Current price-earnings ratios can be evaluated by calculating the growth rate in earnings and dividends implied by the market data.

Evaluating the Level of the Market by Examining the Expected Growth Rate

By Robert Angell and Alonzo Redmon

Much has been written recently about the level of the stock market and whether or not it is overvalued. Therefore, it might be a good time to review the historical fundamentals of the stock market in order to gauge its current level.

In "How to Judge a P/E? Examine the Expected Growth Rate," which appeared in the March 1990 issue, I suggested that one approach is to calculate the growth rate in dividends and earnings that are implied by the current market's price-earnings ratios data and the minimum return you would expect for investing in the stock market (your required return). High ratios, of course, imply the expectation of high future growth rates, and it is useful to examine whether those expected growth rates are reasonable in order to determine, in turn, whether stock prices themselves are reasonable.

But what constitutes a "high" price-earnings ratio is not always obvious, and comparing current ratios to historical ratios can help put them into perspective. In this article, we use the last 20 years as the standard to judge the S&P 500.

Two key components of the price-earnings ratio for the S&P 500 are the growth in the index itself and the growth in earnings. The increase in the S&P 500 over the past 20 years translates to an annually compounded rate of growth of approximately 10.25%, although this increase has not been smooth and has varied substantially.

Over the same period, earnings on the S&P 500 have also grown, from $8 at the beginning of the period to almost $36 by the end of 1996. This translates to an annual growth rate in S&P 500 earnings of approximately 7.4%, and as with the S&P 500 index, the growth rate in earnings has not been smooth, ranging from a high of roughly 42% in 1988 to a low of –12% in 1991.

Clearly, the S&P 500 index has grown at a rate significantly faster than the S&P 500 earnings over the 20-year period. How can this be? It occurred because the price-earnings ratio on the S&P 500 has increased from 11 to slightly over 21 at the end of 1996. In other words, investors are willing to pay significantly more for $1 worth of earnings today than they were 20 years ago. Figure 1 shows the historical price-earnings ratio over the 20-year period. As can be seen from the chart, the price-earnings ratio is above the 20-year average, but still below the peak in the 1991-1992 period.

Thus, the unusually strong growth in the S&P 500 has come both from a growth in earnings and from a growth in earnings multiples.

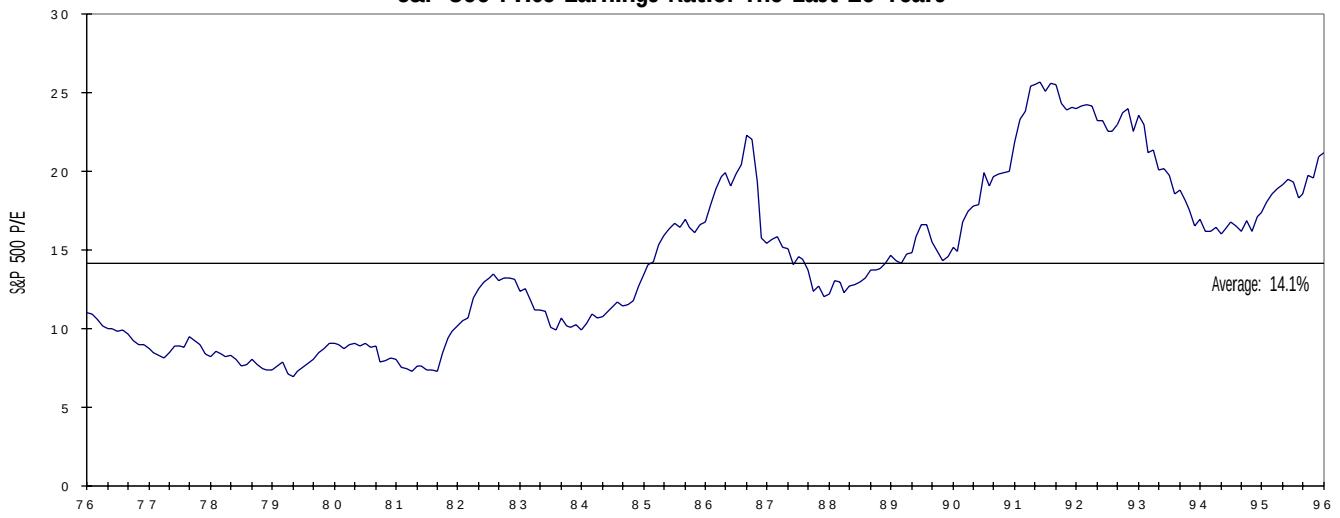
This information can be used to evaluate the relative level of the stock market using the equation presented in the accompanying table. The equation relates the value of a stock or index to dividends and earnings, investor's expectations for dividend and earnings growth, and the minimum return investors would require for investing in the stock. It is obvious that a firm that can generate a faster-growing stream of earnings and dividends should have a higher price than a firm with a lower-growing stream of earnings, but with an equal minimum required return. However, what is not obvious is the magnitude of the differences in prices relative to differences in the variables. The model allows you to evaluate the magnitude of the effect that changes in growth and required return will have on the stock's price.

For example, in early July, the S&P 500's price-earnings ratio was 22.0 and the dividend yield was 1.85%. We can solve for the implied growth rate as shown in the example in the table.

The table shows how the expected growth rate is calculated based on the S&P 500's average return of 14.4% (including dividends) for the last 20 years, which produces an expected growth rate of 12.3%. Using a more conservative return of 11%, which is roughly the average return over the last 35 years, the expected growth rate is 9.0%, while a return of 12% (the average return over the last 50 years) implies expected growth of 10%. (The last section of the table shows the expected growth rates based on several different required return rates, at current price-earnings

Robert J. Angell and Alonzo Redmon are professors of finance at North Carolina A&T State University in Greensboro.

Figure 1.
S&P 500 Price-Earnings Ratio: The Last 20 Years



ratios and dividend yields.)

How do these compare with actual growth rates—the 7.4% that the S&P 500 has averaged over the last 20 years? You can see from the examples that only if the required return were between 9% and 10% (9.4%, to be exact) would the expected growth rate be equal to the 7.4% earnings growth experienced over the past 20 years.

This might appear relatively low to some and high to others. Obviously, the 9.4% implied return is low compared to the actual returns in the market in recent years. However, it is important to remember that these were exceptional returns and unlikely to be repeated. On the other hand, the 9.4% implied return is still somewhat low even compared to the returns over the past 20 years. If you believe that investors will continue to require higher returns similar to those in recent years, you probably will view the market as somewhat overvalued, with expected growth rates exceeding historical norms. If, on the other hand, you believe that required returns are dropping, you may view the market as fairly valued, with expected growth rates that are similar to historical norms.

We should emphasize that we will not be able to identify whether or not we are correct for some time. We are not making a short-term estimate. Rather, our perspective is from that of the long-term investor, and if we are correct, long-term performance in equities will be somewhat lower than average over the period in which the market adjusts.

Only time will tell.

Table 1.
Calculating the Implied Growth Rate

$$G = \frac{(R \times P/E) - D/E}{P/E + D/E} = \frac{(R \times P/E) - (DY \times P/E)}{P/E + (DY \times P/E)}$$

Where:
- G = Implied growth rate in dividends and earnings
- R = Minimum required return
- P/E = Current price-earnings ratio
- D/E = Current dividend payout (dividend yield × price-earnings ratio)
- DY = Current dividend yield

An example using current market levels (P/E = 22.0, DY = 1.85%) and 14.4% required return:

$$G = \frac{(0.144 \times 22.0) - (0.0185 \times 22.0)}{22.0 + (0.0185 \times 22.0)}$$

$$= \frac{2.76}{22.41}$$

$$= 0.123 = 12.3\%$$

Expected Growth at Current Market Levels:*

	Required Rate of Return:						
	9%	**10%**	**11%**	**12%**	**13%**	**14%**	**14.4%**
Implied Growth Rate:	7.0	8.0	9.0	10.0	10.9	11.9	12.3

**P/E = 22.0; DY = 1.85%*