DALBAR's 22nd Annual

Quantitative Analysis of Investor Behavior

For period ended:
12/31/2015

Table of Contents

ABOUT THIS REPORT: QAIB 2016

Since 1994, DALBAR's **Quantitative Analysis of Investor Behavior** (QAIB) has measured the effects of investor decisions to buy, sell and switch into and out of mutual funds over short and long-term timeframes. The results consistently show that the average investor earns less – in many cases, much less – than mutual fund performance reports would suggest.

The goal of QAIB is to improve performance of both independent investors and financial advisors by managing behaviors that cause investors to act imprudently. QAIB offers guidance on how and where investor behaviors can be improved.

QAIB 2016 examines real investor returns in equity, fixed income and asset allocation funds. The analysis covers the 30-year period to December 31, 2015, encompassing the crash of 1987, the drop at the turn of the millennium, the crash of 2008, plus recovery periods of 2009, 2010 and 2012. This year's report examines the results of investor behavior on the average investor and poses the question as to whether an investor's "best interest" should include investor behavior.

No matter what the state of the mutual fund industry, boom or bust: *Investment results are more dependent on investor behavior than on fund performance. Mutual fund investors who hold on to their investments have been more successful than those who try to time the market.*

About DALBAR, Inc.

DALBAR, Inc. is the financial community's leading independent expert for evaluating, auditing and rating business practices, customer performance, product quality and service. Launched in 1976, DALBAR has earned the recognition for consistent and unbiased evaluations of investment companies, registered investment advisers, insurance companies, broker/dealers, retirement plan providers and financial professionals. DALBAR awards are recognized as marks of excellence in the financial community.

Registered Fiduciary (RF™)

DALBAR is the registrar of the RF™ (Registered Fiduciary) designation. RF™ is evidence that holders have adopted a Superior Standard of Care that promises to always act in clients' best interest, charge fair compensation, avoid conflicts of interest, is highly qualified, and has a favorable history. For more information, please see www.FiduciaryRegistry.com.

Methodology

QAIB uses data from the Investment Company Institute (ICI), Standard & Poor's, Barclays Capital Index Products and proprietary sources to compare mutual fund investor returns to an appropriate set of benchmarks. Covering the period from January 1, 1986 to December 31, 2015, the study utilizes mutual fund sales, redemptions and exchanges each month as the measure of investor behavior. These behaviors reflect the "average investor." Based on this behavior, the analysis calculates the "average investor return" for various periods. These results are then compared to the returns of respective indices.

A glossary of terms and examples of how the calculations are performed can be found in the Appendices section of this report.

The QAIB Benchmark and Rights of Usage

Investor returns, retention and other industry data presented in this report can be used as benchmarks to assess investor performance in specific situations. Among other scenarios, QAIB has been used to compare investor returns in individual mutual funds and variable annuities, as well as for client bases and in retirement plans. Please see the "Rights of Usage" section in the Appendices for more information and appropriate citation language.

Visit the NEW QAIB Store!

Renowned investor behavior research is now at your fingertips! Visit the QAIB Store at www.QAIB.com for images, infographics and data feeds from the 2016 study.

For questions, please *contact Cory Clark at cclark@dalbar.com or 617-624-7100 for additional questions.*

KEY FINDINGS OF 2015

- In 2015, the average **equity mutual fund investor** underperformed the S&P 500 by a margin of 3.66%. While the broader market made incremental gains of 1.38%, the average equity investor suffered a more-than-incremental loss of -2.28%.

- In 2015, the average **fixed income mutual fund investor** underperformed the Barclays Aggregate Bond Index by a margin of 3.66%. The broader bond market realized a slight return of 0.55% while the average fixed income fund investor lost -3.11%.

- Equity fund retention rates decreased slightly in 2015 from 4.19 years to 4.10 years.

- Fixed Income retention rates were virtually unchanged from 2014 to 2015 (2.94 years vs. 2.93 years).

- Asset allocation funds were the only funds to experience a material change in retention rates. In 2014 asset allocation fund retention rates were 4.86 years, but decreased to 4.54 years in 2015.

- In 2015, the 20-year annualized S&P return was 8.19% while the 20-year annualized return for the average equity mutual fund investor was only 4.67%, a gap of 3.52%.

- The gap between the 20-year annualized return of the average equity mutual fund investor and the 20-year annualized return of the S&P 500 narrowed from 4.66% to 3.52% in 2015.

| | Investor Returns[1] | | | | | Barclays Aggregate Bond Index |
	Equity Funds	Asset Allocation Funds	Fixed Income Funds	Inflation	S&P 500	
30 Year	3.66	1.65	0.59	2.60	10.35	6.73
20 Year	4.67	2.11	0.51	2.20	8.19	5.34
10 Year	4.23	1.89	0.39	1.88	7.31	4.51
5 Year	6.92	3.28	0.10	1.58	12.57	3.25
3 Year	8.85	3.81	-1.76	1.07	15.13	1.44
12 Months	-2.28	-3.48	-3.11	0.95	1.38	0.55

[1.] **Returns are for the period ending December 31, 2015**. *Average equity investor, average bond investor and average asset allocation investor performance results are calculated using data supplied by the Investment Company Institute. Investor returns are represented by the change in total mutual fund assets after excluding sales, redemptions and exchanges. This method of calculation captures realized and unrealized capital gains, dividends, interest, trading costs, sales charges, fees, expenses and any other costs. After calculating investor returns in dollar terms, two percentages are calculated for the period examined: Total investor return rate and annualized investor return rate. Total return rate is determined by calculating the investor return dollars as a percentage of the net of the sales, redemptions and exchanges for each period.*

- In 9 out of 12 months, investors guessed right about the market direction the following month. Despite "guessing right" 75% of the time in 2015, the average mutual fund investor was not able to keep pace with the market, based on the actual volume and timing of fund flows.

- Money Market assets, as a percentage of all mutual fund assets, tends to increase substantially during periods of market downturn but is only reinvested into the market slowly during market recoveries.

- During the downturn of 2008, the percentage of mutual fund assets that were in Money Market surpassed 40%.

- Asset classes tend to become more correlated during market corrections, somewhat muting the benefits of diversification and necessitating a downside protection strategy that goes beyond traditional diversification.

- No evidence has been found to link predictably poor investment recommendations to average investor underperformance. Analysis of the underperformance shows that investor behavior is the number one cause, with fees being the second leading cause.

- Acting in the investor's best interest should include affirmative practices to curb harmful behaviors.

- The average equity fund investor outperformed a hypothetical systematic investor on an annualized basis for the period 1996-2015 (4.67% vs. 3.99%). For that same period, the systematic fixed income investor outperformed the average fixed income investor on an annualized basis (2.58% vs. 0.51%).

Average Fund Investor Returns
1-Year
1996 - 2015

Legend: Asset Allocation, Equity, Fixed Income
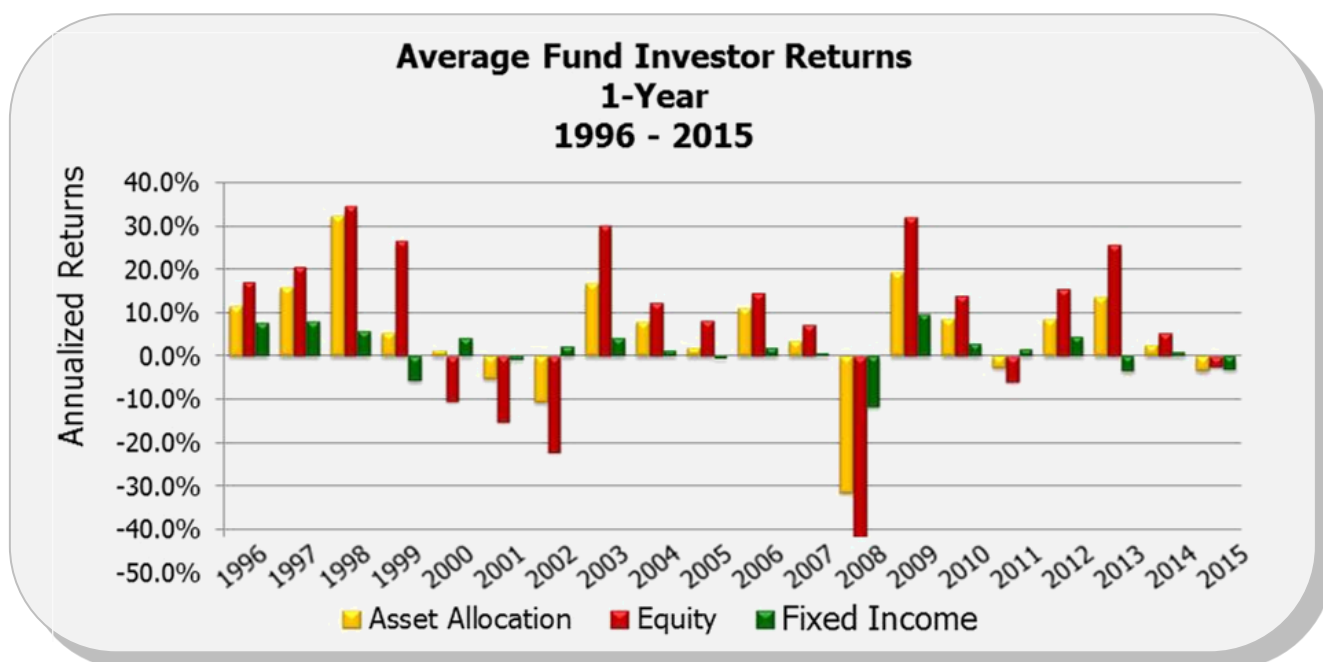
DEFENSE WINS CHAMPIONSHIPS!

Ron Santangelo, CFA

When you think of the great sports dynasties the majority have one thing in common, they had a great defense. You think of the Steelers' four Super Bowl wins anchored by their defense "the steel curtain," the San Antonio Spurs smothering man-to-man defense, or the pitching of the San Francisco Giants that helped win 3 of the last 6 World Series.

Defense in investing can be thought of as controlling downside risk.

We believe that defense in the investing world is the ability to preserve capital by controlling downside risk. Let's take a look at investor behavior during the last two major market drawdowns 2000-2003 and 2007-2009. During both periods the market decreased over 40%, red line. According to data from Thompson Reuters Datastream the percentage of money market assets versus total mutual fund assets, blue line, tended to increase as the market declined and slowly was reinvested as the market improved (see exhibit 1 below). What we believe this indicates is that **investors are loss instead of risk averse**. As the DALBAR studies have indicated over the years, investor behavior has resulted in dramatically lower returns versus market indices. Therefore, a different investment approach may be required to gain investor confidence so as to avoid major downdrafts while participating as fully as possible during recoveries.

Exhibit 1: Money Market Assets as % of All Mutual Fund Assets
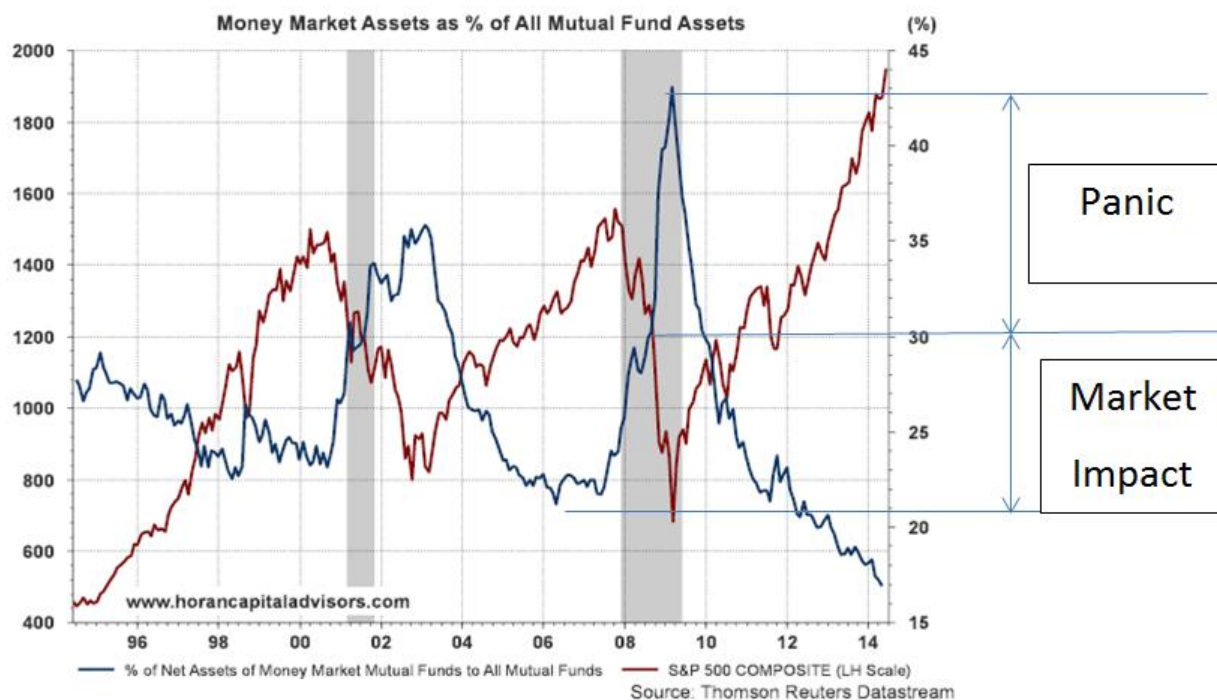
The industry preaches to stay fully invested with diversification as a means of loss mitigation. The issue is that there are few capital preservation investment strategies, such as QID's Rotation Strategies, to protect investors from extreme downside risk. As expected, during major economic events such as the bursting of the technology bubble in 2001-2003 and the mortgage meltdown of 2008-2009 most asset classes participated in the stock market carnage. Therefore, **the major benefits of diversification across asset classes failed investors when needed most**. The relationship between asset classes is known as correlation. Correlation ranges between -1 and +1, where the closer to one the more asset classes tend to move together and the closer to -1 tend not to move together. Asset classes that are near zero or negative are considered good diversifiers. For example, during the mortgage meltdown in 2008, asset class correlations to the stock market moved towards +1 (see exhibit 2 below). The only asset class that maintained a negative or low correlation to the stock market was U.S. Treasuries.

Exhibit 2: Correlation to the S&P 500 Converged Towards One during Market Duress

Asset Class	Correlation 10/31/2007	Correlation 10/31/2008	Difference
Russell 2000 (IWM)	0.80	0.95	+0.16
MSCI EAFE (EFA)	0.81	0.95	+0.14
U.S. REITS	0.67	0.83	+0.16
U.S. Inv Gr Corp (LQD)	-0.04	0.66	+0.70
U.S. Hi Yld Cp (HYG)	0.69	0.90	+0.21
Commodities (GSG)	-0.13	0.60	+0.73
Emerg Mkts Eq (VWO)	0.41	0.90	+0.49
Currency (DBV)	0.27	0.81	+0.54
U.S. Treasury (IEF)	-0.45	-0.15	+0.30

Source: Morningstar Direct

Controlling Downside risk must also be considered when selecting the managers for your portfolio.
Investors have a tendency to select investments that have performed the best over the last couple of years. What worked in the past may not be necessarily what will work in the future. A study performed in 2005 by Rajiv Mallick, former Merrill Lynch Quantitative Manager Due Diligence Analyst, questioned the persistence of manager performance. The probability of maintaining a top two quintile ranking, top 40% of managers, over three year rolling periods on average was low (see exhibit 3 below). A fund that was in the top 40th percentile, top two quintiles, had less than a 20% probability of maintaining its top 40th percentile ranking the following three years. **The bottom line, do not chase yesterday's winners.**

In addition, it was also pointed out that risk-adjusted measures were also questionable selection criteria due to the lack of sustainability of returns. The factor that tended to have the most persistence was ability to predict future performance, was a measure of downside risk known as semi-variance that focused on probability of receiving a return less than zero. Therefore, it would

appear that investors, advisors and asset managers must use a different measure to select or focus on managers with downside risk being a leading factor.

Exhibit 3: Persistence of Top Ranked U.S. Equity Funds

	Large-Cap			Mid-Cap			Small-Cap			Multi-Cap		
	Value	Blend	Growth	Value	Blend	Growth	Value	Blend	Growth	Value	Blend	Growth
4/5	15.6	6.7	4.3	16.1	4.4	6.3	14.3	19.1	3.6	13.4	15.1	10.3

Source: Rajiv Mallick

A Plan Participants savings rate, portfolio risk and equity allocation are also critical factors in controlling downside risk during retirement.

We ran retirement studies for individuals with starting salaries from $25,000 to $250,000. The analysis indicated that a plan participant, including employer contribution, should save 6% or more, select a moderate risk portfolio and not to be too conservative with the equity allocation after age 65. Based on the U.S. longevity studies, the likelihood of one if not both spouses living into their 80's and 90's are increasing. We performed a sensitivity analysis of the probability of a plan participant's running out of money twenty years after retirement, age 85. We assumed two savings rates at 3% and 6% which combines participant and sponsor contributions. In exhibit 4 below, we note the expected assets at 10 and 20 years after retirement for a plan participant with a starting salary of $50,000.   At the 6% savings rate the forecasting model suggests there is only a 5% probability that one may run out of money. Whereas, at a 3% savings rate there appears to be a 95% probability of one running out of money as the projected cash flows are all negative. What was very clear from the sensitivity analysis was that **the more one makes the more one should save to ensure they may maintain their life style throughout their lifetime.**

Exhibit 4: Future Asset Level Estimate for a Participant with Starting Salary of $50,000 and a moderate risk asset allocation.

Probability	95th		50th		5th	
Savings Rate	10Yr	20Yr	10Yr	20Yr	10Yr	20Yr
3%	135.2	-928.5	-3.2	-1,098	-104.3	-1,299
6%	2265.6	1724.1	1262.2	268.6	635.5	-447.1

Source: Morningstar Direct

Assumptions: wage inflation rate average over the past 40 years of 3.88%.   At retirement we used a base case asset allocation in line with industry standards of equity 20%, bonds 60% and cash 20%. Expense level at retirement was 60% of compensation.

The above are excerpts from an in depth report on Retirement available through Quantitative Investment Decisions, LLC prepared December 2015 at a subscription of $930. In addition, a quarterly screen of managers that meet our quantitative factors is also available at an annual subscription of $1200. The subscriptions can be ordered by emailing ron.santangelo@qidllc.com.

SHOULD "BEST INTEREST" INCLUDE INVESTOR BEHAVIOR?

The argument made for regulating the practice of acting in an investor's best interest is largely based on the presumption that investors would earn considerably greater returns if they received better investment recommendations. While this presumption has never been actually tested, the deep belief is that conflicts of interest are the root cause of the diminished returns. Again, this belief has never been tested!

Based on presumptions and beliefs, regulators have introduced rules that prohibit conflicts of interest and require best interest contracts for business arrangements with most investors.

DALBAR has been analyzing investor returns for over 20 years and found that there are in fact greatly diminished returns. The diminished returns is the gap between what an investor would earn from a representative group of investments (index) and the actual returns that an average investor received.

For the 30 years ended December 31, 2015, the S&P 500 index produced an annual return of 10.35%, while the average equity mutual fund investor earned only 3.66%. The gap of 6.69 percentage points represents the diminished returns. Recovering a portion of this shortfall would mean hundreds of billions of dollars earned by investors.

Additionally, over the 30 year period, the equity index was ahead of investor return in 22 of those years, showing that the odds of winning are heavily against the investor.

Over and over, it emerged that the leading cause of the diminished return is the investors' own behavior. No evidence was found that predictably poor investment recommendations were a material factor. Analysis of underperformance shows the following are the primary causes.

Major Causes of Equity Investor Underperformance (20 year analysis)		
Cause	% Contributed to Underperformance	Underperformance ($Billions)
Lack of Availability of Cash to Invest[1]	0.54	44
Need for Cash (planned and unplanned)[2]	0.68	55
Fund expenses (including management fees)	0.79	65
Voluntary investor behavior underperformance[3]	1.50	122
Total	**3.52**	**286**

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[1] Lack of availability of cash represents the investor return that is lost by delaying the investment.
[2] Need for cash represents the percentage of investor return that is lost or gained by withdrawing the investment before the end of the period being measured.
[3] Voluntary investor behavior generally represents panic selling, excessively exuberant buying and attempts at market timing.

The causes of underperformance shown here are consistent with extensive other research that reports on the inadequacy of retirement savings (Lack of availability of cash) which in turn defines plan leakage (Need for cash) as another major cause of underperformance.

It is not difficult to conclude that the goal of raising investors' returns should start with the causes of the diminished returns.

Capturing the Investor's (Best) Interest

Acting in the investor's best interest should be to reduce the investor's harmful behaviors. Four successful practices to reduce harmful behaviors were introduced in 2014:

➔ **Set Expectations below Market Indices** … *change the threshold at which the fear of failure causes investors to abandon investment.*

> Set reasonable expectations and do not permit expectations to be inferred from historical records, market indexes, personal experiences or media coverage. The average investor cannot be above average. Investors should understand this fact and not judge the performance of their portfolio based on broad market indices.

➔ **Control Exposure to Risk** *… include some form of portfolio protection that limits losses during market stresses.*

> Explicit, reasonable expectations are best set by agreeing on a goal that consists of a predetermined level of risk and expected return. Keeping the focus on the goal and the probability of its success will divert attention away from frequent fluctuations that lead to imprudent actions

➔ **Monitor Risk Tolerance**… *periodically reevaluate investor's tolerance for risk, recognizing that the tolerance depends on the prevailing circumstances and that these circumstances are subject to change.*

> Even when presented as alternatives, investors intuitively seek both capital preservation and capital appreciation. Risk tolerance is the proper alignment of an investor's need for preservation and desire for capital appreciation. Determination of risk tolerance is highly complex and is not rational, homogenous nor stable.

➔ **Present forecasts in terms of probabilities** *…simply stating that past performance is not predictive creates a reluctance to embark on an investment program.*

> Provide credible information by specifying probabilities or ranges that create the necessary sense of caution without negative effects. Measuring progress based on a statistical probability enables the investor to make a rational choice among investments based on the probability of reward.

It stands to reason that acting in the investor's best interest should include affirmative practices, such as those listed above, to curb harmful behaviors.
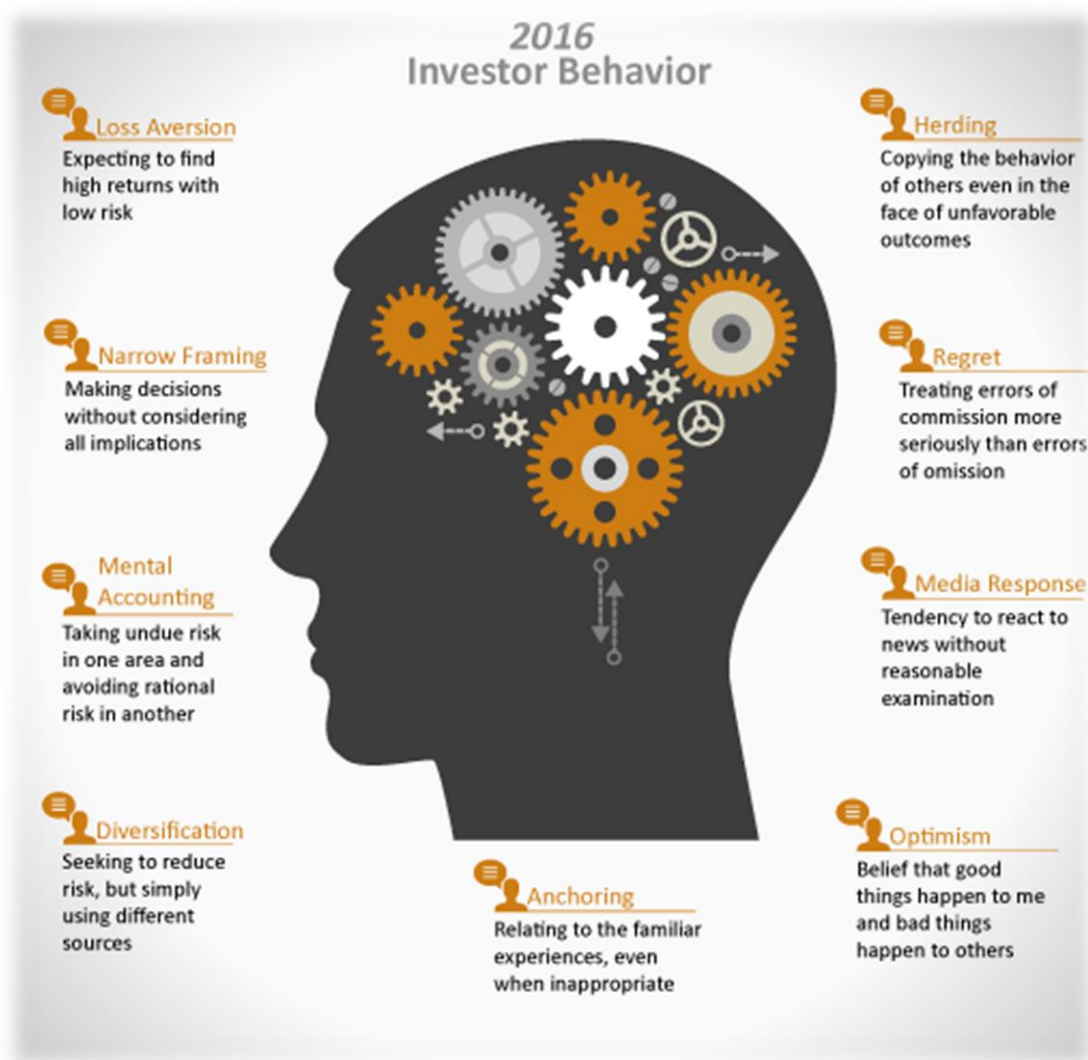
The Causes of Poor Decision Making

Investor Psychology

When discussing investor behavior it is helpful to first understand the specific thoughts and actions that lead to poor decision-making. Investor behavior is not simply buying and selling at the wrong time, it is the psychological traps, triggers and misconceptions that cause investors to act irrationally. That irrationality leads to buying and selling at the wrong time, which leads to underperformance.

There are 9 distinct behaviors that tend to plague investors based on their personal experiences and unique personalities.

2016
Investor Behavior

Loss Aversion
Expecting to find high returns with low risk

Narrow Framing
Making decisions without considering all implications

Mental Accounting
Taking undue risk in one area and avoiding rational risk in another

Diversification
Seeking to reduce risk, but simply using different sources

Anchoring
Relating to the familiar experiences, even when inappropriate

Herding
Copying the behavior of others even in the face of unfavorable outcomes

Regret
Treating errors of commission more seriously than errors of omission

Media Response
Tendency to react to news without reasonable examination

Optimism
Belief that good things happen to me and bad things happen to others

THE EVIDENCE OF POOR DECISION MAKING
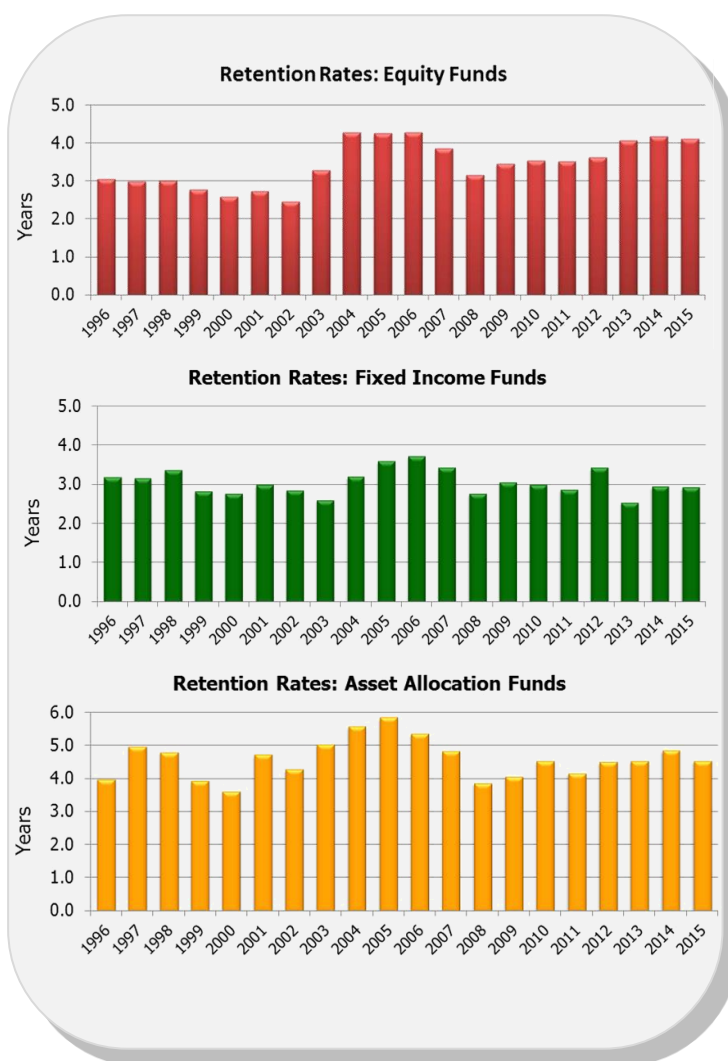## Short-Term Focus and Market Timing

One thing that all the negative behaviors have in common is that they can lead investors to deviate from a sound investment strategy that was narrowly tailored towards their goals, risk tolerance and time horizon. The best way to ward off the aforementioned negative behaviors is to employ a strategy that focuses on one's goals and is not reactive to short-term market conditions. The data shows that the average mutual fund investor has not stayed invested for a long enough period of time to reap the rewards that the market can offer more disciplined investors. The data also shows that when investors react, they generally make the wrong decision.
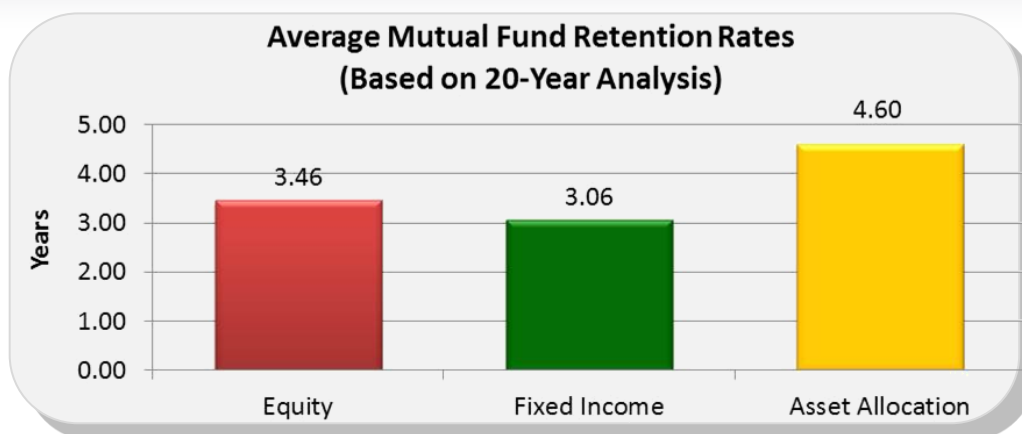
Retention Rates

Over the past 20 years, **equity mutual fund investors** have seldom managed to stay invested in their funds for more than 4 years. When they have done so, it has generally been during periods of bull markets. Equity fund retention rates surpassed the 4 year mark in 2004, after the S&P rose over 28% in the previous year, and stayed there for the 3 years leading up to 2007. Equity fund retention rates are currently back on a 3 year streak of exceeding 4 years, starting in 2013 with an S&P surge of over 32%.

Fixed income mutual fund investors have not remained invested in their funds for longer than 4 years at any time in the past 20 year and has exceeded 3 years only once in the past 8 years.

Asset allocation mutual fund investors have continued to stay invested longer than their equity and fixed income counterparts. This data illustrates the importance of an asset allocation strategy and how it tends to curb negative behavior and lead investors to stay more committed to that strategy. Asset allocation fund retention rates have stood above the 4 year mark for 7 straight years.


Retention Rates: Equity Funds

Retention Rates: Fixed Income Funds

Retention Rates: Asset Allocation Funds

Average Mutual Fund Retention Rates (Based on 20-Year Analysis)

Equity	Fixed Income	Asset Allocation
3.46	3.06	4.60

Market Timing

The retention rate data for equity, fixed income and asset allocation mutual funds strongly suggests that investors lack the patience and long-term vision to stay invested in any one fund for much more than 4 years. This short-term retention does not adhere to a prudent, long-term strategy and is likely the result of short-term thinking and market timing. This begs the question: has investors' market timing been successful?

DALBAR continues to analyze the investor's market timing successes and failures through their purchases and sales. This form of analysis, known as the Guess Right Ratio[4], examines fund inflows and outflows to determine how often investors correctly anticipate the direction of the market the following month. Investors guess right when a net inflow is followed by a market gain, or a net outflow is followed by a decline.

DALBAR looks at the data to determine when investors correctly guess the timing of their purchases or sales and what impact those decisions have on their returns. The Guess Right Ratio shows that investors who execute purchases or sales in response to something other than a prudent investment decision reduce the return created by the markets and portfolio managers.


How Often Do Investors Guess Correctly?
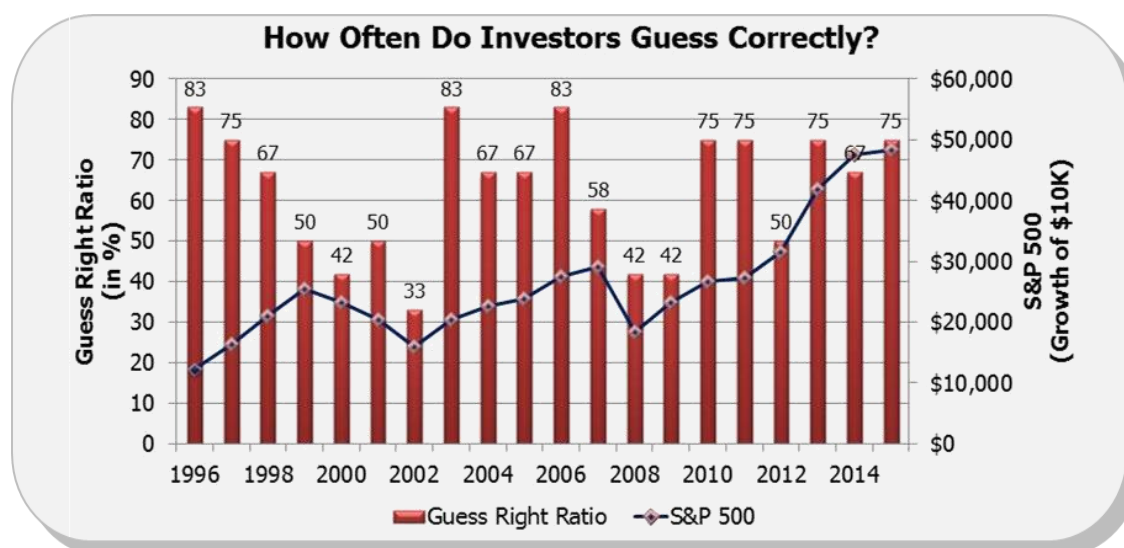
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[4] *Please note that the Guess Right Ratio is not dollar weighted, so it cannot be used to measure returns.*

As is often the case, fund inflows and outflows generally corresponded with the direction of the market the following month. This was the case 75% of the months in 2015. This would leave one to believe that investors are correctly timing the market and should therefore have the returns to prove it. Unfortunately for the average mutual fund investor, they gained nothing from their prognostications. On the contrary, the average mutual fund investor left a considerable amount of money on the table. Why is this so?

Fund flows may coincide with the market direction the following month, but to what extent? Is it enough to make up for the damage done in the current month? January and February of 2015 are illustrative of how an investor can guess right but still be wrong. In January of 2015 fund flows increased by .15% while the S&P shaved -3%. While buying into a weak market in January, investors guessed right; February brought positive returns that more than recouped the losses of the previous month. However, mutual fund assets grew in February at only a fraction of the rate they did in January (.10% versus .15%), suggesting that more investors bought into the -3% correction of January than bought into the 5.75% surge in February. A look at the S&P performance and fund flows throughout the calendar year of 2015 shows several instances in which the data series are on extreme opposite sides of the X-axis (money coming in while the market is going down or money going out while the market is going up).

Investor Fund Flows and Market Performance for the 5 Years Ending 12/31/15
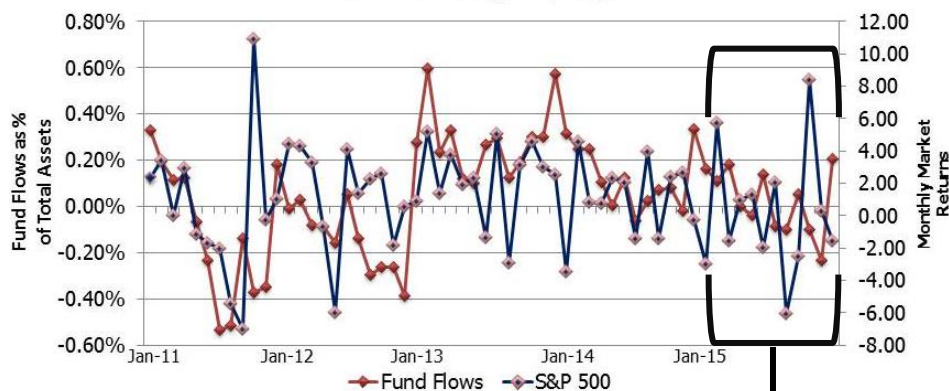
Investor Fund Flows and Market Performance for Calendar Year 2015
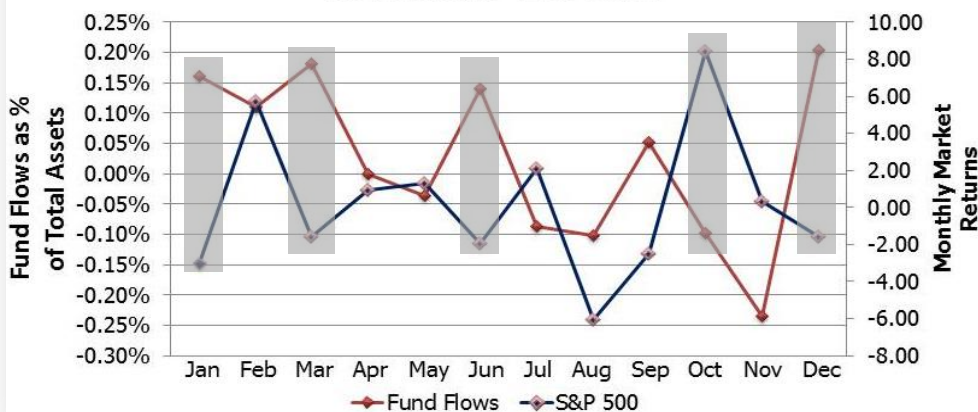
We have seen the various psychological phenomena that take hold of an investor at various points of the market cycle. Some are driven by fear, some by greed, and others by misconceptions perpetuated by our limited experiences and outside influences.

We have seen that these psychological factors led investors to move into and out of investments too frequently, and that their timing in doing so is askew. But what about the alternative? What are investors losing by engaging in such behavior? If one looks at the returns of the average investor against the returns of the overall market, it is clear that the consequences of this investor behavior is serious and detrimental to long-term financial goals.

LONG-TERM RESULTS

When looking at the long-term annualized returns[5] of the average equity mutual fund investor compared to the S&P 500 we see that the average investor has always lagged the overall market. While the gap between the average equity mutual fund investor and the S&P 500 has narrowed considerably in the past 15 years, the average investor still has only earned almost half of what they would have earned by buying and holding an S&P index fund (4.67% vs. 8.19%).


Long-Term Annualized Returns
S&P 500 vs. Average Equity Fund Investor

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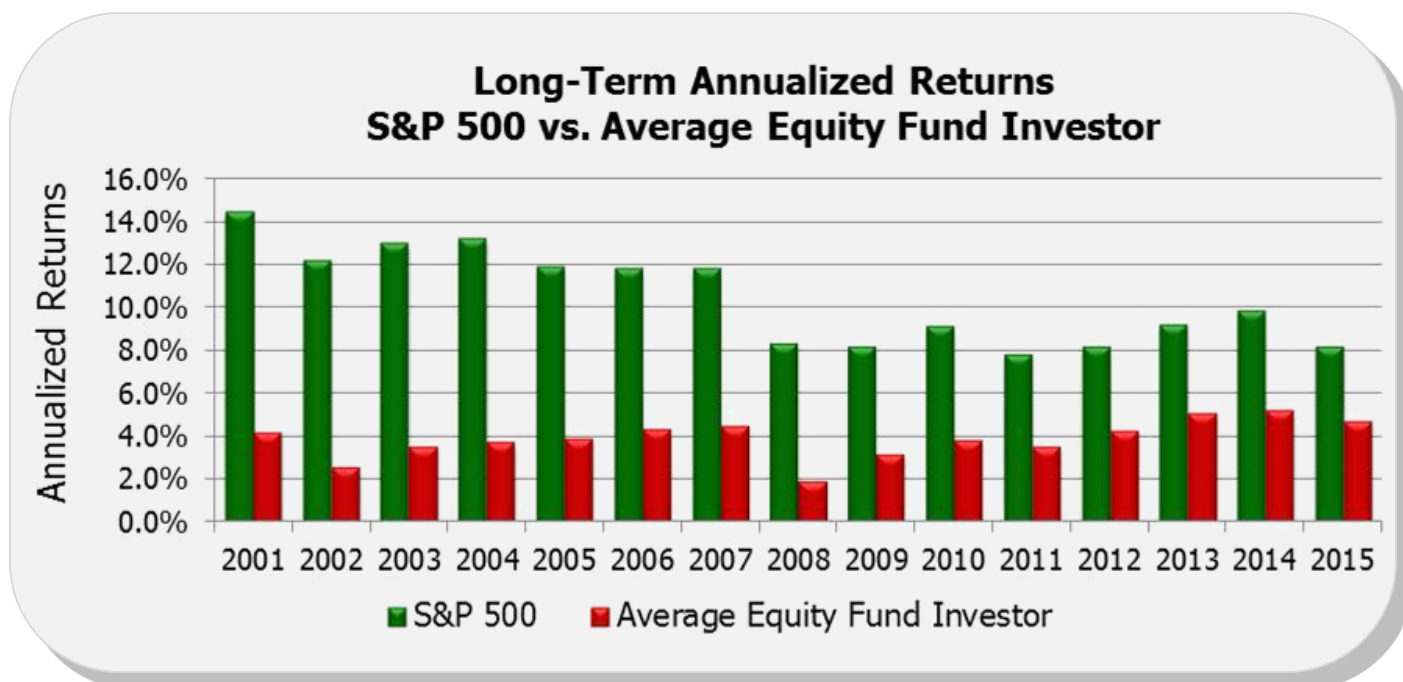
[5] *The original analyses began in 1984, so 2001 represents an 18 year analysis and 2002 represents a 19 year analysis. Starting in 2003, the long-term analysis covers a 20-year timeframe.*

The QAIB study has seen much greater underperformance over the years than it did in 2015; the year 2014 being the most recent example. Although the underperformance of 2015 was not quite as acute as other years, the difference between the average fund investor and the overall market was the difference between making money and losing money.

The underperformance of the average equity and fixed income investor was coincidently the same (3.66%) when compared against the S&P 500 and Barclays Aggregate Bond Index respectively. The underperformance of the average asset allocation investor was greater (4.86%). Last year was particularly noteworthy because the overall market did make modest gains, but the average investor suffered depreciation in their account value.

One-Year Returns for 2015
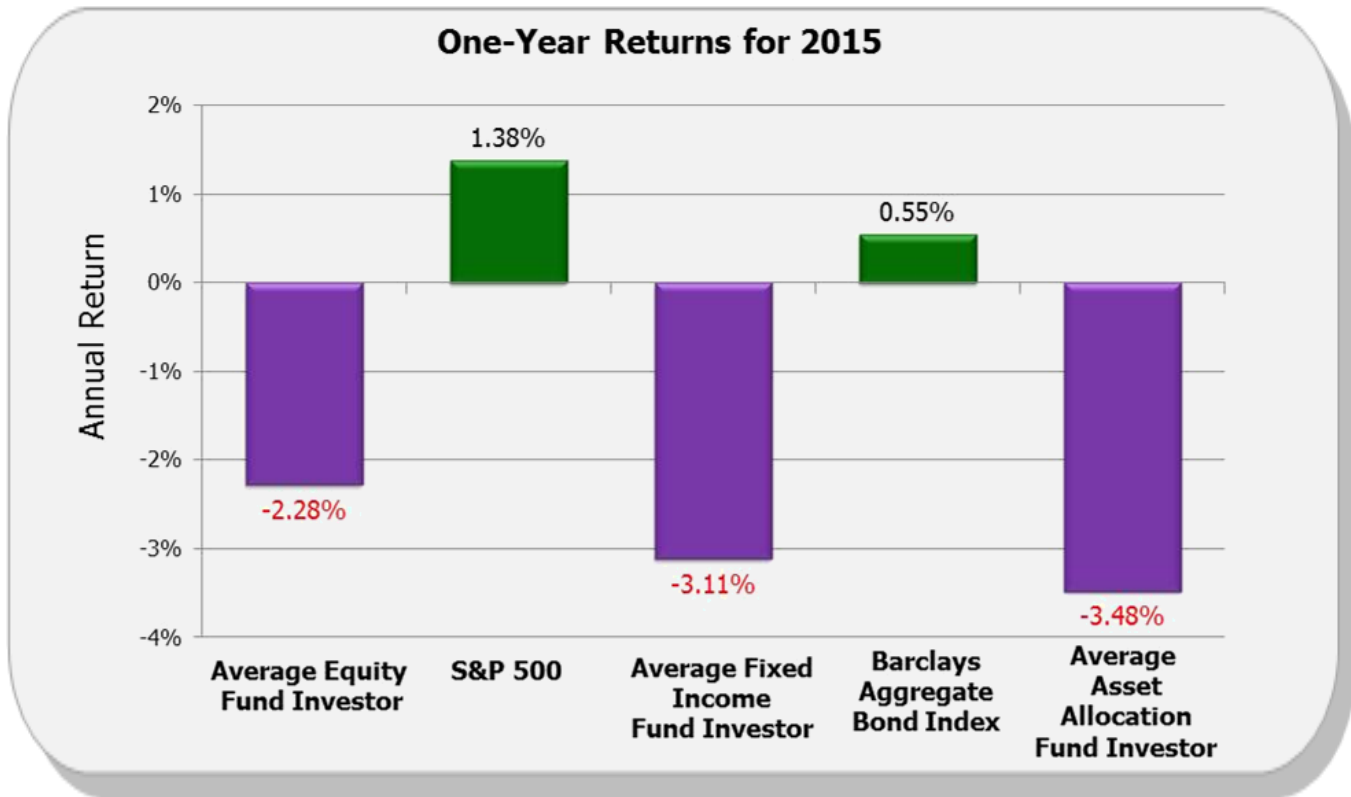
SYSTEMATIC INVESTING

On the next three pages you will find charts that compare a hypothetical $10,000 investment made by the average investor to a series of systematic investments totaling the same $10,000. This comparison is provided for the average equity, fixed income and asset allocation mutual fund investor over a comparable twenty year time horizon.

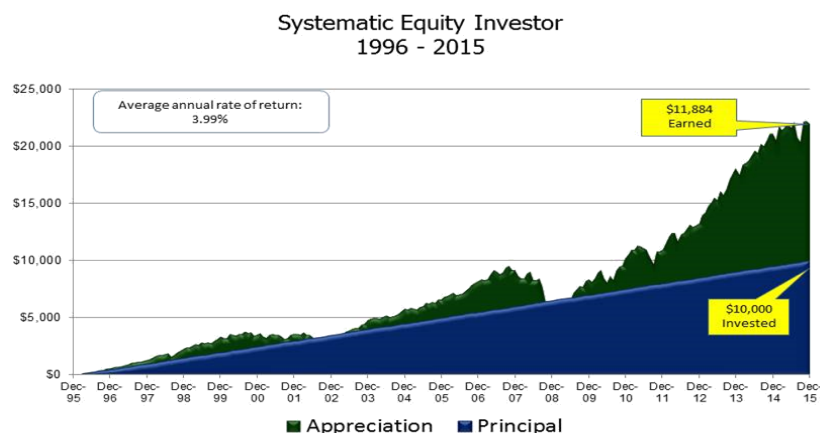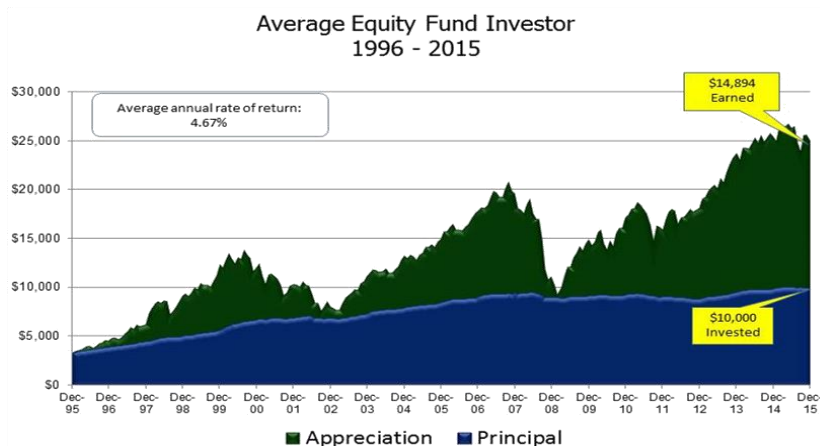## WHY HAS THE SYSTEMATIC INVESTOR UNDERPERFORMED THE AVERAGE INVESTOR?

In comparing the average equity mutual fund investor to a systematic equity investor, the results may surprise you. The average investor outperformed the systematic investor by an average annual rate of 0.68% (4.67% vs. 3.99%).

But isn't dollar cost averaging supposed to be the holy grail of long-term investing? Surely the average equity investor, subject to all the poor decision making discussed earlier, could not outperform the discipline of a systematic investor over 20 years!

These results should not besmirch the merits of dollar cost averaging. For the twenty years leading up to 2015, the average equity investor had a tremendous advantage. Both sets of hypothetical investors were greeted with a very harmonious market. The S&P surged over 20% in every year from 1996 to 1999.

The average investor had substantially more assets to invest, $3,300 to start and had invested $5,689 total by the end of 1999. During those same years, the systematic investor steadily invested only $40.67 each month and had only invested $2,000 during that same timeframe.

The systematic equity investor is represented by the S&P 500, an unmanaged index of common stock. Data supplied by Standard & Poor's. Indexes do not take into account the fees and expenses associated with investing, and individuals cannot invest directly in any index. Systematic investing involves continuous investing in securities regardless of price levels. It cannot assure a profit or protect against loss during declining markets. Past performance cannot guarantee future results.

The average investor had access to cash that the systematic investor did not, and consequently the average investor had an account balance of $9,099 by the end of 1999, while the systematic investor had an account value of only $3,344. A fortuitous entry point provided the average equity investor a head start over the first 4 years; a head start that it would not relinquish to the systematic investor over the next 16 years.
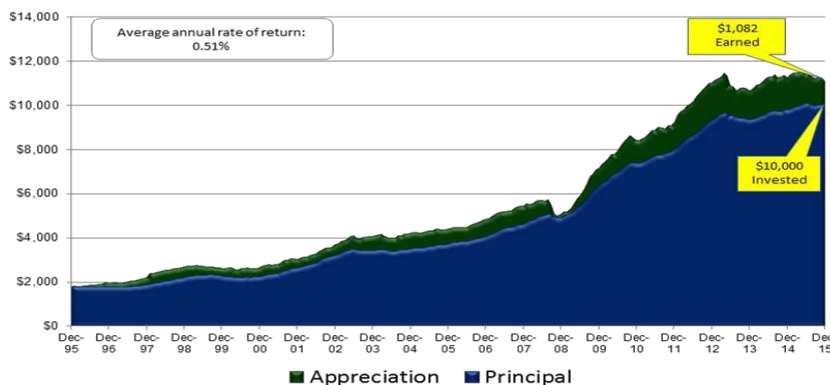
FIXED INCOME

Any doubts regarding the virtues of systematic investing based on the equity analysis on the previous page should be quickly dispelled when looking at their fixed income counterparts. Fixed income did not see the extreme gains that equities did in 1996-1999 and therefore the average fixed income investor gained less of an initial advantage over the systematic fixed income investor.

The average investor started 1996 with $1,837 invested compared to the systematic investor who started with $0 invested and systematically invested $40.67 each month. By the end of 1999 the average investor had a hypothetical account value of $2,624 versus a systematic investor who had an account balance of $2,204. Without 20%+ returns for the first 4 years, the systematic investor was almost able to keep up with the average fixed income investor.
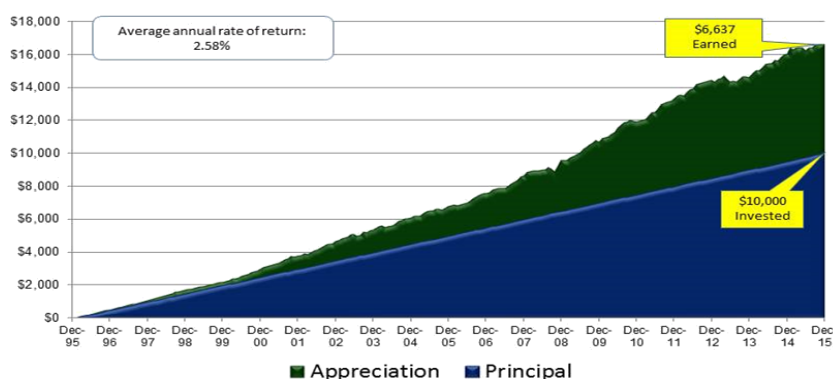
However, as the years rolled on, and the extreme bull market of the mid-late 90's faded away, slow and steady began to win the race.

Average Fixed Income Fund Investor
1996 - 2015

Average annual rate of return: 0.51%

$1,082 Earned

$10,000 Invested

■ Appreciation ■ Principal

Systematic Fixed Income Investor
1996 - 2015

Average annual rate of return: 2.58%

$6,637 Earned

$10,000 Invested

■ Appreciation ■ Principal

The systematic fixed income investor is represented by the Barclays Aggregate Bond Index. Systematic investing involves continuous investing in fixed income assets regardless of price levels. It cannot assure a profit or protect against loss during declining markets. Past performance cannot guarantee future results.

By August of 2000, the systematic fixed income investor had surpassed the average fixed income investor and would never look back. Fast forward fifteen years and the systematic fixed income investor has earned over 5 times that of the average fixed income investor.
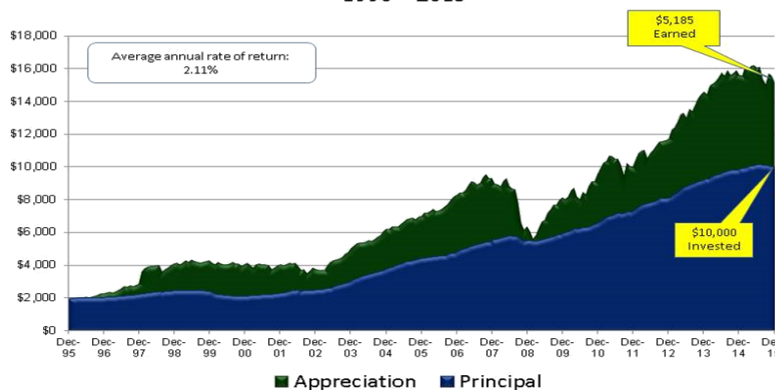
Asset Allocation

The average asset allocation fund investor was outperformed by the systematic equity investor for the period of 1996-2015. The average asset allocation investor started 1996 with $1,990 and doubled his hypothetical account balance in a little over 2 years, but it would stay at that general level until 2003.
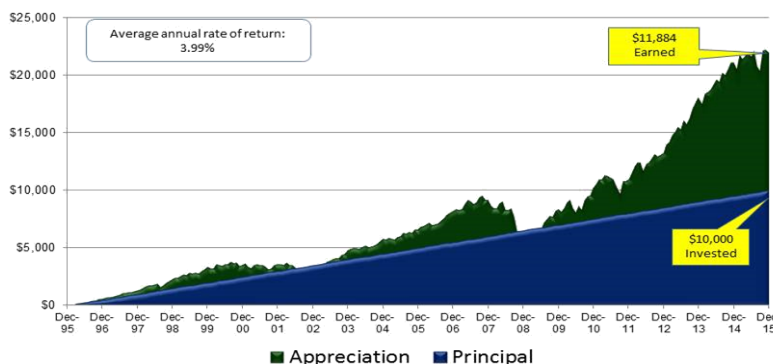
During that same period, the systematic equity investor was able to narrow the gap between he and the average asset allocation fund investor, but would not eliminate the gap until many years later in 2009.

From 2009 until 2015, the systematic equity investor pulled away from the average asset allocation investor and ended with more than double the money earned.

Average Asset Allocation Fund Investor
1996 - 2015

Average annual rate of return: 2.11%

$5,185 Earned

$10,000 Invested

Appreciation   Principal

Systematic Equity Investor
1996 - 2015

Average annual rate of return: 3.99%

$11,884 Earned

$10,000 Invested

Appreciation   Principal

The systematic equity investor is represented by the S&P 500, an unmanaged index of common stock. Data supplied by Standard & Poor's. Indexes do not take into account the fees and expenses associated with investing, and individuals cannot invest directly in any index. Systematic investing involves continuous investing in securities regardless of price levels. It cannot assure a profit or protect against loss during declining markets. Past performance cannot guarantee future results.

APPENDICES

1. Year-by-Year Investor Returns

2. Long-Term Annualized Investor Returns

3. Glossary

4. Investor Return Calculations: An Example

5. Rights of Usage and Sourcing Information

YEAR-BY-YEAR INVESTOR RETURNS

The following table shows the one-year investor return since inception from 1985 to 2015. These calculations assume that investors start investing on January 1 of each year and withdraw their investments on December 31. The effect of compounding across years is therefore lost. Additionally, because of the year-by-year nature of the calculation, returns cannot be asset weighted.

Year	Avg. Equity	Avg. Fixed Income	Avg. Asset Allocation
1985	27.79%	11.86%	20.50%
1986	17.53%	7.94%	5.97%
1987	0.51%	-0.84%	6.03%
1988	17.88%	4.70%	-1.78%
1989	23.51%	6.63%	20.77%
1990	-5.62%	2.18%	6.81%
1991	29.40%	11.94%	17.25%
1992	7.28%	8.60%	1.13%
1993	15.93%	7.87%	16.66%
1994	-0.02%	-4.99%	-5.48%
1995	26.52%	14.37%	25.36%
1996	17.33%	7.71%	11.51%
1997	20.59%	8.14%	16.02%
1998	34.48%	5.92%	32.40%
1999	26.58%	-5.68%	5.47%
2000	-10.20%	4.17%	1.39%
2001	-14.92%	-0.75%	-5.15%
2002	-21.86%	2.20%	-10.56%
2003	30.08%	4.31%	16.80%
2004	12.60%	1.30%	8.01%
2005	8.45%	-0.58%	1.95%
2006	14.65%	2.09%	11.12%
2007	7.33%	0.80%	3.47%

Year	Avg. Equity	Avg. Fixed Income	Avg. Asset Allocation
2008	-41.77%	-11.55%	-31.35%
2009	32.10%	9.78%	19.31%
2010	14.11%	3.05%	8.83%
2011	-5.73%	1.84%	-2.60%
2012	15.62%	4.70%	8.53%
2013	25.69%	-3.47%	13.72%
2014	5.51%	1.19%	2.60%
2015	-2.28%	-3.11%	-3.48%

LONG-TERM ANNUALIZED INVESTOR RETURNS

Year	S&P 500	Average Equity Fund Investor	Difference
1998[6]	17.90%	7.25%	-10.65%
1999[6]	18.01%	7.23%	-10.78%
2000[6]	16.29%	5.32%	-10.97%
2001[6]	14.51%	4.17%	-10.34%
2002[6]	12.22%	2.57%	-9.65%
2003	12.98%	3.51%	-9.47%
2004	13.20%	3.70%	-9.50%
2005	11.90%	3.90%	-8.00%
2006	11.80%	4.30%	-7.50%
2007	11.81%	4.48%	-7.33%
2008	8.35%	1.87%	-6.48%
2009	8.20%	3.17%	-5.03%
2010	9.14%	3.83%	-5.31%
2011	7.81%	3.49%	-4.32%
2012	8.21%	4.25%	-3.96%
2013	9.22%	5.02%	-4.20%
2014	9.85%	5.19%	-4.66%
2015	8.19%	4.67%	-3.52%

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[6] *The original analyses began in 1984, so that between 1998 and 2002, the period covered was less than 20 years. Since 2003, however, the long-term analysis has covered a 20-year time frame.*

GLOSSARY

Average Investor

The average investor refers to the universe of all mutual fund investors whose actions and financial results are restated to represent a single investor. This approach allows the entire universe of mutual fund investors to be used as the statistical sample, ensuring ultimate reliability.

[Average] Investor Behavior

QAIB quantitatively measures sales, redemptions and exchanges (provided by the Investment Company Institute) and describes these measures as investor behaviors. The measurement of investor behavior is the net dollar volume of these activities that occur in a single month during the period being analyzed.

[Average] Investor Return (Performance)

QAIB calculates investor returns as the change in assets, after excluding sales, redemptions, and exchanges. This method of calculation captures realized and unrealized capital gains, dividends, interest, trading costs, sales charges, fees, expenses and any other costs. After calculating investor returns in dollar terms (above) two percentages are calculated:

➢ Total investor return rate for the period
➢ Annualized investor return rate

Total return rate is determined by calculating the investor return dollars as a percentage of the net assets, sales, redemptions and exchanges for the period.

Annualized return rate is calculated as the uniform rate that can be compounded annually for the period under consideration to produce the investor return dollars.

Dollar Cost Averaging

Dollar cost averaging results are based on the equal monthly investments into a fund where performance is identical to the appropriate benchmark (either the S&P 500 or the Barclays Aggregate Bond Index). Investments total $10,000 over 20 years. Dollar values represent the total amount accumulated after the period under consideration. The percentage is the uniform annualized return rate required to produce the dollar returns.

Guess Right Ratio

The Guess Right Ratio is the frequency that the average investor makes a short-term gain. One point is scored each month when the average investor has net inflows and the market (S&P 500) rises in

the next month. A point is also scored when the average investor has net outflows and the market declines in the next month. The ratio is the number of points scored as a percentage of the total number of months under consideration.

Holding Period

Holding period (retention rate) reflects the length of time the average investor holds a fund if the current redemption rate persists. It is the time required to fully redeem the account. Retention rates are expressed in years and fractions of years.

Hypothetical Average Investor

A $10,000 investment is made in a pattern identical to the average investor behavior for the period and asset class under consideration. Rates of return are applied each month that are identical to the investor return for each month. The resulting dollar value represents what a $10,000 investment would be worth to the average investor. The dollar amount of the return is then converted to an annualized rate.

Hypothetical Systematic Investor

A $10,000 investment is evenly distributed across each month for the period under consideration. The appropriate benchmark (either the S&P 500 or the Barclays Aggregate Bond Index) is used as an assumed return rate and applied each month.

The resulting dollar value represents what $10,000 would be worth to the systematic investor. The dollar amount of the return is then converted to an annualized rate.

Inflation Rate

The monthly value of the consumer price index is converted to a monthly rate. The monthly rates are used to compound a "return" for the period under consideration. This result is then annualized to produce the inflation rate for the period.

INVESTOR RETURN CALCULATION: AN EXAMPLE

Investor return is calculated by measuring the actual gains that investors realize. The following example is hypothetical:

Step 1: Compute Monthly Net Change

The equity assets at the end of 1/31 are subtracted from the assets at 12/31 to determine the change for the month. The change is the net of investor actions [new investments (which includes the reinvestment of dividends and capital gain distributions), withdrawals (redemptions), exchanges in and out], changes in market value, net of loads, fees, expenses, commissions, etc.

> 1/31 Assets - 12/31 Assets =
> Change
>
> 5196 – 4940
>
> = 256
>
> (In $ Billions)

> Monthly Change   256
> Minus New Investments -123
> Plus Withdrawals +105
> Minus Exchanges in -25
> Plus Exchanges out +12
> Equal Net Change in Market Value   225
> (In $ Billions)

Step 2: Compute Change in Market Value

The change in assets due to investor actions are deducted from monthly net change, resulting in the market value change that is net of loads, fees, expenses, commissions, etc. The net change in market value is the return earned by the investor for the month, after all fees and expenses are paid. This could be either a gain or loss.

Step 3: Calculate Total for Period

The calculation is repeated for each month to develop the total for the periods for which the investor return is being measured – (1, 3, 5, 10 and 20 years.)

The example illustrates a one-year period. Note that the average investor suffered losses in February, May, June and July but these were more than offset by the gains in the other months.

> January   225
> February   -28
> March +106
> April +106
> May   -213
> June   -5
> July   -20
> August +119
> September   +88
> October +195
> November +154
> December   +30
> Total for period   757

Step 4: Determine Cost Basis

The cost basis is the opening balance for the period adjusted by the investor actions (new investments, withdrawals, exchanges in and out).

Opening Assets	4940
Plus New Investments	+1288
Minus Withdrawals	-1150
Plus Exchanges in	+206
Minus Exchanges out	-128
Equal Cost Basis	5156

(In $ Billions)

Investor Return $ / Cost Basis =
% Return

757 / 5156= 15%

(In $ Billions)

Step 5: Calculate Investor Return Percentage

Dividing the investor return dollars calculated in Step 3 by the cost basis in Step 4 give the total investor return percentage.

Step 6: Find Annualized Rate of Return

Annualized return in then calculated. This is the single rate that can be compounded for each year to produce the same effect as the varying monthly rates.

Since the period in our example is only one year, the annualized investor return is the same as the total investor return.

The formula used to calculate annualized return is:

Annualized Return =
[% Return ^(1/# of years)]-1

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Source: "Quantitative Analysis of Investor Behavior, 2016," DALBAR, Inc. www.dalbar.com

Equity benchmark performance and systematic equity investing examples are represented by the Standard & Poor's 500 Composite Index, an unmanaged index of 500 common stocks generally considered representative of the U.S. stock market. Indexes do not take into account the fees and expenses associated with investing, and individuals cannot invest directly in any index. Past performance cannot guarantee future results.

Bond benchmark performance and systematic bond investing examples are represented by the Barclays Aggregate Bond Index, an unmanaged index of bonds generally considered representative of the bond market. Indexes do not take into account the fees and expenses associated with investing, and individuals cannot invest directly in any index. Past performance cannot guarantee future results.

Average stock investor, average bond investor and average asset allocation investor performance results are based on a DALBAR study, "Quantitative Analysis of Investor Behavior (QAIB), 2016." DALBAR is an independent, Boston-based financial research firm. Using monthly fund data supplied by the Investment Company Institute, QAIB calculates investor returns as the change in assets after excluding sales, redemptions and exchanges. This method of calculation captures realized and unrealized capital gains, dividends, interest, trading costs, sales charges, fees, expenses and any other costs. After calculating investor returns in dollar terms, two percentages are calculated for the period examined: Total investor return rate and annualized investor return rate. Total return rate is determined by calculating the investor return dollars as a percentage of the net of the sales, redemptions, and exchanges for the period.

Systematic investing examples are hypothetical and for illustrative purposes only. Systematic investing involves continuous investments regardless of security price levels. It cannot assure a profit or protect against loss in declining markets.

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