Evidence-Based Investing

A Scientific Framework for the Art of Investing

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Science has produced many tremendous advances, from lifesaving medical treatments to instantaneous communication. Historically, though, science has had little influence on investing. Instead of keeping pace with advancements in modern portfolio theory and historical and statistical evidence, investors and money managers often rely on conventional wisdom and flawed assumptions. How can investors sort through the vast amount of available data to maximize after-tax return and minimize risk? This paper provides a framework called Evidence-Based Investing that can provide investors optimal outcomes based on compelling scientific evidence.

ABOUT THE AUTHORS

Kent Kramer CFP®, AIF®

Kent Kramer is Co-Chief Investment Officer and Lead Advisor for Foster Group, a 24-year-old Wealth Management Advisory firm. Drawing on his depth of experience as financial advisor, portfolio manager, communicator and elected state representative (where he was Vice-Chair of the Ways & Means Committee on taxation), Kent provides leadership within Foster Group with strategies that can lead the way to meeting client goals. Kent joined Foster Group in 2001 and was named shareholder in 2004. A University of Iowa graduate in Finance, Kent enjoys the challenge of taking complex or misunderstood ideas and making them clear and applicable to an individual's real life. Kent comments, "This quote from the recent book, *Every Good Endeavor* by Timothy Keller, inspires my personal work ethic: *If God's purpose for your job is that you serve the human community, then the way to serve God best is to do the job as well as it can be done."*

Kent is a Certified Financial Planner (CFP®) and Accredited Investment Fiduciary (AIF®). His writings have appeared in Physician's Money Digest and Iowa Medicine, among other publications, as well as more than two dozen weblogs (www.fostergrp.com) on personal finance. Kent and his wife, Kim, have four daughters, ranging in age from college graduate to middle school.

Ed Green CFP®, ChFC, AIF®

Ed Green is Co-Chief Investment Officer and Lead Advisor for Foster Group, a Wealth Advisory firm in Des Moines, Iowa, with offices in Omaha, Nebraska. Ed joined Foster Group in 1999 following a successful 12-year career in financial services. "Today, I spend most of my time with our institutional clients—for-profit and non-profit clients, endowments and foundations," Ed reports. "The balance is spent in portfolio management functions, where our firm's Investment Committee determines policy and strategy that directly impacts client portfolios. It's how we apply academic research to the construction of our recommended portfolios. My role is more on the strategic end rather than executional.

"Our industry is noted for making things unnecessarily complex," Ed comments. "But as Albert Einstein said, 'Everything should be made as simple as possible, but no simpler.' I try to live by those words in my discussions with Foster Group clients. If I can't explain a portfolio concept in five minutes and be easily understood, warning lights start flashing." Ed's blogs about investment philosophy and strategy appear on Foster Group's website.

Ed and his wife, Kem, have two grown children, as well as two Golden Retrievers, Rocky and Charlie, "who graciously allow us to live in their home." During free time, Ed enjoys tending the Greens' yard and flowers and, for more than 30 years, providing audio technical support at his church.

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Brent is Savant's Chief Executive Officer (CEO), a Principal, and a financial advisor. He has 23 years of experience in the financial services industry. He has previously taught investment and finance courses at Rock Valley College, Rockford College, and Northern Illinois University.

Brent earned a bachelor of science degree in finance and economics and an MBA, with an emphasis in accounting, from Northern Illinois University. He is a Certified Public Accountant (CPA), Certified Financial Planner™ (CFP®), Chartered Financial Analyst®(CFA®), and an Accredited Investment Fiduciary Analyst® (AIFA®).

Brent was formerly the president of the Illinois CPA Society and a board member of the Northern Illinois Estate Planning Council. He was an officer of Stateline Angels, an angel investment group, as well as a long-term participant in Vistage (previously known as TEC), and The Strategic Coach™. He is currently a member of Young President's Organization (YPO) and serves on the boards of several community organizations and the Northern Illinois University Foundation.

Brent received the Distinguished Finance Alumnus Award from Northern Illinois University in 2010. He represented Savant for the fifth year on *Barron's* list of the "Top 100 Independent Financial Advisors" in the country. From 1997 until the survey ended in 2008, Brent represented Savant on *Robb Report Worth* magazine's "The Nation's 100 Most Exclusive Wealth Advisors" list. He has also been named by *Chicago* magazine as the #1 independent financial advisor for the Chicagoland area and as one of the nation's top professional advisors by *J.K. Lasser*. In 2011, Brent was named the nation's 10th "Most Experienced Independent Financial Advisor" by *Bloomberg Businessweek*. Brent was featured in the *Wall Street Journal* in July 2009 and January 2010, is a contributor to the WallStreetWeek.com website, and is regularly quoted by local, national, and industry media.

Brian J. Knabe MD, CMP©, CFP®, FAAFP

Brian is a financial advisor and a member of the Advisory Team with over four years of experience in the financial services industry. He is responsible for managing all aspects of the financial planning and investment process for Savant's clients. Brian routinely meets with clients, advisors, portfolio managers, and planners in order to develop comprehensive planning, investment, and tax strategies.

Brian is also a clinical assistant professor in the Department of Family Medicine with the University of Illinois. He is a member of several professional organizations, including the American Academy of Family Physicians, the Illinois State Medical Society, and the Catholic Medical Association.

Brian is a magna cum laude graduate of Marquette University with an honors degree in biomedical engineering. He earned his medical degree from the University of Illinois College of Medicine and has earned the Degree of Fellow of the American Academy of Family Physicians (FAAFP). Brian also attended the University of Illinois for his family practice residency, where he served as chief resident. Brian is a Certified Medical Planner™ (CMP®), a Certified Financial Planner™ (CFP®), and has earned a certificate in financial planning from Marquette University. He serves on the executive board for the Blackhawk Area Council of the Boy Scouts of America as well as the Haven Network board. Brian joined Team Savant in January 2007.

Adam W. Larson CFA®

Adam is a research analyst and the Investment Research Team Lead for Savant. He is responsible for contributing to the management of Savant's investment strategy, conducting portfolio analysis, and managing investment processes for Savant's clients. He is a member of the Investment Committee and has authored various articles, papers, and commentaries that appear in Savant's newsletters and website.

Prior to joining Savant, Adam gained experience in finance and accounting working as a financial analyst for several local companies. Adam earned a bachelor of science degree in finance with an emphasis in investments from Northern Illinois University and is a Chartered Financial Analyst® (CFA®). Adam joined Team Savant in October 2007.

THE CLASH OF "CONVENTIONAL WISDOM" VS. SCIENCE

INTRODUCTION

Scientific progress is evident in virtually every aspect of our lives. From the moment we get up in the morning, the impact of modern science is everywhere. The magnitude of change over the last few decades is overwhelming; one exception is the manner in which most people make their *investment decisions*.

Over the last five decades, there has been a quantum leap forward in understanding how capital markets work and the factors that drive investment return. Objective and high-quality academic research is available to inform investor decisions about which investment approaches are more likely to succeed and which are more likely to fail.

Although this research is virtually irrefutable, ***most investors do not make their investment decisions based on this evidence***. On the contrary, fear and greed, rather than scientific and numerical evidence, tend to drive many investor decisions. It is surprising how few investors are even aware of the overwhelming body of evidence that exists regarding optimal investing.

The evidence indicates how difficult it is to pick individual stocks, trade in and out of them at just the right time, and fare as well as the overall market. Likewise, no reliable system has been demonstrated by which one can consistently profit by timing the purchase or sale of securities. This data, compiled by numerous Nobel laureates and other respected academic thinkers over two decades, is quite clear.

Nevertheless, most investors (and some investment advisors) ignore this body of evidence. They often follow rather unscientific models based on unproven hypotheses. In doing so, they—perhaps unknowingly—believe they have unique information or some special knowledge that can be used to produce returns in excess of the market, **and** which is sufficient to offset the cost of executing the strategy. To demonstrate the many shortcomings of this approach and provide a higher probability of investing success, this paper introduces the concept of *Evidence-Based Investing* (EBI).

EBI involves the judicious use of current best evidence to make informed investment decisions. The concept is built around methodology that has produced great success in the field of medicine. Evidence-based medicine (EBM) is defined as "the attempt to apply standards of evidence gained from the scientific method to aspects of medical practice in a uniform manner."1

In the same way, Evidence-Based Investing applies available evidence to investors' questions and challenges in order to formulate better investing solutions. The goal of EBI is to maximize after-tax returns for the individual investor, while reducing risk and decreasing the maximum likely loss during bear markets.

EBI involves *a series of steps*. First, questions are developed. Then, related evidence is located, researched, interpreted and compared. Finally, ongoing application of the evidence is made, within the context of the investor's relationship with his or her investment advisor.

This paper introduces the methods and conclusions of EBI, and relates how an investor can best capture market returns while avoiding the failure of the conventional approach. In doing so, we seek to demonstrate the benefits of a scientific approach for the individual investor.

HOW EVIDENCE CONTRADICTS THE CONVENTIONAL APPROACH

Question: *What is the best way to capture market returns?*

Most investors believe successful investing involves *outperforming the market*, and that the best way to achieve this is through *actively managed* investment strategies. Evidence demonstrates, however, that this approach is questionable at best. Both the method (the continuous in-and-out trading of securities for the purpose of generating gains) and the goal (beating the market) add significant risk and expense while frequently delivering lower overall return to the investor, compared to investing strategies that neither actively trade nor seek returns greater than the market.

This is counterintuitive for many investors.

Wall Street's ongoing "message" conveys to investors that money managers add value by providing *expertise* in stock selection and market timing. In fact, there is a large amount of evidence demonstrating that professional market timing and stock selection actually work to investors' detriment. On average, the conventional approach of active management not only fails to deliver returns that *exceed* the market, it actually *under*performs the market.

A study by *Dalbar* (**Figure 1a**) shows that conventional active money management techniques actually resulted in substantially *lower* returns for investors. In fact, the average stock fund investor earned returns of only 3.8% per year over the 20-year period ending in 2011, while a simple buy-and-hold strategy in the S&P 500 Stock Index returned 9.1%. (This outcome was similar for bond investors, as well.) Remarkably, the average stock investor realized returns barely above the level of inflation. The average bond investor was unable to achieve even this low level of performance.

In contrast, equity markets themselves have a long and consistent history of significant growth. This pattern is illustrated in the graph of "Stocks, Bonds, Bills, and Inflation" (**Figure 1b**), showing that over the long term, stocks have risen consistently, though certainly not on an "every year" basis.

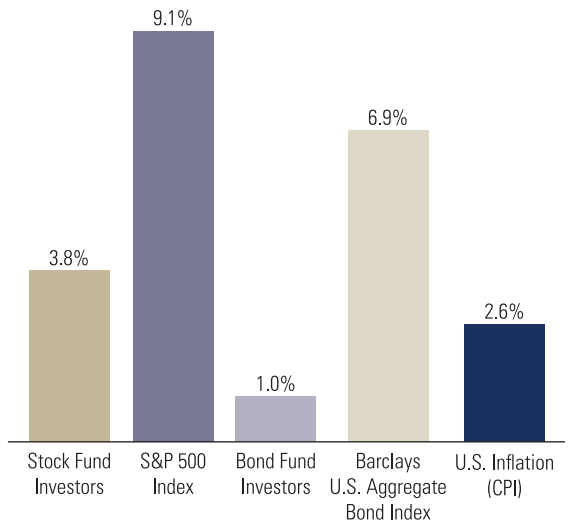
The consistent long-term growth of capital markets raises the critical question: How can individual investors effectively capture this growth? Research initially conducted by Gary Brinson, L. Randolph Hood and Gilbert Beebower in 1986, and confirmed again in 1991, demonstrates that focusing on *asset allocation* is the key determinant explaining differences in portfolio performance (Figure 1c).

Asset allocation is the decision—or series of decisions—an investor makes to determine the strategic mix of asset classes (i.e., stocks, bonds and cash) employed in a portfolio to capture the most return over the long term, given the investor's acceptable level of risk. In this groundbreaking study, allocation decisions accounted for more than 90% of returns earned by investors—while an investor's ability to select the "right" stocks and time markets accounted for only 5% and 2%, respectively.

Disciplined asset allocation enhances returns, whereas attempts at individual stock selection and market timing actually *detract* from performance, more frequently than not. Typically, conventional investors focus their efforts on these much-less-important factors—timing and individual stock picking—while ignoring the *primary* determinant that will affect their future return (and risk)—appropriate allocation among different asset classes.

"Realized" Annualized Investor Returns

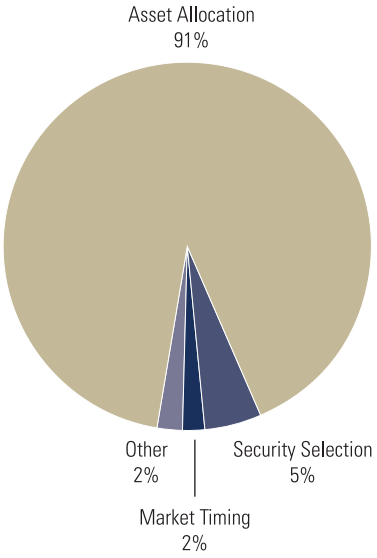
(20 Years Ending 12/31/2011) *Figure 1a*



Source: Dalbar, Quantitative Analysis of Investor Behavior, 2012, Morningstar Direct

Determinants of Investment Performance

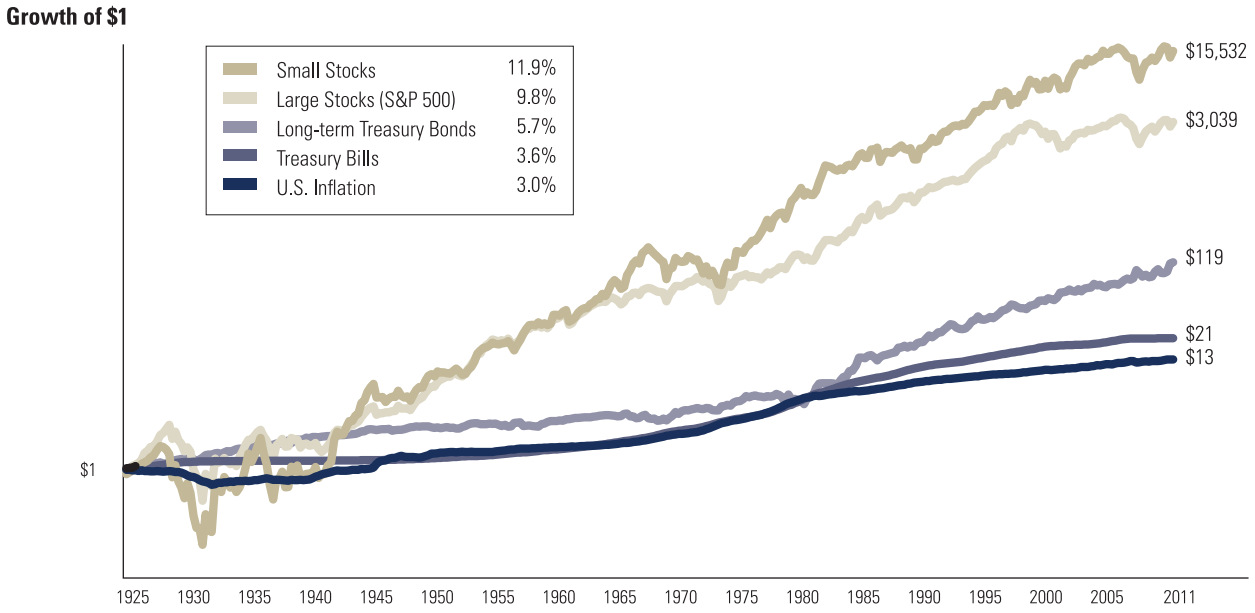
Figure 1c



Source: Brinson, G., Singer, B., & Beebower, G. (1991, May/June). The Determinants of Portfolio Performance II, an Update. Financial Analysts Journal.

Stocks, Bonds, Bills, and Inflation

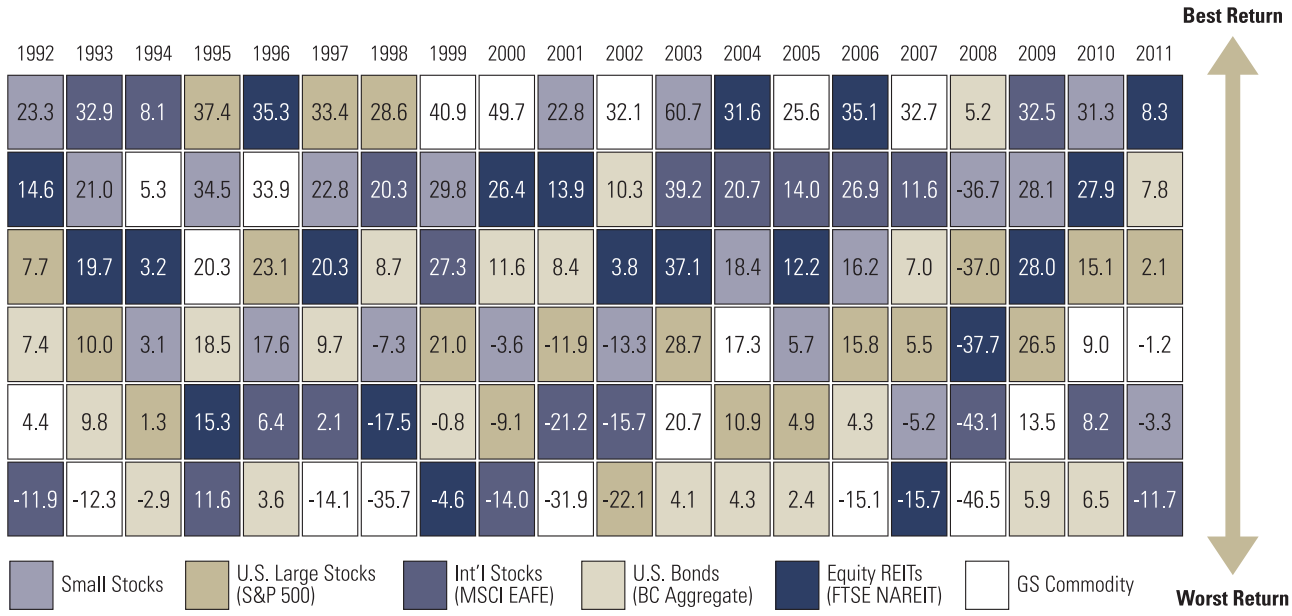
Growth of $1 (1926-2011) *Figure 1b*



Data Source: Morningstar Direct

Can You Pick the Next Winner?

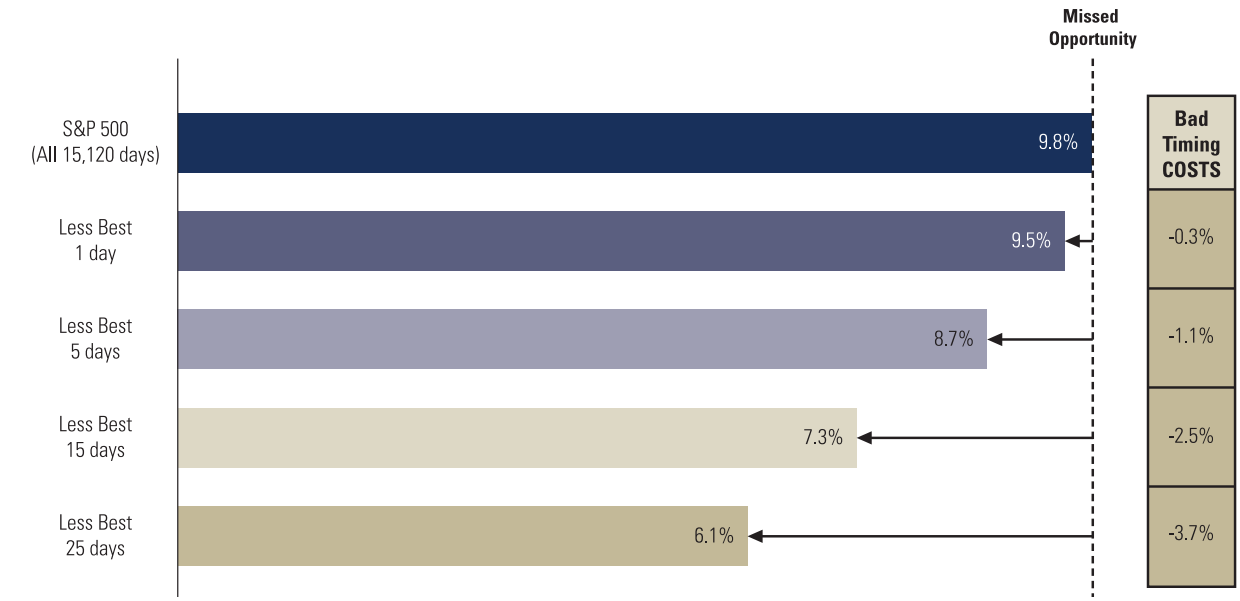
(Asset Class Returns 1992 - 2011) *Figure 2a*



Data Source: Morningstar Direct

The Real Problem with Market Timing: Missing the Big Days

(S&P 500 1970 - 2011) *Figure 2b*



Source: Dimensional Fund Advisors

THE ALLURE OF MARKET TIMING—HOPE SPRINGS ETERNAL

Question: *Can market timing improve returns?*

Investors perennially wish to be able to foresee the next big trend, invest accordingly, and then watch their investment value soar as the economic climate unfolds as predicted. Yet research over the last two decades strongly supports the hypothesis that markets themselves are more or less "efficient." This hypothesis states that at any given time, markets have already taken into account all available information, outside influences and investor expectations as they set security prices. Both evidence and experience suggest that those events that really *do* move the markets are notable precisely because of their *un*predictability. For instance, the tragic events of 9/11 and the downfall of Lehman Brothers devastated financial markets, yet neither of these events could have been reasonably predicted.

The randomness of capital markets is illustrated in **Figure 2a**. This graph evidences *no discernible pattern*, indicating that the year-to-year behavior and ranking of six basic asset classes defies prediction. In fact, even patterns that *seem* to appear can often reverse quickly and backfire on those investors who chase returns. For example, international stocks were one of the top-performing asset classes from 2003 to 2007. However, the bear market and global financial crisis in 2008 affected international stocks more than any other segment. Investors who attempted to time the market based on a few years of performance ended up disappointed.

The evidence-based investor, on the other hand, looks skeptically at any prediction of what the future holds. The fact is, substantial market growth and loss occur in relatively short periods throughout the year. As **Figure 2b** shows, stock returns often come in concentrated pockets of time. The S&P 500 Stock Index has had an annual average return of 9.8% since 1970. However, by missing the best 25 stock market trading days over that period, the return drops to only 6.1%; bad timing could have cost an investor nearly 40% of the total return available. Even just missing the best *five* trading days cost 1.1% in average annual return.

Clearly, market timing adds risk and can prove extremely costly. The evidence indicates that market timing is extremely difficult to do successfully and exposes investors to higher levels of risk, without reliably improving the likelihood of better return. The good news is that the search for the power of prediction is unnecessary.

THE POOR PERFORMANCE OF ACTIVE MONEY MANAGERS

Question: *Do professional money managers perform better than market indexes?*

In an effort to chase above-average returns, money managers are often hyperactive traders. They execute a variety of trading techniques in hopes of achieving returns that are higher than the return of broad equity markets such as the S&P 500. With the finest information, technology and research at their disposal, money managers no longer have to be content with simply trading in and out of the market. They can also trade from industry to industry and sector to sector simultaneously.

Their actions are best measured in terms of cost, both explicit (that is, cost disclosed in the prospectus) and implicit (not disclosed). These undisclosed costs are rarely discussed. They include the cost of market impact, bid/ask spreads and direct trading costs that only appear in the net cost of a stock position after the cost of the trade has settled. Truly visible, or "admitted," costs include:

- Local broker commissions (loads)
- Expense ratios, which include management fees, administrative fees, legal fees, custody costs and 12b 1 fees
- Wall Street brokerage commissions (inside the fund)
- Capital gains taxes from excessive trading within the fund (Few investors fully appreciate the added cost of taxes, although it may be the single most important expense to overcome.)

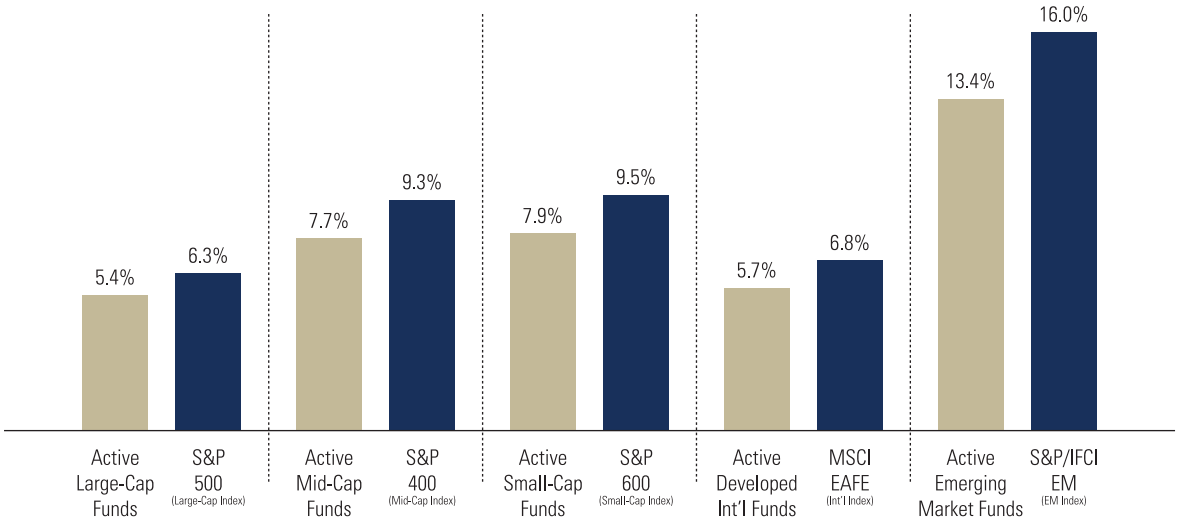
These added costs make it very difficult for active managers to outperform appropriate passive benchmarks. **Figure 3a** shows how the average actively managed fund compared to its relevant passive index for the 10-year period ending July 31, 2012. Actively managed large-cap funds underperformed the S&P 500 by an average of 0.9% per year. The results are even more pronounced for active small and mid-cap funds, which both trailed their indexes by 1.6% annually. The same holds true for funds that invest abroad. Developed-markets international stock funds trailed their benchmark by 1.1% per year, while emerging market funds trailed by 2.6% per year.

Proponents of active management often counter that fund managers are most able to add value during difficult market periods. The theory is that active managers can avoid bad investments and/or time entry and exit from the market to protect investors from downside volatility. Maybe the best opportunity to prove this occurred in 2008—the worst bear market since the Great Depression. Surely, if active managers were able to add value by getting out of the market and avoiding losses, 2008 gave them an ideal opportunity to test their prowess.

The evidence, however, shows that active managers using market timing were unable to add value. In fact, **Figure 3b** shows that **the average actively managed mutual fund significantly trailed its passive benchmark across nearly all categories**. Instead of nimbly exiting the market in anticipation of the events of 2008, active managers, on average, went down with the market and managed to lose even more money for investors.

Actively Managed Stock Funds Failed to "Beat the Market"

(Annualized Returns 10 Years Ending July 31, 2012) *Figure 3a*



Data Source: Morningstar Direct. Active fund returns are category average returns.

The Typical Active Manager Failed in 2008

(U.S. Equity Funds) *Figure 3b*

Lipper Average Fund Return

	VALUE	BLEND	GROWTH
LARGE	-37.40	-37.20	-40.70
MID	-38.30	-38.50	-44.50
SMALL	-33.50	-36.20	-42.10

Index Return

	VALUE	BLEND	GROWTH
LARGE	-39.22	-37.00	-34.92
MID	-34.87	-36.23	-37.61
SMALL	-29.51	-31.05	-32.94

Difference*

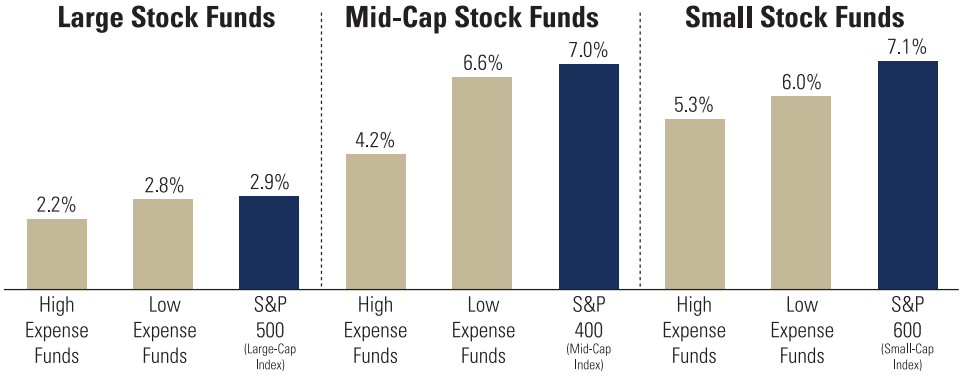
	VALUE	BLEND	GROWTH
LARGE	1.82	-0.20	-5.76
MID	-3.43	-2.27	-6.89
SMALL	-3.99	-5.12	-9.16

*Negative number indicates active managers underperformed indices.

Source: Lipper Average published by The Wall Street Journal, January 6, 2009 and Morningstar EnCorr

High Expense Funds Lag Market Indices

(Annualized Returns 10 Years Ending December 31, 2011) *Figure 4a*

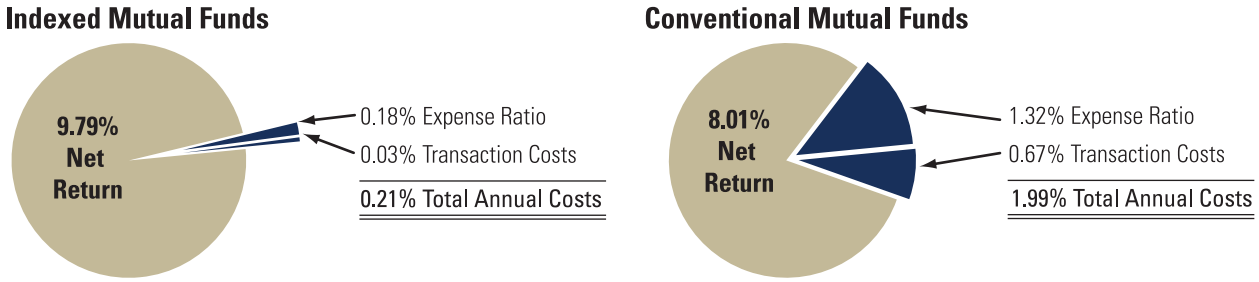


Median Expense Ratio	**1.85%**	**0.53%**	**N/A**	**1.94%**	**0.56%**	**N/A**	**2.12%**	**0.75%**	**N/A**

Data source: Morningstar Direct, Mutual funds in each category were sorted by expense ratio and grouped into quartiles.
Funds in the top quartile are High Expense funds and those in the bottom quartile are Low Expense funds.

Internal Fund Expenses Reduce Net Returns

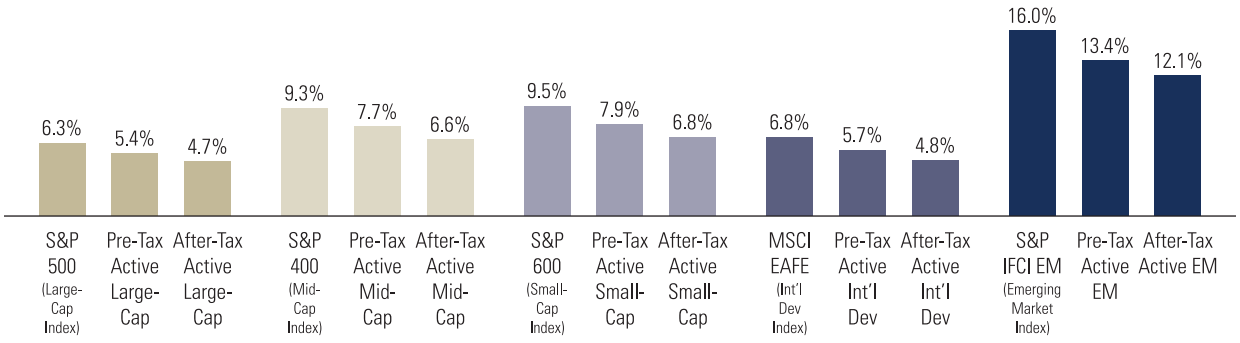
(Assumes 10.0% Gross Annual Return) *Figure 4b*



Data source: Morningstar Direct. See Endnote 2.

Pre-Tax and After-Tax Active Management Performance Trails Market Indices

(Annualized Returns 10 Years Ending July 31, 2012) *Figure 4c*



Data source: Morningstar Direct, Pre-Tax and After Tax returns are those of the mutual fund category averages.

THE COSTS OF TRYING TO BEAT THE MARKET

Question: *Can money managers overcome their high costs?*

There is an inverse relationship between fund expenses and returns. In short, costs matter. Nobel Laureate Dr. William Sharpe points to this in his landmark article, "The Arithmetic of Active Management,"3 in which he asserts:

> *If active and passive management styles are defined in sensible ways, it must be the case that (1) before costs, the return on the average actively managed dollar will equal the return on the average passively managed dollar, and (2) after costs, the return on the average actively managed dollar will be less than the return on the average passively managed dollar. These assertions will hold for any time period. Moreover, they depend only on the laws of addition, subtraction, multiplication and division. Nothing else is required.*

Though it is very difficult to overcome the high cost hurdle of active management, many managers try. The term describing this effort is "pursuing alpha," which refers to the risk-adjusted measure of return above an appropriate benchmark. Significant "alpha" is required for an active manager to match the performance of an appropriate indexed or passive strategy due to the additional costs the active manager must overcome. In fact, a fund's expenses can be a good predictor of its relative long-term performance. **Figure 4a** shows that funds with the highest expense ratios trailed their passive benchmarks much more than funds with lower costs.

To put this in perspective, **Figure 4b** illustrates that the average money manager, with a typical portfolio turnover of 133% per year, needs to beat the market by 2% annually just to *equal* the return of the index—a nearly impossible task. Assuming (simply for mathematical purposes) a 10% gross annual return, the difference in net return between conventional active mutual funds and a low-cost index fund is 9.8% vs. 8% annually. While attempting to outperform the market, active managers actually **underperform** it by a significant margin.

The cost of active management is considerable, and there are multiple layers of costs to consider. For most investors, mutual funds with front-end loads are more or less a thing of the past. Yet, the fund industry has found less obvious ways of extracting commissions. Wrap accounts, for example, typically charge between 1.5% and 2.5% of assets under management, plus other hidden trading costs. Variable annuities, some with surrender charges as high as 9% of invested value, are popular. The 12b-1 fee, introduced in the 1970s as a means of offsetting marketing costs, remains in most actively managed funds, scraping off an additional fee each year.

Transaction costs can also be a significant expense. "The Role of Trading Costs,"4 a 2007 study by Edelen, Evans and Kadlec, found that trading costs pulled more capital from portfolios than commissions *or* expense ratios. The study also found that the larger the mutual fund, the higher its trading costs. "Trading costs," say the authors, "have an increasingly detrimental impact on performance as the fund's relative trade size increases."

In addition to the higher expense of trying to outperform the market, the high turnover generated by active management also results in *higher taxes*. **Figure 4c** shows how taxes can be a significant additional drag on performance. The average fund trailed its passive benchmark across multiple categories *before* taxes; after taxes are considered, the picture becomes even worse.

Once all of the hidden transaction and tax costs are added to the disclosed sales expenses and commissions, total costs not only negate most gains made by pursuing alpha but often result in returns that actually lag the market indexes.

THE ALLURE OF HUNTING FOR THE GREAT MONEY MANAGER

Question: *Can you beat the market by identifying great money managers?*

The section of this paper entitled *"The Poor Performance of Active Money Managers"* established that the average actively managed fund lags its appropriate benchmark index. Many advisors acknowledge this is true. However, they do not see it as a reason to abandon the quest to outperform the market by picking the "right" mutual funds. After all, they argue, they plan to select only the best money managers; the *average* money manager need not apply.

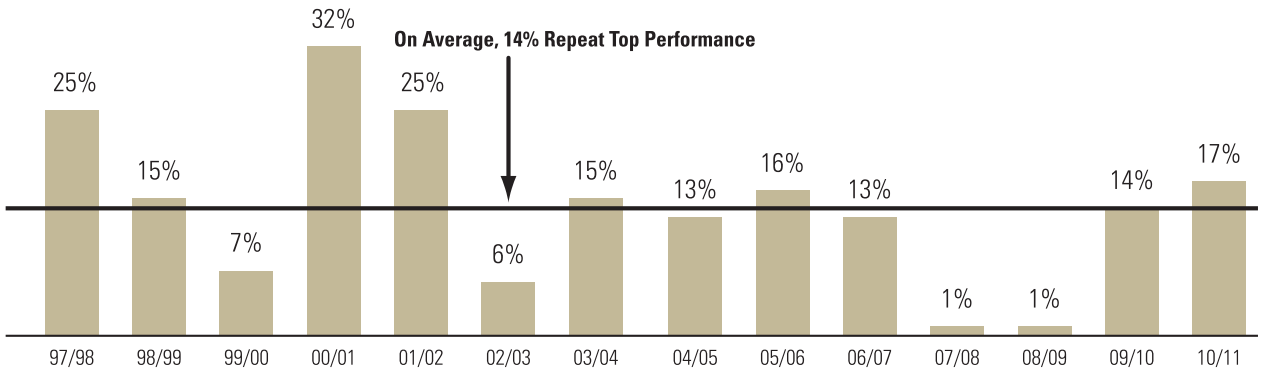
The idea is that the advisor recommends only managers with top track records—those with stellar five-year (or longer) histories. The Securities and Exchange Commission (SEC) has highlighted the basic problem with this approach. They mandate that *every* mutual fund prospectus disclose that "Past performance is not indicative of future returns."

Ironically, a good track record often attracts an influx of new investor capital that, in turn, may consign the fund to lower future returns. **Figure 5a** shows how few top-100 growth fund managers were able to maintain a top-100 ranking in the following year. On average, only 14% of the managers were able to remain in the top-100 from year to year. Notice the broad range of money managers' annual repeat successes, from 1% to 32%. Such a range points to the random nature of a money manager's success and the difficulty of consistently beating the market.

Figure 5b shows that the very top funds actually perform *well below average* in subsequent periods. Of the 377 funds ranked in the top quartile of performance from 2002 through 2006, only 32, a mere 8%, were able to remain on top in the following period, 2007–2011. An amazing 175 funds, close to half of the top quartile group, actually fell to the *bottom* quartile in the subsequent five-year period. Finally, 55 of the top funds (15%) did not even *survive* to the end of the subsequent five-year period. No substantive evidence supports the notion of positive correlation between superior past performance and future returns. If anything, evidence suggests a somewhat negative correlation. To offer an analogy, following past performance is like driving a car by looking only in the rear-view mirror.

Very Few Top 100 Growth Fund Managers Stayed in the Top 100 the Next Year

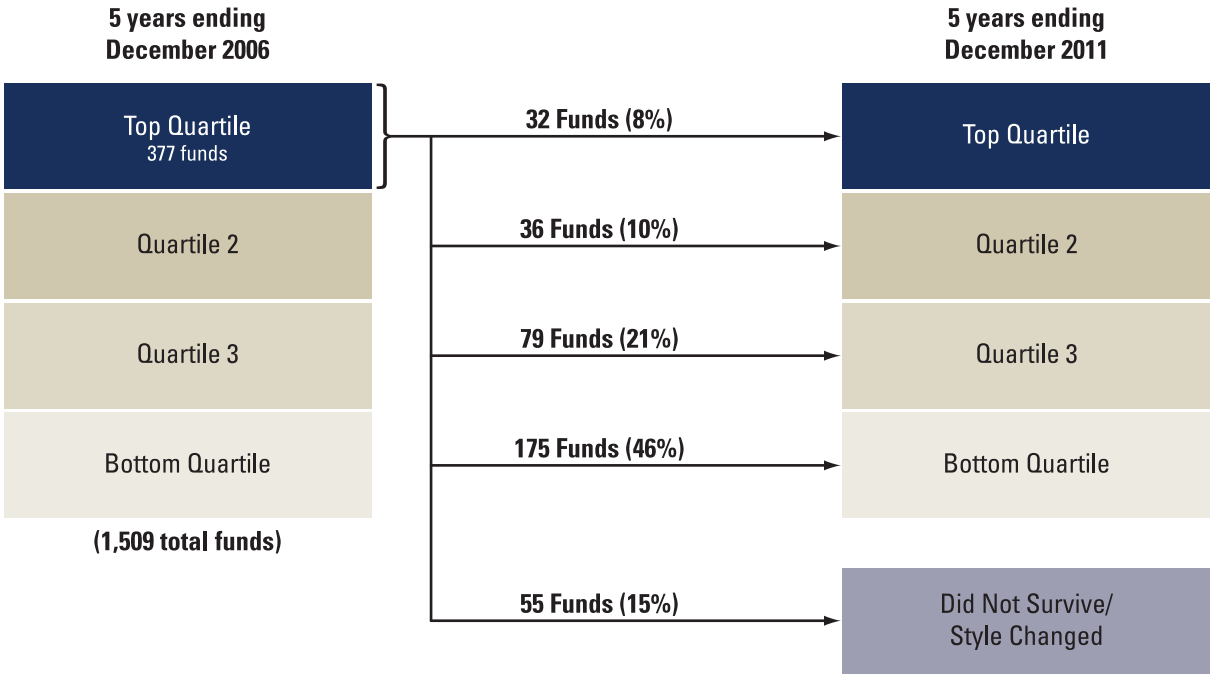
(Percentage of funds that repeat Top Performance) *Figure 5a*



Data source: Morningstar Direct, Domestic Large Growth Funds (distinct portfolios) ranked by calendar year performance.

Subsequent Performance of Top 25% of U.S. Large-Cap Funds

(As of December 31, 2011) *Figure 5b*



Source: Dimensional Fund Advisors

THE EVIDENCE-BASED METHOD: SOME STICK WITH IT . . . *REGARDLESS*

In spite of growing consensus and substantial evidence against actively managed approaches, that method of investing is likely here to stay. Why does the conventional view have such staying power? This question was posed by Nobel laureate William Sharpe in "The Arithmetic of Active Management." His answer?

> *More often, the conclusions (in support of active management) can only be justified by assuming that the laws of arithmetic have been suspended for the convenience of those who choose to pursue careers as active managers.*

The conclusions reached in this paper through an informal application of an Evidence-Based method demonstrate that the three tenets of the conventional approach to investing rest on flawed assumptions and false hopes. Whether one seeks investing success by picking stocks, timing the market or selecting skilled money managers, the costs of these techniques often prove greater than the gains derived by their practice.

SOURCES OF DATA AND METHODOLOGY:

Indexes used except where otherwise noted:

- **U.S. Inflation** – Consumer Price Index – Bureau of Labor Statistics
- **Treasury Bills** – Ibbotson U.S. 30 Day T-Bill Index
- **Aggregate Bond** – Barclays U.S. Aggregate Bond Index
- **Long-term Treasury Bonds** – Ibbotson U.S. Long-Term Govt Index
- **U.S. Large Stocks** – Standard & Poor's 500 Total Return Index
- **U.S. Small Stocks** – Ibbotson U.S. Small Stock Index
- **Int'l Large Stocks** – MSCI EAFE Index
- **Emerging Markets Stocks** – 50% MSCI EAFE and 50% DFA International Small Company Index (1/73 – 12/84), IFC EM Composite Index (1/85 – 12/88), S&P IFCI EM Composite Index (after 12/88)
- **REITs** – FTSE NAREIT Equity REIT Index
- **Commodities** – S&P GSCI Commodity Index

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