

# Risk Measurement versus Risk Management

D. Sykes Wilford

Chairman, Advisory Board, Beauchamp Financial Technology

Partner, Hamilton Investment Partners

Greenwich, Connecticut

Risk management garners much attention in the investment management industry, but it differs from risk measurement. Portfolio managers, consultants, and clients each require different portfolio-related information. Managing the information derived from risk measurement is central to the portfolio management process. Portfolio managers must balance expected returns against the risk accepted to earn those returns. For them, risk measurement information has always been an integral part of the portfolio management process. But as the industry evolves, others are becoming interested in the structure of the portfolio risks taken. Firms not providing sufficient information will miss opportunities to acquire and retain clients.

**R**isk measurement and risk management are both integral to the portfolio management process, but the two are very different. Risk measurement gauges changes in portfolio value corresponding to different market conditions. It is a risk management tool. Risk management focuses on identifying and controlling portfolio risks. Management entails action to make the measurement activity useful. Measuring systems used for portfolio creation are also not the same as those used to manage portfolio risk. Confusing the two can lead to the underestimation of risk, as can be argued in the Long-Term Capital Management (LTCM) crisis case. Risk measurement information is based on *ex post* analytics applied to existing portfolios, which can have wide use by many different constituents.

Another issue looming on the horizon relates to interpreting the inherent complexities of such *ex post* risk measurement information. Portfolio managers may understand complicated statistical analysis, but they are not the only users of risk measurement data. My goal, therefore, is to discuss risk measurement in a nontechnical, client-friendly way and to encourage others to do the same. The institutionalization of hedge funds and the increasing number of parties that require risk measurement information necessitate a major change in the industry in this regard.

## From Data to Useful Information

Many investors assume that portfolio managers are able to forecast a particular stock's future performance. Portfolios exist, however, because no one knows what is going to happen in the future. Thanks to the work of Harry Markowitz and modern portfolio theory, portfolio managers know they are trying to manage risk and return in the aggregate, not for individual stocks. If portfolio managers are not managing portfolio risk, they are not managing portfolios.

To help clients understand that portfolios are primarily a means to manage uncertainty, portfolio managers must convert risk measurement data into useful information that will help clients understand the information derived from their risk systems, such as value at risk (VAR) analysis. Portfolio managers are dealing with *ex ante* forecast risk, not *ex post* measured risk. But for risk management purposes, they are interested in the market-driven measurement of risk. Clients must be able to use this information and apply it to their investment decision-making process. Portfolio theory, risk measurement, and risk management must be integrated practically if the maximum value of the work is to be obtained by managers and clients as well.

**Constituents.** Risk measurement provides the information. With it, the portfolio manager or another interested party can take action in the form of risk management. Many firms now have risk managers charged with measuring risk and developing strategies to handle it. Web access for the risk measurement data is vital so that portfolio managers can get to it easily, wherever they happen to be. The data should be user-friendly, not obscure. To make efficient decisions, portfolio managers also need data that can be viewed in multiple forms.

Many other constituents need risk measurement data. Chief investment officers need the data to ensure proper management of their areas of responsibility. CEOs, investment committee members, and the board also need to conduct risk analyses. Clients are increasingly interested in knowing what the data mean and how to use it to make better financial decisions, so client service and marketing teams need to know how to deal with risk measurement data as well. Portfolio managers, therefore, cannot continue to simply engage in esoteric discussions of risk analysis among themselves. Making data useful to a wider audience is critical.

**Need for Conversion.** The development of risk measurement "toolkits" driven from a single data source is important in meeting the informational needs of different user groups. Portfolio managers have particular data needs in order to make decisions. For instance, they may prefer to see complicated equations that look at Greek letter variables derived from an option theoretic approach to portfolio analysis. The client service team, however, might not need to see complex mathematics, but it definitely needs to understand its implications.

Board members need information about risk to make sure they are meeting their fiduciary obligations. They cannot simply put this burden on their consultants. In the current market, clients have been requesting risk measurement data, especially as they consider alternatives to stocks and bonds. Furthermore, many clients perceive the existence of less regulatory oversight in such alternative investment classes as hedge funds and funds of funds than in more traditional asset classes. With these alternative investment classes come new types of oversight and investment committees, each with different informational needs.

## The New Institutional Investor

Hedge funds were once the domain of wealthy individuals, but they are now attracting institutional investors. Because institutional clients care about risk management issues, the risk management topic has

become even more important. Unfortunately, many people in the industry still respond to questions about risk measurement data simply by saying, "Leave it to me; I will manage risk. Trust me." Such an attitude will no longer suffice.

**Traditional Investors.** Traditionally, long-only institutional clients focused on the trade-off between stocks and bonds. Most of the major indexes were constructed accordingly, as were the methodological approaches to risk. Long-only clients focused on return history and tended to remain with managers for a long time. Periodic reporting was sufficient, and the desire for privacy outweighed any need for better information.<sup>1</sup> Furthermore, risk guidelines were not critical and often did not even exist, as evidenced by the LTCM crisis. Risk mattered, but risk management was not common practice. Correlation with other investments was important, but less so than today. Index tracking was more important for long-only clients than it is now.

**Hedge Funds.** The institutionalization of hedge funds has underscored the need for formal risk management. Committee decisions, which were never part of the decision-making process of wealthy individuals, are more prevalent. Committee decisions imply the involvement of economic agents who usually have fiduciary responsibilities and a different attitude toward risk than an individual might have. These agents view the risk-return trade-off differently and care about correlations with other investments in their portfolios. As a result, those hedge funds that wish to attract institutional clients need to explain average historical risk, crisis risk and correlations, and portfolio risk and cross-correlations.

## Transparency and Risk Measurement: The New Constituency

To satisfy the institutional market, the hedge fund industry must make a commitment to transparency. In fact, transparency of risk may be just as important as historical performance. I would not invest any money in a hedge fund unless it could show the amount of risk it was taking to achieve its level of performance. Clients expect quick access to such information. Competition is driving firms to find ways to satisfy these new demands.

**Marketing, Client Service, and Sales.** The marketing department should be the largest user of

<sup>1</sup>Leo de Bever points out that fewer than 40 percent of hedge funds provide the level of transparency he would like to have in reporting. See Leo de Bever's presentation in this proceedings.

risk measurement information. As clients demand more information more quickly, marketing departments have become the real constituents for risk measurement, and they want the data fast, quick, and cheap. This desire for fast, quick, and cheap data is especially important because the marketing staff works in an increasingly competitive environment and needs to help institutional investors feel comfortable with the firm's investment process. High absolute future returns are unlikely in both the equity and fixed-income markets, so portfolio managers will have more difficulty concealing their mistakes. Volatility beyond a predetermined or preconceived boundary might be perceived as a portfolio manager mistake, which is not the same as a mistake in the legal sense. Portfolio managers simply must keep clients informed. They have the tools necessary to educate clients; now, they must provide their marketing departments with them.

The client service team should be equipped to provide the answers to clients' questions about return, risk, and correlations. Although portfolio managers use *expected* risk and returns in order to build portfolios, the client service team may need measurement tools based on *historical* information. The tools used to produce one set of data should be able to produce the other as well. Return data can be sliced in many ways and can be attributed to different sector and industry bets. Few firms do the same with risk and correlation data, which presents an opportunity to better serve clients.

Large firms should have the resources to provide these data. Because more and more clients now use risk measurement data, firms should strive to take advantage of the situation by marketing this information to them. If clients do not understand the usefulness of these data, firms can gain a competitive advantage by letting them know why they need the data.

**Web Systems.** Web-enabled services allow clients to see manager activity regarding risk-return analyses and correlations with other positions. Clients also need to have the ability to create sensitivity or crisis scenarios as well as to understand portfolio correlations with respective benchmarks.

Although expensive to implement, Web-based systems have benefits that should not be underestimated. I once managed a portfolio management team that managed investments for a Tokyo-based firm. The 12-hour time-zone difference wreaked havoc on their internal risk data. They spent considerable time on the phone with our trading desk. We eventually determined that the Japanese administrator was providing mismatched information to the risk managers because of the time-zone difference. A Web-based

risk management system solved our problem. The calls from Tokyo, which used to occur once a day and take about three hours to resolve, ended. Needless to say, our client service representative was happy not to receive anymore irate phone calls from Tokyo, and we were able to make more efficient use of our time. An Internet-based risk analysis system for clients can save the managing firm money, time, and headaches and simultaneously keep the customer happy.

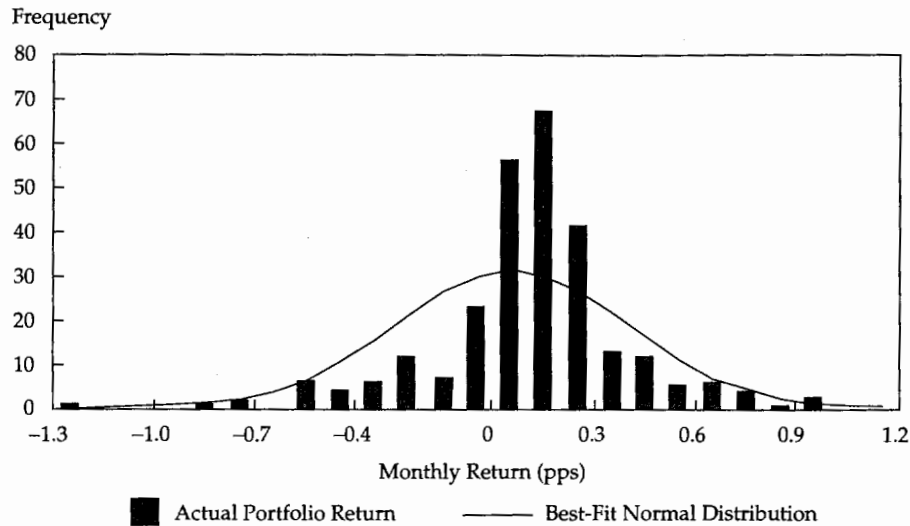
## Providing the Tools

When providing services to clients, the data should be presented in a way that is meaningful to them. A screen full of numbers, for example, can be easily converted into a picture. Portfolio risk data should be divided into historical track record information and information on current portfolio positions. Historical information includes such items as return and risk statistics; examples include VAR standard deviation, skewness, and kurtosis. Portfolio position information includes VAR measures, shocks with crisis scenarios, and even Monte Carlo simulation with a bi-modal distribution of returns. The advantage of separating the data is that although portfolio managers are more interested in the current portfolio standing, clients are more interested in the historical information.

In deciding whether to purchase a particular investment, clients should be able to see the distribution in terms of skewness and kurtosis. These two simple measures convey a great deal of information about the amount of risk taken and have not traditionally been provided to clients.

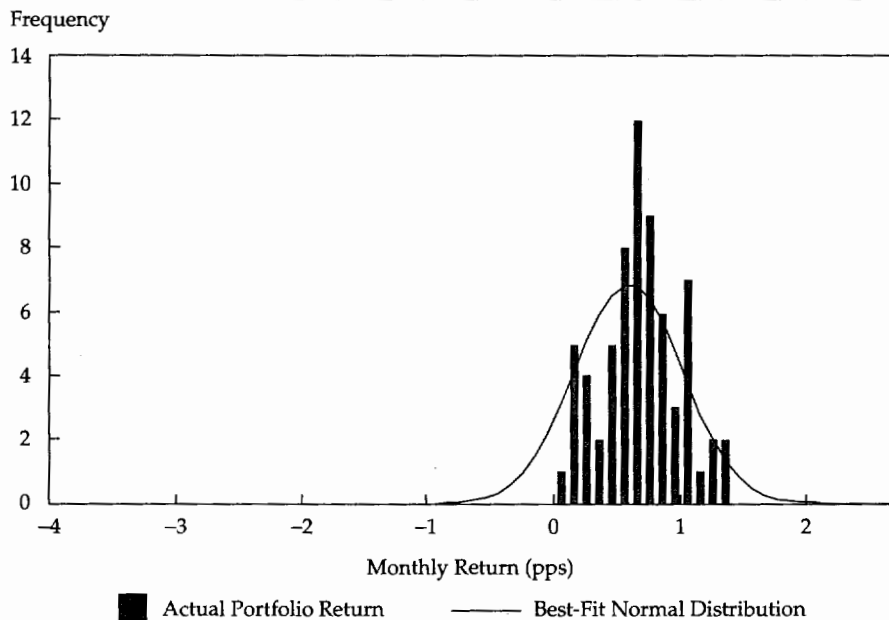
Recall that skewness and kurtosis evaluate how a distribution of returns varies from normal. Skewness describes the asymmetry of a distribution to show where the risk is likely to be. A risk-averse investor would prefer that the skewness be positive. Kurtosis measures the size of the tails of the distribution. A risk-averse investor would like these to be as thin as possible because thin tails mean the returns generally fall closer to the mean. **Figure 1** depicts actual returns and a best-fit normal distribution for a typical asset-backed securities portfolio. It shows a little kurtosis and a little skewness. **Figure 2** shows the same portfolio's historical returns and distribution from January 1993 to July 1998. Back then, I would have wanted to invest with the manager of this portfolio because of its low risk and concentrated above-LIBOR returns, month after month, for five years. Institutional investors sought out these types of funds. A steady return of a couple hundred basis points a year in outperformance was deemed exactly what the doctor ordered. They would have loved this type of portfolio. Nonetheless, with the little bit of kurtosis in the middle, the distribution was not

**Figure 1. Portfolio Returns Demonstrating Skewness and Kurtosis**



Source: Analytics by Investor Analytics, LLC.

**Figure 2. Portfolio Returns, January 1993–July 1998**

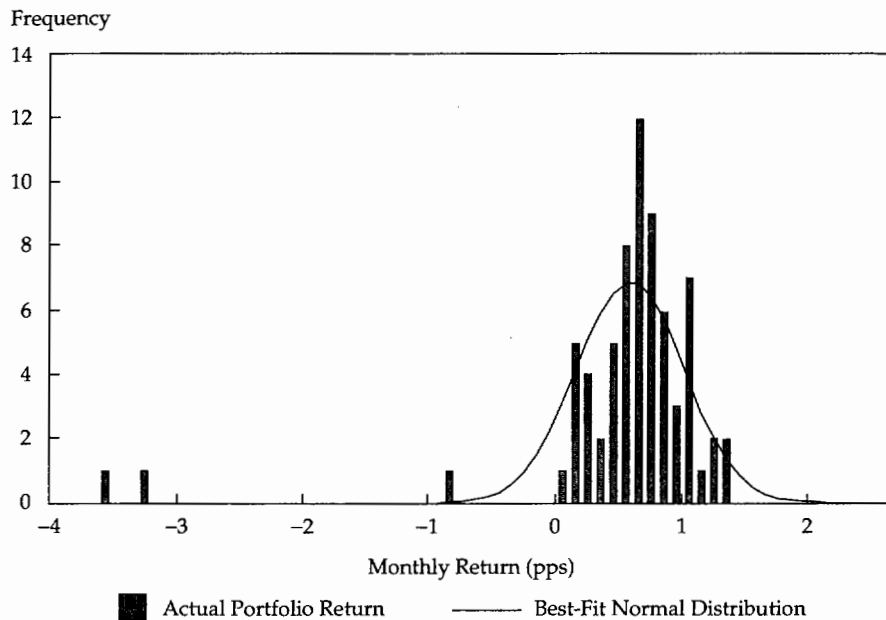


Source: Analytics by Investor Analytics, LLC.

normal. No fraud or fake accounting had occurred, but the distribution shows that the manager may have been taking on more risk than the client may have realized.

Figure 3 shows the portfolio's distribution through October 1998. Between July and October, the Russian government defaulted on its debt and LTCM failed. News and events affect the markets. In the

long run, this distribution is more likely to occur than the five-year distribution with magnificent information ratios shown in Figure 2. Notice that the distribution in Figure 3 is more skewed to the left and has fatter tails (kurtosis). The investment style indicated that this portfolio would have unsurprisingly resulted in a distribution with more skewness and kurtosis after a market shock.

**Figure 3. Portfolio Returns, January 1993–October 1998**

Source: Analytics by Investor Analytics, LLC.

Portfolio managers, of course, know how to look for skewness and kurtosis and manage the risks they signify. Conveying such information to clients may seem difficult at first, but it can be done through VAR measures and crisis scenarios. If a firm is unwilling to provide such information, an investor may question whether the portfolio manager is doing a good job.

Some portfolios have two planes of performance, one that reflects normal conditions and one that reflects a crisis. A variety of methodologies can be used to model these bimodal scenarios and provide appropriate information to an investor. The key is to give investors the information they need to assess portfolio risk. Most clients will want to see graphs with examples chosen for their needs. Some clients will want to know positions, but not all hedge fund firms will provide that information. Other clients will want different analyses of profit, loss, risk potential, distribution analyses, and so on.

The multiplicity of demands will be a challenge for fund managers. Tailoring each report and piece of information specifically to each individual's demands is a great deal of work. Traditionally, managers have simply chosen not to do it, instead giving everyone the same type of report. But now, improvements in information systems and presentation software make it easy to provide clients with all the information they want, in the way they want it, with the pictures they want. And they can receive it from the Internet according to their timetable, not the client service team's timetable. If managers do not deliver such information, their competition will.

Having a single-data source, or a single-portfolio platform, is a critical element in providing information in a useful form to the many user groups I have mentioned. The client service team has to make the data useful to the investor, and each individual need is an opportunity for the marketing team to explain the product. In taking the time to explain products to clients, managers improve their chances of client satisfaction and have the opportunity to steer clients toward the manager's products and away from the competition's products.

## Conclusion

Now that *risk management* has become increasingly important in the investment management industry and many constituents need *risk measurement* information, people must be able to grasp the distinction between the two terms. The portfolio management process is about managing the information derived from measuring risk. For portfolio managers, who must balance expected returns against the risk accepted to earn those returns, risk measurement information has always been an integral part of the portfolio management process. But as the industry evolves, others are becoming interested not only in the accuracy of managers' forecasts but also in more sophisticated perspectives on risk as they try to understand how the value of their portfolios change as market factors change. Firms must consider their capacity to provide necessary investor information. If they do not, a competitor surely will. Firms not providing sufficient information will thus miss enormous opportunities to acquire and retain investors.