Executive Summary

Research in behavioral finance has demonstrated that individuals do not fit the rational economic model, but instead allow errors, biases, and emotions to impair their investment judgments.

The purpose of this manuscript is to describe and organize various research findings in behavioral finance so that the material is specifically targeted to help planners bring behavioral finance considerations into their day-to-day work.

Loss aversion is arguably the most important behavioral bias that affects investing, and is best be dealt with by accommodation—modifying investment recommendations to allow for the bias.

Other errors and biases like overconfidence, reliance on rules of thumb, and extrapolation bias can best be dealt with by educating the client.

Investor behavior can also influence financial markets. In particular two stock market phenomena, “the equity premium puzzle” and “mean reversion of stock returns,” may reflect the impact of investor errors and biases. Planners aware of these influences may wish to recommend heavier stock allocations for long-term investors and more use of asset allocation funds that vary the stock/bond mix.

This article is intended for all planners and investment professionals who want to improve their understanding of behavioral finance, and incorporate behavioral considerations in their work.
Behavioral Finance—Implications for Investment Planning

Introduction

Behavioral Finance is becoming more of a mainstream topic among financial planners. The subject was first introduced to the planning profession by pioneers in the field, such as Daniel Kahneman and Richard Thaler, speaking at conferences, sharing their research, and also entertaining the attendees with examples of how investors, try as they might, end up buying and selling the wrong investments at the wrong time and generally shooting themselves in the foot.

As a planner attending these conferences, I would leave such sessions feeling enlightened, entertained, and perhaps a bit uncomfortable. Part of the discomfort related to my concerns about how I should use what I was learning in my day-to-day dealings with clients. As I delved more deeply into the research literature on behavioral finance, I found that there was a lot more “stuff” that I probably should be taking into account in my planning work. But the open question was how to fit it all together and organize it with the planning applications in mind. Fortunately, the planning profession is now beginning to address the more specific application of behavioral finance to financial planning. (see Bolhuis and Goodman, 2005; O’Neill, 2005; and Pompian and Longo, 2005) This article is an attempt to contribute to this effort and help planners incorporate behavioral finance considerations in their work, with a specific focus on the investment planning and asset allocation.

Behavioral finance literature describes a number of investor errors and biases that cause investor behavior to deviate from what we might think of as the rational ideal. (See Shefrin, 2002 for an overview.) Examples include overconfidence, loss aversion, anchoring, reliance on rules of thumb, extrapolation bias, and the list goes on. In this article I will first attempt to address which of these various errors and biases are most important for planners to consider. Then I will move on to make the distinction between those behavioral traits that are best addressed by educating clients versus those that may defy education and best be dealt with by adjusting investment recommendations.

The Mythical Rational Investor

I’ll start with an example. Let’s say you are a financial planner and have a new client who goes by the nickname of Rational Rachel. She is of retirement age, unmarried, and has built up a significant amount of savings, but she is keeping those savings in safe low-yielding investments. She is not necessarily risk averse; she just hasn’t given much thought to investing. She has come to you because she is considering retirement and wants to know what level of spending she can afford after she stops working. Friends have told her she needs to invest more aggressively to fund a comfortable retirement.
Rachel is a unique person. She possesses the ability to reduce any decision to the basic question being asked, and finds her decision making blissfully free from the behavioral errors and biases that affect less “rational” investors. Her approach to investing could be described as consistent with the model of rational economic behavior that has formed the basis of much of economic theory about such topics as investor and consumer choices.

Working with Rachel is straightforward. She completes a questionnaire listing assets, sources of future income, and annual expenses. She also completes a risk profile assessment. You then run your computer models to determine the likelihood that an investment program compatible with her risk assessment will allow her to live comfortably in retirement. If there is a shortfall, you will propose options such as retiring later, spending less in retirement, or investing more aggressively. Once you and Rachel have all this sorted, you will work with her to come up with an asset allocation and a set of investment choices. The asset allocation will sit on the classic Markowitz efficient frontier (or a more leading edge, “re-sampled” variant of same), so that she will be minimizing return variability for a given target rate of return.

The Rachel example is deliberately oversimplified. We rarely find clients holding pure low-risk portfolios, and there are other issues such as clients holding monies in accounts subject to different tax treatments. There is quite a bit of planning work that needs to be performed before we get to the behavioral considerations, and here are some of the issues that typically need to be addressed:

- **Portfolio simplification**—Many clients arrive with multiple retirement accounts and individual brokerage accounts that need to be consolidated for better management.

- **Improving tax efficiency**—Part of this issue involves placing appropriate investments in taxable versus tax-deferred or tax-free accounts, and the other part involves choosing tax efficient investments within the taxable accounts.

- **Reducing investment costs**—Here I reflect my personal bias favoring index investing, so in my view lower costs and improved tax efficiency are almost always good for the client.

- **Bringing in new asset classes**—This involves seeking out investment classes that offer favorable risk/return tradeoffs and, most importantly, show a low correlation with more traditional asset classes—examples might be foreign stocks, foreign bonds, commodities, and investment real estate.
• Protecting against inflation—It is important to recognize that risk and return analysis using nominal returns and an assumed fixed inflation rate over the projection period may leave the client vulnerable to inflation surprises. This shortcoming can be addressed by tilting the portfolio toward those asset classes, like inflation protected bonds or real assets, that provide greater inflation protection.

Getting Into Behavioral Issues

So far, we have done some important planning work, but we have not had to get into behavioral issues. Now we move from the world of Rational Rachel and begin to deal with much more typical client issues. These are the clients that bring a number of biases, errors, and emotions to their investing, which we as planners need to address in order to recommend good planning solutions.

A key decision for the planner when dealing with client errors and biases is whether to address the issues by: (1) trying to educate the client to remove the error or bias, or (2) to accept the error or bias and adjust the investment policy recommendations as an accommodation. The choice between educating versus adapting will depend on: (1) the impact on investment performance, and (2) how deeply ingrained the error or bias is.

Now let’s look at some the specific behavioral issues we face when dealing with our real-world clients.

Loss Aversion

In their pioneering work on prospect theory, Kahneman and Tversky (1983) described loss aversion as a condition where losses loom significantly larger than gains, and both losses and gains are viewed in relation to the status quo (or some other reference point) rather than in the context of total well being. An example would be an investor refusing to sell an investment when its market price is below the original purchase price, even if it otherwise makes economic sense to sell. Loss aversion will likely lead to regret when things go badly, and regret may lead to actions not in the client’s best long-term interest.

It is likely that loss aversion will be found to be so deeply rooted in a client’s psyche that it makes more sense to make adjustments to investment policy and tactics rather than try to educate the client out of being loss averse. Here it may be best to gauge the client’s level of loss aversion through the use of a good risk-profiling tool, and then utilize certain management approaches to address the loss aversion.

Here are some examples of such management approaches:

Dollar cost averaging—When working with the client to change a portfolio structure, particularly when moving in the direction of taking more equity risk, it may make sense to make the changes gradually over the course of a year or so. This lessens the chance of
making a big change, having the markets take an unfortunate turn, and the client then feeling regret over the move. Dollar cost averaging may also be used as a means of addressing what is known as the “endowment effect” or “status quo bias.” For example, if a client receives a large inheritance, he or she may be more comfortable with an investment approach that gradually shifts allocations to match up with the client’s overall allocation strategy, rather than making changes all at once.

**Domestic focus**—an asset allocation based on minimizing return variability might dictate holding as much as half of the portfolio in foreign debt or equity securities. However, such an approach may leave clients experiencing regret when domestic markets (covered more intensely by the media) are outperforming their foreign counterparts. This potential issue can be mitigated by holding foreign investment at 15%-20% of portfolio assets.

**Spending accounts**—Return maximization may dictate minimizing amounts held in low-yielding money market funds. However, for the loss averse investor, it may make sense to set aside an annual spending account invested in money market funds so amounts available will be locked in, the client will not feel that spending per budget is stealing from savings/investing, and the other funds can be thought of as set aside for long term investing.

**Taxable versus tax advantaged accounts**—tax efficiency might dictate investing all taxable monies in stocks and tax deferred accounts in bonds. However, for clients who are concerned about performance in each of their accounts separately, it may make sense to have more diversification within each account while still tilting the accounts in the tax-efficient direction.

**Framing of the sell decision**—A key finding of behavioral research is that the response of individuals to proposals or “prospects” depends heavily on how the prospects are presented or “framed.” The individual may tend to view the prospect in relation to some reference point rather than in terms of the effect on overall well being. For example, the loss-averse investor may be reluctant to accept the advice to sell a single investment at a value below the original purchase price. However, if the action is packaged with the sale of other assets showing gains, or is presented as means of getting the overall allocation of assets on track, the investor may be more willing to accept the advice.

**Myopic loss aversion**—Benartzi and Thaler (Kahneman and Tversky, pg.301) put forth this term to describe the combined impact of investors assumed to be loss averse, and also tending to evaluate portfolios frequently, giving rise to an over-focusing on short term results. It is common practice among financial planners to provide clients with monthly, quarterly, or annual updates on investment performance. While frequent reporting does help clients to stay in touch with their investments, the danger is that too much short-term focus will bias clients against riskier investments (e.g. equities) which may demonstrate significant short-term volatility, but provide long-term superior performance.
Overconfidence

“Psychological studies have shown that most individuals are overconfident about their own abilities, compared with others, as well as unreasonably optimistic about their futures.” (Camerer and Lovallo, in Kahneman and Tversky, pg. 414). Some financial planning clients may have too much confidence in their own ability to choose superior investments, while other clients may place too much of a burden on the adviser—expecting too much of the adviser’s tactical investment ability. It is not surprising that clients develop false confidence about their adviser’s abilities, given that the financial media places such heavy emphasis on “experts” providing intelligent-sounding predictions about the future performance of asset classes and individual securities. It is only natural that clients might expect their adviser to do what the media pundits “say” they can do. The issue of false confidence in the advisor needs to be addressed at the very beginning of the planner-client relationship. Client and planner need to put in place a clear and shared understanding of the planner’s capabilities and the specific services the planner will provide.

For those clients where the issue is the client’s confidence in their own investment-selection ability, an adaptive tactic might be to follow a “core and explore” strategy, agreeing to place the bulk of the client’s funds in well diversified investment strategies, while allocating a small portion of the portfolio for the client’s own exercise of investment selection. It is also useful if the planner and client set up a means of measuring the performance of the client’s discretionary portfolio against an appropriate benchmark. Short-term results may not be meaningful, but it’s likely that over time the client will develop an appreciation for how difficult it is to beat benchmarks.

Other Behavioral Considerations

Loss aversion and overconfidence are perhaps to two most important behavioral traits for clients and planners to address. However, there are a number of other errors and biases which may also need to be dealt with. What follows is a listing and commentary on other behavioral traits. These are all traits that are best dealt with through education rather than through accommodation.

*Availability bias*—The client may be influenced by their exposure to the financial media--both reporting and advertising. Much of the “news” focuses on asset classes that have demonstrated recent superior performance. Data on mutual fund flows shows the strong tendency of investors to respond to recent past performance. Less highlighted in the press are the studies showing that “chasing” past performance typically leads to inferior performance and investor regret. A variant of “availability bias” is “familiarity bias” which explains why investors are so willing to invest substantial sums in company stock.
**Extrapolation bias**—Although different in character from availability bias, extrapolation bias produces similar effects. The client assumes, in general, that trends will continue, and, in particular, that investment performance (good or bad) will persist.

**Gamblers fallacy**—This is the opposite of extrapolation bias; the investor feels that a run of good luck is likely to be followed by a run of bad. There is significant evidence of regression to the mean in stock performance (Siegel, 1998), but gamblers fallacy overdoes it. The investment-selection implications of stocks showing mean regression are dealt with later in this paper.

**Over-reliance on rules of thumb**—Traditional economic theory assumes that participants in markets when processing information, use appropriate analytic tools. However, the reality is that the investment world is complicated and investors tend to place reliance on rules of thumb that may lead to errors and biases. An example of using a rule of thumb would be picking mutual funds with the best five-year track record, while ignoring other criteria which might lead to improved choices.

**Money illusion**—Individuals tend to view the performance of their investments in nominal terms rather than adjusted for inflation. An investor who earns 5% on a bond when inflation is at 7% will likely not view the investment as losing, even though it really is losing in terms of purchasing power. Discussions with clients about keeping money “safe” need to focus on safety in a purchasing power sense and not just in a nominal sense. Such discussion can steer clients more in the direction of investments that provide some degree of hedge against inflation, e.g. inflation protected securities, equities, and commodities.

**Behavioral Finance and the Efficient Frontier**

The classic Markowitz “efficient frontier” shows rate of return on the vertical or y-axis and standard deviation of return as a risk measure of the horizontal or x-axis. The Markowitz version is based on a model which equates “well being” with increased return and “risk” with investment volatility. This approach is consistent with the view of investors as rational, although tying to risk to volatility is based on investors not being completely indifferent between gains and losses. The Markowitz approach assumes that losses loom larger than gains, but perhaps not to the degree that has been demonstrated in studies on loss aversion.

As a conceptual tool for incorporating behavioral considerations, I’d like to introduce a new version of the efficient frontier. For this version I change the label on the horizontal access from “risk” to “potential regret,” and change the vertical axis from “return” to “potential happiness.” Clients and planners operating in this newly defined space are trying to maximize the amount of potential happiness they can achieve while risking a defined level of potential regret, or, alternatively, trying the minimize the potential regret that might be associated with trying to achieve a certain level of happiness.
Let’s first look at the “potential regret” axis and utilize an example. Based on historic numbers we can show that a well-diversified all-stock portfolio composed of 50% US securities and 50% foreign stocks would have been less volatile than a 20% foreign and 80% domestic portfolio. However because investors tend to receive a disproportionate amount of news about performance of US markets and tend to experience happiness or regret in relation to the experience of others, typical loss averse investors may experience less regret investing with a heavy domestic bias. From a client perspective, it may be more important to minimize regret than to minimize investment volatility. We can’t measure regret the way we can measure volatility, but thinking in terms of regret management may help to incorporate behavioral considerations in the planning effort.

Now let’s turn to the “potential happiness” axis. When we move from “returns” to “happiness,” we move from traditional financial planning to the realm of “life planning.” We step beyond just looking for higher returns, and address client life-fulfillment issues. Various psychological studies and surveys on human happiness (see Nettle, 2005) have shown that:

- Societies don’t get happier as they get richer, unless they are very poor to begin with.
- Personal control is a much better predictor of happiness than is income.
- People are not good at predicting the impact of attaining financial objectives on their feelings of happiness.
- People tend to react initially to positive events, but then happiness tends to return to baseline levels that are typically fairly stable over a person’s life, and perhaps genetically determined.
- People tend to experience happiness more in relation to the fortunes of others than in absolute terms.
- Evolution may leave people more “wired” to accumulate money and employ other survival tactics, at the expense of their own happiness.

Clients may need help from planners on issues like the implications of shifting careers to more fulfilling but less remunerative work, the financial implications of finding ways to spend more time with family, or making a decision about buying a vacation property. It is not necessary that all financial planners become life planners. However, focusing, at least conceptually, on potential happiness rather than pure return maximization may help planners ask better questions of their clients and focus on what is most important.

One additional note on efficient frontiers is that for the mythical client like Rational Rachel, the happiness versus regret asset allocation analysis resolves back to the traditional risk vs. return analysis. For Rachel, happiness equates to higher returns, and
potential regret is a direct function of investment volatility. The traditional asset allocation analysis assumes investors to be wholly rational.

**Impact of Behavioral Traits on Financial Markets**

So far we have focused on behavioral impacts on individual behavior. We now turn to how individual behavior can impact financial markets.

**The Equity Premium Puzzle**

Benartzi and Thaler (1995) came up with the term “myopic loss aversion” discussed earlier in this paper. Besides using “myopic loss aversion” as descriptive of investor behavior, they also addressed the possible impact of this bias on investment markets.

“The equity premium puzzle refers to the empirical fact that stocks have outperformed bonds over the last century by a surprisingly large margin. We offer a new explanation based on two behavioral concepts. First, investors are assumed to be ‘loss averse’ meaning that they are distinctly more sensitive to losses than gains. Second, even long-term investors are assumed to evaluate their portfolios frequently. We dub this combination ‘myopic loss aversion.’ Using simulations, we find that the size of the equity premium is consistent with previously estimated parameters of prospect theory [degree of loss aversion] if investors evaluate their portfolios annually.”

This work by Benartzi and Thaler (and follow-up work by Siegel and Thaler, 1997) has not received as much attention as it deserves. The assumed size of the equity premium has a huge impact on financial projections and asset-allocation recommendations. The equity premium (defined as the difference between annual stock market returns and returns on Treasury bills) has averaged over 6% since 1926, but there are indications that the premium is currently settling closer to 3%, consistent with the very long data history going back to the early 1800’s described in Siegel (1998). Even at 3% the equity premium makes stocks far more attractive than bonds for long-term investors. $1,000 grows to $2,427 over 30 years at a 3% earnings rate and grows to $5,743 at a 6% rate. To the extent we, as planners, can get comfortable that the size of the equity premium reflects ingrained human behavior, and not just a changeable economic disequilibrium, we can get more comfortable in tilting asset allocations for long-term investors more in the direction of equities, and building projections based on the equity premium remaining close to today’s levels.

**Mean Reversion of Stock Returns**

The Siegel (1998) study of stock returns dating all the way back to 1802 shows solid evidence of “mean reversion,” meaning that future returns are related to past returns and returns tend to be pulled in the direction of the mean. (If the year-by-year returns were independent they would be following what is known as a random walk.) Fixed income assets have shown the opposite tendency and can be described as “mean averting.” The
Mean reversion of stocks has important implications for asset allocation recommendations. As the investment horizon lengthens, the stocks decline in volatility even more than would be predicted if stock returns followed a random walk. For very long-horizon investors (20 to 30 years), the standard deviation of annual returns is actually lower for stocks than for bonds and bills.

Mean reversion would seem to imply that the stock market is not completely efficient, and such inefficiency might be due to behavioral considerations. Schleifer (2000) provides us with a theoretical basis for understanding this market inefficiency. The framework he sets up is one where investors behave irrationally (reflecting behavioral errors and biases) and they do so in a systematic way so there is a tendency to move markets. However, other theoreticians have pointed out that such market movements create opportunities for arbitrageurs to profit from the market mis-pricings and, in the process, bring prices back to “correct” levels. Schleffer’s (2000) theoretical approach assumes that real world arbitrage is risky because of the lack of close substitutes for broad market securities—arbitrageurs need close substitutes to accomplish risk free hedging. Under this theoretical construct, the stock market prices can get out of line with fundamental values and can stay misaligned for long periods of time, before they mean revert.

The implications of mean reversion for asset allocation can be demonstrated by showing risk-return tradeoffs for various bond/stock mixes (efficient frontiers) and varying the holding periods. (Siegel, 1998, pg.36) If we assume investment returns follow a random walk, then the efficient frontiers look the same (following the traditional lower left to upper right path) regardless of holding period. However, when we use historic returns which are mean reverting for stocks and the opposite for bonds, the 1-year-holding-period frontier follows the traditional path, but for longer holding periods the frontiers become more vertical. The 30-year-horizon frontier even has a slight negative slope, very different from the models planners typically work with.

Mean reversion of stocks has important implications for planners. First, for long-horizon investors, planners should be comfortable recommending higher allocations to stocks than would be the case if stock returns followed a random walk. Second, planners may want to recommend that clients hold some portion of balanced or asset allocation funds, where the manager shifts the bond/stock mix based on measures of bond versus stock attractiveness. Such funds may be best suited to retirement accounts.

**Risk Tolerance Assessment**

Risk tolerance questionnaires provide a quick means of determining an investor’s level of risk aversion relative to other investors, but do not provide the wherewithal for the investor to react to risk/return characteristics related to a particular time horizon. The double effect of the law of averages plus the mean-reverting tendency of stock returns can make a big difference in the attractiveness of stocks, depending on the investor’s time horizon.
Siegel and Thaler (1997) report on work done by Benartzi and Thaler (1996) re: an “experiment in which groups of university employees were shown distributions of returns for two hypothetical retirement funds, A and B, where the distributions were derived from actual distributions of stocks and bonds since 1926. One group was shown a distribution of annual returns; this group invested 40% of their money in stocks. Another group was shown a simulated distribution of 30-year returns derived from the annual return data by drawing years at random. Although this group was given essentially the same information, they chose to invest 90% of their money in stocks, presumably because they found the long-run return distribution for stocks more attractive than for bonds.”

Risk tolerance tools can provide valuable input, but it is also important to provide clients with projections that show them the potential variability of financial results related to their specific financial objectives and time horizon.

**Monte Carlo Simulations**

Monte Carlo Simulations are becoming more popular as a means of demonstrating the variability clients may face related to their particular financial plans. Unfortunately, many of the Monte Carlo models in use rely on the simplifying assumption that investment returns for all asset classes follow a random walk. There are proprietary models that generate random series that where generated values depend to some degree on past values or the relationship to average values. The models can be used to incorporate assumptions about mean reversion for stocks and mean aversion for fixed-income investments. As such models come into wider use by planners, the quality of financial projections will better reflect the workings of market forces.

**Concluding Remarks**

At this stage we can review what we have learned and what it tells us that financial planners can actually use in their practices.

The first key point is that planners and their clients are to some degree irrational in their investment decisions. This leaves the planner with a bigger task than just developing financial plans that work in a numbers sense; the planner needs to be aware of behavioral traits and needs to address these traits in the planning process.

Addressing the traits can take the form of either changing the clients thought process through education, or accommodating the trait and adjusting financial recommendations. Perhaps the most important trait is risk aversion and there are a number of ways that plans can be adjusted to accommodate the risk-averse investor. Other traits like overconfidence, extrapolation bias, and over-reliance on rules of thumb can best be dealt with by attempting to educate the client.

We then move on to address how behavioral traits may impact financial markets. We discuss the equity premium puzzle and the mean-reverting tendency of stocks. Both of
these phenomena make the case for increasing allocations to stock investments and/or investing some portion of funds in asset allocation funds. Getting at the specifics of how these phenomena affect financial plans will require some changes in the way financial planning tools are utilized and some changes in the actual tools themselves.

Behavioral finance has a lot more to offer than a bunch of entertaining anecdotes about investors behaving badly. Planners who appreciate the behavioral impacts on their clients’ attitudes and beliefs will do a better job serving their clients, and, understanding how investor behavior impacts financial markets, will help planners and clients come up with more suitable approaches to investing.
References


