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Behavioral Finance:
Common Sense isn't always common

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Behavioral Finance.

Common Sense isn't always common.

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Confirmation Bias

Cognitive Dissonance Bias

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Hindsight Bias

Framing Bias

Anchoring Bias

Representativeness Bias

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Overconfidence Bias

Mental Accounting Bias

Loss Aversion Bias

Common sense isn't always common: The role of emotion in personal finance

It is very difficult to avoid experiencing strong emotions when it comes to financial matters, but it may be possible to dodge negative outcomes if we understand those emotions and learn how to avoid acting on them.

Advice. Beyond investing. Your financial life encompasses much more than the current markets. It includes your goals for the future and how you want to live right now. We are committed to addressing all of your needs—giving you the confidence to pursue all of life's goals. This includes discussing how emotions and biases may affect your financial life.

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People tend to feel the pain of a loss much more acutely than the pleasure of a gain.

Despite our best efforts, we frequently engage in suboptimal behaviors when it comes to personal finances. For example, a recent study[1] examined how mutual fund (including U.S. stock, sector stock, international equity, balanced, taxable bond and municipal funds) investors fared compared to the returns of the mutual funds themselves, over the ten-year period from 2002 through 2012. The funds themselves returned an average of 7.1% a year, but the individuals who invested in those very same funds realized an average return of only 6.1% a year. On an investment of $1 million, that 1% difference over a ten-year period is almost $180,000. The investors left money on the table by buying high and selling low in response to the latest news, which drove the investors' emotions in different directions (Dow 6,547.05 anyone?).

It is very difficult to avoid experiencing strong emotions when it comes to financial matters, but it may be possible to dodge negative outcomes if we understand those emotions and learn how to avoid acting on them.

Development of behavioral economics

Even though the field of behavioral economics did not become a mainstream topic of conversation until 2002 when Daniel Kahneman won the Nobel Prize in Economic Sciences for his work in prospect theory, some of the key concepts were being discussed as early as 1759.[2] Adam Smith, who is best known for his work *The Wealth of Nations*, asserted in a different book, *The Theory of Moral Sentiments*, that people tend to feel more pain from losses than joy from gains. This lack of symmetry between how we experience gains and losses is known as loss aversion and is discussed below.

Over the next two hundred years, the field of economics sought to become more mathematically rigorous so that it could be accorded the same status as a "hard science," akin to physics or chemistry. Concepts such as morals and emotions do not fit well into formulas, so many economists came to view people as a new type of species: *homo economicus*.[3] *Homo economicus* is a purely rational decision-maker who knows all of the relevant facts and always acts based on his/her self-interest. This approach led to the development of utility theory, which provides a well-defined structure for predicting how people will make choices under a variety of circumstances based on a rational decision-making process.[4]

It did not take long for researchers in the fields of economics and psychology to highlight many anomalies in which people made suboptimal decisions that were not in accordance with the concept of *homo economicus*.[5] This counterrevolution culminated in a seminal paper by Amos Tversky and Daniel Kahneman that harkened back to Adam Smith's observation from more than 200 years before, that the pain of a loss is felt more strongly than the joy of a gain.

Loss aversion

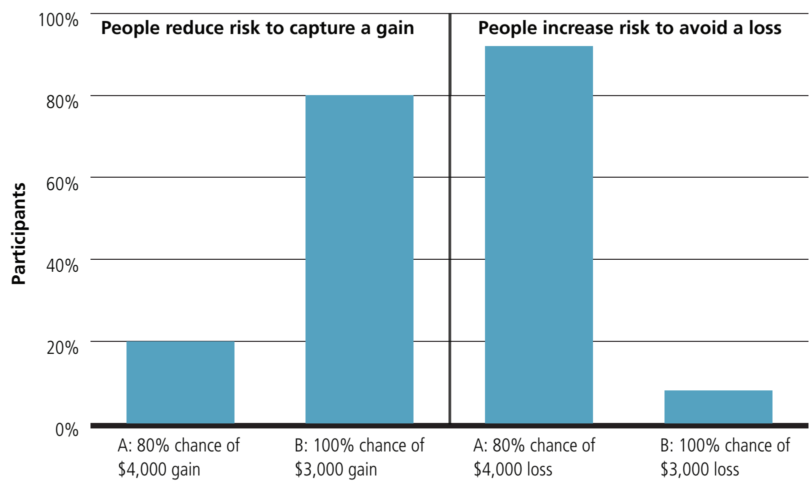
People tend to feel the pain of a loss much more acutely than the pleasure of a gain by a factor of about 2 to 1. As a result, they engage in risky behaviors in order to avoid the pain of losses, but will try to minimize risk when it comes to locking in the pleasure of gains.[6] Consider the following experiment:

Researchers first asked participants whether they would prefer (A) an 80% chance of winning $4,000 or (B) a guaranteed payout of $3,000. The expected value of choice (A) was $3,200 ($4,000 times the 80% probability of winning) whereas the expected value of choice (B) was $3,000 ($3,000 times the 100% probability of winning). Even though choice (A) had a higher expected value, 80% of the participants selected choice (B) because there was no risk of missing out on the gain, whereas choice (A) entailed a risk of not getting the guaranteed $3,000 payout. After all, missing out on a sure thing is just another form of loss.

Researchers then asked the participants a similar question, but framed the choice differently. This time, the participants faced a choice about avoiding losses rather than capturing gains. The researchers asked the participants if they would rather have (A) an 80% chance of losing $4,000 or (B) a guaranteed loss of $3,000. The expected value of choice (A) was a $3,200 loss (a $4,000 loss times 80%) which was worse than the expected value of a sure-thing loss of $3,000 in choice (B), but 92% of the participants opted for choice (A) because there was at least a chance of avoiding the loss. The participants were willing to accept the risk of a greater loss in order to avoid the certainty of a lesser loss. See Figure 1.

Loss aversion is a common behavior when it comes to investing.

Figure 1: Loss aversion



Loss aversion is a common behavior when it comes to investing. An investor who has done well with a stock might be tempted to lock in the gains even though a dispassionate analysis of the stock may show that significant upside remains. Another investor who has a significant paper loss may be reluctant to sell and make that loss a reality even though the stock is no longer a good investment. The investor may think that the stock could bounce back, and the possibility of benefiting from that bounce-back is eliminated by a sale.

In the context of estate planning, many people think of a future estate tax as a "loss." The federal estate tax is a flat 40% tax assessed on amounts in excess of $5.34 million, so a client who ends up with an estate of $10 million is facing a "loss" of $1,864,000. In order to avoid realizing that kind of loss, a taxpayer may decide to engage in risky tax minimization strategies, even though the taxpayer may generally be risk-averse. As a result, the taxpayer may fall prey to an unscrupulous advisor who stands to earn a sizable fee on a "unique" and "proprietary" tax savings strategy.

Loss aversion is an emotional response. In order to demonstrate this concept, researchers presented two groups of people with a series of "investment choices."[7] The first group had brain lesions that impaired their ability to feel emotion (hereinafter referred to as the "target group"). The target group had normal IQ and intellect, but had a low level of "emotional intelligence." The other group had normal IQ and intellect as well, but also had normal emotional profiles. Each participant was given $20 and allowed to invest $1 in each of 20 rounds of investments. The investment in each round was a $1 wager on a coin flip, where heads resulted in the loss of the $1 but tails resulted in a payback of $2.50, so the expected value of investing was $1.25 and the expected value of not investing was $1.00. Clearly, making the investment in each round was the best choice. In fact, there was 87% probability of ending up with the original $20 stake or more if the participant invested in each of the 20 rounds.

Participants who had "impaired" emotions chose to invest in 83.7% of the rounds compared to participants who had "normal" emotions who chose to invest in 57.6% of the rounds. During the first block of five rounds, the two groups were not all that different in their participation rates (85% for the target group versus 70% for the normal group); but, by the last block of five rounds, the groups were making very different choices (85% participation rate for the target group versus 50% participation for the normal group). Due to the target group's higher participation rate, that group ended up earning about 12.7% more money than the normal group. As the normal group experienced the pain of losing a $1 when tails came up, they gravitated toward locking in the guaranteed gain of $1 even though the purely rational choice was to wager the dollar in each round. The target group did not feel the pain of losing, so they tended to act more rationally and play the odds.

We are also influenced by pieces of data that may be completely irrelevant to the financial decision at hand.

Anchoring

More than emotions can lead us astray when it comes to making financial decisions. We are also influenced by pieces of data that may be completely irrelevant to the financial decision at hand. Those irrelevant bits of data sometimes act as a basis or "anchor" for subsequent decisions.

Consider the following experiment: A group of students were given a list of products such as wine, chocolate, computer equipment and books. They were then asked to write the last two numbers of their social security numbers next to each item in the form of a price, so someone whose social security number ended in 80 wrote $80 next to each item. The students were then asked to bid for these items. Students with higher than average two-digit "anchor" numbers gave bids that were 57% – 107% higher than students with lower than average "anchor" numbers, even though the last two digits of their social security numbers obviously had no relation to the value of the products.[8] And to top it off, the subjects were students in the Sloan School of Management MBA Program at the Massachusetts Institute of Technology, which is hardly an outpost of irrational decision-making. If an irrelevant "anchor" like the last two digits of your social security number can have an impact, just think of what your knowledge of last year's S&P 500 return can do to your expectations of how your portfolio might perform this year.

For a more real-world example, consider the beneficiary who inherits shares of stock at $50/share. That value can become a stand-in for the stock's fair market value in the beneficiary's mind, and the beneficiary may be averse to selling the stock below that price even if the stock's underlying fundamentals have deteriorated significantly. If you combine the anchoring effect with the tendency to take additional risk in order to avoid the pain of a loss, you can see why investors sometimes ride an investment to the bottom rather than exiting the position once it's clear that the investment is

The anchoring bias shows up in estate planning, too.

no longer an appropriate part of the portfolio. The anchoring bias shows up in estate planning, too. Some clients may use the inheritance they received from their parents as the "anchor" for how much they want to leave to their children. This can work in both directions. A client whose parents left him/her very little (whether by choice or due to lack of funds) may focus on that single data point and ignore the fact that his/her children could benefit substantially from a higher level of inheritance. On the other side, a client who received a significant inheritance may feel obligated to provide that level of inheritance to his/her children, even though doing so may require great financial sacrifice during the client's life, and may not ultimately be in the children's best interests.

Availability bias/overreaction

We are inundated with a constant barrage of information. We would fall into a state of "analysis paralysis" if we tried to incorporate every bit of relevant information into our decisions, so we tend to focus on the data that is most "available" to us in terms of what is most memorable, most impactful or most recent. For example, most people think that accidents cause more deaths than disease and that homicide is a more frequent cause of death than suicide. In reality, diseases cause about 16 times as many deaths as accidents, and suicide is the cause of twice as many deaths as homicide.[9] Accidents and murders tend to receive more publicity than diseases and suicides, so they appear to happen with far greater frequency, even though an objective view of the data tells a different story.[10] Accordingly, we may overreact to the risks of accidents and murders because we inaccurately think that there is a greater chance of these events occurring.

A similar effect can be seen in the investment world. In an attempt to assess the impact of availability bias, researchers looked at how the stocks on the New York Stock Exchange had performed over a three-year period. They put the top 35 performing stocks into a "winner's portfolio" and the bottom performing stocks into a "loser's portfolio." Over the next three years, the loser's portfolio outperformed the winner's portfolio by almost 25% on a cumulative basis. The researchers concluded that investors piled into the "winning" stocks during the initial three-year period based on short-term performance, while investors stampeded out of the "losing" stocks for the same reason. Over the following three years, the short-term performance headlines had faded (i.e., had become less "available") and the stocks reverted to something more closely resembling their fair market values.[11]

The impact of the availability bias isn't limited to specific stocks. Our perceptions of the market in general can also be skewed by larger-than-life data points. In 2008, the S&P 500 Index declined by 37%. This piece of information was highly available, in every sense of the word, to investors. In the following years, researchers asked investors for their recollection of whether the S&P 500 Index's performance for the previous year was either flat or negative.[12] In 2010, 66% of the respondents said the index's 2009 performance was flat or negative, when in fact it rose by 26.5%. The same pattern persisted in 2011 when 49% of the respondents thought that the index was down or flat for 2010, when in fact it rose by 15.1%. The high "availability" of the 2008 meltdown skewed investors' perceptions into the future.

The availability bias also makes an appearance during estate planning conversations. Everyone has heard horror stories of how family businesses have been sold in order to pay estate taxes. Even though this does happen on occasion, it is a very infrequent occurrence. With some basic estate planning, a forced liquidation is easily avoided most of the time; but, when it does happen to a highly visible business, such as the Robbie family's Miami Dolphins in 1990, the news makes a lasting impact on families that own businesses, and causes them to overestimate the likelihood of facing the same issues themselves.

Solutions

The biases that influence our investment decisions are very deep-seated, making it difficult or even impossible to eliminate them, so the best approach is to acknowledge those biases and construct ways to counteract them.

Loss aversion is an emotional response, so the key to avoiding loss aversion-related behaviors lies in reducing the emotional component of financial decisions. The negative impacts of loss aversion bias can be mitigated by adopting a disciplined, proactive approach to assessing the positions in your investment portfolio. For example, with individual securities, consider using stop-loss orders to limit the loss potential of a position. It is much easier to set a rational exit point on the downside before a loss actually occurs and triggers an emotional response. With regard to estate planning, don't seek to minimize estate taxes at all costs. Pushing the envelope too far, and winding up with years of litigation with the IRS, is not a worthwhile legacy to leave to your family. In addition, the best estate plans are driven by the parents' core beliefs and values rather than by an obsessive focus on tax minimization.

Instead of getting blindsided by the anchoring bias, base your future return expectations on carefully constructed forward-looking capital market assumptions, and gain a solid understanding of the volatility that is inherent in your investment portfolio. Focus on whether the positions in your portfolio are above or below their fair market values rather than the amount of gain or loss represented by each position. The price you paid for an investment has no bearing on whether the investment's current price and future prospects justify holding the investment. When deciding on what level of a financial legacy to leave to your children, focus on your values and the needs of your children, rather than basing your decisions on what your parents did for you.

Work with the right professionals who can help you steer your way around biases and empower you to make better decisions.

Be sure to put the headlines in the appropriate context in order to avoid the availability bias. Even though the latest episode of disastrous (S&P 500 Index down 37% in 2008) or euphoric (S&P 500 Index up 30% in 2013) investment performance may loom large in your mind, take a step back, and place that single data point into the overall context of your portfolio and your goals. The same holds true for estate planning. Don't let the headlines control your decisions when it comes to your estate plan.

Finally, work with the right professionals who can help you steer your way around these biases and empower you to make better decisions. A professional advisor, whether in the field of investments or estate planning, is well acquainted with the psychology of how we make decisions, and has the experience necessary to recognize the pitfalls and avoid them. In addition, a professional advisor is less susceptible to being influenced by emotion because he/she is not as personally and emotionally involved in the issues as his/her client. A good advisor always cares about his/her client; but, the professional relationship allows the advisor to be more objective and less emotional when it comes to making financial decisions.

– *Terence Condren*
Senior Wealth Strategist

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11 De Bondt, W. F., & Thaler, R. (1985). Does the Stock Market Overreact?. *The Journal of Finance*, 40(3), 793.

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Behavioral finance

Addressing behavioral biases

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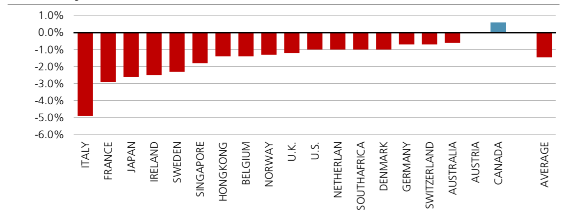
- Investors often underperform simple benchmarks through poor market timing and security selection. We believe behavioral errors are one of the causes of this underperformance.
- In this paper, we discuss some of the more common behavioral biases that cause investors to err.
- We also provide concrete advice on how to avoid making behavioral mistakes and to improve investment results.

It has been over 60 years since Harry Markowitz came up with a scientific approach to portfolio selection (and 80 since Benjamin Graham and David Dodd published *Security Analysis*) and yet, investors still seem to make repeated mistakes when investing. In fact, aggregate investor timing has been so bad that investors have underperformed simple buy-and-hold indices (Fig. 1).

Fig. 1: Investors underperform simple benchmarks
Dollar weighted relative to buy-and-hold returns by country



Source: Dichev, Ilia; "What are stock investors' actual historical returns? Evidence from dollar-weighted returns"; American Economic Review, UBS CIO WMR

In most instances, investors' market timing skills cost them money in the long term. In fact, according to the research cited above, the average annual underperformance is around 1.5%. Now 1.5% may not seem like a lot, but over time that 1.5% compounded can lead to dramatically poor investment outcomes.

So why have actual investor returns been so mediocre? We believe this is due to a series of behavioral biases, which cause investors to invest at some of the worst possible times and also to sell at inopportune times. Some of the well-documented biases include overconfidence, anchoring, recency, loss aversion and confirmation bias.

In this report, we will delve into some of the more common behavioral biases investors exhibit. We'll also provide concrete methods for dealing with each bias and advice about how these biases can be addressed during the investment process.

Overconfidence

When asked to rate their overall driving ability, the vast majority of people rate themselves as above-average[1]. When college professors were asked about their teaching ability, over two-thirds said that they were in the top 25% of professors[2]. Unfortunately, this level of confidence is not limited to perceptions of driving ability and teaching, and even leads to poor investment outcomes. A good example of overconfidence would be investors' attempts to engage in market-timing and individual security selection to try to beat a simple buy-and-hold strategy.

But the results of such attempts are far from stellar, with investors underperforming by 1.5% *annually*[3]. Most people seem to think that they are from Lake Wobegon, the fictional town where "all the women are strong, all the men are good looking, and all the children are above average", but the inconvenient truth is that they are not[4].

When it comes to individual stock-picking, the data is overwhelmingly clear - most individuals would be better off trading less often, not more (Fig. 2).

We are not saying that it is impossible to beat the stock market by trading actively, but empirical evidence based on the historical performance of individual investors who trade frequently and the tendency we all have for overconfidence suggest investors are probably much less likely to do so than they think.

So how can an investor avoid falling prey to overconfidence and the resulting underperformance? The first step is to create a well-diversified asset allocation strategy that is appropriate for the investor's risk tolerance and financial goals. After that, the key is to stick with that strategy and only make changes (and small ones at that) after careful consideration of the pros and cons of taking such action.

Recency

When people are asked to predict stock market performance, they often expect higher returns when the market has done well recently and lower returns when the market has performed poorly recently. In the same vein, optimistic equity analysts have been known to assume that a company which has posted strong earnings recently would show a similar level of growth for years to come (leading to some truly aggressive earnings estimates for some high growth companies).

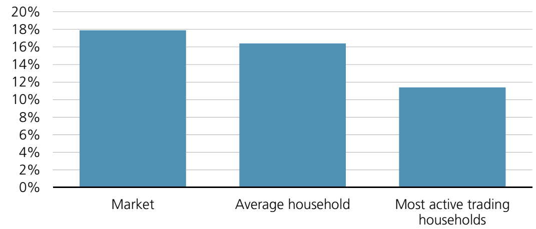
Recently, after watching a team win the first two games of a playoff basketball series, a friend told me that the opposing side had no chance and that "the series is over", despite the fact that the teams had matched up quite evenly in their four previous meetings and the next few games would be in the second team's home court.

This tendency for extrapolating the events of the recent past into the future has a name: recency bias (or recency effect). Studies have shown that individuals are more likely to remember items in a list if the items are located towards the end of the list rather than if they are in the middle (although the first couple of items are frequently remembered as well due to a different behavioral bias).

The problem for investors is that frequently the asset class or security that has done the best in the recent past is unlikely to be the best performer in the future. In fact, over the long run, markets tend to mean-revert, meaning those that have done the best tend to follow this period with below-average returns, and those that have performed poorly tend to do better in the following years. Of course, momentum has been shown to work in the shorter term, but the tendency for markets to mean-revert over the course of a market cycle is clear.

Fig. 2: More frequent trading leads to poorer results

Household equity portfolio returns and market returns



Source: Barber and Odean "Trading is hazardous to your wealth: the common stock investment performance of individual investors" The Journal of Finance, Vol. 55, No. 2, April 2000, 773-806 (data from 1991-1996) and UBS CIO WMR

Fig. 3: No asset class is always the best performer
Annual returns for various asset classes

12/31/99	12/31/00	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05	12/31/06	12/31/07	12/31/08	12/31/09	12/31/10	12/31/11	12/31/12	12/31/13	YTD 06/30/2014	10 year (2004 - 2013)
Emerging Market 66.41%	Commodity 31.84%	REITs 13.93%	Commodity 25.91%	Emerging Market 56.28%	REITs 31.57%	Emerging Market 34.54%	REITs 35.06%	Emerging Market 39.78%	Commodity Futures 14.09%	Emerging Market 79.02%	REITs 27.95%	REITs 8.28%	REITs 19.70%	Small Cap Core 38.82%	REITs 16.25%	Emerging Market 197.66%
HFRI Equity Hedge 44.22%	REITs 26.36%	US Bond 8.44%	World Bond xUS 21.99%	Small Cap Core 47.25%	Emerging Market 25.94%	Commodity 21.36%	Emerging Market 32.59%	Commodity 16.23%	World Bond xUS 10.11%	Mid Cap Core 40.48%	Small Cap Core 26.85%	US Bond 7.84%	Emerging Market 18.64%	Mid Cap Core 34.76%	Mid Cap Core 8.67%	Mid Cap Core 164.66%
International 26.96%	US Bond 11.63%	Cash 4.09%	Commodity Futures 12.36%	Mid Cap Core 40.06%	International 20.25%	International 13.54%	International 26.34%	World Bond xUS 11.45%	US Bond 5.24%	International 31.78%	Mid Cap Core 25.47%	World Bond xUS 5.17%	International 17.32%	Large Cap Core 32.39%	Large Cap Core 7.14%	Small Cap Core 138.32%
Commodity 24.35%	HFRI Equity Hedge 9.09%	Small Cap Core 2.49%	US Bond 10.25%	International 38.59%	Mid Cap Core 20.22%	Mid Cap Core 12.65%	Small Cap Core 18.37%	International 11.17%	Cash 1.80%	REITs 27.99%	Emerging Market 19.20%	Large Cap Core 2.11%	Mid Cap Core 17.28%	International 22.78%	Commodity 7.08%	REITs 128.45%
Small Cap Core 21.26%	Mid Cap Core 8.25%	Commodity Futures 0.84%	REITs 3.81%	REITs 37.14%	Small Cap Core 18.33%	REITs 12.17%	Large Cap Core 15.79%	HFRI Equity Hedge 10.48%	Diversified Portfolio -26.34%	Small Cap Core 27.17%	Commodity 16.83%	Cash 0.08%	Small Cap Core 14.23%	HFRI Equity Hedge 14.96%	Emerging Market 6.32%	Large Cap Core 104.28%
Large Cap Core 21.04%	Commodity Futures 7.86%	HFRI Equity Hedge 0.40%	Cash 1.70%	Diversified Portfolio 29.17%	Diversified Portfolio 15.00%	HFRI Equity Hedge 10.60%	Diversified Portfolio 15.54%	Diversified Portfolio 8.59%	HFRI Equity Hedge -26.65%	Large Cap Core 26.46%	Diversified Portfolio 15.56%	Mid Cap Core -1.55%	Large Cap Core 16.00%	Diversified Portfolio 10.68%	Diversified Portfolio 6.11%	Diversified Portfolio 102.17%
Diversified Portfolio 18.61%	Cash 5.96%	Emerging Market -2.37%	Diversified Portfolio -1.17%	Large Cap Core 28.68%	World Bond xUS 12.14%	Diversified Portfolio 9.87%	Mid Cap Core 15.26%	Commodity Futures 7.64%	Small Cap Core -33.79%	Diversified Portfolio 26.24%	Large Cap Core 15.06%	Commodity Futures -3.00%	Diversified Portfolio 10.66%	REITs 2.86%	World Bond xUS 5.95%	International 95.09%
Mid Cap Core 18.23%	Diversified Portfolio 2.44%	Diversified Portfolio -2.76%	HFRI Equity Hedge -4.71%	Commodity 23.93%	Large Cap Core 10.88%	Large Cap Core 4.91%	HFRI Equity Hedge 11.71%	US Bond 6.97%	Commodity -35.65%	HFRI Equity Hedge 24.57%	HFRI Equity Hedge 10.45%	Diversified Portfolio -3.00%	HFRI Equity Hedge 7.94%	Cash 0.05%	Internationa l 4.78%	HFRI Equity Hedge 68.47%
Cash 4.74%	World Bond xUS -2.63%	World Bond xUS -3.54%	Emerging Market -6.00%	HFRI Equity Hedge 20.54%	Commodity 9.15%	Small Cap Core 4.55%	World Bond xUS 6.94%	Mid Cap Core 5.60%	Large Cap Core -37.00%	Commodity 18.91%	International 7.75%	Small Cap Core -4.18%	US Bond 4.22%	Commodity Futures -1.68%	US Bond 3.93%	US Bond 56.00%
US Bond -0.82%	Small Cap Core -3.02%	Mid Cap Core -5.62%	International -15.94%	World Bond xUS 18.52%	HFRI Equity Hedge 7.68%	Cash 3.00%	Cash 4.76%	Large Cap Core 5.49%	REITs -37.73%	US Bond 5.93%	Commodity Futures 7.05%	HFRI Equity Hedge -8.03%	World Bond xUS 1.51%	US Bond -2.02%	HFRI Equity Hedge 3.32%	World Bond xUS 49.51%
Commodity Futures -1.19%	Large Cap Core -9.10%	Large Cap Core -11.89%	Mid Cap Core -16.18%	Commodity Futures 8.69%	US Bond 4.34%	US Bond 2.43%	US Bond 4.33%	Cash 4.74%	Mid Cap Core -41.46%	World Bond xUS 4.38%	US Bond 6.54%	International -12.14%	Cash 0.07%	Emerging Market -2.27%	Small Cap Core 3.19%	Commodity Futures 33.94%
REITs -4.62%	International -14.17%	Commodity -19.51%	Small Cap Core -20.48%	US Bond 4.10%	Commodity Futures 3.30%	Commodity Futures 1.71%	Commodity Futures 3.54%	Small Cap Core -1.57%	International -43.38%	Cash 0.16%	World Bond xUS 5.21%	Commodity -13.32%	Commodity -1.06%	World Bond xUS -4.56%	Commodity Futures 0.79%	Cash 17.04%
World Bond xUS -5.07%	Emerging Market -30.61%	International -21.44%	Large Cap Core -22.10%	Cash 1.07%	Cash 1.24%	World Bond xUS -9.20%	Commodity 2.07%	REITs -15.69%	Emerging Market -53.18%	Commodity Futures -0.10%	Cash 0.13%	Emerging Market -18.17%	Commodity Futures -1.22%	Commodity -9.52%	Cash 0.02%	Commodity 9.02%

Source: Morningstar Direct. Data as of 06/30/14. The indexes used are the following: Mid Cap Core – Russell Mid Cap Index; Small Cap Core – Russell 2000 Index; International Equity – Morgan Stanley Capital International Europe, Australasia, Far East Index (EAFE) Net; US Bonds – Barclays Capital Aggregate Bond Index; S&P 500 – Standard & Poor's 500 Index; HFRI - HFRI Equity Hedge Index; Commodity – DJ-UBS Commodity Index (do not have full year performance of 1991); Commodity Futures – Barcap CTA; World Bond xUS – Citi Group WGBI xUS; REITS – FTSE NAREIT All Equity REITs; Cash – Citi Group 3 Month T-Bill; Emerging Market – MSCI EM; Diversified Portfolio - Equal weighted of all segments disclosed above, excluding cash. * DJ-UBS Commodity Index has only 19 years of data.

The past performance of an index is not a guarantee of how your portfolio will perform. Indexes are not available for direct investment and reflect an unmanaged universe of securities, which does not take into account advisory or transaction fees, all of which will reduce the overall return. Asset allocation does not assure profits or prevent losses in declining markets. Prepared by UBS Financial Services Inc. Investment Management Research Group.

One thing that is clear from the table (Fig. 3) is that the asset class that had the best performance one year rarely was the best performer the following year. That is not to say it cannot happen, but rather that it is a poor technique to use for portfolio selection. Unfortunately, our brains are wired to find patterns and likely to lead us to expect the future to look like the recent past despite the obvious problems with this line of thinking.

So the big question now is what can investors do to avoid succumbing to the recency bias and entering asset classes at the wrong time? Well, we see two ways to address this issue, one dynamic, and one static.

The dynamic way is to create an investment process that is based on objective (preferably quantitative) metrics that determine one's asset allocation (or for that matter, security selection) on the expected return and risk of the specific asset classes and the investor's risk tolerance. A rules-based approach should help mitigate the effect that recency has on one's investment decision making.

The static approach is to re-balance one's strategic allocation on a predetermined basis (preferably annually, but definitely not more often than quarterly). Re-balancing should help an investor sell assets that have become more expensive and buy assets that have become cheaper, which should lead to better risk-adjusted results over time.

Anchoring

When a group of students were asked to assess the value of a house, they were heavily influenced by the "listed price" that they were initially given, with those who were given a higher listed price ultimately choosing a higher price as their appraised value of the house. Another compelling layer to this study is that the authors repeated the experiment with a group of local real estate agents. The result was essentially the same, with the listed price seemingly affecting the real estate professionals' estimation of the value of the house[5].

Both the students and the real estate agents appear to be suffering from a common behavioral bias, referred to as anchoring. Anchoring is a bias that causes people to put too much emphasis on an initial number or data point when making future decisions.

So, if one bought a stock for USD 8 and now the stock is trading at USD 10, should one sell, hold or buy more? What is the stock worth (the expected return)? What is the expected return on other investment options? These are the questions to ask, not how much the trade is up (or down) since the stock was purchased.

Anchoring seems most often to harm people when they have bought an investment that then goes down in price. People have been shown to consistently hold onto losing investments too long. In fact, empirical evidence has shown that investors tend to sell their winners more often than their losing investments (Fig. 4).

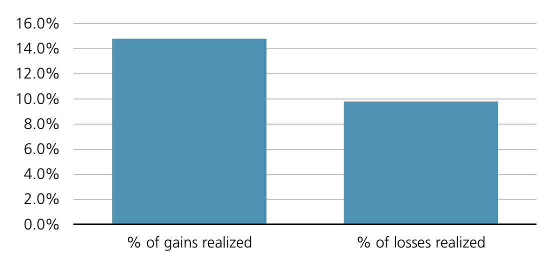
The chart shows the percentage of possible gains realized by investors (defined as realized gains / [realized gains + unrealized gains]) compared to the percentage of possible losses realized (defined as realized losses / [realized losses + unrealized losses]). This chart essentially shows the percentage of investments that are "up" that investors sell compared to the percentage of investments that are "down" which are sold. As you can see, investors are much more likely to sell winning investments than losing ones. There may be many reasons for this, but we believe that anchoring is the main culprit as people make sell/hold decisions relative to their initial purchasing price, and therefore are reluctant to sell investments that have suffered losses. The main problem with this is that evidence suggests that the winning investments that are sold tend to outperform the losing investments which are held going forward.[6]

An asset's purchase price is irrelevant to whether or not it is appropriate to sell the asset (tax-considerations aside) now. All that matters is the investment's expected risk-adjusted return in the future compared to the expected risk-adjusted returns of other potential investments.

So, how does one avoid succumbing to anchoring and suffering poor portfolio returns as a result? We believe that one way is to evaluate the fair value of an asset/security on a pre-determined basis (i.e. quarterly) so as to develop an "expected return" which can be used to judge the

Fig. 4: Investors are more willing to sell their "winners"

Percentage of gains vs. losses realized



Source: Odean, Terrence "Are Investors Reluctant to Realize Their Losses?" Journal of Finance, October 1998, 53(5), pp. 1775–98.

relative attractiveness of this investment compared to other potential choices. There is no guarantee this method will work, but at least it will avoid the situation where the investor is right about the relative attractiveness of an investment and yet ends up making the wrong decision because anchoring has caused them to act irrationally.

Confirmation bias

Suppose we give you a series of three numbers 2-4-6. We tell you that the series follows a simple rule, and that this rule is concerned with the relationship between any three numbers, and has nothing to do with the absolute magnitude of the numbers. We then say that your mission is to figure out what the rule is, by writing down a series of three numbers, which we will evaluate and tell you if they conform to the rule or not. We tell you that there is no time limit, but you should try to discover the rule by citing the minimum needed sets of numbers. When you feel confident that you have discovered the rule, you are to tell us what it is.

If you were to take this test, what numbers would you try out? Well, when given this test, most people try other series of numbers that increase by 2 (i.e. 8-10-12) until they eventually guess something like "the numbers are increasing in increments of two". And all these people are wrong.

What's the rule then? The three numbers are in increasing order.

After the fact, this seems like a pretty easy rule to discover, but when this exact question was asked in an experiment, only around 20%[7] of participants correctly guessed the rule on their first try. So what is the problem with most people's approach to this problem? It demonstrates confirmation bias.

Confirmation bias is the tendency to interpret new evidence as confirmation of one's existing beliefs or theories[8]. We tend to focus on data that confirms our prior beliefs, and discount any evidence that goes against our previously established position. An extension of this is that we seek out information that proves that we are right.

The problem is that we never attempt to disprove our hypotheses. It is human nature to focus on confirmation rather than dis-confirmation.

So, how does confirmation bias hurt investors? Well, when investing, it is important to pay attention to facts. It is hard enough to make the right decision when investors have an unbiased view of all the relevant facts, but if they only see the information that confirms what they already believe, then they are almost certain to fail.

One way to avoid this bias is to actively seek out the work of people who disagree with us. For example, part of the CIO TAA process is to invite strategists from other firms to discuss our views and why they disagree. It forces us to address differing opinions.

As John Maynard Keynes was purported to say, "When the facts change, I change my mind. What do you do, sir?" We should all strive to be objective enough to see when the facts change and to respond appropriately; but in order to do this, we must take the uncomfortable route of actively looking for dis-confirmation, rather than confirmation.

Loss aversion

If we were to say to you that we are going to toss a coin, and if it comes up heads you lose USD 100, how much would you have to get when it comes up tails for you to play this game? Well, an economist answering this question would probably say anything more than USD 100, or maybe USD 110 just to keep things simple. There is some logic to this answer as the expected value of a round of this game (based on a USD 110 payoff) is USD 5 (you win USD 110 50% of the time and you lose USD 100 the other 50% of the time [(0.50 x USD 110) + (0.50 x -USD 100) = (USD 55) + (-USD 50) = USD 5]. So you can expect to earn USD 5 every time you play the game in the long run.

When people were asked this question, what do you think was their response? USD 110? USD 120? USD 130? According to the Nobel Prize winning psychologist Daniel Kahneman, people want more than twice as much as they are risking (which would be USD 200 dollars in this case) when asked to play this game[9].

Why is there such a huge difference between the rational being and the average person? It is all a matter of preference. To a completely rational being, all that matters is expected value, how much are they going to make on average from playing the game. But human beings aren't rational calculating machines; when they think about the game, they do not see their mathematical expectations, they see themselves either winning a certain amount of money or losing USD 100. For the average human being, losing USD 100 is worse than gaining USD 100, and therefore they will need extra compensation to play the game. Psychologists have a name for this strong distaste for losses: loss aversion.

Psychological studies have estimated that the displeasure produced by losses is over twice as strong as the pleasure produced from an equal gain. It seems irrational that losses hurt more than gains.

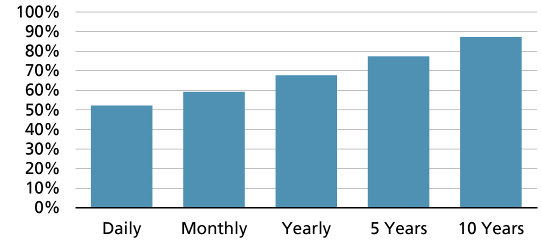
The question is how investors should respond to this. The optimal approach will be to maximize expected value (or risk-adjusted returns, in this context) while controlling for the psychological pain that losses can produce.

We think the best method for dealing with loss aversion is to simply look at one's investments less frequently. Markets are volatile in the short run, but tend to go up over time. On a daily basis, the US stock market has risen around half the time (52% for the S&P 500 from 1928-2013) (Fig. 5). On a monthly basis, the stock market has risen 59% of the time. Whereas on a yearly basis, the market has risen 68% of the time. In fact, the longer the time period, the greater the odds the market has risen.

This means that the less often investors look at their investments, the less frequently they will see a loss and feel the disproportionate sting of displeasure that comes from a loss. To be clear, this does not mean that no one is watching the investments on a day-to-day basis; investors can have their positions actively managed on a discretionary basis by their advisor or an outside money manager (i.e. in a mutual fund), they just don't look at it themselves every day. While this may not be an easy practice to follow, investors would probably be better off from both a utility and financial perspective if they looked at their portfolio less often, not more.

Fig. 5: Percentage of the time returns have been positive

Rolling daily periods for the S&P 500 1928-2013



Source: Bloomberg and UBS CIO WMR

Note: (Returns measured on a daily basis, monthly equals 21 trading days, yearly equals 252 trading days, 5 years equals 1,260 trading days and 10 years equals 2,520 trading days)

Learning through stories

People prefer narratives to hard data. When asked about a prospective treatment for a disease, psychological experiments have shown that people tend to be persuaded more by anecdotes about a single patient's results rather than data about the efficacy of the treatment for a broader population of patients. Why would the outcome for one patient, when presented as a narrative, hold more sway than outcomes for a large number of patients, when presented numerically (for example that 70% of patients survived the procedure)?

We think the reason is that human beings learn through stories. Disparate facts and hard data without any obvious meaning are both hard for us to remember (and possibly encode in our brains) and do not appear immediately useful. We naturally gravitate towards stories that have an easy to identify cause and effect and that are easily understood and simple. The problem is that the modern world is complex. It is not always easy to connect the dots between causes and effects. Furthermore, we are hard-wired to look for patterns, even in places where none exist.

Another way of saying this is that we are susceptible to strong rhetoric, which is the art or skill of speaking or writing formally and effectively especially as a way to persuade or influence people[10]. Also, as the example of disease treatments at the start of this section demonstrates, rhetoric is more powerful than pure logic or facts.

In the investment business, we see the naïve acceptance of stories all the time. In the late 1980s, people were convinced that Japan was somehow different than the rest of the world and therefore Japanese companies deserved to trade at significantly higher earnings multiples than their US counterparts. The story that traditional valuation metrics were not applicable to Japanese companies did not end well for investors in Japanese equities (Fig. 6).

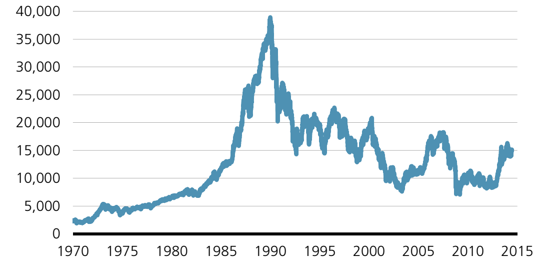
We believe a relevant recent example of a narrative that presents an illusory correlation (a correlation that appears true but does not actually exist) is the relationship between the Federal Reserve's balance sheet and the US equity market (Fig. 7).

People have seen this chart and created a narrative to fit it, that the Fed's loose monetary policy has driven US equities higher. While it may be tempting to believe this simplistic story, we need to look at the logic behind this argument. How has the Fed caused stock prices to go up?

We have yet to see a logical argument that describes how the Fed's actions could directly lead to higher equity prices, but the story in itself seems like a powerful enough narrative to persuade some.

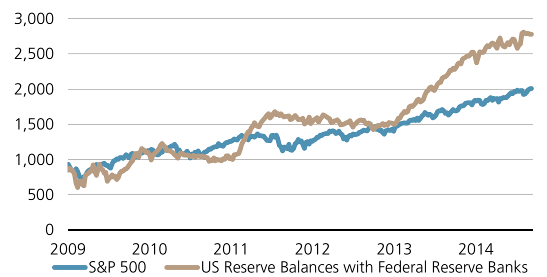
So what can investors do to avoid falling for false narratives? We would advise always looking for the combination of logic and empirical evidence when evaluating an investment recommendation. While we may need a story to convince us to act, we should at the very least make sure that the story makes sense and that there is tangible evidence to support the investment being proposed. We are programmed to learn through narratives; while we may not be able to change this, we can take steps so that we are not fooled by false ones.

Fig. 6: This time was not different in Japan
Nikkei 225 index



Source: Bloomberg and UBS CIO WMR

Fig. 7: Correlation is not causation
S&P 500 index and US reserve balances with Federal Reserve Banks (USD billions)



Source: Bloomberg and UBS CIO WMR as of 5 September 2014

Conclusion

We have discussed some of the more common behavioral biases that investors exhibit. Investors tend to be overconfident, expect the future to resemble the recent past, seek confirmatory evidence and see patterns that aren't really there. All of these biases lead investors to significantly underperform simple buy-and-hold indices.

We hope that by discussing these biases, investors will recognize them and avoid them when making investment decisions. The good news is that there is evidence that investors are capable of recognizing these biases after learning about them. The bad news is that they tend to only recognize these biases in others, not themselves. This tendency for people to believe they are less susceptible to behavioral biases than others is called the bias blind spot.

So, if we are unable to recognize behavioral biases in ourselves even after becoming educated on the subject, what can we do to address them? Well, if we know that not only do we suffer from behavioral biases, but that we won't be able to see them in ourselves when they occur, there are two solutions that can help solve this problem.

One is for investors to discuss all their investment decisions with someone else (preferably their financial advisor) before making any changes to their portfolio. While it may be difficult for us to see our own biases, others are better at seeing them. An advisor, who can help us avoid succumbing to these behavioral biases, is an extremely valuable resource. Considering how much people tend to err when left to their own devices, a thoughtful discussion with a trusted advisor can be a useful check on one's natural irrational tendencies.

Another way of dealing with the bias blind spot is to develop a rules-based approach to making investment decisions. After creating a set of rules to determine asset allocation (or security selection), the investor should stick to the strategy and only make changes at predetermined time periods. Taking the human aspect out of investing can help us avoid making the all too human errors which cause us to underperform. As one of our advisors said, "The only way to combat a paralyzing set of emotions, accompanied by regrets, is to have a set of rules that you operate from with clearly stated goals. You make a decision and you live with it." While it may seem unnatural to automate one's investment strategy, an unnatural approach may be the best way to avoid our natural tendencies to act irrationally.

Endnotes

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Appendix

Behavioral finance

How the present keeps us under its spell

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- Direct experience is a poor guide for investing.
- Another investor pitfall is "force of habit" or resistance to change.
- "Loss aversion" can have especially serious consequences for investors.

In the two preceding notes of this series on disciplined investing we illustrated how the past can hoodwink us into drawing erroneous conclusions and how little we know about the future. But what about the present? Shouldn't the mistakes we make when we are misled by our quick thinking at least inflict damage in the here and now? Ultimately, we should also be able to quickly correct such mistakes. This, unfortunately, is not the case because the present, too, is plagued with thinking traps that we are almost preprogrammed to fall into. Two of these are explained below: the anchoring effect and the tendency toward the status quo.

Anchoring effect – or why we make forecasts in the first place
Admittedly, after reading in the preceding section that forecasts are (almost) always wrong, you will have no doubt asked yourself why we even bother making them in the first place. Why do thousands upon thousands of economists, analysts and other experts in the financial industry, at central banks, in public research institutions, at universities and in international trade organizations waste their time on prognoses? To answer these questions, allow me to give two anecdotes. The first is based on my experiences as an economist at UBS, and the other is drawn from the life of renowned US economist and Nobel Prize Laurasia Kenneth Arrow.

As an economist at UBS, I spend a large portion of my time presenting our investment strategy and house view to clients. This strategy naturally also incorporates forecasts, even if they are given only a minor weighting when developing our strategies. One of the very first speeches I made, a year after having been hired by UBS, was in Martigny, a town in the Swiss Alps, in 2000 in front of around 150 clients. After the speech, during the traditional question and answer session, an incensed client stood up and called out to me: "In 1985 your bank put the US dollar at X against the Swiss franc, and then Y happened. In 1986 you forecast A, but it ended up being B. In 1987...," and so on and so forth until he arrived at the actual question: "Why should we believe your exchange rate forecasts?"

This report is the third in a series of four, relating to disciplined investment:

1) Why it isn't easy to invest in a disciplined manner (published on February 13th, 2015)
2) How our memories deceive us (published on March 5th, 2015)
3) Forecasts are (almost) always wrong (published on April 10th, 2015)
4) How the present keeps us under its spell

Parts of this report were originally published outside the US in October 2014 and have been customized for US distribution.

Slightly dumbfounded by this totally justified criticism (even if it wasn't my impression that I was proffering any sort of belief system), I vowed there and then that I would not mention exchange rate forecasts in my next speech in Martigny the following year. I'll give you three guesses what, one year later, the first question from the audience was after finishing my speech: "Where do you see the US dollar against the Swiss franc in 12 months' time?"

Kenneth Arrow had a similar experience during World War II. The budding economist was then serving as a statistician in the US Army weather service. After a few weeks of service, he noticed that the weather forecasts were repeatedly wrong. In the spirit of open communication, he penned a memo to his general saying that the forecasts were frequently wrong and that the large amounts of money used to make the weather forecasts could be better deployed elsewhere. A few days later, Arrow received the following response from the general's chief of staff: "The general is thoroughly aware that the weather forecasts are almost always wrong. He nevertheless needs them for planning."

These two anecdotes show that – in contrast to the motto of John Maynard Keynes, "It is better to be vaguely right than exactly wrong" – people prefer patently incorrect forecasts over uncertainty.

As human beings, we are predisposed toward anchoring. Any data, however far-fetched, is better than no data at all when it comes to making decisions. James Montier, who has written several eminently readable publications on behavioral finance, conducted an interesting experiment. He asked his clients to recite the last four numbers of their telephone number and then to estimate how many doctors there are in London. Interestingly, those clients whose last four digits of their telephone numbers were higher than 7,000 estimated the number of doctors to be around 8,000 on average, while those whose telephone number ended in less than 3,000 guessed an average of 4,000. In spite of the fact that a telephone number obviously has nothing to do with the number of doctors in London, if mentioned previously it seems somehow to be factored into the decision-making process.

As a side-note: I do not know the actual number of doctors in London. Based on the fact that the World Health Organization puts the number of doctors per resident in the United Kingdom at 2.8 per 1000, Central London has approximately 8 million inhabitants and it can be assumed that the density of doctors is higher in London than in the rest of Great Britain, a figure of around 25,000 would seem plausible.

The anchoring effect plays a very important role on the financial markets. We are fascinated with the Dow Jones at 10,000 or 15,000, the S&P 500 at 2,000, the latest high of the SMI, or parity between the Swiss franc and the US dollar. We forget that, in the final analysis, these numbers are exactly that - just numbers. A high on the equity market or a round number for an exchange rate says nothing about whether a market or a currency is expensive or cheap. What is called for here are analyses, such as price-earnings ratios in the case of equities or purchasing power parities for currencies. Nonetheless, we can't seem to help clinging to these "psychological thresholds" when it comes to asset prices.

Sticking to the status quo – or how we are paralyzed by the fear of losses

When, approximately 2,500 years ago, Heraclitus of Ephesus was wading through the Little Meander near the west coast of what is now Turkey, he noticed that everything is continually flowing (panta rhei, in the Greek) and thus you cannot step twice into the same stream. In making this discovery, not only did he lay one of the cornerstones of Western philosophy, he also identified something that goes against our fundamental nature as human beings: change.

This is often summed in the phrases "force of habit" or "creature of habit." These idioms reflect our deeply ingrained fear of the new and the unknown. Animals are also creatures of habit. If I give my two cats their dry food before six o'clock in the morning, they look at me bemusedly and turn their noses up at their bowls. But if I forget to feed them at 6 a.m. on the dot, they meow me right out of bed.

"Force of habit," or the tendency toward the status quo, was studied in-depth by two American psychologists back in 1988. Given the choice between two objectively equal options, one option will become significantly more popular if it is additionally labeled as being the status quo, according to the researchers. As an example, they cited the election of two otherwise completely equal political candidates, which, in principle, should have resulted in a split vote of 50/50. The result of an experimental ballot was 59/41 percent in favor of the politician given the additional title "incumbent." Even more interesting: as the number of alternatives increases, the ratio becomes even more distorted in favor of the status quo. An election among four otherwise completely identical political candidates did not result in a 25/25/25/25 split, but rather a split of 38.5/20.5/20.5/20.5 in favor of the "incumbent" politician.

This predilection toward the status quo is often referred to as loss aversion. It forms the backbone of the new "prospect theory," for which Daniel Kahneman received the Nobel Prize in 2002. Aversion to losses can be explained using the following two scenarios:

- **Scenario 1**: You are given the choice between either receiving 900 dollars as a certainty, or taking part in a lottery where you have a 90 percent chance of winning 1,000 dollars but a 10 percent risk of going home empty-handed.
- **Scenario 2**: You are given the choice between either losing 900 dollars as a certainty, or taking part in a lottery where you have a 90 percent risk of losing 1,000 dollars and a 10 percent chance of losing nothing.

The vast majority of people would decide against the lottery in scenario 1, but in favor of the lottery in scenario 2. The decision in scenario 1 is quite understandable; most people are wary of taking risks and would prefer a bird in the hand over two in the bush, as the saying goes. Against this backdrop of risk aversion, however, the choice of the lottery in scenario 2 is incongruous; at the end of the day, there is a very strong danger that taking part in the lottery could result in losing even more than not taking part.

Many similar experiments have shown that people suffer much more from losses than they derive pleasure from gains. In other words, a loss that has been incurred can only be offset by a significantly larger gain. According to various empirical studies listed by Kahneman, the compensation must be 1.5 to 2.5 times higher than the loss in order for the person concerned to be as happy as they were before the loss.

While risk aversion explains why many investors unload lucrative investments too early and take the profits, loss aversion is responsible for the fact that numerous investors hold on to unprofitable investments for too long under the mistaken belief that losses that have not yet been realized are not actually losses. Economists should at least be a little bit savvier about this. They know that unrealized losses can generate so-called opportunity costs, since the money remaining from an unrealized loss could have been invested for a profit elsewhere.

It is not only investors who commit this error in reasoning: politicians, governments and the media are guilty of it as well. How often do we hear that we should not give up on a project that has so far proven fruitless because “so much has already been invested.” Rather throw good money after bad than admit having made a mistake. The construction of the Concorde or the Berlin-Brandenburg Airport, still in the making, are examples where the argument of costs already incurred (or sunk costs) played an important role in deciding whether or not to continue these ineffective projects.

How can an investor escape force of habit or loss aversion? In the case of individual investments, not only should you be clear about the price target you are striving for or the return you expect to achieve, but you should also specify a stop loss. This means that, in the event of a loss, you set a price limit at which the investment is automatically sold in order to prevent further losses.

If prices are rising, this stop loss should be adjusted upward on a regular basis. In the case of an overall portfolio, the key thing is to regularly review whether the portfolio is still in line with the declared targets and investor’s risk profile. It goes without saying that you should also frequently scrutinize whether the goals defined and risk profile drawn up when the portfolio was put together are still current.

Last but not least, investors should take a step back from their current portfolio at regular intervals and honestly ask themselves the following question: “If I were to receive the assets invested in cash at this precise moment, how would I invest them?” This hypothetical portfolio should then be compared with the actual one and any differences analyzed in detail. This is a tried and tested method of outmaneuvering the inertia of the present.

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Appendix

Global Disclaimer

Intellectual Capital Blog

Watch out for confirmation bias

Svetlana Gherzi, Behavioral Finance Specialist

Have you ever noticed that after buying a new car you suddenly see more ads of your new car? And suddenly there are more people driving that model on the road? Or, if you're thinking of having a baby, you suddenly notice babies everywhere?

It turns out that people are very good at seeking out information that confirms their views and beliefs – *confirmation bias*. For example, during the 2008 US presidential election, data from Amazon.com showed that people who liked Obama were buying books that painted him in a positive light. On the other hand, those who already disliked Obama were buying books that painted him in a negative light. To reiterate the point, people were buying books for confirmation and not for new information.

Indeed, we work hard to prove that our beliefs are correct instead of wrong. This naturally makes us feel good and as if we made the right decisions. However, when it comes to investing, automatically seeking out information that confirms an investor's beliefs can lead to wrong conclusions. By unintentionally ignoring important information, investors can end up holding on to losing investments for too long or missing out on good investment opportunities.

As Brian Nick rightly pointed out in his *Following the rules* blog on 12 February, "Seeking out sources of information from time to time that challenge your conclusions or even your entire investing framework isn't a bad idea." I would say it's a great idea and should be a habit. In science, seeking evidence to the contrary moves a researcher closer to the truth. Perhaps a similar approach will help make better investment decisions.

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Intellectual Capital Blog

Believing is seeing

Matthew Baredes, Strategist, CIO Portfolio & Planning Research

Suppose I were to give you a test. I give you a series of three numbers 2-4-6. I tell you that the series follows a simple rule, and that this rule is concerned with the relationship between any three numbers, and has nothing to do with the absolute magnitude of the numbers. I then say that your mission is to figure out what the rule is, by writing down series of three numbers, which I will evaluate and tell you if they conform to the rule or not. I tell you that there is no time limit, but you should try to discover the rule by citing the minimum needed sets of numbers. When you feel highly confident that you have discovered the rule, and not before, you are to tell me what it is.

If you were to take this test, what numbers would you try out? Well, when given this test most people try other series of numbers that increase by 2 (i.e. 8-10-12) until they eventually guess something like "numbers increasing in increments of two". And all these people are wrong.

So what's the rule? Three numbers in increasing order.

Now after the fact this seems like a pretty easy rule to discover, but when this exact question was asked in an experiment, only around 20%[1] of participants correctly guessed the rule on their first try. So what's the problem with most people's approach to this problem? It demonstrates confirmation bias.

Confirmation bias is "the tendency to interpret new evidence as confirmation of one’s existing beliefs or theories."[2] We tend to focus on data that confirms our prior beliefs, and discount any evidence that goes against our previously established position. An extension of this is that we seek out information that proves that we are right.

The problem is that we never attempt to disprove our thesis. It's human nature to focus on confirmation rather than disconfirmation.

So how does the confirmation bias hurt investors? Well, when investing, it is important to pay attention to the facts. It's hard enough to make the right decision when you have an unbiased view of all of the relevant facts, but if you only see the information that confirms what you already believe, then you are almost certain to fail.

One way to avoid this bias is to actively seek out the work of people who disagree with us. For example, part of the CIO TAA process is to invite strategists from other firms to discuss our views and why they disagree. It forces us to address differing opinions.

As John Maynard Keynes was purported to say: "When the facts change, I change my mind. What do you do, sir?". We should all strive to be objective enough to see when the facts change and to respond appropriately, but in order to do this we must take the uncomfortable route of actively looking for disconfirmation, rather than confirmation.

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2 oxforddictionaries.com/us/definition/american_english/confirmation-bias

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Intellectual Capital Blog

Reframing investment decisions

Svetlana Gherzi, Behavioral Finance Specialist

Would you rather eat beef labeled as "75% lean" or as "25% fat"? Yes, it's a trick question as clearly the two options are the same. However, the majority of individuals are more likely to prefer the "75% lean" option[1]. Investors are just as prone to such *framing effects* when it comes to investment decisions.

Simply how information is presented impacts how investors evaluate options and this can lead to different decisions. For example, it's been found that annuities framed as "consumption" - providing USD 650 of monthly spending for life - are perceived very differently than annuities presented as "investment"- providing a guaranteed monthly return of USD 650 for life. In the consumption frame, 72% of subjects chose a life annuity over a savings account. While in the investment frame, only 21% of subjects chose a life annuity [2]. So why are the results so different if in economic sense the options are the same? Turns out that the narrow "investment" frame makes the option seem risky and unattractive while the other alternative is more positively perceived.

Subtle framings can have substantial and dramatic effects when it comes to financial planning and investing decisions. For example, narrow framing can lead to evaluation of each individual investment separately rather than the portfolio performance as a whole. This means that investors will be more likely to experience frequent loss aversion. A solution is to frame the investment in terms of how it fits within the total portfolio. This will allow investors to realize all benefits of diversification (see blog: Realize all benefits of diversification in volatile markets, published 7 March 2016).

Another example of framing is presenting investments in terms of short-term versus long-term evaluation period. When investors are focused on short-term evaluation of performance, it makes the investment seem riskier compared to a longer evaluation period[3]. This implies that short-term evaluation periods can increase investor's risk aversion, which will make it difficult to stick to riskier assets within the portfolio. A solution is to emphasize how investments are expected to behave over longer term. This will ensure an appropriate asset allocation across various time horizons and risk/return options.

To give one more example, framing performance simply as a single value for the entire portfolio will miss the connection of how each investment is designed to meet investor's specific goal. A solution is to continuously highlight how investments are matched to investor's clearly defined objectives, and to view current investment decisions as a function of future values.

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Disclaimer

Behavioral finance

How our memory can deceive us

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- Our memory tells us that our investment successes are rooted in our talent, while our investment failures are attributable to bad luck.
- An investment diary can help you keep track of your investment decisions, avoid distorted memories and learn from the mistakes of the past.

Even those who believe that they are thinking and acting rationally sometimes make mistakes that are practically inevitable. Such mistakes occur when we rely on a system of thought that is quick and intuitive but not suitable for solving complex problems, rather than using a more painstaking, time-consuming, difficult and, therefore, more appropriate way of thinking. Investing is a complex matter and therefore requires a more complex way of thinking. All too often, however, the quicker way of thinking is used when making investments, and this results in incorrect decisions.

The way in which we view the past and our memory of it is particularly fertile ground for such incorrect decisions. This is primarily because our memory presents a biased image of the past. In particular, we would like to emphasize two errors, or biases: hindsight bias and self-serving, or attribution bias.

Hindsight bias
If we look back at the 2007/08 financial crisis, it is fairly obvious why it occurred, or even had to occur. From the beginning of 2000 to the middle of 2006, US real estate prices nationwide doubled (approximately 12% growth per year). In the US, so-called NINJA loans were granted on a large scale to people who were not creditworthy. Thanks to price increases, many US households were able to take out new loans on their homes and use them to finance consumption spending. Banks took on debt that represented many times the amount of their equity capital, and had such complex securities on their balance sheets that a clear-eyed risk analysis was impossible. The entire edifice was bound to topple.

This report is the second in a series of four, relating to disciplined investment:

1) Why it isn't easy to invest in a disciplined manner (published on February 13th, 2015)
2) How our memories deceive us
3) Forecasts are (almost) always wrong
4) How the present keeps us under its spell

Parts of this report were originally published outside the US in October 2014 and have been customized for US distribution.

Interestingly, many economists and financial experts now describe themselves or allow themselves to be described as "one of the few who saw the financial crisis coming." There are now so many of these economists that at the very least the word "few" should be omitted from this description. A close look at what these all-knowing economists themselves wrote in 2008, however, makes clear that in reality only a handful of experts can call themselves visionary. Does this mean that my fellow economists are suffering from a form of collective mythomania? By no means. It is simply hindsight bias.

"Hindsight is 20/20," as the saying goes. However, people often redefine the experience that they gained in retrospect as insights that they always held. The boundaries are blurred from "That was so obvious, I must have seen it" to "It's not possible that I didn't see it" to "I saw it."

A survey of 850 US investors conducted in 2002 illustrates why these errors play a particular role when it comes to investing. Nearly half of those surveyed indicated that the development of technology, telecommunications and Internet stocks at the end of the 1990s was clearly a speculative bubble. Another third of all those surveyed indicated that it was probably a speculative bubble. However, all of the investors surveyed had investments in what were in retrospect dubbed "clearly overvalued" stocks during the speculative bubble.

People should be able to learn from their mistakes. But they cannot do this if they are no longer aware of their mistakes after the fact, and instead believe that they already knew everything in advance.

Self-serving or attribution bias

Closely related to hindsight bias is self-serving, or attribution bias. In this case, we ascribe successes to our own actions, our skills and our abilities. Failures, by contrast, are the result of external circumstances, including plain bad luck. Such retrospective perceptions and explanations of past events increase self-esteem and the perceived importance of the person involved.

Mere mortals are not the only ones who fall prey to this distorted perception. What else explains why former Federal Reserve Bank chairmen Alan Greenspan and Ben Bernanke down-play their contributions to the creation of the housing bubble and the credit bubble in 2007–2008? Greenspan repeatedly stresses that a loose monetary policy "had absolutely nothing to do with the housing bubble." He even goes so far as to call the idea "ridiculous." Instead, Greenspan shifts the blame for the crisis to external factors, such as the "irrational exuberance" of banks and property buyers, and Ben Bernanke points to the "global savings glut" at the time (particularly among savings-obsessed Chinese). You may believe them when they say that monetary policy had no impact on the crisis. But then the question immediately arises: Why should the current ultra-loose US monetary policy have anything to do with the current US recovery? Is the loose monetary policy really so one-sided that it can only have positive results, without causing negative side effects?

Politicians are particularly susceptible to self-serving bias. How often have we heard state and government heads in the European Union congratulate themselves on their clever policies when these appeared to lead to positive economic developments, but blame external factors when things did not go so well? The bureaucrats in Brussels have always been the popular scapegoats in this regard. So it's really no wonder that voters in Europe did take seriously the attempts by leading politicians to assign blame on Brussels and vented their anti-European sentiment during the latest round of European Parliament elections.

Finally, this bias is common practice in sports. Have you ever seen a football coach criticize the referees after his team has won?

Such bias can cause a lot of damage when investing. Viewing investment successes unquestioningly as a result of one's own extraordinary investment skill and simultaneously assigning the blame for failures to bad luck, combined with hindsight bias means that one learns absolutely nothing at all from one's experiences. In principle, there are four outcomes when investing, which the following table is showing.

Table: the four possible outcomes of investing

	Success	Failure
Correct analysis	Talent	Bad luck
Incorrect analysis	Dumb luck	Just punishment

Source: UBS CIO

Focusing on investment failures is, unfortunately, only half the battle. Investment successes also have to be scrutinized carefully. Is the success really the result of a correct analysis, was it just my dumb luck? US philosopher William James (1842-1910) famous saying that "truth is what works" misses the mark here.

Avoid being surprised by the past

One trick of well-known investors to avoid falling into the trap that our memory sets for us is to "objectify" the past. This means trusting objective evidence of what we really thought at the time of the investment decision more than our memories. One should therefore always document an investment decision before carrying it out. What considerations motivate me to make this decision? What return can I expect? Which risks can I assume at the moment? One should record the answers to all of these questions in an investment journal and refer to it when it comes time to chalk up the success or failure of an investment.

There is a reason why I belong to the ever-smaller group of economists who unfortunately did not predict the financial crisis of 2007/08. After the financial crisis, I looked carefully at what I wrote and said in 2006, 2007 and into 2008. While I stumbled here and there on one concern or another about the enormous and growing current account deficit in the United States as well as a certain amount of disbelief about the high-flying US real estate prices, I did not, unfortunately, find any predictions – or even the mere hint of a prediction – of the impending chaos in my statements at the time, despite my best intentions.

Annex: hunting Black Swans

Parlous times often breed towering personalities. The Great Depression saw John Maynard Keynes become the leading economist and one of the most prominent public intellectuals of his generation and beyond. So far, the current crisis hasn't produced anyone whose stature is comparable to that of Keynes. But there is one candidate who may someday join him in the economists' pantheon, an individual who in any case will surely have a lasting influence on the profession of economics: Nassim Nicholas Taleb.

Taleb is one of the very few pundits who can fairly say, "I told you so," in the wake of the financial crisis. His books, "Fooled by Randomness" and "The Black Swan," have not only been bestsellers; they are truly seminal works in the theory of finance. Especially with "The Black Swan," whose title has entered our everyday language, Taleb has become required reading for anyone who wants to dismantle the inherited inaccuracies of financial theory.

The main message of "The Black Swan" is that improbable, exceptional and extreme events occur far more often than we dare to think. The potent consequence of this conclusion is that reality is more complicated and unpredictable than we generally assume it to be. Black swans, by the way, were discovered in Australia in the 18th century and the book's title plays on the assumption, employed in treatises on logic since Aristotle, that "all swans are white."

The financial crisis is a splendid example of a fully-fledged black swan. Few thought such a meltdown was possible in the developed economies of the modern financial system; even fewer saw it coming. And now, after the fact, many economists are trying to save face by employing the kind of logical gamesmanship that Taleb so coolly punctures.

For example, some economists have adopted "hindsight bias" to suggest that the crisis was, of course, predictable; or they have succumbed to "narrative fallacy," wherein an inexplicable event is folded neatly into a fluid story line to make it seem self-evident, albeit after the fact. Taleb's point is that people, including economists, actively resist acknowledging that events can overwhelm their comfortable cognitive preconceptions; they (we) are highly creative and all-too-successful at painting any disturbing black swans white, which is how we like them to be, after all.

Add to this the media's penchant for airing extreme opinions rather than more moderate views, and the aftermath of the financial crisis has the punditocracy spouting a steady stream of doomsday scenarios. It seems that since most economists were wrong-footed by the crisis, none wants to miss the next black swan, which is certainly swimming out there somewhere.

But this creates a paradox: If black swans really are sighted everywhere, then they are no longer exceptional. Grim predictions invoking runaway high inflation, or a deflationary, Japanese-style paralysis, or the impossibility of central banks smoothly exiting their stimulus programs, or the catastrophic consequences of the massive new debt on government balance sheets are becoming the norm. But the norm, by definition, cannot be a true black swan.

Indeed, the black swan today would be the scenario of a seamless return to the "great moderation" of the previous 25 years, with low inflation and high growth. Admittedly, this is a highly improbable, even extreme prospect after such a profound crisis. But bear in mind, extraordinary events are not necessarily negative in nature and black swans must not always be bleak.

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Appendix

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Version as per May 2014.

Intellectual Capital Blog

Is short-term loss aversion clouding your financial judgment?

Svetlana Gherzi, Behavioral Finance Specialist

Paralyzed by the markets? Afraid of making the wrong choice? Emotions driving investment decisions? You're not alone. One main ingredient that dominates during periods of market uncertainty is loss aversion. Although in terms of survival we are hard-wired to avoid losses at all cost —a natural human reaction — this should not be the case when dealing with economic problems. Fear of losses can result in suboptimal investment decisions, damage a financial plan and skew an investor's judgment.

The regret associated with making a 'real' financial loss is very painful. It can lead to holding on to a losing position too long instead of cutting losses and reinvesting in a better alternative. In other times it can lead to selling at a loss as soon as the market sneezes, another way to derail an investment plan. Loss aversion can also cause investors to invest in ultra-conservative securities instead of taking the right risks and achieving gains. Generally there is absolutely nothing wrong with conservative choices. For example investors who are in retirement tend to be much more loss averse as they have a much shorter investment horizon than those at an earlier phase in life (e.g., Millennials). By this logic, retirees' portfolios should hold less risk. Similarly, investors who have experienced a number of bear markets in the past are also more likely to have greater sensitivity to losses and less risk appetite. However, the experience of loss aversion and the emotions that accompany it can cloud financial judgment.

The solution is to make a financial plan that you can live with.

Markets will always be uncertain, and there will always be ups and downs. And while loss aversion can vary based on age and experience, one certainty is that investors can set up a financial plan based on their individual goals and needs, and stick to that plan. With a solid plan there is no need to react to everyday market movement or to anxiously follow volatility or to worry about things that are beyond ones control (e.g., inflation) because the financial plan should already accommodate for risks and market changes.

Quick takes

Investor Insights from UBS Asset Management
April 2016

Hindsight is insight

Predicting behaviors is easier than predicting markets

When it comes to investing, people are often thirsty for knowledge, but drowning in information. Some follow predictions of economic growth and recession, market highs and lows, asset bubbles and the direction of interest rates. But focusing too much on predictions may distract these investors from making sound, long-term decisions. And they may earn lower returns as a result.

The fact is that there is a gap between investment returns and investor returns. According to DALBAR, Inc., an average equity fund shareholder simply has not achieved the same returns as the S&P 500 Index over time (see Figure 1). Between 1996 and 2015, for example, the S&P 500 Index returned 8.2% annually, but the average equity fund shareholder earned only 4.7% after fees (index performance does not reflect deduction of fees and expenses). The story is the same over rolling 20-year periods (see Figure 2). Over time, an average equity investor consistently has failed to achieve the same performance as his or her investments.

Why does this gap exist? One of the reasons is that the average investor buys high and sells low, holding his or her equity

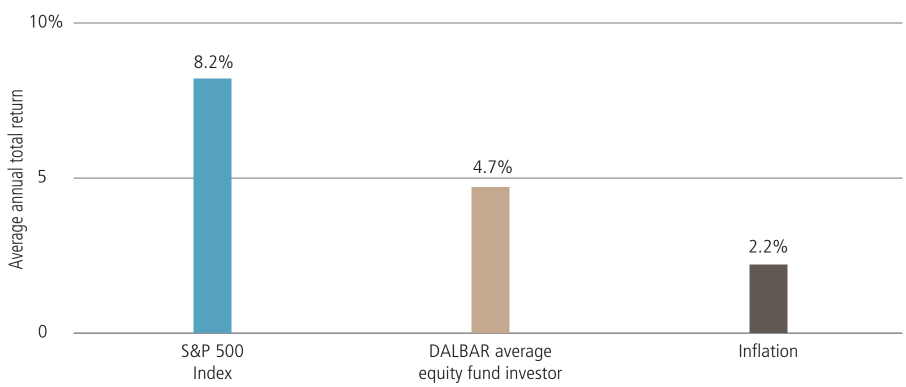
UBS

investment for an average of a little more than four years—not even a full market cycle. These behaviors are often referred to as "fear and greed" reactions, because investors tend to sell on the fear of further losses or buy out of greed into an investment that may have already grown significantly in value. But in the relentless pursuit of alpha (market outperformance), people aren't even getting beta (returns consistent with an overall asset class).

As the expression goes, "Prediction is very difficult, especially about the future." It is much easier to predict what people are going to do than what markets are going to do. As investors, what can we actually predict? We're going to go out on a limb and predict that people generally will continue to buy high and sell low; that they will chase yesterday's winners only to own tomorrow's losers; and perhaps most importantly, that they will continue to invest with their emotions, focusing more on fear and greed than planning and patience.

So how can people become better investors? They can start by extending their time horizons from months and quarters to years and full market cycles. People need to learn to stay in their seats through bull and bear markets in order to have a better chance at achieving the potential of their investments over time. That is sometimes easier said than done, but professional guidance can help. Working with your financial advisor to establish a long-term plan is a good way to start. Having a well-diversified portfolio will make it easier to stay invested through full market cycles. We predict that if you do, you'll be on your way to achieving better outcomes.

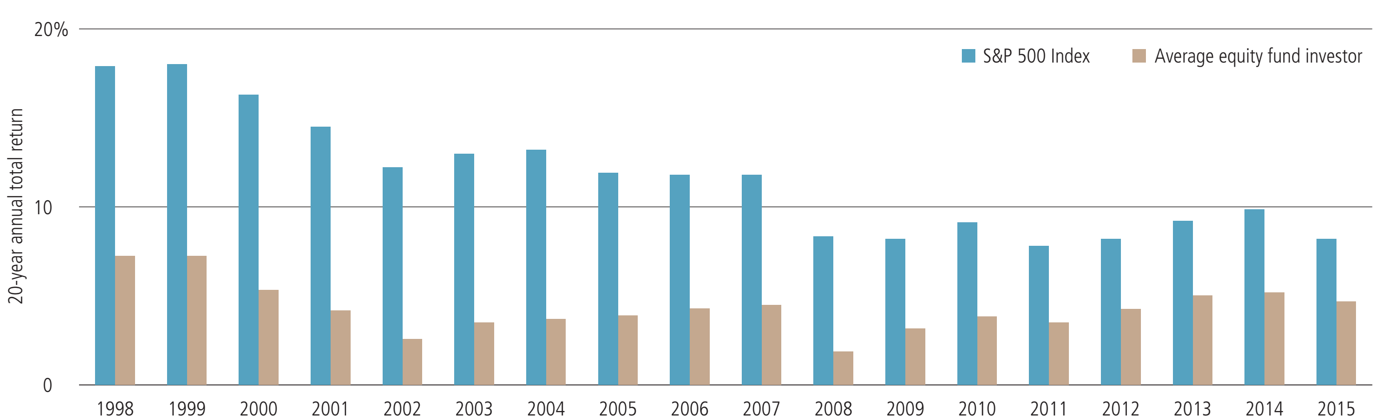
Figure 1. Average annual total returns: 1996–2015



Average holding period of equity mutual fund investors: **4.1 years**

Source: "Quantitative Analysis of Investor Behavior for period ended: December 31, 2015," DALBAR, Inc.; used with permission. For illustrative purposes only. **Past performance is not a guarantee of future results.** The S&P 500 Index is an unmanaged, weighted index comprising 500 widely held common stocks varying in composition and is unavailable for direct investment. Index performance does not reflect deduction of fees and expenses. 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.

Figure 2. Long-term annualized investor returns



Source: DALBAR, Inc. The original analyses began in 1984; thus 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.

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