



C A M B R I D G E A S S O C I A T E S L L C

U.S. MARKET COMMENT: VALUATIONS OF SMALL-CAP EQUITIES

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Mike Walden
Robert Lang
William Nasgovitz

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The Valuations of Small-Cap Equities

How High Can They Go?

After underperforming large-cap equities by 150 percentage points over the five-year period 1994-99, small-cap equities have staged a classic comeback and significantly outperformed large-cap stocks. Between April 1, 1999 and April 30, 2002, small-cap equities returned a cumulative 33.7% while large-cap equities returned -13.0%, resulting in a relative small-cap performance advantage of 46.7 percentage points (see Table). While this performance disparity is already significant, the small-cap rally may still have some legs, if history serves as a useful guide. The small-cap performance advantage to date is narrower than those of 1964-68, 1973-83, and 1991-94, when small-caps outperformed large-caps by 244, 762, and 51 percentage points, respectively. Analysis of the current small-cap rally relative to prior periods of outperformance and today's valuations relative to historical averages may shed some light on the staying power of the current rally.

Relative to their own historical valuations, small-cap equities appear expensive on the basis of price-earnings (P/E), price-to-sales (P/S), and price-to-book (P/B) ratios. As of April 30, 2002, the P/Es of our CA Small-Cap Index and the Dow Jones U.S. Small-Cap Index were actually negative, dragged down by the large number of companies with negative earnings. Similarly, the P/B and P/S ratios of our small-cap index, at 2.1 and 0.9, respectively, are well above their long-term averages. Dividend discount model valuations also show small-cap stocks to be overvalued, although these models can be made to show a fair value rating if aggressive assumptions are used. However, Ford Investor Services has been calculating price-to-value (P/V) ratios on the basis of dividend discount model calculations since the early 1980s using a consistent methodology. Their model shows that the P/V ratio of small-cap stocks has climbed from 0.98, or 2% undervalued, as of April 1, 1999 to 1.38, or 38% overvalued as of April 30, 2002—somewhat above the 1.25 average ratio since their series begins in 1981.

While it is clear that small-cap stocks are overvalued, the evidence on small-cap valuations relative to those of large-cap stocks is mixed. According to an analysis by GMO, small-cap equities trade at a discount to large-cap equities on the basis of P/S, P/B, and price-to-cash flow (P/CF) ratios, while only appearing relatively overvalued on the basis of P/E. For example, the ratio of the P/S of small-cap stocks to that of the S&P 500 is approximately 0.59, compared to an average of 0.78 since 1963, while the ratio of small-cap to large-cap P/Bs is 0.56, compared to an average value of 0.84. According to these metrics, GMO estimates that small-caps are 1.4 and 1.8 "standard deviations cheap," respectively, relative to large-cap stocks. Similarly, on the basis of P/CF, small caps are 1.9 standard deviations cheap. However, the P/E of small-cap stocks is significantly higher than that of the S&P 500, or 1.4 standard deviations more expensive. In addition, Ford's price-to-fair value ratio for large-cap stocks is 1.17, or 17% overvalued, which is much more reasonable than the 38% overvalued reading for small-caps. On an historical basis,

the price-to-fair value ratio has been about 2% higher on average for small-caps than large-caps, but is presently 18% higher. While the evidence on relative valuations is mixed, we would caution that both large-cap and small-cap stocks remain overvalued.

Some analysts point to relative P/E ratios that exclude companies with negative earnings and conclude that small-cap stocks are more attractively valued than large-cap stocks on the basis of this metric as well. Although removing companies with negative earnings eliminates the dilution effect of large-loss outliers within the universe, the resulting P/E ratio represents approximately two-thirds of the small-cap universe. The large number of companies with negative earnings is attributable to both the recession and the proliferation of IPOs in the late-1990s, which resulted in more companies going public before turning a profit than was previously possible. Given that many of these companies fueled the outperformance achieved by some small-cap equity managers and investors in the late-1990s, it seems rather irrational to exclude these same companies from valuation measures. Unless a small-cap allocation is implemented with the mandate of only investing in companies with *consistently* positive earnings, it is not logical to exclude companies with negative earnings from valuation measures of the sector.

The current rally in small-cap stocks has been concentrated in the small-cap value sector—the Russell 2000® Value Index returned 73.3% over the period April 1, 1999 to April 30, 2002, compared to a return of -1.7% for the Russell 2000® Growth Index over the same period. As a result of the strong performance differential, valuations of small-cap growth stocks have generally fallen, while those of small-cap value stocks have generally risen. The severe underperformance of small-cap growth stocks is largely attributable to the decimation of many small-cap technology stocks for which P/Es actually increased, as earnings fell at a faster rate than prices. The P/E ratios of various small-cap growth indexes, while somewhat improved since the market peak in March 2000, are either negative or near triple-digits. On the other hand, P/Es of small-cap value indexes are only a fraction of those of small-cap growth indexes, yet they have increased sharply since early 2000 and are now at or near all-time highs. Similarly, on the basis of P/S and P/B, small-cap value appears overvalued. However, small-cap growth results are mixed, with these stocks appearing overvalued on the basis of P/S and fairly valued on the basis of P/B.

The tendency for capitalization and style cycles to run beyond their fundamental support is a well documented trend that was most recently confirmed by the outperformance of the S&P 500 from 1994-99, during which valuations peaked at more than three standard deviations above the long-term mean. However, it is also important to consider that cycles have run as short as three and as long as ten years, defining their own path and establishing their own characteristics along the way. For example, small-cap stocks outperformed large-caps from 1973 to 1983, during which the equity market endured a recession and a period of massive inflation. The P/E ratios of small- and large-cap stocks were 11.5 and 22.7, respectively, on June 30, 1973 and 19.4 and 14.3 on June 30, 1983. The 70% increase in small-cap

multiples and 40% decrease in large-cap multiples drove the ratio of small-to-large-cap P/Es from 0.51 in 1973 to 1.36 in 1983. The small-cap rally of 1991-94 was different from that of 1973-83 not only because both capitalization sectors were fairly valued in 1991, but also because it was a classic small-cap recessionary rebound. Small- and large-cap stocks traded at P/Es of 15.3 and 15.6 as of January 1, 1991 and 22.6 and 21.6 as of March 31, 1994, while the ratio of small- to large-cap P/Es expanded from 0.92 in 1991 to 1.05 in 1994.

The current small-cap rally shares some characteristics with the small-cap rallies of 1991-94 and 1973-83. For example, small-cap stocks rallied 21.1% in the fourth quarter of 2001 as investors anticipated a post-recessionary bounce similar to the 29.7% return in the first quarter of 1991 that spurred the 1991-94 rally. On the other hand, the doubling of small-cap valuations and the surge in the small-to-large-cap P/E ratio, from 0.57 at the beginning of 1999, to 1.12 at the end of 2001, is emblematic of the shift in valuations that accompanied the small-cap rally of 1973-83. While the combination of these characteristics suggests that the current small-cap rally may be near a close, small-cap stock momentum still appears to be powerful, as evidenced by the recent cash inflows into small-cap mutual funds and heightened press coverage of the small-cap sector.

However, investors should keep in mind that the small-cap sector is somewhat resistant to the forces of upward momentum. This is partially due to the fact that small-cap managers suffer from the law of diminishing returns, where a massive influx of fresh capital can handicap small-cap managers. Small-cap managers have essentially four options for deploying new capital, all of which create complications if taken to extreme levels: (1) buy more shares of current holdings, which could increase liquidity risks as managers own a greater percentage of these companies, and may violate guidelines that often stipulate managers cannot own more than 20% of a company; (2) invest in larger-cap stocks, which could create tracking error with market indexes and violate investment guidelines; (3) invest in a greater number of companies, which further diversifies bets and could stress firms' resources; and (4) hold cash, which increases tracking error with market indexes. In fact, 11 of the top-performing small-cap value mutual funds, including Wasatch and Numeric Investors, have closed to new investors in the past year, indicating both the limitations for hot money and the difficulty associated with joining a small-cap rally late in the game.¹

The current level of overvaluation of small-caps and the rejection of new money by some small-cap value managers may tempt investors to underweight the sector. In addition, the relatively higher beta of small-cap stocks means that they will rise and fall with more speed and momentum than the overall

¹ Source: "Awash in Cash, With No Place to Go," by Lewis Braham, *Business Week*, June 3, 2002.

market. However, the sustainability of the small-cap rally will be largely contingent on the relative earnings power of smaller companies, and managers adept at navigating through market cycles may continue to outperform the broader averages. Investors should maintain exposure to both small- and large-caps, rebalancing among both the capitalization sectors and styles, as the benefits of diversification are vitiated unless investors periodically move funds from those asset classes or managers that have performed best and to those asset classes or managers that have performed worst.

SMALL-CAP AND LARGE-CAP PERFORMANCE CYCLES

Small-Cap Outperforms Large-Cap

Period	Length (years)	Cumulative Return (%)			Annualized Return (%)			Subsequent Relative Retracement Ratio (%)
		Small	Large	Differential	Small	Large	Differential	
01/01/64 – 12/31/68	5.0	306.4	62.3	244.1	32.4	10.2	22.2	86.9
07/01/73 – 06/30/83	10.0	919.9	157.5	762.4	26.1	9.9	16.2	20.1
01/01/91 – 03/31/94	3.3	100.1	48.7	51.4	23.8	13.0	10.8	365.2
04/01/99 – 04/30/02	3.1	33.7	-13.0	46.7	9.9	-4.4	14.3	—

Large-Cap Outperforms Small-Cap

Period	Length (years)	Cumulative Return (%)			Annualized Return (%)			Subsequent Relative Retracement Ratio (%)
		Large	Small	Differential	Large	Small	Differential	
01/01/69 – 06/30/73	4.5	16.2	-45.7	61.9	3.4	-12.7	16.1	511.3
07/01/83 – 12/31/90	7.5	159.3	25.2	134.1	13.5	3.0	10.5	-0.7
04/01/94 – 03/31/99	5.0	220.7	70.2	150.5	26.2	11.2	15.1	65.9

Notes: Subsequent relative retracement ratio measures the percentage of cumulative outperformance that was ceded in the subsequent period of relative underperformance. For example, \$100 invested in 1964 in both our small- and large-cap indexes yielded \$406.4 and \$162.3, respectively, or a difference of \$244.1, in 1968. By the end of the subsequent period (1969-73), when small-cap *underperformed* large-cap, the cumulative amounts were \$220.7 for small and \$188.8 for large, or a difference of \$31.9. Therefore, during 1969-73, small-caps ceded 86.9% $(31.9/244.1 - 1)$ of their relative outperformance in 1964-68.