Chapter 4

A Fundamental Tool in the Process: Decision Making

Learning Objectives

1. Describe and apply a general model of decision making.
2. Explain how decision making rules may be applied within the decision making process.
3. Understand and apply the traditional decision making approach to a financial planning decision.
4. Recognize and explain how behavioral finance concepts may impact the decisions and choices made.
5. Identify and explain the threats to the decision making process.
6. Summarize how uncertainty, intuition, and habits impact decision making.

The Building Blocks of the Financial Planning Pyramid

Key Terms

Aversion to loss
Behavioral finance
Complacency
Decision
Decision making
Defensive avoidance
Deterministic model
Framing
Gambler's fallacy
Habit
Herding
Heuristic
Hot hand fallacy
House money
Ignoring the base rate
Maximization
Mental accounting
Mental accounts
Objective probabilities
Optimization
Overconfidence bias
Panic reactions
Prospect Theory
Regression to the mean
Regret avoidance
Representativeness
Satisficing
Stochastic modeling
Subjective probabilities
Traditional decision making

Introduction

Financial planners—like medical, legal, and other professionals—are charged daily with making decisions with, or on behalf of, clients that will impact the lives of the clients and perhaps even the professional. But it is the sheer complexity of the relationships, the multitude of factors impacting the decisions, and the uncertainty surrounding the decisions that makes decision making a fundamental financial planning tool. In addition, there is the element of time. Decisions on choosing and funding retirement savings vehicles, although made today, can impact outcomes for decades into the future. And then there is the issue of the number of decision makers. A decision may involve one person or many people and may impact the decision maker or others, immediately or in the future. Cumulatively, all decisions made by a financial planner add up in ways that determine whether or not a practice will be successful for the planner and the clients served.

So, what is a decision? What is decision making? These may seem like silly questions on the surface because most anyone could provide an answer. But the volumes written and the numerous theories developed about this subject attest to the complexity of the questions that have been approached from various disciplines of study, ranging from personal self-help books to complex statistical and computer modeling. A **decision** represents a choice, resolution or conclusion arrived at after a consideration of alternatives. Assuming that there are no options, or no choices to make, removes the need to make a decision. Similarly, engaging in **habits** averts conscious decision making as individuals routinely select the same choice every time. To make a decision is synonymous with coming to a conclusion based on fact, emotion, assumptions, conjecture, interpretation, or some combination of these and other factors.

Decision making is the dynamic process of defining the problem or issue to be decided, identifying the alternatives, clarifying the criteria on which the alternatives will be evaluated, reviewing the alternatives, and making the choice. To some, decision making ends there—with the choice. Other authors assert that decision making continues through the stage of taking action on the choice and then evaluating both the choice and the process. In fact, authors writing about decision makers, the decision making process, decisions, and the outcomes of decisions use evaluative terms like “good” and “bad.” “Good” decisions lead to positive outcomes, while “bad” decisions lead to results that are less than optimal. However, it is important to recognize that a “good” decision process could result in a “bad” outcome. Conversely, a bad decisison process, with luck, could result in a “good” outcome. The problem is that humans equate the success of the decision process with the outcome. This lends itself to throwing out good decision making processes sometimes when the outcome was not what was

originally desired, and keeping lousy decision processes because luckily the outcome was what was wanted. Without objective analysis of the decision process and the outcome, a bad decision process may continue to be used until it fails, then the error is covered, or explained, by saying "who could have known?"

For example, a bad financial planning decision can result in a client coming up short of assets at a critical time in the future, or even to the termination of a client-planner relationship. Bad decisions can sometimes lead to professional reprimand and civil liability. Consider the case of a planner that decides, after careful deliberation, to borrow money from a client to cover cash flow deficits in the planning firm. This decision may seem like a good one. The planner wins by obtaining needed cash flow and the client wins by gaining a fair rate of return on a relatively low-risk loan. On closer inspection, however, this decision is fraught with problems. First, the client-planner relationship becomes one of a creditor-debtor interaction, which places the planner in a financially compromising position. The Certified Financial Planner Board of Standards, Inc. has concluded that this type of relationship is subject to review and reprimand. Borrowing money from a client is specifically prohibited for a CFP® certificant. As this example illustrates, what may appear to be a simple decision may not always be that simple or lead to the anticipated outcomes.

Furthermore, this example illustrates several important reasons for studying decision making within the context of financial planning. Although these concepts are further considered in Chapter 2 - Ethics, Regulations and Laws, it is important to recognize that decision making, with, for, or on behalf of a client, may invoke a fiduciary or trustee relationship. As such, the planner has an ethical, professional, and legal responsibility to act in the best interests of the client. Second, that professional responsibility may be further defined by professional or regulatory codes of conduct. Both professional standards and fiduciary responsibilities require defensible decision making practices. The advertising theme of a particular financial services company asserts "You cannot predict, but you can prepare." Sound decision making practices lay the foundation for solid planning practices that prepare clients—to the extent possible—for the uncertainty of the future. Sound decision making practices help planners to build a defensible position on the line separating prediction from preparation.

No decision making framework can ever hope to perfectly replicate the qualitative aspects of the behavioral process. Furthermore, the scope of the topic far exceeds what can be addressed in this chapter. But better understanding of the steps involved in decision making and increased awareness of some of the myriad factors that may affect decision making can yield new insights for planners and their clients.

A Generalized Model of Decision Making

One reason people sometimes make bad decisions is that they fail to use a standard model of decision making. A model can be quite helpful in illustrating the *ideal* steps to fully defining the problem, identifying the alternatives and their potential consequences, and choosing an alternative that best utilizes

resources relative to this or other competing goals. But note that it may not be necessary to follow the model for every decision or choice. In fact habits, such as the choice of your favorite soft drink, are an example of a mental shortcut that alleviates the need to routinely process information to arrive at the simple selection of a beverage. The following discussion presents a generalized model of decision making, as shown in Figure 4.1, which can be applied in most decision making situations, including the financial planning process.

Step 1: Recognize the Need to Make a Decision and Define the Question, Behavior, Concern, Problem, or Goal. Every decision begins by recognizing a need to make a decision. This need may be prompted by a question, behavior, concern, problem, or goal. The issue may be threatening to the individual, such as a problem, or the issue may offer a new challenge or welcome change, such as an opportunity. There must be an evaluation of the issue prompting the need for a decision to allow the decision maker to truly identify the issue and not simply the symptoms of the issue. Questions to ask at this step include: (1) Is the issue longstanding or is it a short-term event? (2) Is the issue self-correcting? (3) If nothing is done, will harm occur? (4) If something is done, will benefit occur?

Step 2: Identify and Research Alternatives in Response to the Question, Behavior, Concern, Problem, or Goal. It is at this stage of the decision making process that a decision maker must put experience, knowledge, assumptions, and expectations to work. Some issues have obvious alternatives, while others do not. Some decision makers prefer to identify all possible alternatives—even those considered outside the realm of reasonable execution. Others limit the identification of alternatives to those that are feasible, given the available resources and subjective values, attitudes, or goals of the decision maker. Any assumptions regarding the decision problem and all alternatives must also be identified, the impact considered, and, if relevant, the probabilty, or likelihood, of occurrence assigned. For example, when deciding whether to fund a traditional IRA or a Roth IRA, one primary decision criteria is the tax implication for the current funding year vs. the future withdrawal year. Of critical imporatance to the benefit of tax deferral is the assumption of a lower tax bracket upon retirement. If the decision maker cannot reasonably assume being in a lower tax bracket when the funds are withdrawn, the Roth offers an immediate advantage over the traditional IRA, exclusive of other considerations.

The search for solutions and strategies may happen intuitively or in a more formalized manner. The choice of how to search for strategies depends on a person's knowledge, experience, and familiarity with an issue, as well the individual's willingness to conduct a search for new information that might introduce other alternatives or insights. Furthermore, the number of alternatives generated tends to vary with the importance of the decision. Decisions that are perceived to be more important typically warrant an extended information search to identify multiple alternatives. The decision maker's confusion or difficulty with processing multiple alternatives may increase with the number of alternatives. Confusion can be reduced with identification of alternatives that represent a wide range of appeal for the decision maker.

Finally, time should be invested in thinking about the potential unintended consequences of the decision. The more significant the potential for a negative consequence, the more time and work should be put into developing alternatives. Questions to ask at this step include: (1) Is the decision maker guilty of paradigm paralysis or the inabilty to see or identify alternatives that do not agree with the decision maker's perspective? (2) Has the alternative search resulted in repeated identification of the same, or similar, alternatives, suggesting that the search is exhastive *or*, conversely, that the decision maker is not open to new ideas? (3) Do the alternatives identified truly address the decision problem, and not just symptoms of the problem?

Step 3: Consider and Rank the Alternatives Relative to the Established Criteria. In the majority of cases, this is the most difficult step in the decision making process. First it requires the decision maker to consider the criteria, both subjective and objective, that are important for this particular decision. Subjective factors include tastes, preferences, values, attitudes, beliefs, needs, wants, assumptions, morals, or ethics—all of which may influence the choice. Objective factors include: availability of resources; costs and benefits associated with each alternative; attributes or characteristics of each alternative; and, when applicable, projections on the probability of the outcomes or assumptions. Second, the decision maker must identify the most important criteria for the decision in question. Third, the alternatives relative to the criteria set must be ranked. Questions to ask at this step of the process include: (1) Are the decision making criteria appropriately balanced between objective and subjective criteria? (2) Which criterion(a) will have the greatest impact on this decision situation? (3) Which alternative is least costly or offers the greatest benefit? (4) Which alternative best matches the decision maker's values, goals, and available resources?

Step 4: Choose an Alternative and Implement It. When the alternatives have been evaluated and ranked, a selection must be made. Quite frequently, a choice must be made among several alternatives to arrive at an optimal course of action. Some choices result from conscious deliberation while others result from intuition. Intuition, sometimes explained by the decision maker as "just knowing" or a "gut reaction," is not typically based on a conscious review of the alternatives, but rather on an assumed broad-based comprehension of the situation and a realization of the alternative to be selected. An optimal choice is often impossible, as the decision maker either does not, cannot, or will not have full knowledge of all alternatives, potential consequences, or the likelihood of any given consequence occurring. In addition to being the optimal, well-conceived, or "best" choice, the chosen alternative and its projected outcome should also reduce doubt and anxiety for the decision maker.

Once a course of action has been chosen, it is essential that implementation take place. Without implementation, a decision is really nothing more than a desire. The choice of action may be positive, negative, or neutral (i.e., no action). The timing of the choice of action may be determined by the severity of the client's situation, the importance placed on the need to improve the situation, or the availability of resources for meeting the need.

As a part of this step, it is also important to identify evaluative criteria, or preliminary signals—ranging from the anecdotal to the catastrophic—that the decision maker will use to assess the success, or failure, of the chosen alternative as well as the decision process. The evalutative criteria should be a valid reflection of the decision and the decision maker, and may be limited by the decision maker's knowledge, experience, and familiarity with the issue.

Questions to ask at this step of the process include: (1) Was the choice of the alternative primarily based on intuition, fact, or a combination of both? (2) Was the choice, the implementation, or the decision making process affected by the decision maker's procrastination? By the decision maker's anxiety to make a decision? (3) Were evaluative criteria identified that reflect both the objective and subjective issues that charaterize this decision, and its significance for the decision maker?

Step 5: Evaluate the Outcome and the Decision Making Process. It is important to complete the decision making process by assessing outcomes (positive, negative, or neutral) and making adjustments for future decisions by monitoring the process and outcomes of previous decisions. Not only does the decision maker have to identify and rank the criteria used to evaluate the outcome, but the decision maker must also set a standard—the yardstick used to measure the outcome. Identifying appropriate standards for comparison at this step serves as a final check on the most significant objective and subjective evaluative criteria. Without having a set standard—based on intangible measures, such as personal experience or satisfaction, or fact-based knowledge—that can be substantiated, the process fails to be repeatable.

Sometimes a person will make a bad decision, or one with negative outcomes, while at other times a decision may lead to unknown or unanticipated consequences. Remember, sometimes a good process may lead to a bad decision and other times a bad process may lead to a good decision, the difference in these two being luck, fate, or the unforeseen—all of which are beyond the decision maker's control. The objective is to identify a process that can be consistently applied with the expectation of yielding a satisfactory decision. Thus, it is important to document the: decision process; information search; criteria, and assumptions considered; alternatives identified; rationale for the choice; and evaluative criteria identified to monitor the success of the choice or, if necessay, the need for a new decision. This kind of information can be instrumental to the review of the decision outcome and process, or it can be helpful when facing a similar decision.

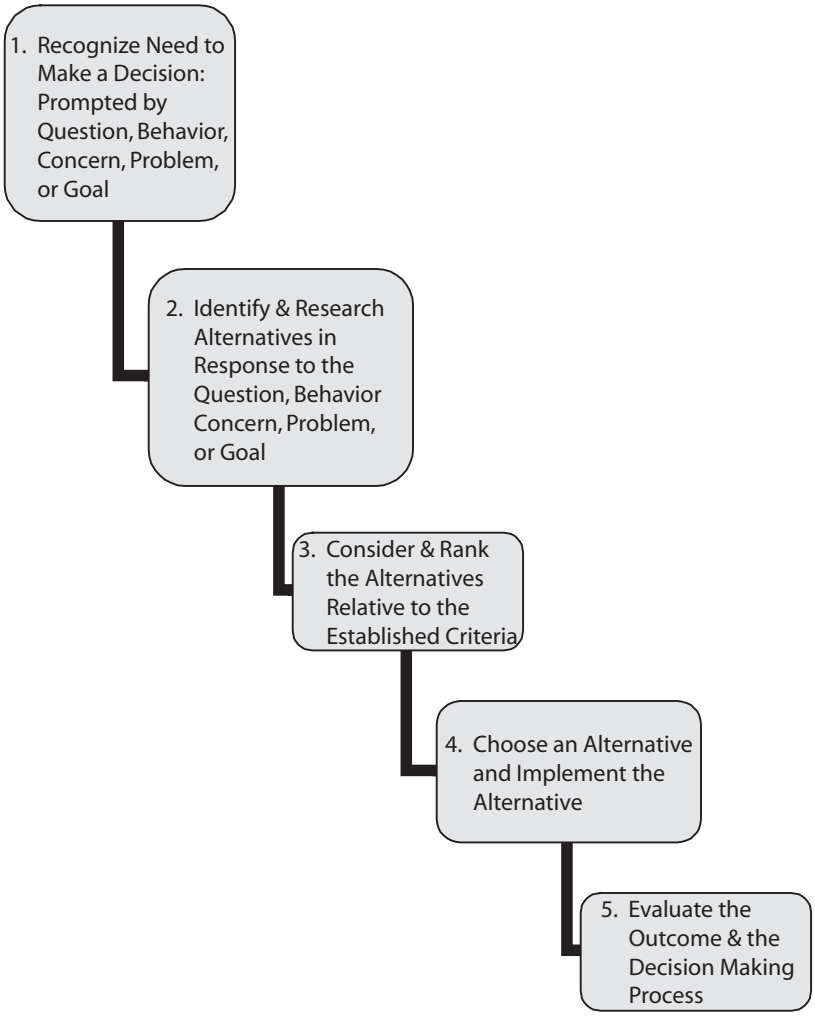
Questions to ask at this step of the process include: (1) What can be learned from this situation and the outcome achieved? (2) In hindsight, what information could have been useful, and may have changed either the decision making process or the outcome? Was the information available, but not included? Or, available, but ignored? (3) How should the decision making process change in the future, either in general or specifically when applied to similar situations?

A simple example may serve to illustrate the model. Consider an individual who recognized the need to save regularly for retirement through an available 403(b) plan. A review of the available investment products yielded a wealth of objective information on the returns, volatility, and risks of different mutual

funds—all of which involved the stock market. Instead of taking on any market risk, the young professional chose to invest all of his monthly retirement savings into a money market mutual fund based on the single criterion of safety of principal. Although this alternative significantly reduced the fear of loss associated with funds invested in the stock market, the risk of the inflationary erosion of purchasing power associated with low-yielding investments was not one of the higher ranking criteria and was ignored in the decision process.

Was this decision flawed by a lack of information that would have enabled the individual to fully understand the alternatives and the benefits of prudently assumed investment risk? By the ranking of the criteria, particularly the strong personal conviction that the stock market was too risky for retirement savings? Because no method or standard, such as the historical average return on the stock market, was identifed for evaluating the outcome or the process? What is known is that after decades of savings, funds were insufficient to support retirement. The decision meant that the individual faced either a significantly reduced standard of living in retirement, or continued full-time or part-time employment during what had originally been planned to be the retirement years.

Figure 4.1: A General Model of Decision Making



Decision Rules for Choosing Among Alternatives

There are, in fact, multiple decision making rules that can be used to reach a conclusion. The first strategy is termed **maximization**, which involves choosing the outcome with the highest unadjusted result based on the assumption that the best possible outcome of the alternative will in fact occur. For example, if a client were given two choices with one offering a 10% return and another offering a 5% return, the maximization approach would have the client choose the 10% return. This choice, as is apparent, does not take into account probabilities of success or qualitative client factors, such as risk tolerance, time frame, or experience. For example, consider the trend of investors attempting to time the market and chasing returns rather than implementing a more proven buy-and-hold strategy.

Optimization is an alternative to the maximization approach. This technique can be used when all relevant goals, data, and resources are known and more than one alternative is available. Optimization simply requires the decision maker to choose the optimum course of action, or the one that will lead to the highest level of satisfaction. But this choice is grounded on the assumptions that all the alternatives are identified and feasible (given the goal, resources, and decision making criteria), and the decision maker has the time and energy to conduct an evaluative comparison of all alternatives. Financial planners and clients that use the optimization rule must take into account a wide range of quantitative as well as subjective data in an effort to identify the optimal choice among the alternatives. Furthermore, the time and energy required for such exhaustive review should not be overlooked.

"**Satisficing**," which originated in the 1950s with economist Herbert Simon, might be summarized by the question "When is good, good enough?" For example, a client might need to reinvest proceeds from the sale of an investment immediately. The client may desire a security that offers both liquidity and relatively high returns. In any given market, these two attributes are hard to find, and there will always be uncertainty regarding the availability of such investments. A satisficing decision strategy would lead the client to choose the first best available security that adequately met the need. Once the investment had been made, little additional research or security searching would occur even though further searching might have led to a more optimal security selection. In other words, the objective is to satisfy as many criteria as possible while sacrificing some other criteria. Identification and selection of the "good enough" alternative, given the criteria identified as most important, end the search.

Aside from the examples cited, how might these decision making rules impact the planner-client relationship? Consider that each of these rules or paradigms for viewing the decision will establish a unique framework that may be counter to that employed by the others involved. For example, if the client anticipates an optimizing approach, then the client will expect extensive evaluation of every possible alternative with a clear explanation of the planner's choice. The client will want to be fully convinced that the best option is recommended, but the advisor may interpret the client's search for additional information as an effort to delay the decision or as a reflection of little confidence in the advisor. Consequently, making a recommendation that satisfies only one or two client

criteria (albeit the most important ones) will likely disappoint the optimizing client.

Conversely, a client using the satisficing approach may be overwhelmed by extensive analysis and presentation of competing alternatives and wonder "Why can't we just make a decision, given our preference for X and Y, and move on?" The maximizing client may also limit the information search and decision criteria, but care must be taken that the choice of the best is, in fact, based on the criteria most likely to result in long-term success.

Typically, the most difficult challenge facing financial planners during the decision making process involves the evaluation of alternatives. Almost all of the decision making approaches discussed in the chapter can be used to make these assessments. What makes the evaluation step so challenging is the number of quantitative and qualitative factors that need to go into the assessment method. Furthermore, not every strategy lends itself to a single evaluation approach or to a defensible probability estimate. So, how does a planner or client evaluate solutions and strategies that are not easily measured statistically? Decision rules related to maximization, optimization, and satisficing certainly can be used. The problem with these evaluative tools is that they tend to be one-dimensional and focused almost entirely on one outcome measure (e.g., increasing a client's satisfaction, maximizing returns, etc.). None of these standard evaluation tools take into account behavioral processes used by individuals when making decisions, nor do they account for a full consideration of the objective, subjective, and qualitative factors that can influence the evaluative process.

The Traditional Approach to Decision Making

The **traditional decision making approach** has its roots in economics. In the world of economic decision making, individuals are assumed to be rational. It is also assumed that outcomes, or the likelihood of an alternative, can be estimated using probabilities. Under conditions of certainty, the decision maker is assumed to have full knowledge of all possible outcomes for any alternative considered. In a situation of certainty, any given outcome may not have a 100% chance of occurring, but the decision maker has a 100% chance of predicting the correct outcome. For example, consider that the weather report predicts a 60% chance of rain, consistent with the assertion that any given outcome (rain) may not have a 100% chance of occurring. But the outcome, as predicted by the individual hearing the weather report, is either 100% or 0%, such that given the weather forecast the individual has 100% chance of predicting the outcome—rain or no rain. Under conditions of uncertainty, the decision maker does not have reliable information regarding the probability of various outcomes associated with any given alternative. With uncertainty, the individual outcomes still do not have a 100% chance of occurring and the decision maker also does not have a 100% chance of correct prediction. Risk differs from uncertainty in that risk is represented by the personal or economic loss associated with the choices, while uncertainty is simply failing to make the right choice regardless of gain or loss.

The traditional decision making process relies on probabilities to arrive at a solution evaluation. There are two types of probabilities that a planner can apply when using this approach: objective and subjective probabilities. **Objective**

probabilities are those that are known with some certainty, based on experience, experiments, or results of research or study with large samples. Mortality probabilities are one example of an objective probability as are other actuarial data such as number of accidents. **Subjective probabilities** are based on a person's belief or best guess of the likelihood of an event actually occurring. For example, a market pundit's prediction may be based on history repeating itself: "this year the stock market will end up higher because 75% of the time when January is up, the market ends the year up." Conversely, another expert may conclude that the "market will be down, because of X, Y and Z, although history would predict a different outcome." It is important to understand the basis for the predictions. Both are subjective judgments, based on objective data that support the conclusions, but judgements that may or may not be supported by objective probabilities. The evaluation of financial planning strategies using the traditional decision making approach works best when probabilities are objective rather than subjective. Examples include evaluating insurance solutions where the probabilities of accidents, theft, and death are relatively well known.

Using a traditional decision making approach, it is possible to objectively value an outcome so that a decision maker can choose the optimum solution to a problem. The best way to understand this methodology is through the application of an example. Assume that a financial planner is faced with a decision to reallocate a client's portfolio. Under the first scenario, the planner could choose to do nothing. In this case, the planner estimates that the year end value of the portfolio would be $110,000. In the second scenario the planner could reallocate the portfolio to 80% stocks and 20% bonds. If successful the portfolio would be worth $125,000 at year's end. If unsuccessful the value of the portfolio value would drop to $85,000. The financial planner, who has many years of experience, believes that the chance of success is 75% while the chance of failure is 25% if the portfolio is reallocated. Should the planner reallocate the portfolio or leave it as it is?

A traditional decision making approach can be used to answer this question. An easy way to do so is to summarize the information into a table. Exhibit 4.1 illustrates how reallocating the portfolio results in a higher expected outcome compared to maintaining the current portfolio. The weighted return of achieving success ($125,000 x 75%) plus the weighted return of achieving failure ($85,000 x 25%) is $115,000, which is greater than the guaranteed return of $110,000 by doing nothing. Thus, someone using the traditional decision making approach would choose to reallocate the portfolio. (Note that if the probability of success versus failure was 50%-50% the approach would indicate that the client should hold the current portfolio.)

A relatively new branch of traditional decision making theory is known as **stochastic modeling**. A stochastic model is one in which the inputs are randomized within a certain range so that the model can account for variations and timing of returns. Essentially, stochastic models are mathematical projections that account for *multiple* variables (e.g., mean and standard deviation). A stochastic model can be compared to a **deterministic model**, where inputs are static.[1] Deterministic models are mathematical projections that account for only *one* variable (e.g., return). Hence deterministic models must use averages, which do not account for the fluctuation or timing of returns.

Exhibit 4.1 Traditional Decision Making Approach

Scenario	Ending Value	Probability	Calculation	Outcome
Maintain Current Portfolio	$110,000	100%	$110,000 x 100%	$110,000
			TOTAL	**$110,000**
Reallocate Portfolio	(A) $125,000 (B) $85,000	(A) 75% (B) 25%	$125,000 x 75% $85,000 x 25%	$93,750 $21,250
			TOTAL	**$115,000**

Consider the situation of a planner who wants to evaluate a potential retirement savings strategy for a client. Using a standard deterministic modeling technique, the planner would base the evaluation on the average rate of return of each asset class corresponding to the projected client portfolio. So if the portfolio historically returned 9% on average, the planner could conclude that approximately 50% of the time the client would earn returns greater than 9%, and 50% of the time the client would earn less than 9%. In either case, the probability of achieving 9% remains constant across the evaluation period because the input is static.

Proponents of stochastic modeling argue that using just one variable (e.g., average annual rate of return over "X" years) as input to arrive at a probability estimate can result in misleading or potentially erroneous solutions. Consequently, stochastic modeling takes the actual distribution of returns over the period instead and uses this data to run hundreds or thousands of iterations to arrive at returns with specific probability estimates attached. In other words, a stochastic model can more accurately tell a planner the probability of actually earning 9% over time based on the historical data. Under stochastic modeling, the probability of achieving a straight-line 9% return (as assumed with the deterministic model) is in reality less than 50% and, depending on the standard deviation of the distribution, it could be much less!

The most common stochastic model is based on a normal distribution of one standard deviation from the mean. This model graphs the 85% probability line and the 15% probability line to illustrate that approximately 70% of the time the result will fall between the upper and lower limits. Planners find this useful because they can tell the client that 85% of the time the value under the projected scenario will be equal to or greater than the lower limit value. Obviously, this is much more conclusive than telling the client that there is a 50%-50% chance of meeting or exceeding a certain value.

Results from stochastic modeling—one example of which is called Monte Carlo Simulation—can provide very useful inputs to the traditional decision making process. Recognizing that the probabilities generated are based entirely on past returns of similar securities, and that past performance is no guarantee of future returns, the stochastic model can produce a range of expected rates of returns with corresponding probabilities.

The traditional decision making approach coupled with new stochastic modeling techniques offers financial planners an ideal way to evaluate some, but certainly not all, financial planning strategies or recommendations. Unfortunately, not all strategies lend themselves to arriving at objective probabilities. In fact, the majority of financial planning techniques do not allow probability modeling. Consider strategies of funding retirement through a 401(k) plan or a Roth IRA. What are the probabilities of success using either solution? Financial planners will most likely be willing to give estimates, but such approximations will be subjective rather than objective. Using the traditional decision making process to evaluate these types of solutions and strategies, employing only subjective probabilities is problematic at best—and dangerous at worst.

The traditional decision making approach works quite well when probabilities of outcomes can be estimated with some degree of reliability and in cases where outcomes can be quantified. Unfortunately for financial planners, very few decision outcomes can be quantified that precisely; and even when estimates can be made, the probabilities assigned to different events tend to be wrong. Evidence of this fact can be found in another approach to decision making, behavioral finance.

The Behavioral Finance Approach to Decision Making

Daniel Kahneman and the late Amos Tversky introduced the concept known as **Prospect Theory** in 1979, and many credit this as the establishment of serious study of behavioral finance. However, the origins of behavioral finance can actually be traced back to the mid-1950s.[2] Behavioral finance attempts to bridge the gap between the solely economic model of utility and the more psychological model of value. According to the classical "economic man" theory, the concept of internal motivation is based upon the condition of economic gain. Under the "rational man" theory, when given a choice man has an organized, rational, and stable system of preferences designed to maximize the utility or value received as a result of the choice.

In a review of the behavioral finance theory and research, Shefrin identified three fundamental themes:

1. Financial professionals rely on heuristics (i.e., simplified rules) when making decisions.

2. The way in which a scenario is framed can change a practitioner's perception of the risk and return involved in a decision.

3. Markets are influenced by the way financial professionals make decisions; the markets are inefficient because decisions are based, in part, on cognitive biases.[3]

Each theme will be considered in greater detail, as well as other behavioral finance themes that have emerged as having an effect on decision making.

In 1974, Kahneman and Tversky theorized that people have certain biases when making decisions that result in the formation of heuristics.[4] The preemi-

nent bias is that people tend to avoid risk—more precisely, the kind of risk experienced when the outcome of an event is uncertain. When an event has multiple possible outcomes, each separate outcome has a probability, or range of probabilities, that it will happen; and the higher the likelihood, the higher the probability. However, the number of variables becomes overwhel121ming when attempting to calculate a probability when there are many possible outcomes each affected by multiple factors.

To deal with these complexities, people use experiential knowledge in order to reduce the probability equations into simpler judgments. This experiential, or common sense knowledge, results in mental shortcuts known as **heuristics** and can lead to the development of heuristic tools. An example of a commonly used heuristic tool, or general rule of practice, for retirement planning is the following equation:

100 – Client's Age = Percentage of the Portfolio in Equities

This straightforward formula simplifies portfolio development by replacing a client's personal situation, goals, time horizon, risk tolerance, attitudes, expectations, and risk capacity with a single assumption. The formula assumes that as a client ages, there is less tolerance for financial risk. Note, however, that there is no convincing empirical research to suggest that age alone causes people to become less risk tolerant. Instead, tolerance for risk is more closely linked with a client's income, net worth, education, and financial knowledge than it is directly correlated with age. In fact, some research suggests a curvilinear relationship.

As a result, although heuristics may be widely accepted, the blending of judgment and fact actually results in more subjective probabilities being assigned to the various outcomes of a choice; it does not, however, guarantee an optimal or accurate prediction of the outcome. In other words, as subjectivity increases, accuracy (at least theoretically) declines.

In addition to the problem of misconception of chance, Tversky and Kahneman identified several other reasons that heuristics and representativeness might also fail to capture the true probability. People apply heuristical judgments based on how well the current situation represents a situation with which they are familiar. This idea is known as **representativeness** (or in a social context, as a stereotype). The more representative the current situation is to the referent situation, the greater the confidence the individual has in the validity of the outcome. Unfortunately, this type of flawed thinking leads to another cause of heuristic failure: frequency of occurrence. Simply because one situation mimics another does not necessarily mean that the outcomes will be identical. A third threat is called the illusion of validity. The asset allocation illustration, above, is a case in point on how a formula can give the illusion of validity because on the surface the heuristic tool seems reasonable.

Thus, although heuristics offers some distinct benefits to decision makers, it can inadvertently bias the decision making process unless the decision maker consciously challenges the heuristics involved—especially when making decisions of great importance.

The role of heuristics in the decision making process can be quite significant. But, according to Shefrin (and others), what is less well known is how the **framing** of a question, case, or scenario can influence the way in which a person arrives at a decision.[5] Framing can occur when the decision maker frames the context of the choice by considering the possible outcomes from a particular paradigm or perspective that is representative of a set of norms, habits, or personal characteristics.

Framing may also occur when a provider of information frames or alters the context of the information in such as way as to influence the decision maker. Consequently, decision framing can be altered by the formulation of the problem or by the context of the possible outcomes. This use of information in a misleading context is readily seen when quoting a short passage from the Bible. Unless the decision maker has complete and unbiased information, the representativeness of the situation, or in this example the meaning of the quote, could be altered to suit the speaker's purpose. Therefore, changing the context has the potential to alter the prediction ability and subsequent prediction accuracy of the decision maker.

Framing may be most apparent when analyzing issues of risk. Consider the following scenario:

Please choose between the following two alternatives:

(A) Take a sure loss of $750; or

(B) Take a 75% chance where you will lose $1,000 and have a 25% chance of losing nothing.

Now consider this alternative:

Please choose between the following two alternatives:

(A) Take a sure gain of $750; or

(B) Take a 75% chance where you will gain $1,000 and have a 25% chance of gaining nothing.

Most people choose answer "B" in the first scenario and answer "A" in the second scenario. Traditional decision making theory and traditional economic theory would suggest that the same answer should be chosen in the second scenario as was chosen in the first scenario. In other words, individuals should exhibit consistent risk choices. This is true because the mathematical outcomes for each question are identical. However, behavioral decision making theory illustrates that framing a question in terms of a known guaranteed loss, the first scenario, will lead people to take risks and gamble by choosing alternative "B." When the same question is framed so that the decision maker can walk away with a guaranteed gain, the gamble is the less likely choice.

So, what does this mean in terms of decision theory? First, people tend to have a strong **aversion to loss**. People dislike losing significantly more than

they like winning. Put another way, the attraction of winning is *not* as strong as the aversion for losing. Second, people are not rational (as defined in traditional economic theory) when it comes to making certain decisions. As an example, consider the frequent practice of not ackowledging an investment loss by instead asserting that a paper loss in a stock is not a loss until the stock is actually sold. This tendency is particularly true when it comes to making decisions about money. These two observations offer evidence that traditional economic decision making theory may not be as applicable to financial scenarios as once thought. Taking into account both the planner's and the client's cognitive biases appears to be one way to improve financial decisions.

Refer back to Figure 4.1, which illustrates the example of the traditional decision making approach. Decision makers who are uneasy about selecting the choice to reallocate the assets based on the mathematical outcome provided may be experiencing a behavioral bias called **regret avoidance**. In the reallocation example, above, recall that the portfolio was projected with 100% certainty to equal $110,000. By reallocating, there was the possibility of actually losing value in the portfolio. People who exhibit regret avoidance make decisions that will minimize the negative effect of making a bad or wrong decision. In other words, they will either stick with the status quo or avoid making the decision to reallocate the portfolio. If they do reallocate, it is likely that they will not be comfortable with their decision. If it is the client rather than the planner who makes the decision, it is likely that the client will be calling the financial planner on a regular basis to determine the exact market value of the portfolio. It is also likely that at the first sign of a loss in value, the client will want to return to the original portfolio allocation.

As indicated above, traditional decision making approaches require individuals to assign relatively precise probabilities to events and outcomes. Most financial planners believe that they are very good at predicting outcomes with financial data. However, the evidence suggests otherwise. Consider the now famous prediction example presented below:

> The closing price of the Dow Jones Industrial Average was 40 in 1896. By the end of 1998 the Dow stood at 9,181. Because the Dow is a price-weighted average, dividends are not shown in the closing value of the Dow. Pick a range of possible returns where you are 90% certain that the Dow would have closed had dividends been reinvested and included in the closing, price.[6]

Nearly all respondents—financial planners included—chose ranges such as 9,000 to 18,000 or 9,000 to 36,000. Few people even estimated that the real value of the Dow would have been 652,230 with dividends at year end 1998! This example illustrates how traditional decision making theory can lead to significant errors in action. People have a tendency to be overly optimistic in their own abilities to predict the future. In fact, all people are subject to psychological biases that tend to influence the way they view the world and make decisions.

How overconfident is the average person? Very overconfident indeed. Ask 100 people to rate themselves compared to other drivers on the road in terms of

what kind of driver they are (i.e., average, below-average, or above-average), and most will likely offer some interesting information about overconfidence. Statistically, one-third of respondents should answer average, another third below average, and the final third above average. However, in reality it is more likely that well over 75% of those who respond will indicate being an above-average driver. How is this possible? People overestimate their own abilities and underestimate the abilities of others, and this almost always leads to overconfidence and a tendency to take risks when caution should be at the forefront of thought.

People become overconfident for a number of reasons. Investors in particular equate knowledge with control. Individuals who are subject to **overconfidence bias** believe that they can control random events simply by obtaining more knowledge and familiarity with a situation. In other words, overconfident investors believe that a risky decision can be controlled through a combination of superior knowledge, situation familiarity, and active involvement in the implementation of decision action. Again, however, history suggests otherwise. Overconfident investors tend to trade too much and earn lower returns than other investors due to increased tax liability and commissions. Overconfident investors are also more likely to subject themselves to substantially risky decisions because they underestimate the probability of failure and overestimate the probability of success.

As an example, consider the often cited 2003 update of the longitudinal *Quantitative Analysis of Investor Behavior* (QAIB) study by DALBAR, an independent research group, that revealed that the average equity mutual fund investor earned 2.57% annually, less than the comparable inflation rate of 3.14% and significantly less than the S&P 500 average annual earnings of 12.2% over the 19-year period.[7] DALBAR observes that investor fear and greed motivates poorly timed buying at market upturns and selling on market downturns.

One of the hallmarks of behavioral finance theory is the concept of **mental accounting**. Consider the following story as told by Belsky and Gilovich:

> "By the third day of their honeymoon in Las Vegas, the newlyweds had lost their $1,000 gambling allowance. That night in bed, the groom noticed a glowing object on the dresser. Upon closer inspection, he realized it was a $5 chip they had saved as a souvenir. Strangely, the number 17 was flashing on the chip's face. Taking this as an omen, he donned his green bathrobe and rushed down to the roulette tables, where he placed the $5 chip on the square marked 17. Sure enough, the ball hit 17 and a 35-to-1 bet paid $175. He let his winnings ride, and once again the little ball landed on 17, paying $6,125. And so it went, until the lucky groom was about to wager $7.5 million. Unfortunately the floor manager intervened, claiming that the casino didn't have the money to pay should 17 hit again. Undaunted, the groom taxied to a better-financed casino downtown. Once again he bet it all on 17—and once again it hit, paying more than $262 million. Ecstatic, he let his millions ride—only to lose it all when the ball fell on 18. Broke and dejected, the groom walked the several miles back to his hotel.
>
> 'Where were you?' Asked his bride as he entered their room.

'Playing roulette.'

'How did you do?'

'Not bad. I lost five dollars.'"[8]

Other than being an entertaining story, what does this have to do with decision making? Actually, quite a bit since this story illustrates how people tend to separate and categorize money into different **mental accounts**. Did the man in the green robe lose $5 or did he lose $262 million? If you answered $5 it is likely that you, too, rely on mental accounts as a way to manage your money and resources. Some people believe in something called **house money**. The man in the green robe mentally placed the $5 chip into one "account" and the earnings on the bets in a second "account." This cognitive bias allows gamblers and investors to operate under the illusion of controlling their losses because they feel that losing money in the house money account is not really losing. In effect, using mental accounts is one way that people reduce the feeling of regret associated with gambling and investment losses.

In fact, **mental accounting** is used by everyone in some form or another. It helps explain why some people hold high account balances in low interest earning savings accounts while simultaneously maintaining an outstanding credit card balance. While this is not logical, it can be explained by the fact that some individuals view cash in a liquid emergency fund as one "account" and their liability on a credit card as another "account." In general, few people manage their entire available resources using a global perspective. Understanding how mental accounting can influence financial planning decisions is one way of evaluating a solution to a financial question or concern. It can also be useful to explore the concept of mental accounting with clients. Helping a client who is heavily influenced by mental accounting to objectively understand this concept may lead to a needed behavioral change or even motivate a client to accomplish other goals.

For example, individuals will frequently identify "buckets" of money, or money earmarked for a particular purpose. Common examples include "this is my fun money, or my speculative fund," "this is my 'safe' money, or the kids' education fund." Frequently, however, the risk taken with each individual "bucket," when added together, would exceed the total risk ascribed for the client's situation or total portfolio. In other words, the mental accounting for each "bucket" or goal, allowed the individual to exceed, perhaps dangerously so, the previously identified *comfortable* level of aggregate risk exposure.

Gamblers often believe that a successful outcome is due after a run of bad luck. They believe that a series of independent trials with the same outcome will soon be followed by an opposite outcome. According to Shefrin in his review of behavioral finance theory and research, **gambler's fallacy** arises from the very poor understanding people have about the outcomes of independent, random events. The example most widely used to validate the gambler's fallacy is the coin toss. Suppose that an unbiased coin is flipped three times and each time the coin lands on heads. So, as of the third flip, heads has occurred 100% of the time. Therefore, if a gambler had to bet $100 on the next toss, which side of the coin would be chosen? This is a trick question because the gambler should recognize

that the next toss is an independent event from the last three tosses and should have no preference between heads or tails (if the coin is honest). However, most people will choose tails anyway, which is the wrong choice. This is the concept of "they're due (to lose or win)" meaning that the individual does actually have a sense of regression to the mean, but not a clear understanding of the probabilities of each independent event. People mistakenly believe that because even odds exist for both heads and tails, the moving average should nearly reflect the actual probability in both the short-term and the long-term. The idea that regression to the mean happens on a self-correcting, continual basis is what leads people to believe in the gambler's fallacy.

The **hot hand fallacy** is another cognitive bias to which many people succumb. People often interpret accidental success to be the result of skill (i.e., don't confuse a rising stock market with being an expert investor!) and are, therefore, overconfident in their own abilities. Investors, money managers, advisors, and analysts are particularly overconfident in their ability to outperform the market because of their perceived level of knowledge; however, most fail to do so. Increasing levels of confidence frequently show no correlation with greater success—hence the term "it is better to be lucky than good."

For example, suppose that a basketball coach is designing a play and that one player must be chosen to take the final shot. There are 10 seconds left in the game and the team is down by a basket. The star player, who is a lifetime 65% shooter, is only three for ten tonight having missed several easy shots. Another veteran player, who has a 45% shooting percentage, has hit the last 10 shots attempted. For whom should the coach design the final shot? Although open for subjective argument, the coach should give the ball to the star player who has averaged 65% over the season. This example is proof that a basketball player with a "hot hand" is no more likely to make his next shot than at any other time.[9] However, most people will choose the player with the hot hand. Again, wherever independent events are concerned (i.e., shooting a basketball, flipping a coin, or selecting a stock), people are prone to overestimate the representativeness of the situation and assume that they have additional valid information.

In the gambler's fallacy and the hot hand fallacy, investors failed to fully account for the fact that independent trials regress to a mean, or assumed the regression would happen continuously. **Regression to the mean** is a statistical phenomenon pertaining to numerical data in which abnormal results tend to be followed by more average results, or at least average out over large number of attempts. In other words, extreme results in one direction are averaged by equal extremes in the opposite direction. People tend to focus on specific elements of information (e.g., a percentage) and extrapolate from what happened in the recent past well into the future. Unfortunately, this does not take into account the tendency for events, scores, and market returns to revert to their averages. For instance, suppose a stock is selling for a price-to-earnings ratio of 35 when similar stocks in the same industry are selling for a price-to-earnings ratio of 20, the historical mean for the industry. Over time an investor should expect the first stock to decline in value relative to other stocks in the industry. To assume otherwise is to discount statistical probabilities.

Regression to the mean is one example of how statistics can be misconstrued; sometimes, however, the statistical probabilities are simply unknown or ignored. Kahneman and Tversky posed the following scenario to many people over the years, but few tended to answer the question correctly:

> Steve, a thirty-seven year old American, has been described by a former neighbor as follows: "Steve is very shy and withdrawn, invariably helpful, but with little interest in people of the social world. A meek and tidy soul, he has a need for order and structure and a passion for detail." Which occupation is Steve currently more likely to have: a salesman or a librarian?

If the common assumptions are made about character traits of librarians, and the commonalities between Steve and the average librarian are compared, the predicted outcome is that Steve is a librarian. Unfortunately, people do not consider the fact that according to the Bureau of Labor Statistics, there are more than 15 million salespeople in America and there are only 180,000 librarians. Therefore, regardless of Steve's character traits, he is 83 times more likely to be a salesman. This tendency to disregard the overall likelihood of a certain outcome is known as **ignoring the base rate**.[10]

One of the financial outcomes associated with ignoring the base rate is momentum investing, a technique that can drive markets ever higher or lower than a rational model would predict. In the fall of 1987, the United States stock market crashed, falling nearly 25% and scaring away investors for nearly two years. Investors opted instead for bank accounts or bonds because of the perception of relative safety attached to these investments. This "flight to quality," as it has become known, occurred because investors and their advisors failed to remember that the base rate indicated that stocks outperform bonds. Therefore, had they remembered history rather than recent past, they would have recognized that the risk in the stock market had been reduced by the crash, not increased. For example, a review of the market returns for 1987 reveals that the market was actually *up* that year in spite of the significant correction. An interesting, but overlooked fact, given that many investors left the market.

The other cause of momentum investing stems from the fact that that nearly all investors suffer from a behavioral trait called **herding**. Herding is the tendency of animals, including people, to group together for protection. People realize that if they are going to be wrong, they would rather be wrong in a group; conversely, if the group is correct, people don't want to be left behind As described by John Maynard Keynes, "investors may be quite willing to take the risk of being wrong in the company of others, while being much more reluctant to take the risk of being right alone." In other words, people are comfortable investing in "hot" stocks and investments because everyone else is doing so. This herding effect causes a stock price to gain momentum. Generally, the price momentum is upward, but herding instincts can drive prices down as well. Other applications of herding extend to the often quoted "keeping up with the Joneses" as a rationale for consumer spending and debt, the tendency of young adults to "opt out" of health insurance because "we're all healthy," or other examples of following the trend.

In summary, behavioral finance blends the disciplines of finance and psychology into an explanation of human behavior that stands as a stark contrast to traditional economic theory. Behavioral finance theory is premised on the assumptions that when making investment and financial decisions:

- most people do not act in consistently rational ways;
- they cannot accurately predict the consequences of their choices;
- they are loss-averse and feel regret when outcomes are not as anticipated; and, maybe most importantly,
- they can be influenced by contextual changes in the presentation of information.

Furthermore, advocates of behavioral finance theory believe that people use mental shortcuts when making decisions and are often subject to cognitive biases and misplaced confidence in their abilities to anticipate outcomes. In addition, misinterpretation of statistics and knowledge inference can be problematic when trying to make accurate financial decisions.

But what does this mean for financial advisors and their clients? For some clients, biases result in no action being taken. Other clients may be prone to seemingly irrational actions, but upon further consideration can be persuaded to "stay the course" of the original plan. This discussion has introduced only some of the most widely acknowledged concepts related to behavioral finance theory and is in no way comprehensive. But it does illustrate just how many biases may significantly impact the decision processes of planners and clients. Understanding these biases provides students or novice planners a rich new perspective for interpreting their own decision making strategies as well as those of their clients.

Threats to the Decision Making Process

Financial planners are faced with a myriad of decisions daily. Some decisions are inconsequential while others can change a client's life for better or worse. Most people, financial planners included, tend to make decisions using rules that they have learned or acquired over time. The question is whether or not the use of heuristics as a decision making shortcut works effectively. The use of heuristics is a fact of life, and as such, it is important to understand when simple rules can work well and when they can lead to critical errors. When it comes to making decisions that have a low cost or little consequence, decision heuristics offer an effective way to arrive at a conclusion. However, the use of heuristics to solve more complex problems can lead to problematic outcomes. Excessive dependence on heuristics should, at the very least, call into question the method used to make the decision.

Knowing this, why are heuristic models so widespread? One reason is people are not ordinarily exposed to generalized decision making models, whereas they are exposed to heuristic models on a daily basis. Think about advertise-

ments that are shown on television. Most, if not all, provide viewers with simplified rules for decision making. If someone has a cold they are told to simply take a particular medication. Little explanation is given as to why or what the consequences might be. It is interesting to note that selling products and services via heuristic models seems to work. People constantly look for simple solutions to what are often difficult problems.

Wheeler and Janis have identified three additional factors that can result in seriously negative decision outcomes: complacency; defensive avoidance; and panic decision making.[11] **Complacency** occurs when a person either cannot or chooses not to see approaching danger. Sometimes a person cannot see that a dangerous situation is happening, or believes that an event is more likely to occur to someone else. Common examples of complacency include an individual who fails to adopt healthier lifestyle practices (e.g., exercise, balanced diet, stress reduction) or a person who fails to take cover on a golf course during a thunderstorm. Complacency can also occur when opportunities are passed up. Consider the financial planner who chooses not to interview a recent graduate from a college financial planning program because the planner does not want to risk hiring someone without experience. In effect, the planner has missed an opportunity. The planner may hire someone with experience, but that experience may be costly in terms of salary, benefits, and the direct and indirect costs of training and retraining the individual to the firm's planning practices and procedures. Passing up the opportunity to hire a recent college graduate means that the planner may miss out on cutting-edge knowledge the graduate can bring to the practice, a willingness to learn and use the planner's techniques (no retraining required), and a higher level of enthusiasm and gratitude for a career-entry opportunity.

Defensive avoidance refers to situations where a person acknowledges a danger, but tends to deny the importance of the danger or the potential role of individual responsibility to reduce the danger. The old adage about how buggy makers failed to appreciate the competitive risk posed by automobiles is an example of defensive avoidance. Some financial planners engage in defensive avoidance when it comes to preparing a succession plan for their firm. As the average age of planners increases, the number of planners who will leave the profession also increases. What will happen to clients as planners either retire or pass away? How will retired planners draw income from their practices without a succession plan? Both of these questions are worth asking, but few planners have attempted to answer the questions. Procrastination is a symptom of defensive avoidance, and it may explain the lack of succession planning by many planners. Procrastination occurs whenever someone feels that the likelihood of a threat is minimal or too far in the future to plan for. Clients can suffer from procrastination, too. Lack of plan implementation is most closely tied with defensive avoidance and procrastination.

The third threat to the decision making process is a person's likelihood to engage in **panic reactions**. Panic occurs when people are faced with a threat that they believe is too urgent to solve using the decision making process. Panic situations related to financial planning include a sudden decline in the stock market, the bankruptcy of a large firm, the death of a loved one, deployment for

active duty military service, or a major accident. Each of these situations can lead a person to frenzied searches for solutions. This often leads to minimal evaluations of the situation, and multiple courses of action being taken simultaneously. Implementation may be quick with little follow through and little effort to maintain action. Panic almost always leads to negative outcomes.

Think about the person, whom we will call Joe, who wakes up one morning to find that the stock market is in a free-fall. Commentators and stock market pundits are on television hinting that the current market drop will be the next 1929, 1987, or 2001. Panic has already set in on Wall Street and it is at this moment that Joe sees a threat. Immediately, Joe runs through his options. He never anticipated such a serious market drop. He has no plan to account for this or to lead him through the decision making process. Joe senses that time is short and that he must make a decision. Should he sell now or later? Joe is definitely not complacent, nor is he engaging in defensive avoidance. Instead, Joe is panicked. Not sure exactly what to do he logs onto the Internet. Within three minutes he has liquidated his stock holdings and moved to cash. Joe is relieved—for now. It is only a day or two later when Joe thinks through his decision. Was it really the optimal decision to sell in the midst of the downturn? Almost all of his assets were invested for retirement—in 20 years. As he checks the market returns, he is disappointed to learn that the market has corrected and is now only 2% below the record highs. Suddenly Joe realizes that he missed a grand opportunity to invest new money at low prices. He also realizes that someone else took advantage of the situation, while he did not. Someone else used a disciplined decision making approach and made money. Joe did neither.

Heuristics, complacency, defensive avoidance, and panic are all threats to decision making and an individual's proactive right to make a decision. But perhaps the biggest threat to decision making is the failure to appreciate its significance. Joe's example and others throughout this chapter illustrate the importance of understanding the decision making process as well as the spoken and unspoken (and, too often, unrecognized) influences. Regardless of the scope of their assets, most clients have limited resources, but unlimited wants and needs. It's always easier to spend more—no matter how many zeros are attached to the number that defines "more." It is unlikely that all client goals can ever be achieved, and even less likely that all alternatives can, or even should, be considered. The dilemma facing financial planners often comes down to the simplest of questions: which recommendation should be given to meet a client's goal? Without a process that balances the qualitative and the quantitative, the objective and the subjective, and the conscious and the unconscious for arriving at this conclusion, there is increased probability that the planner and client will face a disappointing outcome.

Chapter Summary

This chapter is an attempt to fill the void in financial planning decision making. The objective was not to offer students or advisors a repertoire of labels to attach to themselves or to clients. A generalized decision making model was presented to illustrate how decisions can be arrived at in a logical and practical manner. For example, for the client that is "stuck" and refusing to move forward, a simple exercise of sequentially discussing the decision making process may help the planner and client gain new awareness and insight into the client's reservations. Understanding behavioral finance concepts and how they may influence the decision maker's approach to problems and selection of alternatives can help the planner and client to more astutely explore the issue; furthermore, it may aid both in gaining a new appreciation for cognitive biases or other threats to decision making, as neither advisors nor clients are exempt from these influences. Integrating the logic of a standard approach with what sometimes appears to be the illogical behavioral influences should offer new insights to the planner-client relationship. Like other fundamental financial planning skills, continued study, training, and experience will make decision making knowledge a more comfortable tool for the planner to incorporate into daily practice.

Chapter Endnotes

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10. An excellent summary of this and other heuristics, based on the work of Daniel Kahneman and Amos Tversky can be found in: Kahneman, D., Slovic, P., & Tversky, A. (eds.) (1999). *Judgment under Uncertainty: Heuristics and Biases*. Cambridge, England: Cambridge University Press.
11. See Wheeler, D. D., & Janis, I. L. (1980). *A Practical Guide for Making Decisions*. New York: Free Press.

Chapter Review

The Basics: Review Questions

Discussion Questions

1. Explain the five steps of the decision making process. Using a financial planning question, behavior, concern, problem, or goal, illustrate the five steps. Be sure to identify as many alternatives as possible and clearly define your criteria set. How does the identification of alternatives change when approached from the perspective of all possible alternatives versus only the feasible alternatives?

2. Using a financial planning question, behavior, concern, problem, or goal, explain how the choice of alternatives would vary when applying a maximizing, optimizing, or satisficing decision rule. What are the advantages and disadvantages of each rule?

3. What is the difference between objective and subjective probabilities? Identify as many financial planning questions, behaviors, concerns, problems, or goals for which objective probabilities can be applied for the alternatives.

4. Employ the traditional decision making approach to determine which of the following investments should be chosen if the most important decision criteria is to maximize the likelihood of receiving the highest return over a 10-year period. Use the data presented in the table below to answer this question:

Exhibit 4.2

Rate of Return on Investment	Future Value of $1,000 Invested for 10 Years	Probability That Rate of Return Will Be Achieved
12%	$3,105.85	50%
9%	$2,367.36	75%
5%	$1,628.89	99%

5. Explain the difference between stochastic modeling and deterministic modeling. What is the benefit to the planner and the client of knowing the probability of earning "X%"?

6. Explain the three fundamental themes commonly associated with behavioral finance. How do they impact financial planning?

7. Make a list of 5 – 10 heuristics that you use to simplify decisions in your life.

8. What does the conclusion that people dislike losing more than they like winning imply for financial planners who manage client investment assets?

9. Explain how behavioral finance merges two opposing theoretical views. Define representativeness and explain its significance in behavioral finance.

10. Identify and explain the three cognitive biases that you think are most prevalent in financial decision making. Which three are the most difficult for you to grasp or apply to actual decisions? Why?

11. Identify two relatively important decisions that you made recently, and then analyze your decision making style. Did you follow the general model of decision making? What decision rules, if any, were used? Did you use heuristics or other behavioral finance concepts? Why are values, ethics, and other personal perceptions or attitudes an important part of the decision making process?

12. Explain the four threats to decision making. For each, create an example to illustrate the threat.

13. How might the five-step decision making process be applied to diffuse the negative effects of heuristics, complacency, defensive avoidance, or panic reactions. For each threat, which step in the process is likely the most important for the decision maker to fully consider?

14. How do herding and panic reactions support the view that decision makers can impact the markets, thus adding to the claim that markets are inefficient?

15. Why is it important to understand, follow, and evaluate a decision making process? Why is it important to conduct an evaluation of the decision outcome as well as the decision making process?