



Defining and Measuring Investor Risk and Return Expectations

BY ROBERT L. PADGETTE, CIMA[®], CFA,
AND TIMOTHY D. PAULIN, CFA

Over the past several decades, many approaches have been used to understand investors' risk and return expectations. Currently two distinctly different approaches are in use. With the first method, investors answer a series of questions, some of which may not be investment related, to determine the level of risk they are comfortable with, then similar recommendations are made to all investors in that risk-level group.¹ This article discusses a second method focused exclusively on investment issues relevant to high-net-worth and small institutional investors.

Different Investors, Different Definitions

Before tackling investor expectations, the question of suitability should be addressed. Many of today's questionnaires are referred to as "risk tolerance" questionnaires although they cover issues other than risk and return, such as investor age, time horizon, cash flow needs, investment experience, and net worth. These latter issues certainly are relevant to the assessment of investment suitability, but they are outside the framework for measuring investor risk tolerance and risk and return expectations. More specifically, age is not a risk tolerance question. There are aggressive old investors and conservative young investors. But an adviser or a firm may not be wise, from a liability

standpoint, to allow an older investor into very aggressive investments without additional qualifying criteria or the investor's written acknowledgment. So, certain investments should be avoided because they are not suitable and separate questions should be included to address suitability, but these are not risk tolerance questions.

The second type of question often included in a risk-tolerance questionnaire is really an investment preference question. If a question asks about stocks and an investor responds favorably to stocks, a higher score is awarded, which correlates to more aggressive investments. While this may be true generally, long-term high-yield bonds may well have more risk than conservative stocks. When investors say they don't like international investments, they actually may be increasing their risk levels because their portfolios will be less diversified. The goal is for investors to define their risk tolerances and for advisers to then recommend appropriate portfolios, not to ask investors what should be in their portfolios.

Generally, it is not appropriate to ask an investor about the common analytical risk factors such as beta, Sharpe Ratio, etc., that an adviser deals with every day. Instead, the following typical types of risk definitions are considered important to the investor:

- frequency of loss
- amount of loss in a bad year
- amount of loss when the stock market is down

On the other side of the equation are offsetting return definitions:

- average rate of return
- return relative to inflation
- return in a good year
- return when the stock market is up

One significant risk is not on this list: the very important risk of not having enough assets to meet life-goal expectations. That risk should be addressed if the adviser is helping the investor plan to meet long-term goals. But it is inappropriate to push an investor into a portfolio that is too risky (as determined by an investor's risk tolerance) just to show a reasonable probability of meeting long-term goals. So, optimally, the assessment of investor risk tolerance and expectations should be separated from any long-term-goal-planning-process.

Personalizing the risk tolerance assessment

Most risk tolerance questionnaires are composed of scored questions, and the sum of those scores determines an appropriate asset allocation or investment constraints. Almost all these questionnaires suffer from the inability to be truly personal.

For instance, investors often are asked questions that present different outcomes based on hypothetical investments. The following question, excerpted from a questionnaire from T. Rowe Price that is used in a class on personal finance taught at the University of Utah, illustrates:

Suppose that one year ago you invested \$20,000 in a stock mutual fund. The market

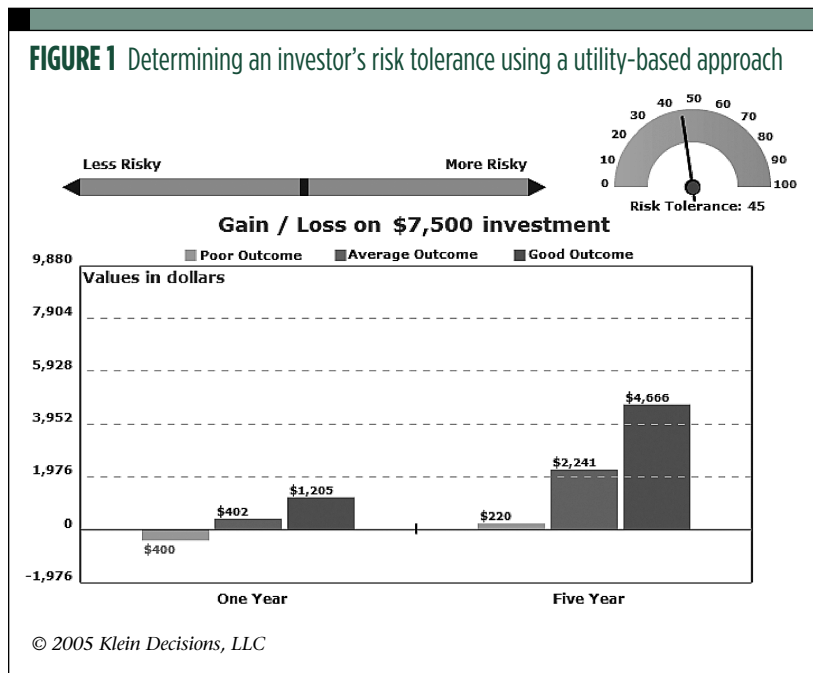
>> “RISK AND RETURN EXPECTATIONS” CONTINUED has gone down during this period, and today your investment is worth \$16,000. You calculate that if you had originally put the \$20,000 into a relatively risk-free investment such as Treasury bills, you would have approximately \$21,000 today. You decide to: (Please check only one box.)

- Sell the fund and invest the proceeds in a much safer investment (0 points).
- Sell the fund and invest the proceeds in a riskier investment in an attempt to recoup your losses faster (8 points).
- Hold the fund (6 points).
- Buy more shares of the fund (13 points).

The higher the point value associated with a response, the greater the risk tolerance assumed. And, typically, the overall point total aligns with a particular allocation or investment vehicle. But this type of question has two major faults. First, the investor may not have \$20,000; he may have \$7,500 or \$123,000. For this question to be relevant to a particular investor with a specific amount to invest, the investor must adjust the hypothetical levels to match the investment amount under consideration. Without such an adjustment, for instance, an investor with \$1 million to invest may answer this question aggressively, but his reaction to the same proportional outcome on an actual \$1 million investment may be very different. Second, this is a complex mathematical comparison for the average individual. The investor’s inability to correctly comprehend the scenario presented may lead to an incorrect measurement of risk tolerance.

The problem with questions like the one above is not with the intent but with the execution. Decades of applying utility theory to investment issues has proven both valid and beneficial in assessing potential investments.²

A utility-based approach that is more effective at determining investor risk tolerance can be



expressed graphically and dynamically, as shown in figure 1.

In this example, the investment dollar amount under consideration is integrated and the investor can move a slider to the left or right to see how much gain or loss might be expected in a portfolio at different levels of risk. In this way, risk is displayed as a potential loss that relates to the dollar amount that the investor actually is investing. The investor’s risk tolerance is calculated based on the trade-off the investor selects between the potential gains and losses presented.

Another benefit of this dynamic approach is the ability to directly incorporate the investor’s risk tolerance into the assessment of potential solutions. The risk tolerance determined in this format can be used to calculate certainty equivalents that may be viewed as personal risk-adjusted returns for each investment under consideration. Other measures such as Sharpe Ratio or alpha are generic risk-adjusted measures that are the same for every investor. While useful, additional insight can be gained by bringing the individual investor’s risk tolerance into the evaluation process.

Resolving conflicting responses

Another shortcoming of static questionnaires is the inability to resolve conflicting answers. For example, consider the following two questions. These questions are useful for determining risk tolerance, but the problem lies in how they are asked and how they are interpreted.

This questionnaire is designed for investors who are at least three years from retirement and plan to keep their funds for at least five years.

1. Over time, inflation can dramatically affect an investment’s real return. Higher returns from some investments can help compensate for the effects of inflation but, in general, higher returns can only be achieved by accepting more risk. Which one of the following objectives has the most influence in shaping your financial strategies?
 - i.) I want investments that are expected to keep pace with inflation. These types of investments generally have lower chances of short-term losses (0 points).
 - ii.) I want investments that are expected to moderately outpace inflation. These types of investments generally have a moderate chance of short-term losses (8 points).

iii.) I want investments that are expected to significantly outpace inflation. These types of investments generally have a greater chance of short-term losses (14 points).

2. Which of the following is your main concern when selecting or maintaining an investment? (Please check only one box.)
 - a.) The potential for loss (0 points)
 - b.) Mostly the potential for loss, with a minor concern for the potential for gain (4 points)
 - c.) An equal concern for the potential for loss and gain (6 points)
 - d.) Mostly the potential for gain, with a minor concern for the potential for loss (10 points)
 - e.) The potential for gain (14 points)

(Source: T. Rowe Price)

Figure 2 shows that, for example, there are three combinations of answers that give a point total equal to 14. Investors can get to this identical point total, however, by very different paths. In two cases (i-e and iii-a), the answers were at opposite extremes of each individual question and only in one case (ii-c) were the two answers rational nonconflicting responses from a moderate investor. So, in two cases, there is an unresolved inconsistency across the

investor's answers. As the number of questions increases, the possibility of more unresolved conflicts increases, and the point total does not address the irrational combination of answers that an investor might provide.

One possible resolution to conflicting answers is to pair the questions into a trade-off exercise. An example derived from the two questions above is illustrated in figure 3.

Here investors are asked to provide feedback about whether they feel stronger about the chance of short-term losses or the potential for large gains. Consumers have been answering questions structured in this manner for decades. This structure commonly is used as part of conjoint analysis-based market research surveys.

Another approach that uses preference trade-offs is the analytic hierarchy process (AHP). With AHP, the questions take a different format than in conjoint analysis, but the investor still is required to make trade-off evaluations rather than answering all of the questions independently. With this approach, the investor first states which is the more important of two choices and then selects the relative importance

on a scale of 1–9 in a single question. The following two questions illustrate this approach:³

Use a scale of 1–9, where 1 indicates both objectives are equally important and 9 indicates the one objective is absolutely more important, to compare the relative importance of each investment objective.

1. Which is more important: capital appreciation over the next five years versus capital appreciation over the next 15 years?

Capital appreciation over the next 5 years.
Specify the relative importance using the following scale:

1 2 3 4 5 6 7 8 9

2. Which is more important: capital appreciation over the next five years versus current income?

Current income.
Specify the relative importance using the following scale:

1 2 3 4 5 6 7 8 9

When the paired trade-off answers are combined with the individual question answers, a more robust picture of a client's risk and return profile develops. This approach leads to a portfolio that is more realistic and based on resolution of conflicting answers, not just averaging of results.

Summary

A lot of resources are being dedicated to develop a clear picture of investor risk tolerance and risk and return expectations. Much of this work goes back to the original concept of a rational investor, developed more than 50 years ago. Since then, we have developed better methods to determine how investors will react when they are not rational, which has proved frequently to be the case. But relative to the time, effort, and money spent to analyze investments (e.g., stocks, mutual funds, money managers), the financial services industry has short-changed the analysis of investors. Given that the

FIGURE 2 Combined scoring of question 1 (rows) and question 2 (columns)

| | a | b | c | d | e |
|-----|----|----|----|----|----|
| i | 0 | 4 | 6 | 10 | 14 |
| ii | 8 | 12 | 14 | 18 | 22 |
| iii | 14 | 18 | 20 | 24 | 28 |

FIGURE 3 Example of trade-off question

WHICH DO YOU PREFER?

a low chance of short-term losses
and the potential for small gains

versus

a high chance of short-term losses
and the potential for large gains

Strongly Prefer Left

No Preference

Strongly Prefer Right



>> "RISK AND RETURN EXPECTATIONS" CONTINUED
 initial setting of risk and return expectations provides the framework for an investor's assessment of success, our focus in this area must improve. It is time that the financial services industry realizes the importance of this initial step in the investment process.

As new risk tolerance questionnaires and processes are developed, the following criteria should be kept in mind:

- The questions need to be user friendly and personally relevant to the investor. Different questions and potential outcomes can easily be adopted for different investors given today's computer technology.
- The assessment of suitability, investment preference, risk tolerance, and long-term goal achievement should be separated for scoring purposes (but they still may be components of one seamless process).
- The questionnaires should become more dynamic in nature to allow for mass customization of investment solutions.

- There should be some process for resolving conflicting answers rather than the simple linear scoring prevalent today.
- There should be a direct connection between risk tolerance and preference responses to investment recommendations. This linkage is critical for compliance reasons.

All of these criteria must be implemented in an efficient, scalable process that will be compatible with the ever-increasing complexity of investment decisions. With improved technology and more general familiarity and acceptance of computer-based processes in all aspects of life, there is no excuse for not defining and measuring investor risk and return expectations at the next level. **M**

Robert L. Padgette, CIMA®, CFA, is managing director of Klein Decisions, LLC, in Raleigh, N.C. He earned both a B.S. in electrical engineering and an M.B.A. from Duke University. Contact him at bpadgette@kleindecisions.com.

Timothy D. Paulin, CFA, is director of product design at Klein Decisions, LLC, in Raleigh, N.C. He earned a B.A.

in finance from the University of Georgia and an M.B.A. from Georgia State University. Contact him at tpaulin@kleindecisions.com.

Endnotes

1. For a discussion of this first approach, see Penelope Wang, "What Money Type Are You?" *Money* (August 2005). FinaMetrica offers a more advanced discussion of this type of psychometric approach on the World Wide Web at www.risk-profiling.com. The authors have no financial interest in FinaMetrica.

2. A discussion of utility theory and application can be found in William F. Sharpe's discussion of macro-investment analysis, an "electronic work in progress" available on the World Wide Web at http://www.stanford.edu/~wfs Sharpe/mia/rr/mia_rr2.htm.

3. See Hakan Saraoglu and Miranda Lam Detzler, "A Sensible Mutual Fund Selection Model," *Financial Analysts Journal* (May/June 2002). This article discusses not only mutual fund selection but also the use of AHP to look at an appropriate asset allocation for an investor that would tie closely to risk and return preferences.