From the point of view of dividend valuation of the market, a most significant factor is the expectation for inflation.

Stock Market Valuations and Inflation: Adjusting to Reality

By John B. Lounsbury

With record returns posted by the market last year, it isn't surprising that many investors are closely examining current market valuations. Even articles in the *AAII Journal* have discussed methods of valuing the market [see, for instance, "Taking Stock of the Market: How to Evaluate Current Market Levels," by John Bajkowski, in the October 1995 issue].

In the process of valuing the market, many analysts have noted with concern that the stock market currently has an all-time low dividend yield. Historically, low dividend yields have been associated with overvalued markets, and periods of low dividend yields have often preceded market corrections that produced more appropriate (lower) market levels, so it is understandable analysts are eyeing current levels with concern.

But are dividend yields really low—or, to rephrase it in a better way, are real dividend yields low?

The Historical Record

Figure 1 shows the dividend yield for the S&P 500 for the past 60 years. The middle line indicates the 60-year average dividend yield (4.27%). The horizontal lines above and below this line indicate the range in which most (two-thirds) of all yields have fallen; yields within this range can be considered "normal," at least based on this time period. Yields above and below the upper and lower lines represent extremes—yields above 5.48% represent extreme undervaluation and yields below 3.06% represent extreme overvaluation.

By inspection of Figure 1, it can be seen that there have been many periods where the extreme undervaluation level has been far exceeded, especially between 1936 and 1956. In comparison, overvaluation extremes have been far less excessive and have, until the 1990s, been corrected quickly. It is from this basis of experience that some analysts and advisers have been bearish on stocks since the end of 1991.

Adjusting for Inflation

The dividend yields presented in Figure 1 certainly could make one question current market levels. However, the dividend yield used here is the nominal yield, unadjusted for inflation.

If inflation were at a constant level, adjustments would be unnecessary. However, a 6% dividend yield when inflation is 4% is very different to an investor than a 6% dividend yield when inflation is only 1%. Comparing dividend yields over different time periods that have various rates of inflation can cause distortions.

Thus, an important concept for the investor is the real yield, which adjusts the yield received (nominal yield) for the effects of inflation. Subtracting the inflation rate from the nominal yield gives you an approximate real yield, but the more accurate formula is:

$$\text{Real yield} = [(1 + \text{nominal yield}) \div (1 + \text{inflation})] - 1$$

(with nominal yield and inflation stated in decimal form, e.g., 1% is 0.01.) For instance, if nominal yields are 6% and inflation is 3%, the real yield is $[1.06 \div 1.03] - 1.0 = 0.029$, or 2.9%. Table 1 presents the real yield for various nominal yields and inflation rates.

Like Figure 1, Figure 2 shows the S&P 500's historical dividend yield for the past 60 years, but it uses the real dividend yield rather than the nominal yield. The middle horizontal line indicates the 60-year average real yield (0.21%), while the upper and lower horizontal lines show the range of real dividend yields that could be considered "normal" (the range in which two-thirds of all yields fell). Real dividend yields above the upper line (at 3.70%) and below the lower line (at –3.28%) represent extremes, indicating undervaluation and overvaluation levels.

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Figure 1.
S&P 500 Dividend Yield

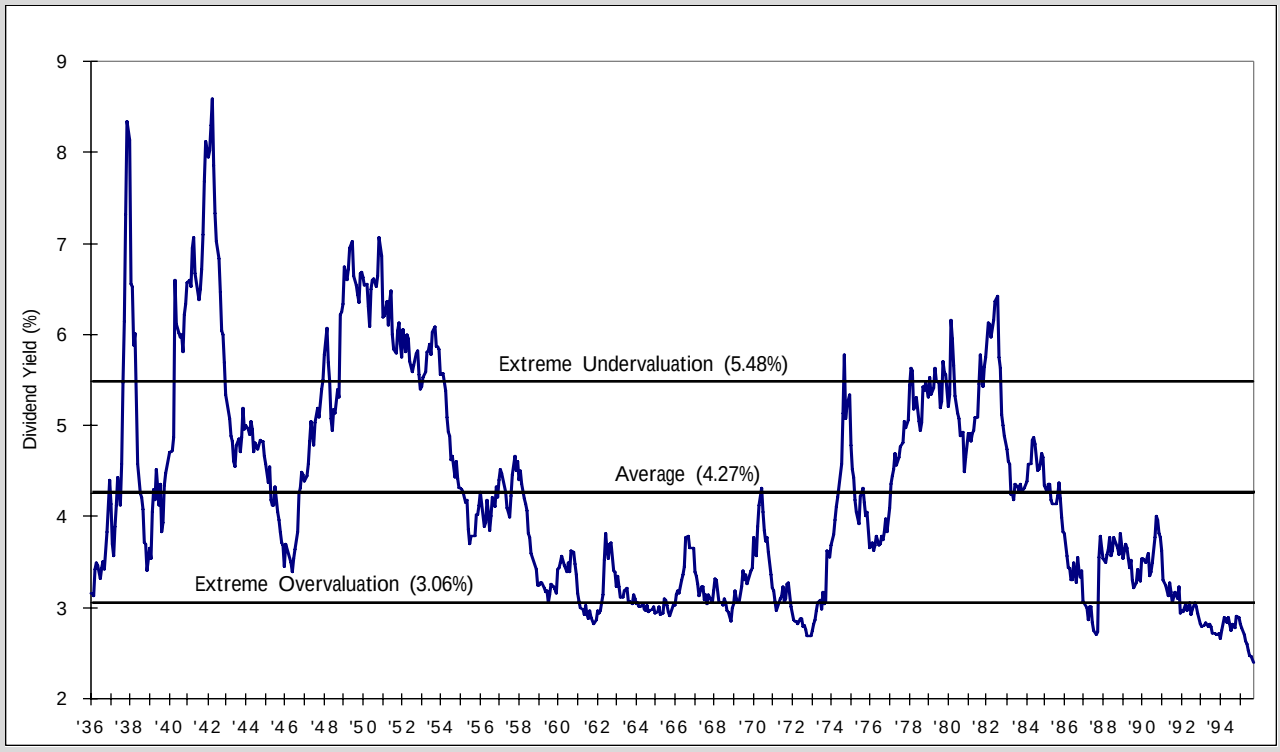

Figure 2.
S&P 500 Dividend Yield—Adjusted for Inflation

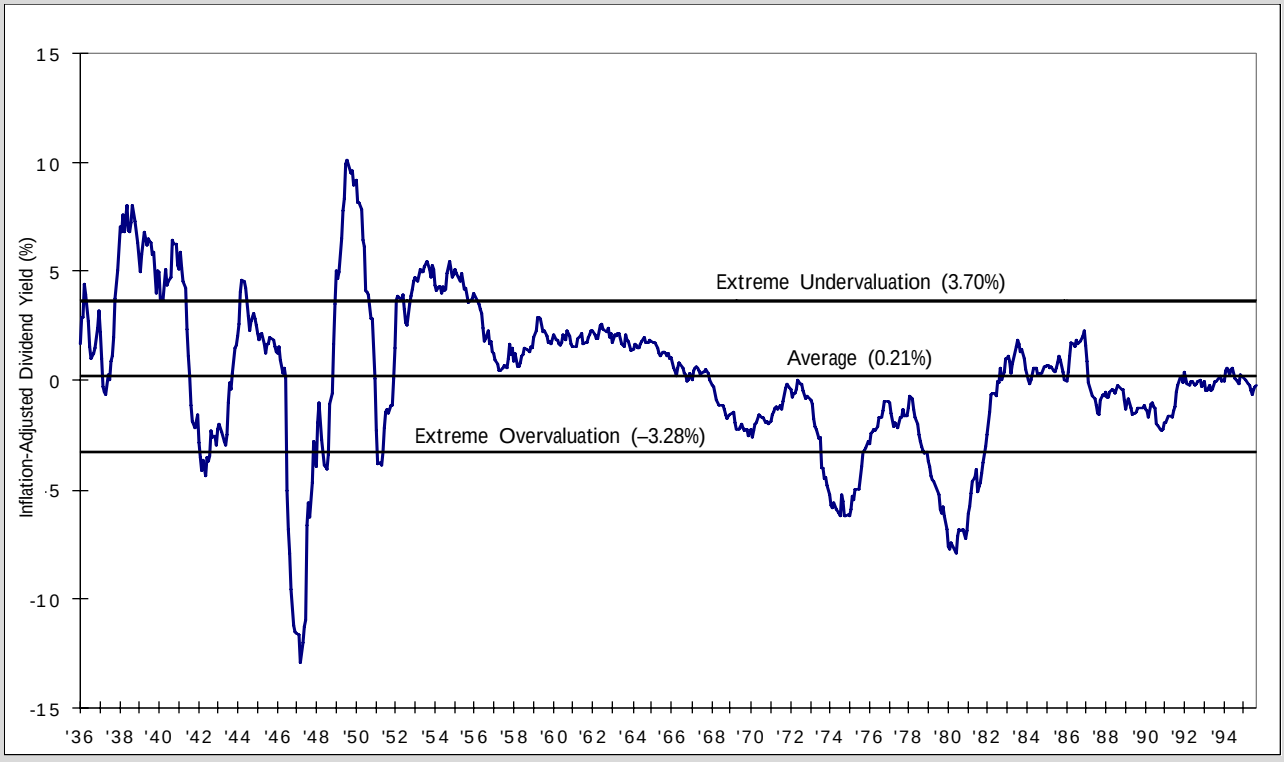

Table 1.
Comparison of Nominal and Real Yields

Nominal Yield (%)	Real Yield (%) When Inflation Equals 2.0%	4.0%	6.0%	8.0%
0.0	–2.0	–3.8	–5.7	–7.4
1.0	–1.0	–2.9	–4.7	–6.5
2.0	0.0	–1.9	–3.8	–5.6
3.0	1.0	–1.0	–2.8	–4.6
4.0	2.0	0.0	–1.9	–3.7
5.0	2.9	1.0	–0.9	–2.8
6.0	3.9	1.9	0.0	–1.9
7.0	4.9	2.9	0.9	–0.9
8.0	5.9	3.8	1.9	0.0
9.0	6.9	4.8	2.8	0.9
10.0	7.8	5.8	3.8	1.9

There are several remarkable observations that can be made regarding Figure 2:

- Perhaps the most important observation is that the current stock market is relatively close to its historical average real dividend yield.
- The extremes above and below the normal ranges occur more symmetrically than with nominal yield.
- The range of yields that could be considered normal is much larger for real dividend yield than for nominal dividend yield.
- Since 1968 (a period of higher average inflation), the market has tended toward overvaluation most of the time (using real dividend yields as the measure of market valuation); before 1968 (a period of lower average inflation), the market tended toward undervalution most of the time.
- Average real dividend yield for the past 60 years has been very close to zero. In other words, dividend yields have been only slightly greater than inflation.
- There is good correlation between low points in real dividend yield and market corrections—note in particular 1969 (the 1970 bear market), 1973-74 (the 1974 bear market), 1980 (the 1981-82 correction), 1987 (the 1987 crash), and 1990 (the 1990 bear market). Although only two of these low points were what we have defined to be extremely overvalued (1973-74 and 1980), the other three low points were substantially below average.

Market Valuation

Using nominal dividend yields, as in Figure 1, the stock market is extremely overvalued. Using real dividend yields, as in Figure 2, the stock market is more nearly fairly valued. Why the dichotomy?

Perhaps the best explanation lies in understanding that the market represents the expectations of investors—in other words, the market is looking ahead. The graphs in Figure 1 and Figure 2 are constructed from historical data, with the last point in each graph representing current data. However, the market is actually valued by what investors expect three, six, or nine months (or more) in the future. From the point of view of dividend valuation of the market, a most significant factor is expectation for inflation.

How can changing inflation expectations change valuations? First, recall the formula for valuing the market using dividend yield:

Dividend ÷ yield = market value

The equation uses nominal yield to determine the market value. Using the 60-year average real dividend yield to determine "fair," you can determine the "fair" nominal yield for various inflation rates by solving for the nominal yield using the first equation presented in this article, or you can use the real yields shown in Table 1. Using the current dividend for the S&P 500 of $14.10 and these adjusted yields at various rates of inflation, Figure 3 shows the fair market value for the S&P 500

Table 2.
The Five Most Overvalued Markets of the Past 30 Years
Based on Inflation-Adjusted Dividend Yields

Maximum Overvalue					Correction		
Real Dividend Yield (%)	Month	S&P 500 Value	Fair Value	Amount Overvalued (%)	Top	Bottom	S&P 500 Loss (%)
–2.53	Dec. 1969	92	52	77	Dec. 1968	June 1970	32
–6.25	July 1974	79	31	155	Dec. 1972	Oct. 1974	48
–7.86	June 1980	114	43	165	Nov. 1980	July 1982	24
–1.53	Sept. 1987	322	198	63	Aug. 1987	Dec. 1987	34
–2.31	Nov. 1990	317	192	65	July 1990	Oct. 1990	20

(solid curve). It also shows the range of over- and undervaluation as a function of the rate of inflation.

It is immediately evident why inflation fears have such a dramatic impact on the stock market. At current inflation levels of 2.5%, the fair market nominal dividend yield would be 2.7% ([1.0021 × 1.025] – 1.0); with $14.10 in dividends that puts the fair market value for the S&P 500 at around 520 [14.10 ÷ 0.027]. With the S&P 500 around 600 in mid-January, the market is 15% overvalued, which is not a serious deviation from the historical average. The five largest market corrections in the past 30 years have all occurred from much greater overvaluations (see Table 2). However, with an increase of inflation by just 1.3% to 3.8%, 520 would correspond to extreme overvaluation with $14.10 in dividends.

In Figure 4, the same graph as Figure 3 is plotted except that dividends for the S&P 500 are 10% higher than present. At that dividend level, fair market value for the S&P 500 is approximately 570 for 2.5% inflation; with 3.6% inflation, fair market value would be about 410. The stock market is much more sensitive to a 1% change in inflation than to a 10% increase in dividends. It is important to recognize that, at current dividend growth rates, $15.51 in Figure 4 represents the dividend that will be achieved in late 1997 or early 1998.

Comparing the fair market values (the solid lines) in Figure 3 using current dividends and in Figure 4 on dividends that are 10% higher, it is easy to see why the stock market reacts so strongly to fears of higher inflation.

Conclusion

Market valuations are based on expectations, including expectations concerning future rates of inflation. To compare market valuations over different time periods with different inflation expectations, it is necessary to put valuations on an equal basis by adjusting for inflation. For that reason, real dividend yields rather than nominal yields are more likely to reveal meaningful market valuations. Based on 60 years of dividend yield history, the stock market is not significantly overvalued at current rates of inflation. However, an increase in inflation of 1.2% or more would make current market levels extremely overvalued, based on current real dividend yield valuation.

It is important to recognize that dividend yield is only one means of evaluating stock prices. Other important measures include price-earnings ratios and earnings growth rates, and the relationship of these parameters to stock market valuation is also subject to the influence of inflation.

To gain a balanced view of stock market valuation, one needs to incorporate input from many sources. The analysis presented here is only one of the may factors that form a complete description of market valuation.

Figure 3.
Dividend Yield Valuation of S&P 500
Inflation-Adjusted Valuations Based on Current Dividend ($14.10) and Historical Average Real Yields

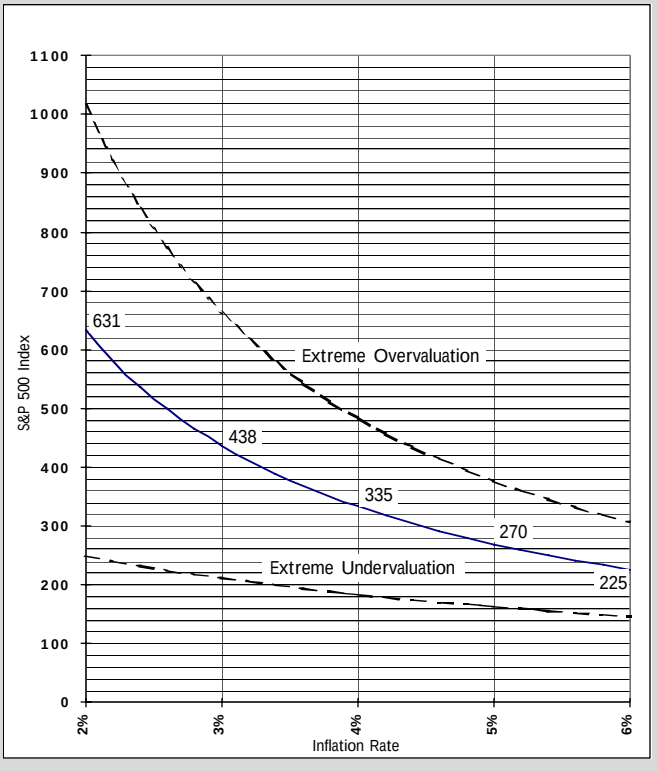

Figure 4.
Dividend Yield Valuation of S&P 500
Inflation-Adjusted Valuations Based on Current Dividend + 10% ($15.51) and Historical Average Real Yields