



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:
U.S. EQUITY VALUATIONS
IMPROVING BUT NOT ENOUGH

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U.S. Equity Valuations

Improving But Not Enough

S&P 500 valuations improved considerably over 2002, but the index remains overvalued as of year end. Valuations decreased as index prices and discount rates (the risk-free rate plus the equity risk premium) fell and earnings improved. Between year-end 2001 and 2002, the price of the S&P 500 declined 23.4%, the risk-free interest rate, as represented by 30-year Treasury yields, fell from 5.48% to 4.95%, and reported earnings increased 24.5%, operating earnings, 6.7%, and normalized earnings (based on the ten-year average of real reported earnings per share), 0.9%. Valuation multiples are generally within the top 25th percentile of historical valuations, which represents a marked improvement from valuations one year ago and at the market peak on March 24, 2000 (Table A).

The larger percentage gain in reported earnings than in operating earnings reflects the fact that reported earnings have bounced back somewhat from their artificially depressed levels. Since early 2001, reported earnings have been plagued by the effects of goodwill write-offs and big-bath accounting. While some of these write-offs reflect the loss of capital associated with unwinding excess capacity and are therefore justifiable, other write-offs were tactical moves intended to clear the deck and foster easier comparisons going forward. For example, operating earnings were 57.4% greater than reported earnings as of December 31, 2002, compared to an average difference of 18.2% over the period 1985-2002. While reported earnings are expected to be more volatile due to the inclusion of one-time gains and losses, in theory these differences should average out over time, and operating and reported earnings should ultimately reconcile. In reality, however, operating earnings have exceeded reported earnings in all but three years since 1985 (namely 1987, 1988, and 1994). Therefore, investors should remain skeptical of the perpetual premium embedded in operating earnings, the excessive write-offs that lower the basis of comparison for reported earnings, and avoid solely subscribing to either measure when gauging equity valuations.

The National Income Product Accounts (NIPA) definition of earnings and S&P's recently introduced Core earnings offer alternative and improved methodologies for measuring reported and operating earnings, respectively. However, NIPA data are reported on a time lag and cover the entire nonfinancial sector of publicly and privately held corporations, thereby making it representative of a universe that is not fully investable. Although S&P's Core earnings made a splash initially, recent changes to the treatment of pension expenses have rendered Core earnings less popular than originally anticipated.¹ As a result, we evaluated the usefulness of different types of normalized earnings to determine if they offer an improvement over reported or operating earnings and found that normalized earnings based on the average real earnings for the trailing ten-years provide the best basis for equity valuations.

¹ See our U.S. Market Comment and Addendum, *Making Sense of U.S. Equity Earnings*, September 2002.

The analysis focused on comparing the predictive power of price-earnings (P/E) ratios in estimating real returns over the subsequent ten- and 15-year periods. We used quarterly data from 1936-2002 and 1960-2002 and compared P/E ratios based on trailing 12-month reported earnings, trailing five-year average reported earnings, trailing ten-year average reported earnings, normalized trendline earnings, and trailing ten-year average *real* reported earnings (real normalized P/Es). Given the relatively short history of operating earnings and their consistent upward bias, we excluded them from this analysis. In all scenarios, the real normalized P/Es exhibited the strongest relationship to subsequent period real returns and showed a marked improvement over the use of P/Es based on 12-month trailing reported earnings. For example, since 1936, the R-squared for real normalized P/Es with subsequent period 15-year returns was 79%, compared to a 53% R-squared for P/Es based on 12-month trailing earnings.

Dividend Discount Model Valuations

At present, those who argue that the market is fairly valued do so largely on the basis of dividend discount model valuations. As shown in Table B, it is not difficult to find plausible scenarios under which a dividend discount model would suggest that the market is fairly valued, or even undervalued. Dividend discount models can suggest that the market is fairly valued even when valuation ratios are relatively high because the model explicitly accounts for changes in discount rates and earnings expectations.

Many analysts argue that over the short term earnings should grow at rates consistent with historical averages, as they are concerned that earnings growth momentum may be slowing under increased consumer savings and continued corporate retrenchment. Most analysts place this historical growth at about 5% to 7%, which is close to the nominal historical average earnings growth rate since 1960. However, given the low inflation expectations priced into the bond market today, it is not reasonable to assume that historical nominal growth rates will prevail. While earnings have compounded at an average annual rate of 5.3% in nominal terms since 1960, inflation has averaged 4.3% over the same period. Given that the inflation expectation priced into the bond market over the next ten years is 1.9%, a more reasonable average assumption would be 3%, which is the average real earnings growth rate of 0.9% plus the expected rate of inflation. The difference in dividend discount model valuations between using a 3% growth rate assumption and a 5% growth rate assumption over the next ten years is significant, falling from 42% overvalued to 20% overvalued, assuming an equity risk premium of 3%, a risk-free rate of 4.95%, normalized real earnings of \$39, and long-term earnings growth of 5% annually (Table B). It should be noted that unlike reported earnings and operating earnings, normalized real earnings did not deteriorate significantly over the last several years, and therefore, it is not reasonable to assume that these earnings will significantly bounce back.

We also caution reliance on dividend discount model valuations when interest rates are particularly low, as they are today. The output of such models is extremely sensitive to changes in any of these inputs, but is particularly susceptible to shifts in prevailing interest rates when they are very low. For example, using our model based on normalized real earnings and 3% earnings growth over the next ten years, the 42% overvaluation reading would fall to 19% if we shifted the discount rate down by as little as 50 basis points. Therefore, it is particularly important today to carefully scrutinize dividend discount model input assumptions to make sure they are plausible and to consider other valuation metrics that are less susceptible to significant changes in valuations based on minor modifications in assumptions. While we regard it as entirely plausible that earnings may grow 7% annually over the next ten years (a fair value reading assuming an equity risk premium of 3%), particularly if capital spending revives, the prevalence of high valuation multiples prevents us from categorizing the S&P 500 as fairly valued.

Table A

U.S. STOCK MARKET VALUATIONS

January 1, 1960 - December 31, 2002

	S&P 500 12/31/2002	S&P 500 12/31/2001	S&P 500 Peak 03/24/2000	Average (to 12/31/2002)	Percentile Ranking of 12/31/2002 Valuation	Percentile Ranking of 12/31/2001 Valuation	Percentile Ranking of Peak Valuation	% Decline in Price Required to Reach Average Valuation
Price-Earnings								
12-Month Trailing Reported Earnings	28.6	46.5	30.0	17.3	8%	1%	5%	-39.7%
12-Month Trailing Operating Earnings	18.2	25.3	28.7	18.5 ¹	43%	14%	3%	1.7%
12-Month Forward Operating Earnings	16.8	21.9	25.4	13.5 ²	23%	10%	1%	-19.3%
Normalized Earnings	22.7	30.5	42.8	16.8	13%	7%	1%	-56.8%
Dividend Yields	1.8	1.4	1.1	3.3	13%	7%	0%	-44.8%
Price-to-Book	2.9 (P)	3.7 (P)	7.5 (P)	2.2 ³	25%	14%	0%	-21.6%
Ratio of Earnings Yields to 30-year Treasury Yields	0.7 (P)	0.4	0.6	1.0	21%	1%	8%	-26.5%
Ratio of Dividend Yields to 30-year Treasury Yields	0.4	0.3	0.2	0.5	23%	7%	1%	-91.2%

Sources: Bureau of Labor Statistics, Salomon Smith Barney, Standard & Poor's, Standard & Poor's Compustat, Thomson Datastream, Thomson Financial, U.S. Treasury, and *The Wall Street Journal*.

Notes: (P) Preliminary. Data for March 24, 2000 were created by using the closing price on that day. Earnings, dividends, book value, and 30-year Treasury yields are from March 31, 2000. Average valuations and percentile rankings are based on quarterly data. The 30-year Treasury yield is an extrapolation of the Long-Term Average Rate series calculated by the Treasury following 2/18/02, when the Treasury ceased publication of the 30-year constant maturity series. The price-earnings ratio using normalized earnings is the real price divided by the trailing ten-year average of real earnings.

¹ The average is taken from September 30, 1985.

² The average is taken from September 30, 1978.

³ The average is taken from March 31, 1963.

Table B

**S&P 500 DIVIDEND DISCOUNT MODEL VALUATIONS
UNDER VARYING ASSUMPTIONS**

**S&P 500 Fair Value and Percentage Over- (Under-) Valued Under Varying Equity Risk
Premium, Earnings, and Earnings Growth Rate Assumptions**

Valuations Using 12-Month Trailing Operating Earnings of \$48

Equity Risk Premium	Valuations Under Various Earnings Growth Assumptions for Next Ten Years							
	1%	3%	5%	7%	9%	11%	13%	15%
2%	791 11%	945 (7%)	1,126 (22%)	1,341 (34%)	1,593 (45%)	1,889 (53%)	2,235 (61%)	2,640 (67%)
3%	533 65%	632 39%	748 18%	884 0%	1,044 (16%)	1,231 (29%)	1,449 (39%)	1,704 (48%)
4%	406 117%	477 85%	560 57%	658 34%	773 14%	907 (3%)	1,063 (17%)	1,244 (29%)

Valuations Using 12-Month Trailing Reported Earnings of \$31

Equity Risk Premium	Valuations Under Various Earnings Growth Assumptions for Next Ten Years							
	1%	3%	5%	7%	9%	11%	13%	15%
2%	614 43%	734 20%	875 1%	1,041 (15%)	1,237 (29%)	1,467 (40%)	1,736 (49%)	2,050 (57%)
3%	414 112%	491 79%	580 52%	686 28%	810 9%	956 (8%)	1,125 (22%)	1,323 (34%)
4%	315 179%	370 138%	435 102%	511 72%	600 47%	704 25%	825 7%	966 (9%)

Valuations Using Normalized Earnings of \$39

Equity Risk Premium	Valuations Under Various Earnings Growth Assumptions for Next Ten Years							
	1%	3%	5%	7%	9%	11%	13%	15%
2%	777 13%	927 (5%)	1,106 (20%)	1,316 (33%)	1,563 (44%)	1,854 (53%)	2,194 (60%)	2,591 (66%)
3%	524 68%	620 42%	734 20%	867 1%	1,024 (14%)	1,208 (27%)	1,423 (38%)	1,673 (47%)
4%	398 121%	468 88%	550 60%	646 36%	758 16%	890 (1%)	1,043 (16%)	1,221 (28%)

Other Key Assumptions

- Long-Term Earnings Growth of 5.0%
- Risk-Free Rate of 4.95%, the yield on the 30-year Treasury on December 31, 2002

Sources: Standard & Poor's, Standard & Poor's Compustat, Thomson Datastream, Thomson Financial, and U.S. Treasury. The 30-year Treasury yield is an extrapolation of the Long-Term Average Rate series calculated by the Treasury following 2/18/02, when the Treasury ceased publication of the 30-year constant maturity series. The price-earnings ratio using normalized earnings is the real price divided by the trailing ten-year average of real earnings.