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Recent experience with a couple of real-life situations suggests that it is useful to discuss the role, usefulness, and limits of quantitative models. Quantitative models, whether relying on optimization or simulation techniques can indeed appear exceptionally attractive. They are able to show the impact of certain decisions and seem to be using a structured approach to making these decisions. Optimization models, such as mean-variance optimizers, help investors or advisors "create" portfolios designed to manage the risk/return trade-off, based on certain broad assumptions. These relate to capital market return and risk assumptions (together with the appropriate correlations), specific constraints imposed by the investor, as well as the interaction between expected investment value added and tax-efficiency issues. Simulation models allow one to evaluate the behavior of a set allocation if certain market conditions are assumed to occur, whether those are randomly generated or designed to replicate a specific time period. Finally, some combination of these two approaches can be used to evaluate the impact of higher statistical moments (skewness and kurtosis)[1] given certain portfolio construction assumptions.

We know that mean-variance optimization is particularly powerful in dealing with long-term strategic or policy portfolio problems. A number of authors have correctly pointed to the risks associated with the assumptions incorporated in the model, and the most relevant such piece was published in *The Journal of Portfolio Management* by Chopra and Ziemba, and focused on the impact of errors in means, variances, and covariances on optimal portfolio choices.[2] In that article, they document the intuitively obvious fact that errors in inputs inevitably lead to errors in outputs, when not simply to the irrelevancy of these outputs. More importantly, though, they document which assumption error is most likely to affect the quality of any output, concluding that errors in return expectations are more important than errors in risk estimates or in correlations.

The impact of any estimation error should lead investors to be quite humble when using such powerful tools and limit their utilization for longer-term optimization exercises. In those cases, one

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can indeed plausibly argue that, although errors may distort predicted total portfolio return and risk characteristics, they should not disturb portfolio composition more than marginally. This belief would be true if one could simply postulate that the hierarchy of return estimates across different asset classes or strategies is preserved, though actual levels may be faulty.[3] Further, one can also postulate that the structural assumptions imbedded in risk estimates and covariances matrixes are most likely to hold once the time horizon is sufficiently indefinite to allow normal cyclical behaviors to run their course.

Where optimization tools become clearly questionable is in cases when shorter-term expectations are injected into the picture. Indeed, almost by definition, any assumption suggesting that a short-term return—or risk—indicator is likely to deviate from some norm (whether based on historical experience or on some formal-looking modeling), must ipso facto invalidate the other elements of the optimization process. If the return expectation is the one variable that is changed, what does that tell us about the risk associated with that return? In what way, more intuitively, should that change the expected covariance between that one asset class or strategy and all others? Finally, given the mathematical requirements imposed on the covariance matrix by the needs of the optimization process, how could an investor believe that he or she has the ability to understand how all two-way relationships across the full capital market universe are likely to differ from that same norm? Similar considerations would need to be addressed if the investor wished to change risk or correlation estimates.

Another important issue relates to the relationship between investment constraints and desired portfolio outcomes. Though mean-variance optimization models can be "gamed"—in that a skilled operator can create sets of assumptions and constraints that virtually pre-ordain the outcome of the model—it is still relatively easy to check for inconsistencies or traces of such pre-ordaining with models that are meant to work over some long-term "equilibrium" period. This becomes considerably harder to pinpoint when dealing with shorter-term outcomes, where the structure of the assumption-forecasting model is, by definition, considerably less clear.

Simulation models are considerably more helpful in dealing with shorter-term time horizons. Indeed, they allow both a visualization of a variety of possible scenarios and an estimation of the likely behavior of a portfolio if a certain set of circumstances were assumed to occur.

- In the former case, they allow advisors and investors to consider the likely distribution of portfolio outcomes and thus to get some sense as to the appropriate range of rational expectations. In fact, one could reasonably argue that simulation models when used in that manner are more useful over the short than the long term, because the width of the range of possible outcomes broadens so much as the time horizon extends as to become virtually boundless. Though many advisors still use and show those wide ranges to their clients, one can question the value of any insight that such an analysis can possibly bring out!
- In the latter case, they allow advisors and investors to "re-live" some historical event and test how the portfolio might have behaved then. Clearly, there is a measure of self-fulfilling prophecy in such an analysis and the well-documented survivorship biases inherent in historical records must be taken into consideration as well. The self-fulfilling prophecy element arises out of the intuitively flawed logic that leads someone to select a portfolio on some basis and then test whether the actual outcome fits with those assumptions. One can see this in the numerous pro forma data provided by a number of managers who build portfolios based on certain strategy or manager selection criteria and appear satisfied that the portfolio thus constructed appears to do well when historically simulated! The more important survivorship bias—or simply the question of whether the future can ever mimic the past—

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is harder to guard against quantitatively, but can readily be incorporated in whatever subjective evaluation is made once the simulation results are available.

In short, when focusing on building a portfolio target that differs from a chosen policy because of some current investment views, investors would be best served if they appreciated that the subjectivity of the exercise does not blend well with the cold objectivity of complex forecasting models. The necessary structure that should be incorporated into the effort should be more a function of a clear estimation of the ways in which the investor aims to deviate from his or her long-term policy and of the reasons underpinning these assumptions than of a quantitatively derived set of portfolio return and risk estimates. More specifically, one should therefore consider not using optimizers to produce return and risk estimates—for the assumption error reasons mentioned earlier. Rather, one might simply assume that expected levels of return and risk might differ from historical patterns along one or both of two lines:

- First, and most important, one might have a subjective view of the likelihood that markets, in general, will produce higher or lower returns than typically expected over some long-term, equilibrium-based cyclical view. For instance, if one were to assume that inflation will rise over some period of time, it would not be unreasonable to conclude that most capital market returns may well be lower as investors need to adjust to structurally higher interest rates. Similarly, if the current market view was driven by broad valuation considerations, one could reflect these, generically, across the portfolio.
- Second, one might assume that tactical activity should, over time, generate some incremental return, at the likely cost of some additional risk, the latter measured as tracking error around the policy—or benchmark—portfolio. Clearly, such an estimate simply defines a range around the expected return and should not be used to raise return expectations.

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This Fall 2004 issue of *The Journal of Wealth Management* follows the same approach as our last issue—Summer 2004—and thus incorporates a few articles written by speakers at last fall's Integrated Wealth Management forum, organized by Institutional Investor Journals.

We start with two important pieces related to the issue of behavioral finance and complete this investment policy section with an article on philanthropy. Michael Pompian and John Longo investigate the correlation between established investor biases with the psychographic and gender profiles of specific investors, which they believe may be the next phase in the practical application of behavioral finance to wealth management. Greg Curtis then draws distinctions and parallels between behavioral finance and modern portfolio theory, effectively suggesting an iterative process that draws on both. Finally, Barbara Hauser investigates charitable giving and families departing from the usual interpretations of the motives behind philanthropy and offering an alternative explanation directly related to the etymology of the word "philanthropy."

The next three articles focus on the execution of the investment policy. Patrick Boyle, Daniel Loewy, Jonathan Reiss, and Robert Weiss discuss the enviable dilemma: hold, sell, or hedge highly concentrated stocks, analyzing the costs associated with that concentration and the advantages and disadvantages of various diversification strategies. James Cohen and Jeffrey Bortnick then revisit the use of variable life insurance and annuity policies to enhance the tax efficiency of hedge funds, concluding that recent tax changes have restricted, but not eliminated the attractiveness of these tools in the appropriate circumstances. Finally, Doug Rogers and Shawn Egan focus on the critical issue of evaluating

managers in an after-tax environment, pointing to the need to combine "art" and "science."

We then turn to three studies focused on specific investment issues. Pauline Lam looks into the world of Commodity Trading Advisors, evaluating the relationship between strategy and capacity, discussing risk management issues, and finally offering suggestions with respect to performance evaluation. Yesim Tokat and Nelson Wicas discuss a particularly topical issue: investing in emerging market equities, concluding that practical factors such as transaction costs and the need to fund local liabilities may call for a smaller allocation than standard recommendations. Finally, Matt Cooper and Natalie Chieffe turn to the issue of market timing and the business cycle, concluding, with the generally accepted wisdom, that managers must have unusual insights to be able to generate excess returns from market timing.

Our final article is by Gary Gallagher who provides an interesting broad industry perspective, looking into the challenge and opportunity for today's wealth manager.

Jean L.P. Brunel
Editor

[1] These higher moments are particularly important when the expected return distribution is not normal, that is, does not look like the classical "bell curve." Skewness measures the extent to which a statistical series is or is not symmetrically distributed around its mean, while kurtosis indicates whether or not the tails of the distribution satisfy normal distribution assumptions.

[2] Chopra, Vijay K., and William T. Ziemba. "The Effect of Errors in Means, Variances, and Covariances on Optimal Portfolio Choice." *The Journal of Portfolio Management*, Winter 1993, pp. 6-11.

[3] See Brunel, Jean L.P. *Integrated Wealth Management: The New Direction for Portfolio Managers*. Institutional Investor Books, 2002. Chapter 8, pp. 129-144.