The Monitor asked the following three experts for insights on managing risk in late June:

- **Andrew Lapkin**, president of Bear MeasureRisk in New York, NY, which offers risk-measurement services to investors with large multi-asset-class global portfolios
- **William (Bill) Shadwick**, Ph.D., mathematician and managing director of Omega Analysis Limited, a financial analysis research firm in London
- **Robert (Bob) Sussina**, CFA, director of Strategy and Risk Management for Verizon Investment Management Corp. in Basking Ridge, NJ, which manages Verizon Communications’ pension fund

Two Monitor editorial advisory board members led the discussion:

- **Margaret M. Towle**, Ph.D., managing partner, McCube Investment Technologies, Inc., Plano, TX, and chair, Monitor Editorial Advisory Board
- **Judy Benson**, managing member, Benson Associates, LLC, Ormond Beach, FL

**Monitor**: How do you define risk management and what do you find particularly challenging in managing risk?

**Bob Sussina**: Verizon Investment Management Corp. is a corporate plan sponsor. Our objective is to manage the assets of the employee benefit trusts and certain affiliates of Verizon Communications Inc. and its subsidiaries. We manage the assets of Verizon’s defined-benefit program, which amounts to about $42 billion. We control structuring the options in our defined-contribution, or 401(k), plans, and we manage assets for other affiliated plans and entities, so we have about $65 billion under management. We work with quantitative models to make global asset allocations, and we give senior management recommendations about how to tactically position our portfolio. We also look at how the strategic and regulatory environments are changing and what implications those changes have for our strategic-neutral benchmark. We’re continually developing new tools for risk-management reporting.

We look at risk in different ways that correspond roughly with the various objectives of the fund. We’re concerned about the likelihood and size of any restrictions or reductions in future benefit accruals for employees. We also focus on the likelihood and size of further company contributions. What else might constitute risk? Insufficient liquidity for benefit payments, underperformance of our fund’s benchmark.

**Andrew Lapkin**: A major aspect of managing risk is understanding where the bets are and, given certain changes in the marketplace, understanding the potential effects of these changes on the fund. This knowledge is the heart of the risk-management effort. A plan may have many goals, but risk management really is about gaining these two pieces of knowledge.

**Bill Shadwick**: At Omega Analysis we focus on alternative statistical techniques that can be used to advantage in alternative investments. My definition of risk management is assessing the likelihood of and preparing for negative outcomes in an uncertain process. Our business relies on quantitative approaches—measuring various types of risk. But due diligence is absolutely essential, and common sense goes along with that. Failures often stem from lack of due diligence or common sense at the outset rather than from problems with statistical computation. I agree with Andrew that risk management is a matter of assessing what you know, what you can know, and what you need to know about any investment process and trying to deal with the prospective downsides.

**Monitor**: How do pension funds deal with asset-liability management—the risk of not being able to meet benefit payments?

Left to right: Andrew Lapkin, William Shadwick, Ph.D., and Robert Sussina
>> “ROUNDTABLE” CONTINUED

Bob Sussina: My group is beginning to address this issue. To reduce income statement volatility, we probably will want a somewhat more fixed-income-oriented and longer-duration portfolio. Traditionally, we’ve been fairly heavily equity-oriented.

Andrew Lapkin: A number of pension funds we work with have a heightened focus on asset-liability management. Traditionally, a lot of pension funds sought the highest possible return across their assets, and that inherently led them into equities. Now investors are starting to think maybe it makes more sense to focus on meeting their liabilities and on structuring a plan that best achieves that goal. They’re moving away from funds designed to generate the absolute highest return and toward funds that can track against true liability.

Bob Sussina: That’s true, but of course the tension from the other side of this equation is meeting our desire for long-term growth. This is leading a lot of funds to consider alternative approaches to seeking alpha—whether through alternative investments or increasing private investments—and to focus more on absolute return.

Bill Shadwick: These issues are prompting people to be more aware of the importance of risk-adjusted return. Understanding the trade-off between risk and return has a greater focus. It’s surprising this hasn’t always been the primary focus.

Monitor: What are your thoughts about separating risk management from risk measurement?

Andrew Lapkin: The two terms often get intermingled incorrectly. Risk measurement really is the starting point of the risk-management process. Risk managers can be effective only if they have access to the right information. A key aspect is quantifying the risks—and then making decisions on that basis.

Monitor: What is the regulatory landscape for risk management, and how are you responding?

Bob Sussina: One of my colleagues describes it as bleak.

Bill Shadwick: I second that assessment. Everyone who has the ability to influence regulations should read Merton Miller’s essay on the modern theory and practice of regulation, one of several essays collected in a book titled Merton Miller on Derivatives. These essays deal with unintended consequences—what the academic finance people call regulator capture, in which the regulator ends up working for the industry the regulation was designed to clamp down on. For example, there’s a whole industry on operational risk that was created almost completely by the second Basel Accords, known as Basel II, issued by the Basel Committee on Banking Supervision. The draft directive was discussed for several years at meetings of the Financial Services Authority (FSA), the U.K. equivalent of the U.S. Securities and Exchange Commission. The Bank for International Settlements (BIS) basically had no definition of operational risk, and yet it proposed to—and some regulators have gone on to—allow regulatory capital reductions from modeling. This is an absolute travesty of the use of mathematical modeling. Sarbanes–Oxley jumps out as an example of unintended consequences in the United States. The European Union (EU) seems hell-bent on producing similar effects. I was chilled recently when someone from an EU committee said we should be regulating stock underwriters because they take risks. The idea that any activity involving risk must be regulated is growing and is absolutely horrific for our future well-being.

Monitor: What statistics do you use in measuring risk? Which are especially useful, and what are the deficiencies?

Bob Sussina: We have reports that enable us to look at the kinds of statistics you would expect—tracking error, correlations among different asset classes or managers, information ratios, value-at-risk analysis—so we’re able to view these measures historically, and we have some tools for looking at them prospectively.

One important source of risk in our funds is our tactical asset allocation activities relative to our strategic neutral benchmark. To monitor this, we produce a couple of reports several times a month to show where we are both on an as-allocated asset-allocation basis and on an actual as-invested asset-allocation basis. This helps us keep track of where we are as well as formulate recommendations about where to raise cash for benefit payments. This is the typical driver for many of our tactical moves because we frequently need to raise cash to pay benefits.

Andrew Lapkin: There’s no single, simple statistical measure of risk. Risk

Risk managers can be effective only if they have access to the right information. A key aspect is quantifying the risks—and then making decisions on that basis.
measurement requires a portfolio of tools for understanding investments. There are a number of useful statistics—value at risk, tracking error, stress testing, notional exposures converting market values into more economic bets, and other measures like duration and convexity. But the focus will be on different things for different portfolios; you can’t rely on any single measure.

**Bill Shadwick:** I agree that there’s no one-size-fits-all approach. We’ve developed our own proprietary measures of risk-adjusted return, tail risk, and other features, and our business is based on applying these proprietary statistics. We tend to report all the standard sorts of statistics Bob mentioned as well, just because our clients expect to see them. One of the great deficiencies in statistical analysis is that asset owners or trustees often come from groups that either fear statistics or naively rely on them. This is a problem for which education is the only solution.

**Monitor:** How do you reconcile the differences between actual statistics and the ultimate objectives of asset owners—for example, an investment committee that looks at standard risk statistics but deep down is concerned with maximum drawdown or reputation risk?

**Bill Shadwick:** Recently we’ve been focusing on a trading application that involves our own money, so I’m wearing both hats—quantitative analyst and owner of the capital. We’ve broken things down into two pieces. One is under the hat of the trader, in which case we care only about risk-adjusted return. On the other hand, for risk management and risk control, we’re very much aware of maximum drawdown. One has to focus on what’s the worst that could happen. There’s tension between exposure and ultimate risk control, which says that the risk-adjusted quality of the bet doesn’t matter if that bet could expose me to large losses. To one person €20,000 in a day is too much to lose; to someone else €100,000 would not be too much. We’ve basically decided that risk control trumps the trading desk, and this would be my approach no matter whose money was involved. Risk-adjusted return is the trader’s currency, but maximum drawdown and maximum exposure have to trump anything else because you won’t make money if you can’t stay in the market.

**Bob Sussina:** That’s an excellent point—you can’t eat information ratio. The investment committee may be most concerned about the relative likelihood and size of prospective future contributions, so although we may work with statistics like value at risk and information ratio—and we can explain what these measures are and how we use them—these statistics don’t necessarily directly address the risks senior management might be most concerned about.

**Monitor:** What challenges do you face in balancing a diversified portfolio with the unique risks of investing in alternative investments?

**Bill Shadwick:** For us and the institutions that come to us because of their exposure to alternative investments (typically hedge funds), data are the real issue. Monthly data are a default. Many strategies allow meaningful returns to be stated daily. There is a move for institutions to focus more on strategies that involve, for example, futures trading, in which you get daily settlements that tell you what your position is, and there’s a lot of liquidity. But even managers who are in those markets, and thus could be running a managed account and keeping clients up-to-date every day, are taking monthly data snapshots. This can make any sort of quantitative analysis difficult and, in some cases, even pointless. What this gives you, effectively, is a mark to model rather than a mark to market, and that’s frightening. One consequence of marking to model is that people in illiquid positions dread an actual market price for what they’re holding. In many cases, this is unnecessary. I think institutions will gravitate to managed-account approaches and to strategies that allow them better information about what’s going on than the traditional monthly report.

**Monitor:** Some firms offer weekly transparency for hedge funds, even though many instruments in the portfolio may be difficult to value. What is the tradeoff between the false sense of comfort an investor might get from greater transparency and the ability to truly understand the risk being taken?

**Andrew Lapkin:** The kind of due diligence required in the manager-selection process for alternatives involves different skills from those needed for managers of traditional investments. The ability to monitor these investments on an ongoing basis also is much more difficult because the kinds of strategies people are attracted to often involve instruments for which poor data and limited models are available. More and more investors are saying that the criteria for whether they invest in some of these alternatives are whether the right models and the right kind of monitoring processes are in place. Without this oversight, as much as they might regret missing out on a certain opportunity, they may feel the investment is not worth the risk of the unknown.

**Monitor:** A recent Senate investigation discovered that the hedge fund Amaranth Advisers controlled more than half of the U.S. natural gas market in 2006. Is there a way a risk manager can identify and quantify a situation like this?

**Bill Shadwick:** Many people did post-mortem examinations of Amaranth’s collapse, and the problem
Bill Shadwick: The earliest step is due diligence. Ask the question: Is there any good reason to be in this business, this trade, or this fund? If the answer is yes, a common-sense assessment of the risk is the next step. My preference is to deal with instruments that have well-defined risks. If the risk can’t be addressed through common sense, it should have a quantitative solution. But it’s important to check out whether that’s appropriate. Too many people imagine things are OK simply because they’ve been able to produce a value-at-risk (VaR) number. In spite of the data that might have been available, their VaR number may be based on the assumption that everything associated with a particular investment is normal when that’s absolutely false. My bias for personal investments is to stay away from vehicles without a decent quantitative approach for measuring the risk. This approach probably would narrow the investment pool too much to be used more generally, but that’s certainly my own bias. Risk controls go on top of risk measurements, and you iterate the process. We revisit these questions at reasonable intervals to see if the answers are the same as before.

Monitor: If you were starting from scratch, how would you build a model risk-management system, including people, software, and infrastructure?

Bob Sussina: Of course, we would build exactly what we have.

Bill Shadwick: We would too. Unfortunately, many risk managers don’t get to build a system themselves. They often inherit a system that was put together piecemeal.

Andrew Lapkin: A key consideration in managing risk, especially for most institutional investors, is that they should outsource the risk-measurement function. The models, the data, and the infrastructure needed to properly quantify risk are becoming overwhelming, and an army of talented individuals is required to stay out in front of all that. Institutional investors should focus on the risk-management component, putting in place the people, process, and reporting structure to enable them to interpret and use the data someone else can calculate. As more investors move into alternatives and as managers of all styles increasingly use derivatives, staying current on the models used to quantify risk is becoming very difficult for the average investor. So investors should outsource the quantification and focus on interpreting that information in order to make better strategic decisions.

Monitor: In conducting due diligence for outsourcing risk measurement, what should investors consider in evaluating a vendor’s risk-measurement system?

Andrew Lapkin: Coverage of the types of assets you have is the primary consideration. If the vendor’s system or process doesn’t cover the type of holdings you have, it won’t give you much benefit. The type of output also is important—are you getting the statistics and flexibility to tailor the information to your specific needs? A number of systems provide only one set of outputs or one type of information, and that may not be what an individual institutional investor needs. The decision ultimately comes down to coverage and flexibility.

Bill Shadwick: I agree that investors shouldn’t try to build quantitative technology in-house. There’s no question that having good outsourced suppliers of risk measurement is the right way to go.

Monitor: Where does risk management belong in an organization and where should its staff report?

Bill Shadwick: Risk managers perform high-level functions, so it’s essen-
tial that they report at a high level. Inevitably, the top manager will have to answer a question regarding the tradeoff between risk and return. Decisions like those related to Ama-ranth in April 2006 wouldn’t have been easy, but it would be bad news to be in a fund whose risk manager had said in April “we should walk” but whose decision was overruled because the manager wasn’t far enough up the food chain.

Andrew Lapkin: The most important thing is for risk management to be independent of portfolio management. The risk-management group should report to the head of the firm or close to that level so that it has a proper voice and its recommendations get interpreted at the right levels.

Bob Sussina: I agree. Our risk-management group reports directly to the chief investment officer and is independent of the portfolio managers—either for managing money internally or selecting external managers.

Monitor: Has anyone in this group looked at integrating risk management into the investment process to help portfolio managers maximize returns?

Bill Shadwick: This is an important issue. You can have too little risk as well as too much risk. The risk-adjusted return might be the same, but if the gearing isn’t high enough, you’d be better off without the tradeoff. Part of the tradeoff is that the portfolio manager, or trader, wants to believe Mario Andretti’s claim that “if everything’s under control, you’re not driving fast enough.” Sometimes you want to let the trader drive a little faster, but the risk manager has to make sure the car stays on the track.

Andrew Lapkin: In this industry, there’s still a little too much focus on return and not enough on what Bill is saying is the most important consider-

Even if you have transparency, you still don’t know exactly how your investment is going to act.

ation—risk-adjusted return. Risk in the best firms is both independent and an integral part of portfolio management, so traders and portfolio managers understand the kinds of risks they’re taking for the returns they’re generating. Every portfolio should be measured on the basis of risk-adjusted return. When investors look at return in isolation without factoring in the true risks taken, they sometimes assume the portfolio manager didn’t do a good job.

Bill Shadwick: Many examples of this fallacy have emerged in recent media discussions of how poorly hedge funds have done over the past few years compared with the S&P. It’s as if people have forgotten what happens when the S&P falls off a cliff. If you look at hedge fund returns on a risk-adjusted basis, it’s a completely different story. Even if you look at the returns of an index of funds of hedge funds (which is not the best source of alpha you might look for), compared with what happens in equity markets when things aren’t just going up, the hedge fund results are vastly better.

Monitor: What are your thoughts on mitigating investment risks (transparency, liquidity, leverage, valuation) and noninvestment risks (business, operation, succession, reputation)?

Bill Shadwick: My approach is to avoid as many problems as possible by staying away from mark-to-model investments. Use common sense in diversifying risk. Business risk is like the risk of walking down the sidewalk; I don’t worry about that. I worry about counterparty risk—someone driving on the sidewalk I’m walking on. I’m fairly allergic to operational risk. In terms of reputation, I like the maxim: Would you be happy if your mother read about this in the newspaper? If you can answer yes, then reputational risk isn’t an issue.

Bob Sussina: The industry has made progress in this area but still has a way to go. Even if you have transparency, you still don’t know exactly how your investment is going to act. Dealing with counterparty and credit-derivative exposure is something my group is actively upgrading. As new types of instruments become available—especially different kinds of structured products with asymmetric payouts—assessing that risk is an ongoing challenge.

Andrew Lapkin: Risk is not simple. It ultimately affects every decision made in the investment process, and it touches every part of an organization. The organizations that embrace risk have better success. It’s a topic that warrants more attention throughout an organization.

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Endnote