

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

WHY WE BELIEVE U.S. EQUITIES ARE STILL OVERVALUED

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Why We Believe U.S. Equities Are Still Overvalued

With the S&P 500 returning -27.0% since its March 2000 peak, its price-to-earnings (P/E) multiple plummeting from 46.5 to 19.7, it is quite tempting to conclude, as have an increasing number of pundits, that equities are now fairly valued or even cheap. We hate to be party poopers, but we must throw an element of sobriety into this autumnal cheer. Equities remain overvalued.

Most Valuation Metrics Suggest Overvaluation

Valuations for the S&P 500 have improved considerably since their 2000 peaks, but the index still remains expensive compared to its historical averages (Tables A and B).

- Using normalized real earnings, the S&P 500's P/E ratio is 25.5, which is one standard deviation above its post-1936 average of 17.0, and 1.5 standard deviations above its post-1900 average.
- Using reported earnings, the index's 12-month trailing P/E is 19.7, which is 0.9 standard deviations above its post-1960 average of 17.5, 0.6 standard deviations above its post-1925 average of 15.7, and 0.8 standard deviations above its 105-year average of 14.8.
- Its current price-to-book ratio is 3.4, compared to its post-1925 average of 1.8 and post-1979 average of 2.4.
- Its dividend yield is currently 1.7, which is 1.6 standard deviations below its post-1926 average of 4.1, and 1.2 standard deviations below its post-1960 average of 3.2.
- The S&P 500's Tobin's Q is currently 1.6, double its post-1952 average of about 0.8.

Dividend Discount Models—Insights and Limitations

We use our dividend discount model (DDM) to understand the assumptions priced into the market, as the model allows us to evaluate the impact on the fair value of the market under different interest rate, equity risk premium, earnings, and earnings growth assumptions. However, the model is less useful during periods when interest rates are low, because small changes in the assumed discount rate produce unrealistic changes in the fair value of the market. Furthermore, it is important to be highly suspicious of claims that the market is fairly valued solely on the basis of DDM analysis, because the model is highly sensitive to changes in assumptions, allowing for significant divergence in valuation results depending on inputs.

We use a base case that assumes the following: the equity risk premium is 3%, the risk-free rate is 4.97% (the yield on the 30-year Treasury bond at the end of September), earnings are \$43.73 (normalized real earnings), annualized earnings growth is 5% over the next ten years, and long-term earnings growth is 5% annually. On the basis of these assumptions, the S&P 500 is roughly 35% overvalued (Table C). However, if we were to use the same assumptions, but switch to reported or operating earnings, the model would suggest that the market is approximately fairly valued.

Our work suggests that normalized real earnings provide a more accurate picture of valuation trends than reported or operating earnings. We 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 (normalized real earnings). We found that P/E ratios based on normalized real earnings had more predictive power for subsequent ten-year and 15-year period returns, particularly when compared to P/Es based on 12-month trailing reported earnings. This is largely because reported earnings are extremely volatile, due to the effect of goodwill write-offs and big-bath accounting, as dramatically evidenced in 2001 when reported earnings fell from a peak of \$53.7 in September 2000 to a low of \$24.7 in December 2001. We do not consider operating earnings either, since they have consistently been higher than reported earnings, suggesting they are overstated. In sum, given the perpetual premium embedded in operating earnings, the volatility in reported earnings, and the stronger relationship between normalized real earnings and subsequent returns, we have adopted normalized real earnings as our standard earnings assumption.

Another limitation with DDMs is that they break down during periods of low interest rates, because when discount rates (the risk-free rate plus the equity risk premium) are very low, the fair value P/E ratio suggested by these models is unrealistically high (see Table D). Since we use the 30-year Treasury yield and a 3% equity risk premium, our current discount rate assumption is close to 8%, which is roughly the point at which model results become rational. However, the discount rate used by analysts who assume lower risk-free rates (ten-year Treasury yields, for example) and/or lower equity risk premiums are clearly too low for DDMs to provide meaningful results. For example, using our model with the assumptions noted above, a 7% discount rate suggests the fair value P/E is 28, which is clearly well above a reasonable assessment of fair value. In contrast, at an 8% discount rate, the fair value P/E suggested by the model is 18.6, which is still somewhat high by historical standards, but clearly not as inflated as that suggested by the 7% discount rate.

Another way of using the DDM is to solve for the average annual earnings growth required over the next ten years for the S&P 500 to be fairly valued at today's prices. Using the above assumptions in our model, in order for the index to be fairly valued, normalized earnings must grow 8.7% annually over the next decade, or 6.3% in real terms, assuming ten-year inflation of 2.4% as priced into the TIPS market.¹

From an historical perspective, achieving this required growth rate will be quite challenging. Since 1926, real normalized earnings growth has averaged an annual compound rate of 1.7%, and 1.5% over rolling ten-year periods—far below the current required rate of 6.3%. Furthermore, over the same time period, real normalized earnings growth over rolling ten-year periods has exceeded 6.3% only 8.7% of the time (24 out of 276 quarters).

Similarly, it takes heroic assumptions to believe that future real reported earnings will meet their required growth rates, at least based on historic norms. For the S&P 500 to be fairly valued at today's prices, real reported earnings must grow 3.2% annually over the next ten years. Since 1926, real reported earnings growth has averaged a compound annual rate of 1.9%, and 2.1% over rolling ten-year periods; real annual growth exceeded 3.2% only 28.6% of the time (90 out of 315 periods).

¹ Inflation expectations are derived from the spread between yields on ten-year U.S. Treasuries and ten-year TIPS.

However, if inflation is somewhat higher than the 2.4% rate currently priced into the TIPS market, real earnings growth expectations might be easier to meet. For example, since nominal reported earnings growth of 5.6% must be achieved for the market to be fairly valued, if inflation is instead 3.5%, real earnings growth would need to be 2.1%, which is certainly in line with historical growth. However, to the extent that there is a sharp, unexpected increase in inflation, we would expect corporations to experience more difficulty in achieving high real earnings growth, while a modest increase in inflation has historically proven to boost earnings growth.

In sum, this analysis indicates the S&P 500 remains overvalued—not exorbitantly expensive as in 2000—but pricey nonetheless. Further disheartening is the absence of pockets of attractive value within the overall U.S. equity market. Large-cap stocks are slightly less expensive than small caps, but both sectors are overvalued. Both growth and value are overpriced, though growth is slightly less dear.

Table A
U.S. STOCK MARKET VALUATIONS
January 1, 1960 - September 30, 2004

	<u>S&P 500</u> <u>9/30/2004</u>	<u>S&P 500</u> <u>12/31/2003</u>	<u>S&P 500 Peak</u> <u>3/24/2000</u>	<u>Average</u> <u>(to 9/30/2004)</u>	<u>Percentile</u> <u>Ranking of</u> <u>9/30/2004</u> <u>Valuation</u>	<u>Percentile</u> <u>Ranking of</u> <u>12/31/2003</u> <u>Valuation</u>	<u>Percentile</u> <u>Ranking of</u> <u>Peak</u> <u>Valuation</u>	<u>% Decline in</u> <u>Price Required</u> <u>to Reach</u> <u>Average Valuation</u>
Price/Earnings Ratios:								
Normalized Earnings	25.4 (P)	27.2	40.8	18.8	16%	13%	3%	-54.0%
12-Month Trailing Reported Earnings	19.7 (P)	22.8	30.0	17.5	26%	18%	6%	-11.3%
12-Month Trailing Operating Earnings	18.9 (P)	20.0	28.7	18.6 ¹	44%	26%	3%	12.1%
12-Month Forward Operating Earnings	15.6	18.0	25.4	13.7 ²	29%	20%	1%	-12.2%
Dividend Yields	1.7	1.6	1.1	3.2	85%	91%	100%	-47.0%
Price-to-Book	3.4 (P)	3.4 (P)	4.9 (P)	2.0 ³	11%	13%	0%	-41.7%

Sources: Standard & Poor's, Standard & Poor's Compustat, Thomson Datastream, Thomson Financial, 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.

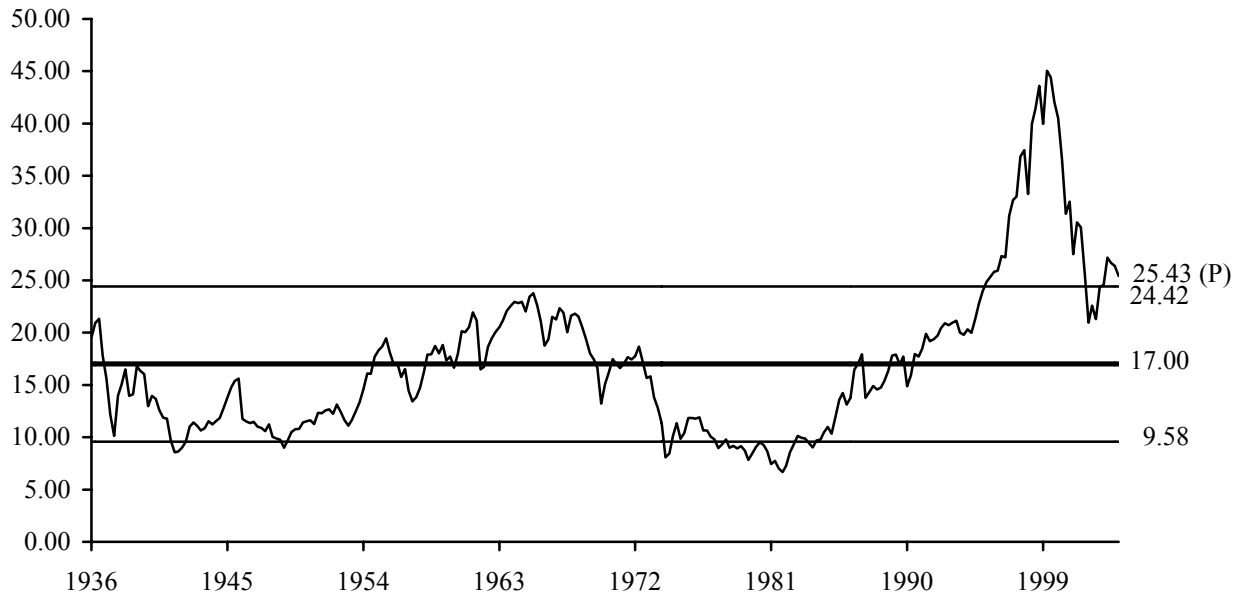
² The average is taken from September 30, 1978.

³ The average is taken from March 31, 1963.

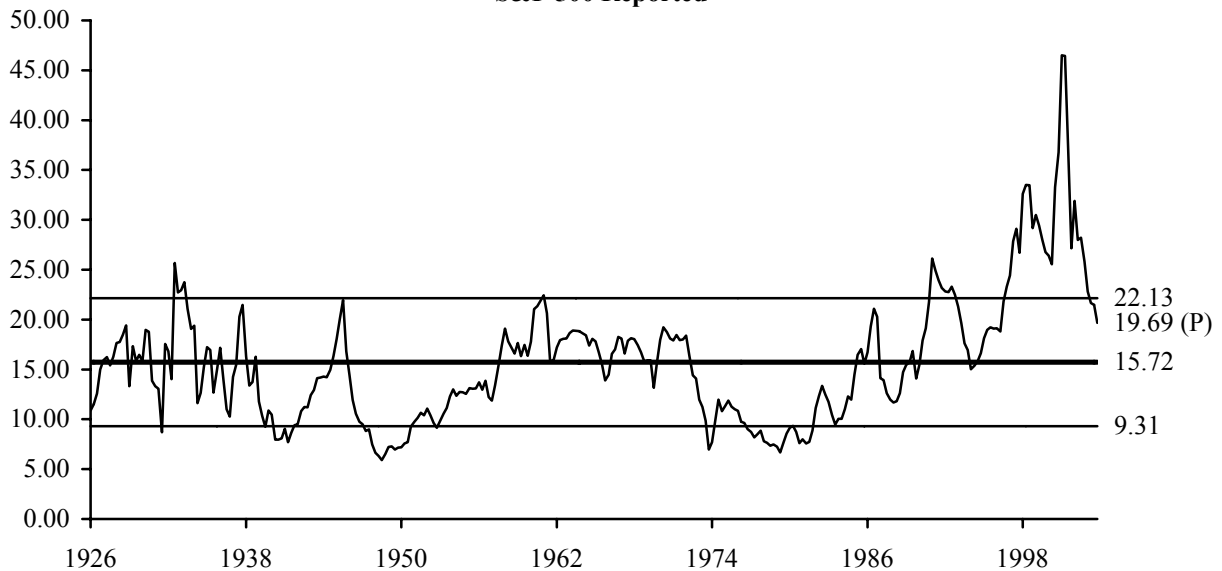
Table B

PRICE-TO-EARNINGS RATIOS UNDER VARIOUS EARNINGS DEFINITIONS

S&P 500 Normalized Real



S&P 500 Reported



Sources: Calculated from data provided by Standard & Poor's, Standard & Poor's Compustat, Thomson Datastream, and *The Wall Street Journal*.

Notes: (P) Preliminary. Normalized real price-earnings ratios for the S&P 500 are calculated by dividing the current index value by the annualized average real earnings for the trailing ten years.

Table C

**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 Normalized Earnings of \$44

Equity Risk Premium	Valuations Under Various Earnings Growth Assumptions for Next Ten Years							
	1%	3%	5%	7%	9%	11%	13%	15%
2%	866 29%	1,034 8%	1,232 (10%)	1,466 (24%)	1,742 (36%)	2,065 (46%)	2,444 (54%)	2,886 (61%)
3%	586 90%	694 61%	821 36%	970 15%	1,145 (3%)	1,351 (17%)	1,590 (30%)	1,870 (40%)
4%	446 150%	524 113%	616 81%	724 54%	850 31%	997 12%	1,168 (5%)	1,367 (18%)

Valuations Using 12-Month Trailing Reported Earnings of \$57

Equity Risk Premium	Valuations Under Various Earnings Growth Assumptions for Next Ten Years							
	1%	3%	5%	7%	9%	11%	13%	15%
2%	1,121 (1%)	1,338 (17%)	1,595 (30%)	1,898 (41%)	2,255 (51%)	2,674 (58%)	3,164 (65%)	3,737 (70%)
3%	758 47%	898 24%	1,062 5%	1,256 (11%)	1,483 (25%)	1,748 (36%)	2,059 (46%)	2,421 (54%)
4%	578 93%	679 64%	798 40%	937 19%	1,100 1%	1,290 (14%)	1,512 (26%)	1,770 (37%)

Valuations Using 12-Month Trailing Operating Earnings of \$59

Equity Risk Premium	Valuations Under Various Earnings Growth Assumptions for Next Ten Years							
	1%	3%	5%	7%	9%	11%	13%	15%
2%	1,170 (5%)	1,397 (20%)	1,665 (33%)	1,982 (44%)	2,354 (53%)	2,791 (60%)	3,303 (66%)	3,901 (71%)
3%	792 41%	937 19%	1,109 1%	1,311 (15%)	1,548 (28%)	1,825 (39%)	2,149 (48%)	2,527 (56%)
4%	533 109%	624 79%	730 53%	854 31%	999 12%	1,168 (5%)	1,364 (18%)	1,593 (30%)

Other Key Assumptions

- S&P 500 price of \$1,114.58
- Long-Term Earnings Growth of 5.0%
- Risk-Free Rate of 4.97%, the yield on the 30-year Treasury on September 30, 2004.

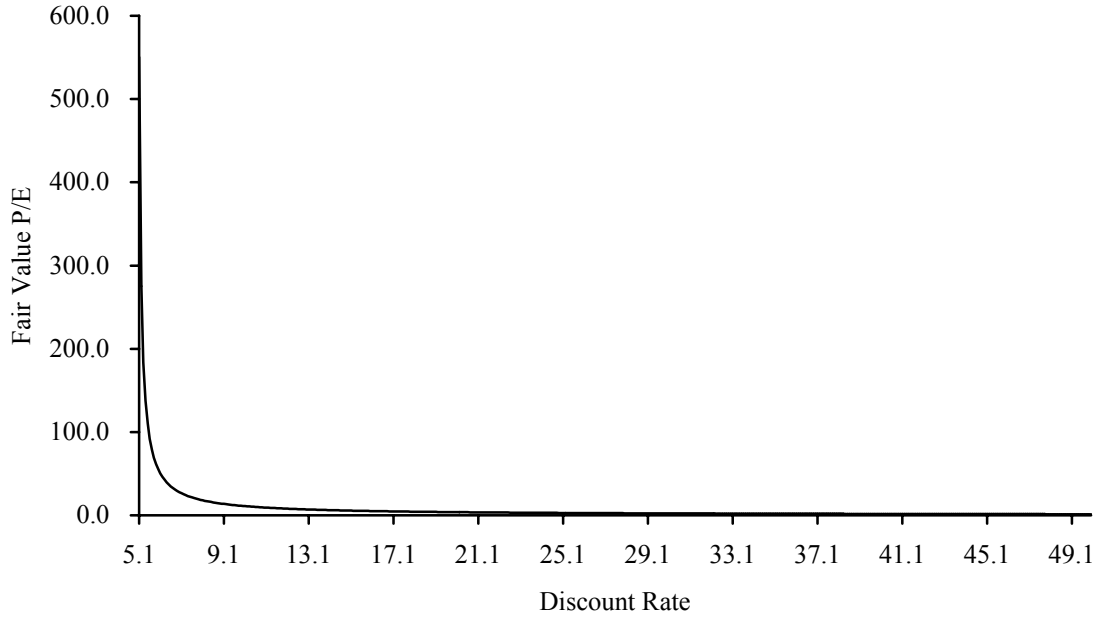
Sources: Standard & Poor's, Standard & Poor's Compustat, Thomson Datastream, Thomson Financial, and U.S. Treasury. The 30-year Treasury yield is an extrapolation of the Long-Term Average Rate series calculated by the Treasury following 2/18/02, when the Treasury ceased publication of the 30-year constant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

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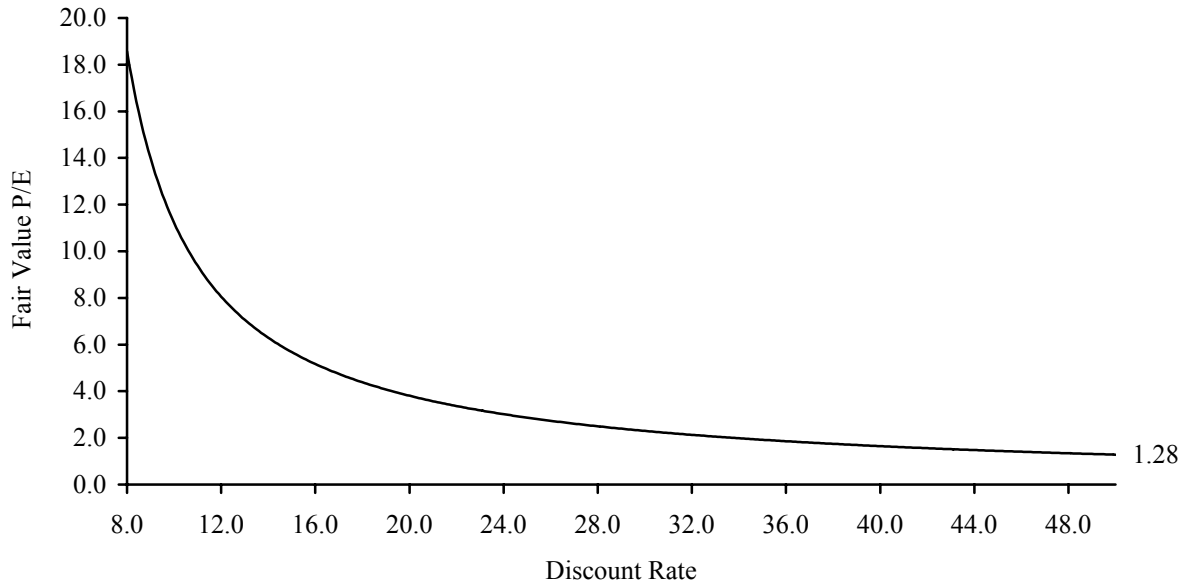
Table D

DIVIDEND DISCOUNT MODEL AND FAIR VALUE P/E MULTIPLES

Relationship is Non-Linear



But Approximate Linearity Over a Range of Interest Rates



Source: Federal Reserve.