

Risk Capital Allocation: Beyond Traditional Asset Allocation Approaches

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A new paradigm of investment management is on the horizon, one that defines portfolios as bundles of risk to be managed dynamically with emerging technologies. Current investment management is locked at two extremes, with alpha-dominated alternative investing at one end and beta-dominated traditional portfolio management at the other. The new paradigm allows all managers to access all the opportunities and all the technologies between the two extremes.

Recently, I moved to London, a city filled with reminders of olden times and respect for longstanding traditions. On the banks of the Thames River is one of London's most magnificent and traditional buildings, St. Paul's Cathedral. Across the river from St. Paul's stands the Tate Modern, a museum containing one of the largest collections of art designed to test the boundaries of all things traditional. The only direct connection between St. Paul's and the Tate Modern is the Millennium Bridge.

I like to think that this scenario, this juxtaposition of the traditional and the alternative, represents the state of investment management today. Traditional investment managers reside on one side, alternative managers reside on the other side, and between the two flows a river of misunderstanding that is bridged only by a wonderful little walkway known as risk management.

Risk management has changed the way money is managed and will continue to do so in the future.

Investment managers have relegated beta to the dustbin of finance. Alpha, they seem to think, is the only good. This is not a healthy development.

Evolving Investment Management

Peter Bernstein was one of the first financial thinkers to look over at our metaphorical St. Paul's and say that policy portfolios are obsolete, a declaration

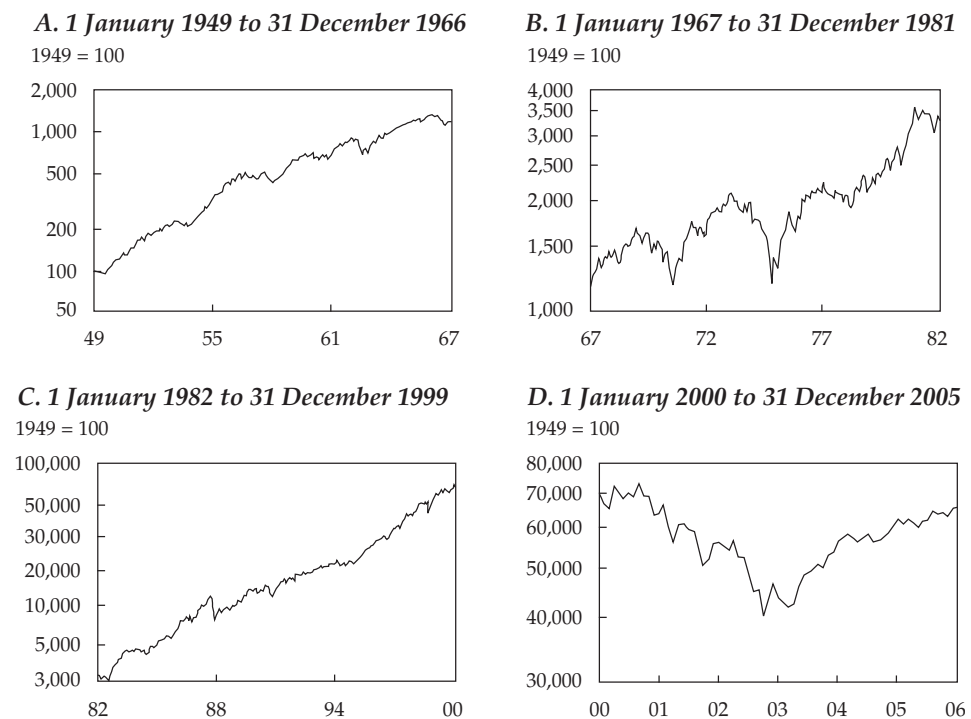
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that may overstate the point but that nonetheless recognizes several important changes in our understanding of investment management.

U.S. Equity Market Investment Regimes

Since the end of the 1940s, the United States has experienced four distinct investment regimes: 1949–1966, 1967–1981, 1982–1999, and 2000–2005, shown in **Figure 1**. Each of these regimes is characterized by distinct aspects of investment management history. Thus, the first period, 1949–1966, was largely a monolithic bull market that was punctuated by the electronics boom. Annualized return during these years was 14.7 percent, and risk (standard deviation based on monthly logarithmic returns) was 11.7 percent. It was during this period that much of the research was done on asset management and modern portfolio theory. These concepts, especially asset allocation and portfolio diversification, were applied in the following years (1967–1981), which constituted a period of extreme volatility; the annualized return was 7.1 percent, and risk was 15.3 percent. The real return during the period was essentially zero, but modern portfolio theory provided a wonderful opportunity, and a number of firms began to make a mark.

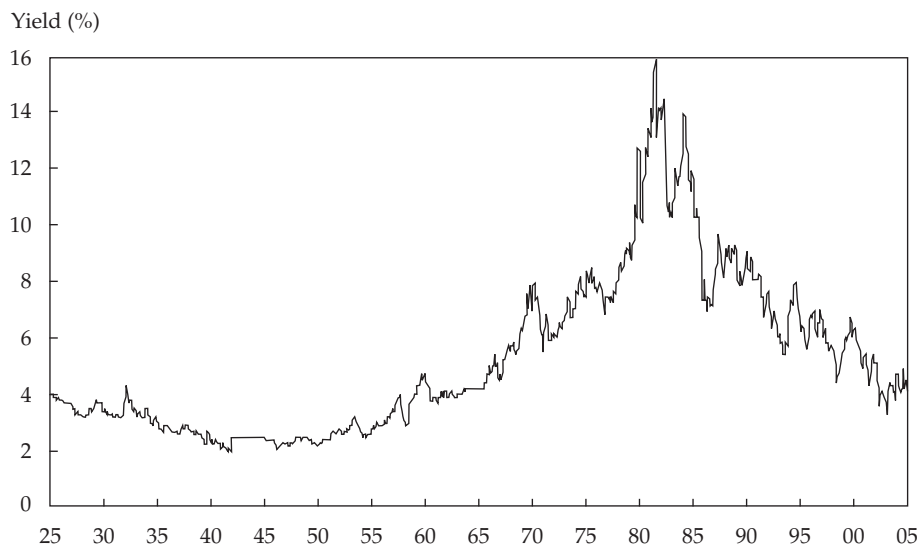
Figure 1 S&P 500 Index Total Returns, January 1949–December 2005



Having learned the concepts of portfolio diversification and asset allocation, the industry entered the next period (1982–1999), which constituted another monolithic bull market that ended in the dot-com bubble and its bursting. The annualized return was 18.5 percent, and risk was 15.0 percent. Unfortunately, having learned the concept of asset allocation, investors applied it. They diversified their portfolios only to learn that they should have invested only in equities. Not only that, they should have been in U.S. equities. Even more specifically, they should have been in growth equities. And more specifically still, they should have been in Cisco Systems and Intel Corporation and forgotten the rest of the market. Therefore, asset allocation did not do investors a lot of good. Two interesting developments during this period were the growing emphasis on alpha and skill and the nascence of hedge funds. Even more interesting was the growing dichotomy between passive managers and skill-based managers, a dichotomy that is now seen almost entirely in favor of skill-based managers. The current period, beginning in 2000, with an annualized return of -1.13 percent and risk of 15.32 percent, is dominated by the application of skill seeking (or alpha-based investing). Everyone is going after skill, and no one wants to invest in no-skill, boring beta.

Since 1925, the bond market has generally exhibited two secular trends, shown in **Figure 2**. A bear market ran into the beginning of the 1980s.

Figure 2 Ten-Year Treasury Bond Yield, Monthly Average: 1925–May 2005



Note: Data from 1925 to 1956 represent the unweighted average of yields on all issues of bonds outstanding during 1925–1956 that were neither due nor callable in less than 10 years. Data from 1957 to May 2005 represent the 10-year Treasury bond yield monthly average.

Sources: Data from 1925 to 1956 were obtained from the U.S. Federal Reserve; data from 1957 to 31 May 2005 were obtained from Leuthold Group.

Then, Paul Volker (U.S. Federal Reserve Board chairman at the time) burst the bubble, inflation came down, and the market became more stable. Since the 1980s, investors have experienced a significant secular bull market in bonds. Today, investors are dealing with fears of a low-return environment, and the equity market has declined significantly. From its peak, the S&P 500 Index has declined by 45–50 percent. The NASDAQ has declined by about 75 percent. Unfortunately, investors did not begin responding to the low-return environment until after the market had declined. Bond yields are running at 4–5 percent, and investors are concluding that they are in a relatively low-return environment. From my perspective, investment managers have relegated beta to the dustbin of finance. Alpha, they seem to think, is the only good. This is not a healthy development.

Periodic Advances in Asset Management

During its history, our industry has experienced periodic leaps that have often used new technologies to achieve superior investment performance for clients. In the early 1970s, investors began thinking about total return. They stopped holding bonds to maturity, and they stopped buying equities for dividend purposes, which, until that time, had been a dominant factor in the investment process. As investors focused on total return, investment performance began to increase—but so too did business performance for those firms that were the early adopters. As the early 1980s dawned, global diversification and asset allocation moved to the forefront, and their value as risk management tools became apparent. Firms that adopted these tools early in the trend experienced superior performance, and other firms eventually caught up, as is typical when a new trend becomes apparent in a competitive environment. In the 1990s, specialization and the search for alpha led to the next surge in performance, which has brought us into the midst of a new leap forward—one dominated, I believe, by what I call “assimilators.”

Assimilators are investment managers who combine alpha sources into customized solutions based on such client needs as return objective, risk appetite, and time horizon. Investment banks were the early adopters of these techniques. In the past 5 or 10 years, risk management has developed tremendously as a tool for understanding and modeling complex securities. A few years ago, most investors used third-party providers of risk management, and all these providers offered essentially the same models. Thus, no investor achieved a significant edge over the others, based on their risk management skill. Today, however, the situation has changed dramatically. Asset managers, investment advisers, plan sponsors, institutional investors, and ultra high-net-worth individuals are all beginning to adopt sophisticated risk management and value-at-risk techniques.

In addition, financial engineering has been a tremendous boon for the industry. When derivatives first entered the investment scene, they tended to carry a negative connotation. Too many practitioners assumed that the purpose of the derivatives market was to find unsuspecting individuals, charge them high commission rates until they had been tapped of all their money, and then move on. Often, unfortunately, the negative connotation was well earned. But the derivatives industry has grown a lot since then. The Bank for International Settlements recently released a study indicating that the notional size of the over-the-counter derivatives industry is \$250 trillion, which indicates growth of more than 200 percent in the past five years. Such robust growth and size indicates that portfolio managers and investors now have available a powerful tool for managing risk more effectively than ever before. Rather than the blunt tools of asset allocation from a generation before, managers now have access, through new technologies and the rich derivatives market, to much more precise tools for modulating risk exposures.

Hedge funds have done a tremendous service to the industry by allowing managers greater flexibility. When clients invest in a hedge fund, they provide the manager with the flexibility to invest however the manager wishes. Additionally, the manager does not even have to report performance to any standard industry or consultant databases. On the traditional side, however, clients tie managers' hands behind their backs and then say, "Go compete." Traditional managers often are not allowed to go short, are not allowed to use derivatives, and are tied to a benchmark by a 2 percent tracking-error restriction. Yet no one seems to see the irony in treating these two types of managers with such massive discrepancy. Figuratively speaking, the Tate Modern is on one side of the Thames, St. Paul's on the other side, and no Millennium Bridge connects them.

The increasingly sophisticated use of leverage is another advance currently improving the capabilities of the industry. I am not referring here to the sort of leverage that was used to do complex and levered transactions that could take municipal institutions down at inappropriate times. Firms are now able to use leverage to manage the amount of market and nonmarket risk that their investors take. In fact, the industry has had these tools for quite some time, but regulators have restricted their use. And regulators do so because they do not understand entirely how these tools can be used for beneficial purposes. The result is that regulators try to slow things down, and asset managers are trying to move as fast as they can to provide their customers with the best possible performance by utilizing these powerful techniques.

Responding to Current Market Developments

The traditional structure that consultants and asset management firms use to organize their businesses are another deterrent to improvements in the industry.

Consultants and asset managers build their businesses as silos: the equity silo, the bond silo, the U.S. silo, the European silo. They even have an alternatives silo, which is everything that will not fit into the other categories. All of these silos are simply groupings of assets that do not necessarily offer any functional value other than to provide an artificial way of organizing one's thoughts (and business). The result of this lack of forward thinking is that investors have been forced to accept extremes in investment strategies.

At one extreme are the nonmarket or skill-based managers, consisting of hedge funds that are purportedly market neutral. These managers offer alpha through security exposure. Risk, and the potential for reward, are inherent in the managers' individual security selection decisions. At the other extreme are the passive managers, such as index funds and traditional, actively managed portfolios. These managers offer beta through market exposure, particularly the risk and reward potential of markets and asset classes. In between these two extremes lies a vast, unexploited land full of opportunities to add value.

The industry has responded to this situation in a variety of ways. First, in a low-return environment, it has biased policy portfolios toward higher-returning assets. One of the ways to do this is to incorporate such assets as real estate, timber, and private equity that have an illiquidity premium. Thus, if two assets have the same underlying economic and fundamental drivers but one is liquid and the other, illiquid, the liquid asset is obviously more attractive, so, investors bid up the price on the liquid asset while the illiquid asset remains lower in price and, thereby, provides a higher return at the same economic and fundamental exposures. Regardless of whether such reasoning makes sense, investment managers are indeed clamoring for illiquid asset classes.

The predominant response, however, is to expose plan assets to more active risk. To achieve this, firms are seeking skill or alpha-intensive investing. They are also seeking absolute return, market-neutral strategies. And finally, they are loosening, if only slightly, their restrictions on tracking error. Uncorrelated risk, it seems, is the only good. Unfortunately, this attitude is indicative of an industry that is flailing about.

A More Dynamic Model

One of the great contributions made by Friedrich Hayek (the Austrian economist who received the Nobel Prize in 1974) was to transform the established way of thinking by attacking the myth of the given. He broke down rigidly conceived models of human knowledge so that a more dynamic exchange of knowledge could occur. I would like to honor his efforts by challenging the financial dogma of the past century so that we can make real progress as we enter the 21st century.

To begin, consider alpha and beta. Alpha is skill, and everyone is clamoring for skill. Yet, skill is not, on average, well compensated. In fact, after each interested party takes its share of the action, alpha is actually negatively compensated. Beta, on the other hand, is market risk. Beta is easy to find because every asset has market risk. Every asset is a claim on the income-generating capability of society. Therefore, every asset provides a market risk and is compensated, on average, for that market risk. Such characteristics should not be cast aside just because alpha is the hot item today.

Policy portfolios are not obsolete, but beta management—the concept of managing betas relative to benchmarks—constrains portfolio management. By embracing all the sophisticated tools currently available for risk management and by managing assets relative to liabilities, the industry can begin to perceive that benchmarks are becoming an outmoded asset management tool. For example, many defined-benefit pension plans are actively trying to hedge their liabilities. To do so, they are using swaps and buying long-duration bonds, which does not make particularly good sense because in many instances, especially where rates are today, such plans end up hedging liabilities but not defeasing them. Defined-benefit pension plans are, in essence, moving from an environment of uncertain success to one of almost certain failure. They are locking in their hedges but not defeasing future liabilities.

Portfolios as Bundles of Risk

The state-of-the-art solution involves separating portfolio management into aspects of risk management—market risk, defined in reference to liabilities, and dynamic risks. These dynamic risks arise from security selection, currency management, and the altering of market risk over time. Also, increasing breadth enhances portfolio efficiency and can be accomplished, in part, by shortening the investment horizon into multiple horizons and by changing the asset mix over time through dynamic beta management. For the liabilities, the recommendation typically is a neutral-policy asset allocation in which neutral beta exposure not only hedges but also defeases liabilities. Thus, a solid portfolio policy generates a long-term return, which allows clients to meet future liabilities.

Unfortunately, most investors continue to maintain a dichotomous view in which alpha resides at one extreme and is unrelated to beta at the other. We prefer to think of both alpha and beta simply as risks. With this perception in mind, we manage beta actively by setting market exposures to capture compensated market risks while avoiding uncompensated risks. We also manage alpha by selecting exposures to capture uncorrelated opportunities across markets, currencies, and securities.

An entire host of risks comes together in a portfolio, and investors have learned to characterize those risks as value/growth or as large cap/small cap and so on. But they are simply a package of risks that are sometimes compensated and sometimes not. Thus, the new risk management paradigm removes the old boundaries and constraints of asset management silos and allows traditional managers access to all of the same strategies that hedge fund managers are now allowed to use—going long and short, using derivatives and leverage, or using whatever strategies and assets are most effective for earning the best returns.

As far as I am concerned, risk is risk, and using terms like “alpha” and “beta” only muddles sound investment thinking. I prefer to consider portfolios as bundles of risk exposures.

The New Paradigm in Practice

To put this new model into practice, we must think in terms of allocating risk capital. In this way, a portfolio can be categorized according to the different managers used, or portfolios can be categorized as various asset classes. But no matter how the individual components are categorized, the flexibility exists to manage composite portfolios very effectively. In this framework, clients can use any of the emerging strategies they deem appropriate. As we loosen the constraints, we find that different managers bring different risk exposures, depending on the assets and how they manage them. Sometimes, managers bring risk exposures that are compounding; sometimes, they bring risk exposures that are offsetting. But whatever the exposures are, risks can be reduced to security selection risk, market selection risk, and currency selection risk.

In these endeavors, derivatives have enabled us not just to leverage but also to eliminate uncompensated risks and concentrate on compensated risks. In doing so, we are able to take no more risk than we took 5 or 10 years ago while earning greater compensation for taking that risk. That greater compensation comes from greater breadth and a higher transfer coefficient, which means a higher information ratio in relative return space or a higher Sharp ratio in total return space. But it takes economies of scale to be able to build out the tools and technologies that enable us to manage the risks of a broadly diversified portfolio—to download daily the individual securities, whether they are equities, bonds, structured products, credit swaps, or credit-default swaps. We bring them into a portfolio, evaluate them, and then determine which risks we actually want. It takes a firm with real breadth and access to a lot of different alpha sources, management styles, and asset classes to follow the new paradigm. It requires a concentration on the exact sort of alpha diversification desired, and doing so creates an environment in which we can manage dynamically to desired risk exposures.

All of these strategies and developments require that investment advisers and clients evolve. It is not enough to establish investment guidelines and then hope that the manager beats a benchmark. We are introducing fundamental changes to the risk space of our broadly defined portfolios every three or four months. We are adding new derivatives capabilities, new short capabilities, new emerging strategies—all of which we have been vetting internally and determining when and how to introduce them to a portfolio. That requires a lot of trust between the client and the investment adviser. It also means that the relationship evolves from being advisory to being collaborative in nature.

My intention is to break down every constraint that has been placed on traditional managers and move both alternative and traditional managers to the middle ground where they all have the flexibility to do their best in managing portfolios, generating alpha, and doing so at the lowest possible risk. In effect, I would like to push the industry to build a Millennium Bridge that allows the Tate Modern of alternative investing to work directly with the St. Paul's of traditional investing.

Because we now have the means to manage portfolios that are more appropriately directed at the liabilities, we are increasingly managing in an asset/liability space. Therefore, we consider beta in reference to those liabilities. All assets and liabilities begin in terms of a large covariance matrix that is sourced at the same set of economic and fundamental drivers. Thus, as we change our views about the relationships between assets and liabilities, the covariance matrix that includes those assets and liabilities also changes. We then look at the assets themselves as a number of risk exposures that can be related to the risk exposures of the liabilities.

Conclusion

A new environment in portfolio management is on the horizon, and that new environment is all about risk management. Certainly, this new way of considering investments presents challenges that some firms and investors will have difficulty adapting to. For those who can adapt, however, the coming environment offers many opportunities.

The first and most fundamental challenge is the need for increased flexibility, a quality not necessarily encouraged in the established paradigm. It is integral, however, with the coming paradigm. Next, firms need to define beta in less narrow terms. They need to consider beta with respect to liabilities and think about systematic and nonsystematic risks. In fact, they need to be prepared to redefine the market itself. Most investment professionals—academics in particular—define the market as the S&P 500 because the S&P 500 offers large

quantities of data going back not just years but generations. The availability of data induces us to define the repository of that data as the market itself. But the S&P 500 is not the market. It is an actively managed portfolio that has been dictated in advance with certain selection criteria. I am unwilling to sign on to that paradigm because I assert that the market portfolio is the collection of every claim on the cash flows that society can generate, including my human capital, including the buildings in which we work and meet and live, and including my ability and the ability of others to leverage that capital. The market is *not* the S&P 500, and it is wrong to think of it in that manner.

A third challenge of the coming environment is the need to educate all the essential parties: plan sponsors, asset managers, consultants, ultra high-net-worth individuals, and decision-making committees. These parties are, for the most part, stuck in the old paradigm, and they need to actively learn about new tools, new techniques, and new ways of looking at investment risk. After becoming educated about this new paradigm, these parties will become aware of new risks to measure and manage, such as administration risk, operational risk, and accounting risk.

By responding to these challenges, the investment community will find itself discovering a new range of opportunities.

First, success will follow those who are able to assimilate all of these risk management tools into one portfolio context. That will be the primary aspect driving investment and business performance. Second, expertise in portfolio construction—particularly management of risk dimensions—is paramount. Third, hedge funds have pioneered the use of the new tools; therefore, firms should take advantage of that expertise by using hedge funds and adopting their strategies. Finally, firms will discover that giving greater consideration to liabilities will provide value not only to plan sponsors and beneficiaries but also to society in general.

All the distinctions that existed in this industry are blurring, and they are blurring quickly. Those who can adapt most quickly to the new paradigm will be the ones who gain the most.

This presentation comes from the 2006 Financial Analysts Seminar held in Evanston, Illinois, on 16–21 July 2006.

More from Brian D. Singer, CFA

This section presents the speaker's lively question and answer session with the conference audience.

Question: Under the assimilation concept, how do I lay off risks for smaller portfolios?

Singer: A firm cannot do what I am suggesting unless it has a large asset base to build the team needed to manage a risk orientation and bear the fixed costs required to build out the risk systems. Only larger firms will be able to pull this off. The smaller boutique firms will need to concentrate on specific capabilities for capturing opportunities in the marketplace. The middle-tier firms will find themselves in the most difficult situation.

UBS Global Asset Management is a relatively large firm, but it manages numerous smaller portfolios. No matter the size of their portfolios, all clients think they are big clients. They often come to us with the initial demand that we manage their assets separately. We tell them that we can do that if that is what they require, but they will not get the best service our shop can provide because we work best as a collective vehicle. We try to convince them that moving into the collective vehicle is the best decision they can make.

Question: If you move them into the collective vehicle, how do you accommodate your last point about greater consideration of liabilities?

Singer: The vehicles can be liability structured. The fact that the liabilities exist suggests that using derivatives, such as swaps, to target the liability risk exposures in the portfolios allows us to have a core from which to manage in a consistent manner. We probably need three or four different core portfolios that we can manage against those liabilities. In fact, we will soon announce liability indices that are based on these types of risk factors, so, they are much more consistent in the way we manage portfolios. The bottom line is to choose some derivatives-structured products. We have spent the past 10 years building out the risk system and the last 2 or 3 years building out the tools for asset/liability investment solutions that enable us to manage the systematic risk exposures to the liabilities.

Question: Do you define risk using standard deviation?

Singer: Most risk systems, if they are going to be effective, are basically standard deviation with a normal-distribution orientation. It is possible to create models capable of handling fat tails, but difficulties arise when trying to manage the convexity of portfolios. Therefore, I prefer a simple risk system based on normal distributions that provides me with an input to the decision-making process. Ultimately, however, all risk management is done in qualitative terms, and it is in that qualitative manner that we bring in such issues as convexity.

In my own shop, we have embedded convexity in the portfolio because the potential for tail risk is greater today than it has been for a while. I perceive numerous reasons for the heightened risk, but I will mention two in particular that are event risks in the portfolio. On the positive aspect of the tail, we are in the midst of a demographic shift that creates an incentive for the integration of emerging and developed economies that has never existed before because the shift is occurring at a time when capital and goods flow freely across borders. The demographic change creates a level shift in the productivity of the economy, and I believe that investors cannot accommodate that type of level shift appropriately. The shift, therefore, creates the potential for a positive-return tail that is unanticipated in certain areas.

On the other end of the spectrum is something that we have been following for several years: avian flu. Most of us consider avian flu high risk but low probability. But a serious epidemic like avian flu is not low probability; it is rather a likelihood. Therefore, we have been structuring our portfolios to insure against that type of tail risk. It is one way of bringing in convexity.

To extend the example, we have long exposure to emerging market equities and short exposure to emerging market debt through credit-default swaps. Thus, if a positive event occurs that evolves over time, we believe that equities will do well but that debt does not have much scope for positive performance. In contrast, if a major event, such as avian flu, occurs, emerging markets in both equity and debt will be decimated. Therefore, we perceive an asymmetric risk exposure for which we have embedded an option into the portfolio. No risk system in the world is going to characterize that situation as convexity, but it is a convexity that arises from qualitative thinking. We build convexity in such a way that we are not just buying insurance because the event may not happen for 10 years, and by the 10th year, we will have paid so much in insurance premiums that we will receive no payout.

Question: What system do you have in place to measure the efficacy of what you are doing with this new paradigm?

Singer: We do not use an external performance attribution system. Instead, we use an internal performance attribution technique that we have built our own system around. We also specify the benefit to portfolio construction and performance from our qualitative overlay of market behavior considerations, especially in reference to our fundamental valuation.