l returns. He discovers that the top
the highest total returns and that risk
the expense ratios for the funds in
sed on this figure. His findings
lios have the highest net returns and
into the style boxes confirms that the
boxes. His study also suggests that
ged funds holding risk constant.
rtcomings of return-based style
iat the major problem in this area is
s about the application of return-
1992] and Tierney and Winston
of a portfolio manager. Return-
r's effective asset mix.
le classification system, expresses
because one would have to invest
is results to be accurate. The
set may exhibit characteristics that
ed style analysis examines the
l of time series returns of various
returns from different indices to
different results. The authors cite
portfolio investment objective is

clear and the asset classes represent the investment style correctly. The findings suggest that when return-based style analysis is used on individual mutual funds and mutual fund aggregates the results are inconsistent. However, when return-based style analysis is performed on index funds the results are stable and useful.

Eichhorn, Gupta and Stubbs [1998] look at using constraints to improve the robustness of asset allocation. The motivation behind this article is that asset allocation software does not produce a reasonable asset mix to maintain a certain risk/return value thereby lowering the investor's confidence in the portfolio. The mean-variance framework does not allow the investor to assume multiple objectives or address any problems made by errors in the mean and variance estimates. The current limitations of modern portfolio theory are that small changes in the variance and mean estimates produce large changes in the asset allocation decision and many times the efficient portfolio is weighted heavily in only one or two asset classes. Confidence in risk-return estimates drops due to the length of time an asset class has been traded or confidence can be inflated by the risk-return estimates of developed economies and psychologically, investors are more comfortable with familiar risks than unfamiliar risks, or they portray a domestic asset class bias. The problem is that any frontier subject to a binding constraint will lie below the unconstrained efficient frontier. The trade-off of constraining the efficient frontier is the cost of a lower expected return versus a greater confidence in the risk-return estimates. To deal with this trade-off, the authors propose an "efficient band." The efficient band is formed by the high and low estimates for the standard deviation occurring with some probability. Although the investor sacrifices expected return, the benefit comes in the reduction of the portfolio volatility. Furthermore, the reduction in

volatility obtained from the constrained portfolio will also help to protect the investor against downside risk.

Vassal [2001] looks at the benefits derived from a multiple stock portfolio. He takes the Russell 1000 index and uses Monte Carlo simulation to create portfolios with various stock holdings. The first part of the analysis entails building portfolios beginning with one stock and increasing to a hundred stocks, then analyzing the frequency distribution of the portfolio returns. Taking these portfolios, seven years is simulated to determine what the cumulative frequency distribution of total returns. His results showed that only 25.5% of the simulated five stock portfolios had a total return between 150% and 250%. On the other hand, 75.9% of the 100-stock portfolios exhibited returns between 150% and 250%. An alternative approach to analyze the success obtained by a portfolio is to look at its downside risk. Vassal reports that 30.7% of the 5-stock portfolios reflected a total return below 100% for the seven-year period whereas only 4.2% of the 30-stock portfolios fell below this mark.

Browne [2000] looks at risk as defined in terms of the probability of a shortfall relative to some benchmark and return in terms of the expected time to reach the investment goals relative to the time it would take the benchmark. Active portfolio management is the process of trying to out perform the target benchmark as opposed to passive portfolio management where one tries to track the benchmark. Benchmarks take on many different forms such as a specific index, or the inflation rate, exchange rate or a benchmark could be represented as a liability. The model studied in this paper consists of a set of risky assets and a riskless bond asset. In Browne's previous work, he looked at the active portfolio management problems relating to maximizing the probability that a