated indexes and DFA index mutual funds. In 1999, tax-managed funds became available for many different DFA index funds.

3. Backtested performance does not represent actual performance and should not be interpreted as an indication of such performance. Actual performance for client accounts may be materially lower than that of the index portfolios. Backtested performance results have certain inherent limitations. Such results do not represent the impact that market, economic and market factors might have on an investment adviser’s decision-making process if the adviser were actually managing client money. Backtested performance also differs from actual performance because it is achieved through the retroactive application of model portfolios (in this case, IFA's Index Portfolios) designed with the benefit of hindsight. As a result, the models theoretically may be changed from time to time and the effect on performance results could be either favorable or unfavorable.

4. History of Changes to the IFA Indexes: 1991-2000: IFA Index Portfolios 10, 30, 50, 70 and 90 were originally suggested by Dimensional Fund Advisors (ifa.com/pdf/balancedstrategies.pdf), merely as an example of globally diversified investments using their custom index mutual funds, back in 1992 with moderate modifications in 1996 to reflect the availability of index funds that tracked the emerging markets asset class. Index Portfolios between each of the above listed portfolios were created by IFA in 2000 by interpolating between the above portfolios. Portfolios 5, 95 and 100 were created by Index Fund Advisors in 2000, as a lower and higher extension of the DFA 1991 risk and return line. As of March 1, 2010, 100 IFA Index Portfolios are available to IFA clients, with IFA Index Portfolios between the shown allocations being interpolations of the 20 allocations shown. In January 2008, IFA introduced three new indexes and eighteen socially responsible portfolios constructed from these three indexes and five pre-existing IFA indexes. The new indexes introduced were: IFA US Social Core 2 Equity, IFA Emerging Markets Social Core, and IFA International Real Estate. All three use live DFA fund data as long as it has been available. Prior to live fund data, they use index data supplied by DFA modified for fund management fees. In April 2008, IFA introduced two new indexes and eighteen sustainability portfolios constructed from these two indexes and five pre-existing indexes. The new indexes introduced were: IFA US Sustainability Core 1 Equity and IFA International Sustainability Core Equity. In November 2011, IFA made a change to the index data used in its large growth and small growth indexes. Fama/French data was replaced with data supplied by Dimensional Fund Advisors via its Returns 2.2 program. For large growth, the difference in annualized return was about 1% (a decrease). For small growth, the difference was about 0.2%. In November 2012, IFA changed the allocations and the historical returns for its socially responsible portfolios to reflect the introduction of the DFA International Social Core Equity Portfolio (DSCXL). Prior to this, the international developed equity asset class was unavailable in a socially responsible implementation. Although clients who were invested in the old allocation from the time it became available (January 2008) likely did better than they would have done with the new allocation, the difference is not statistically significant, and it is IFA's advice that going forward having an exposure to international developed equities will provide a substantial diversification benefit to socially responsible investors. As of September 2013, all new clients will be placed into the NEW IFA Index Portfolios, and all existing clients will be given the option to transition to the new portfolios. Index Portfolio 100 was held the same as it has been since 2000 and became the only 100 percent equity portfolio in the NEW Index Portfolios. The four fixed income indexes (25% each) remain the same as they have been since 2000 and will make up the fixed income allocation of all IFA index portfolios in the allocation equal to 100-New IP#. As of June 2015, IFA introduced Profitability into the historical back-tested returns of the equity funds. IFA wanted to incorporate the new research completed by Fama/French that introduced profitability as its fourth factor in their asset pricing model. Profitability was back-tested by DFA US Large Cap Index. As of 2017, IFA introduced Profitability to the IFA Index Portfolios. The previous allocations are now referred to as Original IFA Index Portfolios. In April 2016, IFA changed the allocations and the historical returns for its socially responsible portfolios to reflect the introduction of the DFA Social Fixed Income Portfolio (DSFIX). Prior to this, the fixed income asset class was composed of four unscreened bond funds as a screened alternative did not exist. Although the duration of the unscreened bond fund mix was less than that of the socially screened bond fund, the increase in duration enhances the portfolio on a risk adjusted basis, and it enables IFA to provide a fully screened portfolio to socially responsible investors. As of July 2017, IFA changed its US Large Blend allocation from using DFA US Large Company (DFUSX) to Schwab S&P 500 Index (SWPPX). IFA has also amended its index backtest for US Large Blend to reflect the new allocation. US Large Blend will track SWPPX live fund data on a go forward basis. Go to www.ifa.com/btp/historyofchange.html to see a summary of changes made to the IFA Indexes and Index Portfolios.
5. Backtested performance results assume the reinvestment of dividends and capital gains and annual rebalancing at the beginning of each year. It is important to understand that the assumption of annual rebalancing has an impact on the monthly returns reported for the IFA Index Portfolio in both the Risk and Reward Table (www.ifabigtable.com) and the Index Calculator (www.ifacalc.com). For monthly rebalancing, the monthly return is calculated with the assumption that the portfolio is perfectly in balance at the beginning of each month. For annual rebalancing, the year-to-date return is calculated with the assumption that the portfolio is perfectly in balance at the beginning of the year. The latter assumption underlies the returns shown for the IFA Index Portfolios. In actual portfolios, however, rebalancing occurs at no set time, and such actions are dependent on both market conditions and individual client liquidity inflows and outflows, along with the cost impact of such transactions on the overall portfolio. Therefore actual monthly and year-to-date returns will differ from the IFA Returns Calculator. The reason for this difference is that with annual rebalancing, the monthly returns are calculated from the ratio of the year-to-date growth of $1.00 at the end of the month to the year-to-date growth of $1.00 at the beginning of the month. For monthly rebalancing, the monthly return is calculated with the assumption that the portfolio is perfectly in balance at the beginning of the month. The performance of the IFA Index Portfolios reflects and is net of the effect of IFA's annual investment management fee of 0.9%, billed monthly, unless stated otherwise. Monthly fee deduction is a requirement of our software used for backtesting. Actual IFA advisory fees are deducted quarterly, in advance. This fee is the highest fee IFA charges. Depending on the amount of your assets under management, your investment management fee may be less. Backtested risk and return data is a combination of live (or actual) mutual fund results and simulated index data, and mutual fund fees and expenses have been deducted from both the live (or actual) results and the simulated index data. When IFA Indexes are shown in IFA Index Portfolios, all returns data reflects a deduction of 0.9% annual investment advisory fee, which is the maximum IFA fee. Unless indicated otherwise, data shown for each individual IFA Index is shown without a deduction of the IFA advisory fee. We choose this method because the creation, choice, monitoring and rebalancing of diversified index portfolios are the services of the independent investment advisor and at that point the fees are appropriate to deduct from the whole portfolio returns. Since we accept no fees from investment product firms, IFA compares index funds based on net asset value returns, which are net of the mutual fund company expense ratios only. Although index mutual funds minimize tax liabilities from short and long-term capital gains, any resulting tax liability is not deducted from performance results. Performance results also do not reflect transaction fees (as seen at www.ifacalc.com) and other expenses, which reduce returns.

6. For all data periods, annualized standard deviation is presented as an approximation by multiplying the monthly standard deviation number by the square root of 12. Please note that the number computed from annual data may differ materially from this estimate. We have chosen this methodology because Morningstar uses the same method. Go to www.ifabt.com for details. In those charts and tables where the standard deviation of daily returns is shown, it is estimated as the standard deviation of monthly returns divided by the square root of 22.

7. The tax-managed index funds are not used in calculating the backtested performance of the index portfolios, unless specified in the table or chart.

8. Performance results for clients that invested in accordance with the IFA Index Portfolios will vary from the backtested performance due to market conditions and other factors, including investments cash flows, mutual fund allocations, frequency and precision of rebalancing, tax-management strategies, cash balances, lower than 0.9% advisory fees, varying custodian fees, and/or the timing of fee deductions. As the result of these and potentially other variances, actual performance for client accounts may differ materially from (and may be lower than) that of the index portfolios. Clients should consult their account statements for information about how their actual performance compares to that of the index portfolios.

9. As with any investment strategy, there is potential for profit as well as the possibility of loss. IFA does not guarantee any minimum level of investment performance or the success of any index portfolio or investment strategy. All investments involve risk and investment recommendations will not always be profitable.

Sources and Description of Data

Sources and Description of Data: The following descriptions of IFA Indexes indicate how indexes are strung together to simulate similar risk and return characteristics back to 1928. This long-term data reduces the possible errors of interpreting a short-term return as being representative of other short-term returns. Such errors are especially high for periods of 20 years or less. When IFA Indexes are shown in Index Portfolios, all return data reflects a deduction of 0.9% annual investment advisory fee, which is the maximum advisory fee charged by IFA. Unless indicated otherwise, data shown for each individual IFA Index is shown without a deduction of the IFA advisory fee. This method is used because the creation, choice, monitoring and rebalancing of diversified index portfolios are the services of the independent investment advisor. Therefore, fees are deducted from the whole portfolio data but not the individual index data. Live Dimensional Fund Advisors’ (DFA) fund data reflects the deduction of mutual fund advisory fees, brokerage fees, other expenses incurred by the mutual funds, incorporates actual trading results, and is sourced from DFA. Simulated index data also reflects DFA’s current mutual fund expense ratios for the entire period. Both simulated and live data reflect total returns, including dividends, except for IFA/NASDAQ Index. For updates on sources and descriptions of data see www.ifaindexes.com.

### IFA U.S. Large Company Index (LC)

**Investment Objective of Schwab® S&P 500 Index (SWPPX)** The index seeks to track the total return of the S&P 500® Index. The fund generally invests at least 80% of its net assets in stocks that are included in the S&P 500® Index. It generally gives the same weight to a given stock as the index does. The fund may invest in derivatives, principally futures contracts, and lend its securities to minimize the gap in performance that naturally exists between any index fund and its corresponding index. It may concentrate its investments in an industry or group of industries to the extent that its comparative index is also so concentrated.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Number of Holdings</th>
<th>Weighted Average Market Cap</th>
<th>Wtd. Avg Dividend-to-Price</th>
<th>Aggregated Price-to-Book</th>
<th>Turnover Ratio (as of 10/31/2016)</th>
<th>Expense Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schwab S&amp;P 500 Index</td>
<td>14.32%</td>
<td>11.84%</td>
<td>13.33%</td>
<td>10.13%</td>
<td>508</td>
<td>$96,65B</td>
<td>1.70%</td>
<td>3.10</td>
<td>2.00%</td>
<td>0.03%</td>
</tr>
<tr>
<td><em>All Data as of Jun 30, 2018. Returns include the impact of reinvested dividends and capital gains distributions. For updates see <a href="http://www.ifaindexes.com">www.ifaindexes.com</a>.</em></td>
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</tbody>
</table>

### IFA U.S. Large Cap Value Index (LV)

**Investment Objective of DFA US Large Cap Value Portfolio I (DFLVX)** is to achieve long-term capital appreciation. The Portfolio is a feeder portfolio and pursues its objective by investing substantially all of its assets in its corresponding Master Fund. The U.S. Large Cap Value Series, which has the same investment objective and policies as the U.S. Large Cap Value Portfolio.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Number of Holdings</th>
<th>Weighted Average Market Cap</th>
<th>Wtd. Avg Dividend-to-Price</th>
<th>Aggregated Price-to-Book</th>
<th>Turnover Ratio (as of 10/31/2016)</th>
<th>Expense Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA Large Cap Value Portfolio (I)</td>
<td>10.19%</td>
<td>9.73%</td>
<td>11.86%</td>
<td>9.73%</td>
<td>517</td>
<td>$121,395M</td>
<td>2.36%</td>
<td>1.81</td>
<td>15.00%</td>
<td>0.22%</td>
</tr>
<tr>
<td>Russell 1000 Value Index</td>
<td>6.77%</td>
<td>8.26%</td>
<td>10.34%</td>
<td>8.49%</td>
<td></td>
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</tr>
<tr>
<td><em>All Data as of Jun 30, 2018. Returns include the impact of reinvested dividends and capital gains distributions. For updates see <a href="http://www.ifaindexes.com">www.ifaindexes.com</a>.</em></td>
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</tr>
</tbody>
</table>

### IFA U.S. Small Cap Index (SC)

**Investment Objective of DFA US Small Cap Portfolio I (DFSTX)** is to achieve long-term capital appreciation.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Number of Holdings</th>
<th>Weighted Average Market Cap</th>
<th>Wtd. Avg Dividend-to-Price</th>
<th>Aggregated Price-to-Book</th>
<th>Turnover Ratio (as of 10/31/2016)</th>
<th>Expense Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA US Small Cap Portfolio (I)</td>
<td>15.31%</td>
<td>10.38%</td>
<td>12.22%</td>
<td>11.85%</td>
<td>1,944</td>
<td>$2,366M</td>
<td>1.22%</td>
<td>2.06</td>
<td>14.00%</td>
<td>0.37%</td>
</tr>
<tr>
<td>Russell 2000 Index</td>
<td>17.57%</td>
<td>10.96%</td>
<td>12.46%</td>
<td>10.69%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><em>All Data as of Jun 30, 2018. Returns include the impact of reinvested dividends and capital gains distributions. For updates see <a href="http://www.ifaindexes.com">www.ifaindexes.com</a>.</em></td>
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</tr>
</tbody>
</table>

### IFA U.S. Micro Cap Index (MC)

**Investment Objective of DFA US Micro Cap Portfolio I (DFSIX)** is to achieve long-term capital appreciation.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Number of Holdings</th>
<th>Weighted Average Market Cap</th>
<th>Wtd. Avg Dividend-to-Price</th>
<th>Aggregated Price-to-Book</th>
<th>Turnover Ratio (as of 10/31/2016)</th>
<th>Expense Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA US Micro Cap Portfolio</td>
<td>17.70%</td>
<td>11.60%</td>
<td>12.98%</td>
<td>11.75%</td>
<td>1,693</td>
<td>$1,307M</td>
<td>1.01%</td>
<td>1.97</td>
<td>15.00%</td>
<td>0.52%</td>
</tr>
<tr>
<td>Russell 2000 Index</td>
<td>17.57%</td>
<td>10.96%</td>
<td>12.46%</td>
<td>10.69%</td>
<td></td>
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<tr>
<td><em>All Data as of Jun 30, 2018. Returns include the impact of reinvested dividends and capital gains distributions. For updates see <a href="http://www.ifaindexes.com">www.ifaindexes.com</a>.</em></td>
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</tbody>
</table>

### IFA U.S. Small Cap Value Index (SV)

**Investment Objective of DFA Targeted Value Portfolio I (DFVX)** is to achieve long-term capital appreciation.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Number of Holdings</th>
<th>Weighted Average Market Cap</th>
<th>Wtd. Avg Dividend-to-Price</th>
<th>Aggregated Price-to-Book</th>
<th>Turnover Ratio (as of 10/31/2016)</th>
<th>Expense Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA Targeted Value Portfolio (I)</td>
<td>14.08%</td>
<td>9.35%</td>
<td>11.23%</td>
<td>10.73%</td>
<td>1,481</td>
<td>$3,187M</td>
<td>1.32%</td>
<td>1.45</td>
<td>23.00%</td>
<td>0.37%</td>
</tr>
<tr>
<td>Russell 2000 Value Index</td>
<td>13.10%</td>
<td>11.22%</td>
<td>11.18%</td>
<td>9.88%</td>
<td></td>
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<tr>
<td><em>All Data as of Jun 30, 2018. Returns include the impact of reinvested dividends and capital gains distributions. For updates see <a href="http://www.ifaindexes.com">www.ifaindexes.com</a>.</em></td>
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</tbody>
</table>

### IFA Global REIT Index (RE)

**Investment Objective of DFA Global Real Estate Securities Portfolio (DFGEX)** is to achieve long-term capital appreciation.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Number of Holdings</th>
<th>Weighted Average Market Cap</th>
<th>Wtd. Avg Dividend-to-Price</th>
<th>Aggregated Price-to-Book</th>
<th>Turnover Ratio (as of 10/31/2016)</th>
<th>Expense Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA Global Real Estate Sec. Portfolio</td>
<td>5.74%</td>
<td>6.97%</td>
<td>7.43%</td>
<td>6.60%</td>
<td>448</td>
<td>$16,496M</td>
<td>4.17%</td>
<td>1.72</td>
<td>--</td>
<td>0.24%</td>
</tr>
<tr>
<td>S&amp;P®: Global Real Estate Index</td>
<td>4.05%</td>
<td>5.80%</td>
<td>6.31%</td>
<td>5.36%</td>
<td></td>
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</tr>
<tr>
<td>*Inception Date 6/4/08 **Net Dividends <em>All Data as of Jun 30, 2018. Returns include the impact of reinvested dividends and capital gains distributions. For updates see <a href="http://www.ifaindexes.com">www.ifaindexes.com</a>.</em></td>
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</tbody>
</table>
### IFA International Value Index (IV)

**Time-Series Construction**
- January 1928 – June 1955: IFA US Large Value Index
- July 1955 – December 1969: Dimensional UK Large Value minus 0.0358%/mo (mutual fund exp ratio)
- January 1970 – December 1974: Fama/French International Small Cap minus 0.05%/mo (mutual fund exp ratio)
- January 1975 – February 1994: Fama/French International Small Cap minus 0.0358%/mo (mutual fund exp ratio)
- March 1994 – Present: DFA International Value Portfolio Symbol: DFIIX

**Investment Objective**
- To achieve long-term capital appreciation. The portfolio pursues its objective by investing substantially all of its assets in its corresponding Master Fund, The Emerging Markets Series, which has the same investment objective and policies as the Emerging Markets Portfolio.

**Average Annual Total Return**
- One Year: 8.95%
- Three Years: 9.26%
- Five Years: 10.39%
- Ten Years: 6.27%

**Number of Holdings**: 521

**Turnover Ratio (as of 10/31/16)**: 17.00%

**Expense Ratio**: 0.43%

### IFA International Small Company Index (IS)

**Time-Series Construction**
- January 1928 – December 1969: IFA US Small Cap Index
- October 1996 – Present: DFA International Small Company Portfolio Symbol: DISVX

**Investment Objective**
- To achieve long-term capital appreciation.

**Average Annual Total Return**
- One Year: 9.30%
- Three Years: 9.25%
- Five Years: 10.39%
- Ten Years: 6.11%

**Number of Holdings**: 4,603

**Turnover Ratio (as of 10/31/16)**: 21.00%

**Expense Ratio**: 0.53%

### IFA International Small Cap Value Index (ISV)

**Time-Series Construction**
- January 1928 – December 1969: IFA US Small Cap Value Index
- July 1981 – December 1994: Dimensional International Small Cap Value Index minus 0.0575%/mo (mutual fund exp ratio)

**Investment Objective**
- To achieve long-term capital appreciation.

**Average Annual Total Return**
- One Year: 5.40%
- Three Years: 7.19%
- Five Years: 10.09%
- Ten Years: 6.11%

**Number of Holdings**: 2,120

**Turnover Ratio (as of 10/31/16)**: 8.00%

**Expense Ratio**: 0.48%

### IFA Emerging Market Index (EM)

**Time-Series Construction**
- January 1928 – December 1969: 50% IFA US Large Value Index and 50% IFA US Small Cap Index
- January 1970 – December 1987: 50% IFA Int’l Value and 50% IFA Int’l Small Cap
- January 1988 – December 1994: MSCI Emerging Markets Index minus 0.05%/mo (mutual fund exp ratio)

**Investment Objective**
- To achieve long-term capital appreciation. The portfolio pursues its objective by investing substantially all of its assets in its corresponding Master Fund, The Emerging Markets Series, which has the same investment objective and policies as the Emerging Markets Portfolio.

**Average Annual Total Return**
- One Year: 5.47%
- Three Years: 5.54%
- Five Years: 4.82%
- Ten Years: 3.02%

**Number of Holdings**: 1,191

**Turnover Ratio (as of 10/31/16)**: 14.00%

**Expense Ratio**: 0.57%

### IFA Emerging Market Value Index (EV)

**Time-Series Construction**
- January 1928 – December 1969: IFA US Large Value Index
- January 1989 – April 1998: Dimensional Emerging Value Index minus 0.05%/mo (mutual fund exp ratio)

**Investment Objective**
- To achieve long-term capital appreciation. The portfolio pursues its objective by investing substantially all of its assets in its corresponding Master Fund, The Dimensional Emerging Markets Value Fund, which has the same investment objective and policies as the Emerging Markets Portfolio.

**Average Annual Total Return**
- One Year: 5.74%
- Three Years: 5.99%
- Five Years: 4.57%
- Ten Years: 2.07%

**Number of Holdings**: 2,454

**Turnover Ratio (as of 10/31/16)**: 15.00%

**Expense Ratio**: 0.73%

### IFA Emerging Small Markets Cap Index (ES)

**Time-Series Construction**
- January 1928 – December 1969: IFA US Small Cap Value Index
- January 1989 – March 1999: Fama/French Emerging Markets Small minus 0.065%/mo (mutual fund exp ratio)

**Investment Objective**
- To achieve long-term capital appreciation. The portfolio pursues its objective by investing substantially all of its assets in its corresponding Master Fund, The Dimensional Emerging Markets Small Cap Portfolio, which has the same investment objective and policies as the Emerging Markets Portfolio.

**Average Annual Total Return**
- One Year: 5.47%
- Three Years: 5.96%
- Five Years: 6.26%
- Ten Years: 6.08%

**Number of Holdings**: 4,288

**Turnover Ratio (as of 10/31/16)**: 2.23%

**Expense Ratio**: 0.73%

### IFA One-Year Fixed Income Index (1F)

**Time-Series Construction**
- January 1928 – June 1983: One-Month T-Bills minus 0.015%/mo (mutual fund exp ratio)
- July 1983 – July 1983: One-Year T-Note Index minus 0.015%/mo (mutual fund exp ratio)
- August 1983 – Present: DFA One-Year Fixed Income Portfolio Symbol: DFMX

**Investment Objective**
- To achieve a stable real return in excess of the rate of inflation with a minimum of risk.

**Average Annual Total Return**
- One Year: 0.78%
- Three Years: 0.64%
- Five Years: 0.63%
- Ten Years: 1.03%

**Average Portfolio Maturity Range**: 0.95 Years

**Expense Ratio (as of)**: 0.17%
### IFA Two-Year Global Fixed Income Index (2F)

**Investment Objective**: DFA Two-Year Global Fixed Income Portfolio (DGF2X) is to maximize total returns in the fixed income sector.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Duration</th>
<th>Average Portfolio Maturity Range</th>
<th>Expense Ratio (as of)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA Two-Year Global Fixed Income Portfolio</td>
<td>0.68%</td>
<td>0.75%</td>
<td>0.68%</td>
<td>1.17%</td>
<td>1.57 Years</td>
<td>1.61 Years</td>
<td>0.17%</td>
</tr>
<tr>
<td>World Gov't Bond Index 1-3 Years*</td>
<td>1.14%</td>
<td>0.92%</td>
<td>0.82%</td>
<td>1.29%</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Barclays Index *All Data as of Jun 30, 2018. Returns include the impact of reinvested dividends and capital gains distributions. For updates see finaindexes.com.

### IFA Short Term Government Index (3G)

**Investment Objective**: DFA Short-Term Government Portfolio (DFGSX) is to provide a market rate of return for a short-term portfolio.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Duration</th>
<th>Average Portfolio Maturity Range</th>
<th>Expense Ratio (as of)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA Short-Term Gov't Portfolio</td>
<td>-0.62%</td>
<td>0.36%</td>
<td>0.78%</td>
<td>2.27%</td>
<td>2.79 Years</td>
<td>2.92 Years</td>
<td>0.19%</td>
</tr>
<tr>
<td>Capital Gov't Bond Index 1-5 Years*</td>
<td>-0.33%</td>
<td>0.52%</td>
<td>0.82%</td>
<td>1.80%</td>
<td></td>
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</tr>
</tbody>
</table>

*Barclays Index *All Data as of Jun 30, 2018. Returns include the impact of reinvested dividends and capital gains distributions. For updates see finaindexes.com.

### IFA Five-Year Global Fixed Income Index (5F)

**Investment Objective**: DFA Five-Year Global Fixed Income Portfolio (DFGBX) is to provide a market rate of return for a fixed income portfolio with low relative volatility of returns.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Duration</th>
<th>Average Portfolio Maturity Range</th>
<th>Expense Ratio (as of)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA Five-Year Global Fixed Portfolio</td>
<td>0.59%</td>
<td>1.48%</td>
<td>1.82%</td>
<td>3.03%</td>
<td>3.80 Years</td>
<td>3.93 Years</td>
<td>0.27%</td>
</tr>
<tr>
<td>World Gov't Bond 1-5 Years*</td>
<td>0.89%</td>
<td>1.18%</td>
<td>1.33%</td>
<td>2.08%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Barclays Index *All Data as of Jun 30, 2018. Returns include the impact of reinvested dividends and capital gains distributions. For updates see finaindexes.com.

### S&P 500 Index (SP)

**Investment Objective**: S&P 500® Index (S&P 500®) is widely regarded as the best single gauge of the U.S. equities market. This single-index includes 500 leading companies.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Number of Holdings</th>
<th>Median Market Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P 500 Index</td>
<td>21.56%</td>
<td>11.10%</td>
<td>13.56%</td>
<td>8.73%</td>
<td>651</td>
<td>$54.9B</td>
</tr>
</tbody>
</table>

*All Data as of Dec 31, 2017. Returns include dividends. For updates see www.finaindexes.com.

### IFA NASDAQ Index (N)

**Investment Objective**: IFA NASDAQ® Index (IAIIX) is designed to capture the return of the NASDAQ-100 Index.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Number of Holdings</th>
<th>Median Market Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>NASDAQ</td>
<td>32.97%</td>
<td>15.77%</td>
<td>20.71%</td>
<td>11.30%</td>
<td>106</td>
<td>$163.5B</td>
</tr>
</tbody>
</table>

*All Data as of Dec 31, 2017. For updates see www.finaindexes.com.

### IFA U.S. Total Market Index (TM)

**Investment Objective**: IFA U.S. Total Market Index (IWM) is designed to track the overall stock market.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Number of Holdings</th>
<th>Median Market Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vanguard U.S. Total Market Index</td>
<td>21.16%</td>
<td>9.95%</td>
<td>13.59%</td>
<td>9.40%</td>
<td>325</td>
<td>$86.3B</td>
</tr>
</tbody>
</table>

*All Data as of Dec 31, 2017. Returns include the impact of reinvested dividends and capital gains distributions. For updates see www.finaindexes.com.

### IFA U.S. Large Growth Index (LG)

**Investment Objective**: IFA U.S. Large Growth Index (VIG) is designed to track the performance of large-cap growth stocks.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Number of Holdings</th>
<th>Median Market Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vanguard Growth Index</td>
<td>27.82%</td>
<td>11.90%</td>
<td>16.08%</td>
<td>9.53%</td>
<td>325</td>
<td>$86.3B</td>
</tr>
</tbody>
</table>

*All Data as of Dec 31, 2017. Returns include the impact of reinvested dividends and capital gains distributions. For updates see www.finaindexes.com.

### IFA U.S. Small Growth Index (SG)

**Investment Objective**: IFA U.S. Small Growth Index (VIGX) is designed to track the performance of small-cap growth stocks.

<table>
<thead>
<tr>
<th>Average Annual Total Return</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
<th>Ten Years</th>
<th>Number of Holdings</th>
<th>Median Market Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vanguard Small-Cap Growth Index</td>
<td>21.91%</td>
<td>9.59%</td>
<td>13.59%</td>
<td>9.40%</td>
<td>651</td>
<td>$4.2B</td>
</tr>
</tbody>
</table>

*All Data as of Dec 31, 2017. Returns include the impact of reinvested dividends and capital gains distributions. For updates see www.finaindexes.com.