

Diversification: A Bigger Free Lunch

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Economists are famous for pronouncing gloomily that “there’s no such thing as a free lunch”. Yet finance theory *does* offer a free lunch: the reduction in risk that is obtainable through diversification. An investor who spreads her wealth among many investments can reduce the volatility of her portfolio, provided only that the underlying investments are imperfectly correlated. There need be no reduction in average return and thus no bill for the lunch.

Many investors appear to ignore this free meal. They overinvest their retirement savings in the company they work for, in one or two favored sectors such as technology, and in companies that are based in the region where they live. (An amusing example is the tendency of US investors to buy the stock of their local telephone company). Even sophisticated investors concentrate their portfolios in stocks of their own country rather than diversifying internationally. Perhaps such investors feel that the volatility reduction provided by diversification is small; the free lunch is so meagre that it is not even worth lining up at the buffet table.

In fact the benefits of diversification are substantial, and they have grown dramatically over time. Thirty or forty years ago in the US market, a single randomly selected stock had a standard deviation 35 percentage points higher than a portfolio invested in an equally weighted index of all available stocks; a portfolio of 20 individual stocks could reduce this excess risk to a modest level of about 5 percentage points. This was the basis for the well-known rule of thumb that a 20-stock portfolio is adequately if not perfectly diversified. During the last decade, however, a single randomly selected stock has had a standard deviation 50 percentage points higher than an equally weighted index; and it takes a portfolio of 50 stocks to reduce excess risk to 5 percent. The old rule of thumb is no longer adequate because a 20-stock portfolio has excess risk of 10 percent, twice its former level.

These trends are illustrated in Figure 1.¹ The horizontal axis measures the number of stocks in an imperfectly diversified portfolio, and the vertical axis measures the excess volatility of the portfolio (the difference between the standard deviation of the portfolio return and the standard deviation of an equally weighted index). Portfolios with different numbers of stocks are formed by randomly selecting and equally weighting stocks listed

¹ The figure is taken from John Y. Campbell, Martin Lettau, Burton G. Malkiel, and Yexiao Xu, “Have Individual Stocks Become More Volatile? An Empirical Examination of Idiosyncratic Risk”, forthcoming *Journal of Finance*, 2001.

on the NYSE, the AMEX, or the NASDAQ; the volatility of each portfolio is calculated and averaged across alternative random portfolios. This procedure is repeated for the periods 1963-73 (bottom solid line), 1974-85 (middle short-dashed line), and 1986-97 (top long-dashed line). Each line slopes down, reflecting the decrease in risk that can be achieved through diversification. The position of the line is much higher, and the downward slope is steeper, for the 1986-97 period. Diversification reduces risk more effectively than it did before, but one must hold more stocks than before to realize this benefit.

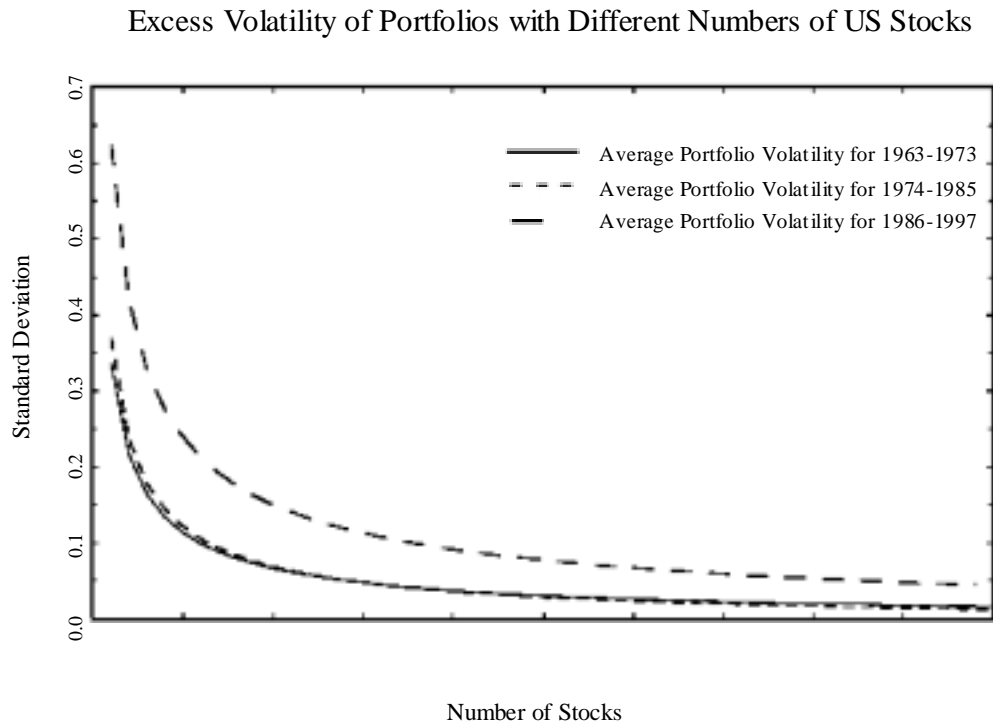


Figure 1

What has been happening in the stock market to cause these changes? A typical individual stock is now more volatile than before, but it also has a lower correlation with other stocks. More of the individual-stock volatility is idiosyncratic, less is shared with the market as a whole, and so the volatility of the overall market has not increased. In monthly data from the early 1960's a typical US stock had a correlation between 0.25 and 0.30 with other stocks; by the late 1990's this correlation had fallen below 0.10. These trends reflect numerous changes in the market, including the trend away from conglomerates towards companies focused on one or two core competencies, and the tendency to list companies earlier in their life cycle, when their futures are still very uncertain.

Diversification also has important benefits for international investors. Even the US market is imperfectly diversified relative to a world portfolio; other national stock markets are generally much smaller, with poorer diversification. Figure 2 illustrates recent movements in the volatility of excess country returns over the Morgan Stanley Capital International World Index (the blue line in the figure). Volatilities are calculated

separately for each country using daily data in a six-month moving window, and a value-weighted average across countries is shown in the figure. Diversifiable country volatility averaged about 9% per year in the mid-1990's, but international crises in the late 1990's (notably the Asian crisis in 1997 and the Russian crisis in 1998) have driven the average up around 12% in the last few years.

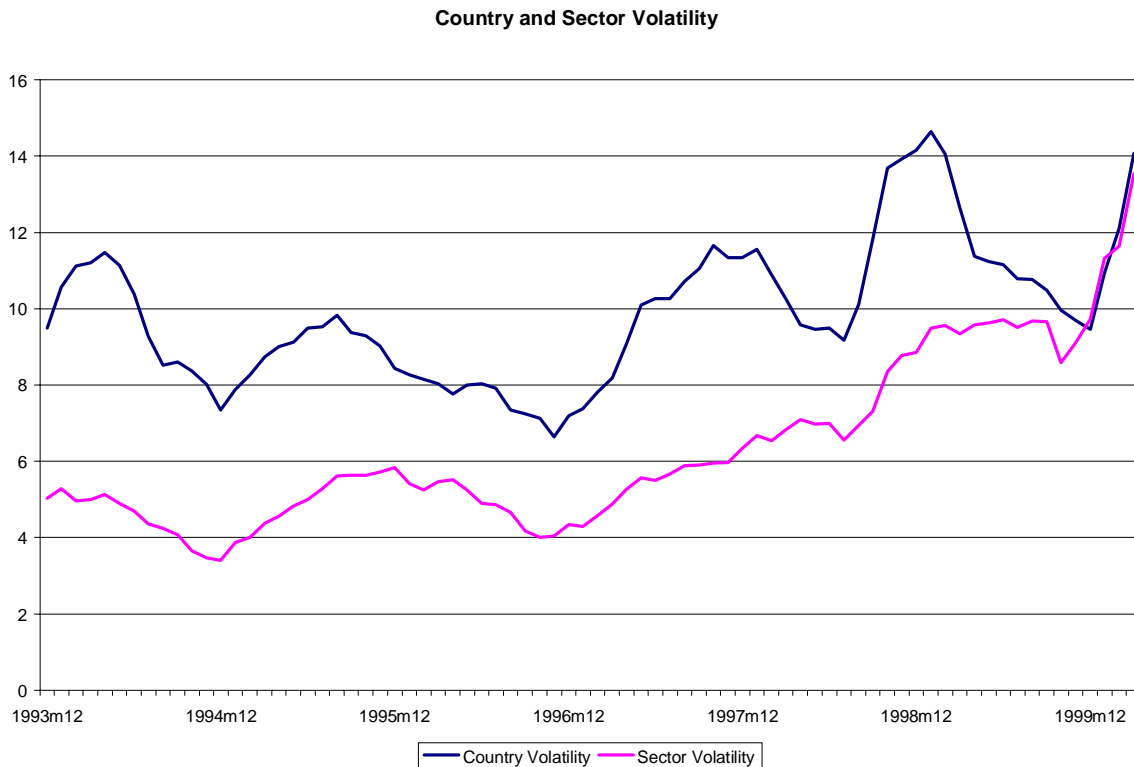


Figure 2

Diversification across sectors is equally important today. The red line in Figure 2 shows the volatility of excess sector portfolio returns over the MSCI World Index. In the mid-1990's sector volatility was around half country volatility, but it has moved up dramatically and is currently about the same as country volatility. Many countries have stock markets that are concentrated in one or two sectors (the Finnish market, for example, is dominated by the mobile-phone company Nokia). Portfolios held in these countries are concentrated both by country and by sector; this is particularly risky in the current environment.

Diversification is a lunch that has not only remained free, but has grown more lavish over the years. While many investors may wish to take active positions on the basis of their own opinions and information, all investors should carefully consider the extra risk that is involved in small concentrated portfolios.