Dispersion! Not correlation!

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A great deal of commentary lately has focused on increased correlation among stocks, with the conclusion that this phenomenon is one of the reasons for the recent underperformance of active management.[1] The discussion of correlation has masked a much more important issue that can lead to variability in active managers' performance—namely, dispersion.

While correlation can show the directional movement of stocks, it does not indicate the magnitude of their movement. The differences in the magnitude of movements by individual stocks in an index lead to differences—dispersion—in total returns within and versus that index. Because outperformance results from having outsize exposure to securities that exceed the index return or from underweighting those that lag it, one should consider the degree of dispersion, not the degree of correlation, when evaluating the potential for active managers to outperform.

1 For example, Standard & Poor's research indicates that 84.1% of all domestic equity funds underperformed the S&P Composite 1500 Index in 2011. ("S&P Indices Versus Active Funds" scorecard, available at www.spindices.com.)

Correlation in context

Much of the commentary related to increasing stock correlations has focused on recent time frames, but analyzing correlations over longer time periods provides a broader perspective.

Figure 1 considers average stock correlations among the constituents of the Russell 1000 Index on a rolling 63-day basis (a period approximating three trading months) over the past 32 years. It provides evidence that, while correlations have changed over time, the recent spikes and drops in correlation are not unprecedented.[2]

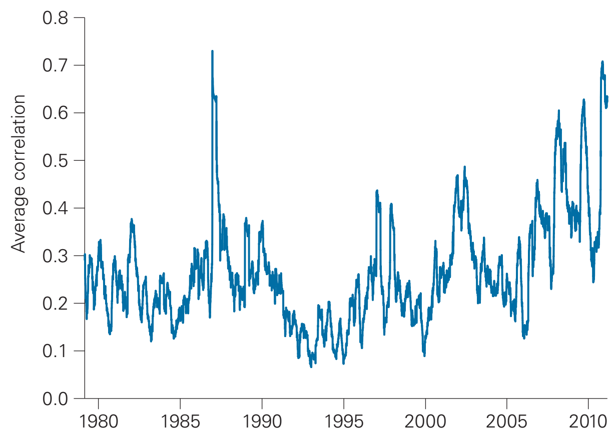
Parallels to the zero-sum game

Even if stocks' returns are directionally the same, the returns themselves are different. Since their returns in aggregate generate the return of the index, by definition some stocks will outperform the index and the rest will underperform it. The magnitude of the out- and underperformance by the individual stocks represents the amount of dispersion in the returns. Greater magnitude signals greater dispersion; less magnitude, less dispersion.

Of course, regardless of the dispersion or correlation of returns, it will still be the case that, in aggregate, half of all dollars invested in the index securities will outperform before costs and half will underperform (see Sharpe, 1991). In this way, seeking to exceed the index return is much like a zero-sum game: A "win" by one active manager implies equivalent underperformance by one or more others.

Figure 1. Average correlations among all Russell 1000 Index stocks, 1979–2011

This chart shows the average of pairwise correlations—i.e., correlations between every possible pairing of index stocks—over rolling 63-day trading periods.



Note: Average pairwise correlations are calculated by computing individual stock-pair correlations among the index constituents for the prior 63 trading days and then averaging across all of the correlations.

Source: Vanguard calculations based on Russell 1000 Index data.

Active management might add value in two ways

Dispersion of returns is a critical concept when considering how active managers can add value relative to an index. They are able to do so not only by overweighting stocks that outperform the index, but also by underweighting stocks that underperform it.

In other words, active managers have opportunities available on both sides of the relative performance spectrum.

Notes on risk: All investments are subject to risk. Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

2 See Philips, Walker, and Kinniry (2012) for a discussion of correlation changes over time.

Dispersion opportunities persist through market change

A look at dispersion in recent years illustrates these opportunities. **Figure 2** shows the extent to which constituent stocks' returns have differed by more than 10 percentage points—either up or down—from the Russell 1000 Index's return in each calendar year.

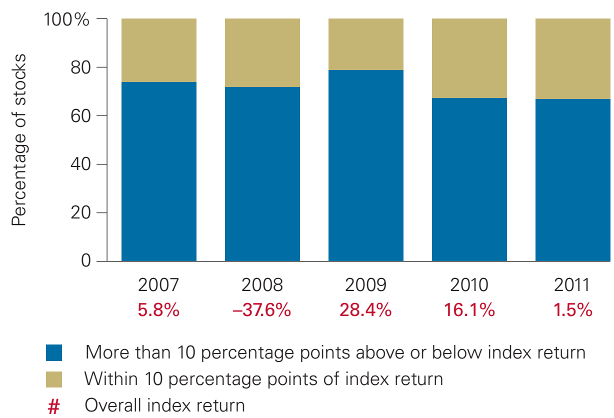
The past five years have provided bull, bear, and flat markets, but the degree of dispersion has been fairly similar: The percentage of stocks that either led or trailed the index by more than 10 percentage points ranged from 67% to 79%.[3] Although there was somewhat less dispersion in 2010 and 2011 than in the previous years, it was still the case that more than two-thirds of the Russell 1000 stocks performed better or worse than the overall index by more than 10 percentage points, providing ample opportunity, in theory, for managers to choose or avoid stocks so as to exceed the index's return.

Conclusion

Correlation among stocks does not necessarily describe the degree to which active stock pickers' relative performance versus the index might differ. Even if returns for individual securities move in the same direction, their magnitudes will vary. When considering the potential for active management performance, dispersion measures should be considered much more heavily than correlations.

Figure 2. Dispersion of returns for Russell 1000 Index stocks, 2007–2011

In each year, at least two-thirds of the stocks exceeded or trailed the index return by more than 10 percentage points.



Sources: FactSet, Vanguard calculations.

References

Philips, Christopher B., David J. Walker, and Francis M. Kinniry Jr., 2012. *Dynamic Correlations: The Implications for Portfolio Construction.* Valley Forge, Pa.: The Vanguard Group.

Sharpe, William F., 1991. The Arithmetic of Active Management. *Financial Analysts Journal* 47 (1, January/February): 7–9.

3 We conducted the same research for the Russell 3000 Index and Russell 2000 Index and found substantially similar results.

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