

Bigger not always better

How many stocks should your portfolio contain? Based on the questions asked by *Forecasts* readers, there is little agreement on the answer. As the chart below indicates, large portfolios tend to be less volatile than small portfolios. The more stocks a portfolio contains, the less the movement of one or two stocks affects the portfolio.

Most academic research has determined that portfolios of 40 or even 20 stocks capture the bulk of the benefits of diversification. The *Forecasts*' recommendations reflect that sentiment, with the Buy List containing 35 stocks and the Long-Term Buy List 40. Both lists are fairly well diversified and suitable as stand-alone equity portfolios.

Portfolios containing more than 40 stocks tend to be slightly less volatile, but at the cost of watering down your best ideas. The more stocks you add to a portfolio, the closer the portfolio's expected return gets to the expected market return as you limit both upside and downside volatility.

Upside volatility is a good thing — it's why we go to such lengths to select stocks. But while we seek out upside volatility, we try to avoid downside volatility.

To an extent these are contradictory goals, and the *Forecasts* has constructed its portfolios with an eye on the risk/reward relationship. Stock collectors who amass portfolios of 60 or more stocks may unwittingly be creating their own version of an index fund.

Many investors would rather not buy even 30 stocks. Some don't want to spend the time following all of them, and some just aren't comfortable with a portfolio that large. The Focus List, generally comprising 15 to 20 of our top selections from the Buy List, is designed for such investors.

If we were creating a portfolio of "average" stocks, 15 to 20 would probably be too few. But as the tables at left illustrate, portfolios containing stocks with high Quadrix® scores tend to be less volatile than those with low Quadrix scores. Importantly, they also manage to limit downside volatility without losing all of the upside volatility, as shown in the bottom table titled "Likelihood of loss."

We generated these numbers through a back-test of 12-month returns for 100 portfolios of stocks from the S&P 1500 Index of large, medium size, and small stocks. We considered 138 rolling 12-month periods since 1994.

In other words, we calculated standard deviations for 13,800 randomly generated 10-stock portfolios from the top quintile (top one-fifth) of Quadrix Overall scorers, and a similar number of 10-stock portfolios from the bottom quintile. We did the same for portfolios of one, five, 20, 40, 60, and 80 stocks.

THREE TYPES OF RISK

The tables below illustrate how investors can mitigate three types of risk by purchasing more stocks or by selecting stocks from the top one-fifth of Quadrix® Overall scorers in the S&P 1500 Index.

Standard deviation

Stocks In Portfolio	– Quadrix Overall Quintile – Top	Bottom
1	44.9%	62.5%
10	14.9	19.5
20	10.5	13.7
40	7.1	9.3
60	5.5	7.2
80	4.6	5.9

Standard deviation measures variation in annual returns relative to the average return of all stocks in a Quadrix quintile (one-fifth). The lower the standard deviation, the tighter returns are grouped around the quintile average.

Tracking error

Stocks In Portfolio	– Quadrix Overall Quintile – Top	Bottom
1	31.1%	39.4%
10	10.8	14.1
20	7.8	10.0
40	5.3	6.9
60	4.1	5.4
80	3.5	4.4

Tracking error is the average amount by which portfolio returns differed from the average return of all stocks in a Quadrix quintile. For example, the returns of 10-stock portfolios chosen from the top quintile differed from the quintile average by an average of 10.8% per year.

Likelihood of loss

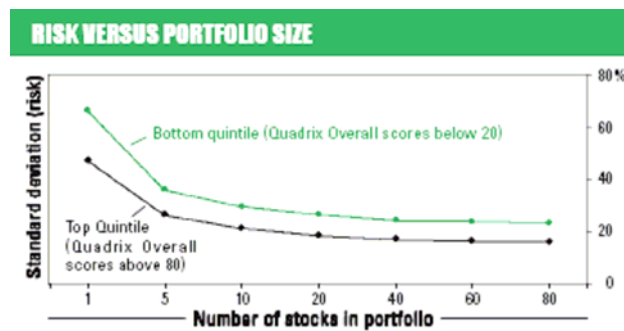
Stocks In Portfolio	– Quadrix Overall Quintile – Top	Bottom
1	34.8%	42.5%
10	17.9	29.5
20	15.1	25.3
40	12.7	22.2
60	12.2	20.8
80	11.4	20.0

Likelihood of loss is the percentage of portfolios that declined during 12-month periods.

The use of large numbers of randomly generated portfolios should mitigate sector and size biases, helping us to assess the volatility of portfolios of different sizes. Standard deviation is a common measurement of volatility.

From this research, we were able to draw two conclusions:

- If you stick with high Quadrix scorers and mostly large-cap stocks, 20 is probably enough. A 20-stock portfolio of high Overall scorers from the S&P 1500 is only slightly more volatile than a 40-stock portfolio of low scorers, and provides much better return potential. For large-cap stocks from the S&P 500 Index, even a 10-stock portfolio of top scorers is less volatile than a 40-stock portfolio of low scorers.
- Market volatility has declined since 1994, as the returns of stocks with average or high Quadrix scores have gradually become less volatile. But stocks ranked in the bottom one-fifth as measured by Quadrix Overall bucked the trend, and have actually become *more* volatile.



As the number of stocks in a portfolio rises, volatility tends to decline, and returns tend to move toward the average return for all stocks. As investors, we seek a portfolio containing a large enough number of stocks to limit risk, but not so many as to dilute our best ideas. Standard deviation is a measure of volatility, and the deviations in the chart above are derived from a study of the 12-month returns of 193,200 portfolios containing stocks in the S&P 1500 Index since 1994. Interestingly, portfolios drawn from the top quintile of Quadrix Overall scorers tend to be less volatile than those containing low scorers.