



Portfolio Strategy Service

#34 Populist Capitalism And Other Wildly Bullish Themes

#35 The Economic Consequences Of The Peace

#36 Conference Call With Alan Blinder

#37 New Era Recession?

Topical Study #38

Fed's Stock Market Model
Finds Overvaluation

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Three Ways To Correct Overvaluation. The folks at the Federal Reserve have a new stock market valuation model. It shows that stock prices are 15%-20% overvalued. I can't disagree with this conclusion. The Dow did plunge 6.8% from a closing record high of 8259 on August 6 to 7694 on August 15, but then it rebounded just above 8000 the following three days. The Fed's model suggests that the summertime correction may not be over, but I don't expect much more than a 10% decline from the August 6 peak. I still expect to see the Dow hit 8500 by the end of the year, though it might take a bit longer to get there. I still expect 10,000 by the end of the decade.

History shows markets can stay overvalued and become even more overvalued for awhile. But eventually, overvaluation is corrected in three ways: 1) falling interest rates, 2) higher earnings expectations, and of course 3) falling stock prices—the old fashioned way to decrease values. Better-than-expected economic growth during the third quarter has already halted the recent decline in the 10-year government bond yield. Another negative for bonds is the possibility that the German Bundesbank might raise short-term interest rates to defend the deutschemark. However, lower-than-expected US inflation should stabilize the 10-year yield around 6.2%-6.5% for now, before it declines to 5.8% closer to year-end.

Earnings of multinational companies may be negatively impacted by the strong dollar and weak overseas economies. Indeed, during the first week of August, both Coke and Gillette warned analysts that they should lower their growth assumptions for these two reasons. On the other hand, better-than-expected growth should boost profits of companies with revenues coming mostly from US sales. Profits in the technology sector should remain very strong especially as these companies benefit from increased spending by business and government to fix The Year 2000 Problem.

Greenspan's Model Finds Some Irrational Exuberance. Alan Greenspan, the chairman of the Federal Reserve Board, has developed a keen interest in the stock market. It was on December 5, 1996, that he worried out loud for the first time about "irrational exuberance" in the stock market. He did it again on February 25 of this year. He probably instructed his staff to devise a stock market valuation model to help him evaluate the extent of this irrational exuberance. Apparently, they did so and it was made public, though buried, in the Fed's Monetary Policy Report to the Congress, which accompanied Mr. Greenspan's July 22 Humphrey-Hawkins testimony. (I first wrote about it in the July 28 issue of my *Weekly Economic Analysis*.)

According to Mr. Greenspan's new model, the S&P 500 should have been trading around 800 in July. Instead, it was over 900, or nearly 20% above fair value. This is the most overvalued the market has been since July 1991. In this prior episode, lower bond yields, rather than falling stock prices corrected the valuation problem. The Fed's model shows that the stock market was 32% overvalued during September 1987, just prior to the October crash. Back then, the 10-year bond yield rose from 7.1% in January to 9.4% in September. By December 1987, the market was 7% undervalued mostly because prices crashed, but also because the bond yield fell and earnings expectations were moving higher (Exhibits 1, 2, 3, and 4). By the way, the market was fairly valued last December when Mr. Greenspan first mentioned irrational exuberance.

Alan's Model. As noted above, the stock valuation model was buried in the July Monetary Policy Report. It was summed up in one paragraph and one chart on page 24 of a 25-page document.¹ The paragraph is reprinted below. The Report's chart shows a strong inverse correlation between the ratio of S&P 500 earnings—using 12-month-ahead consensus earnings estimates compiled by I/B/E/S International Inc.²—and the 10-year Treasury yield (Exhibit 5).

Of course, in the investment community, we tend to follow the Price/Earnings ratio rather than the Earnings/Price ratio. The ratio of the S&P 500 price index to expected earnings (P/E) is highly correlated with the reciprocal of the 10-year bond yield. The Fed's model suggests that July's fair-value P/E multiple should have been about 16 with the bond yield close to 6%. Instead, the actual P/E was over 19 (Exhibit 6). A 19 multiple would be fair value if the bond yield fell to 5.3%. The Fed's analysis can be used to derive a fair-market price for the S&P 500 by dividing expected earnings by the bond yield (Exhibit 1). When the actual S&P 500 is greater (less) than the fair-value S&P 500 index, the market is overvalued (undervalued). In July, the market was almost 20% overvalued as noted above. This could be corrected without a price decline if the bond yield falls to 5.3% or earnings rise 20%—or a combination of a smaller decline in the yield and a smaller increase in earnings that add up to a 20% gain in the fair-value price.

Many investors tend to follow the P/E ratio using actual (four-quarter trailing) rather than expected earnings. There is a strong upward bias in expected earnings as measured by I/B/E/S. Collectively, analysts almost always overestimate year-ahead actual earnings. Yet the Fed's model clearly supports expected rather than actual earnings for valuation purposes. There is always the risk that the market is even more overvalued than the Fed's model suggests because expected earnings exceed both current and year-ahead realized earnings. The good news is that while the market is overvalued based on expected earnings, the gap between expected and actual earnings currently is relatively small (Exhibits 7, 8, 9, and 10).

Excerpt from Fed's July Monetary Policy Report:

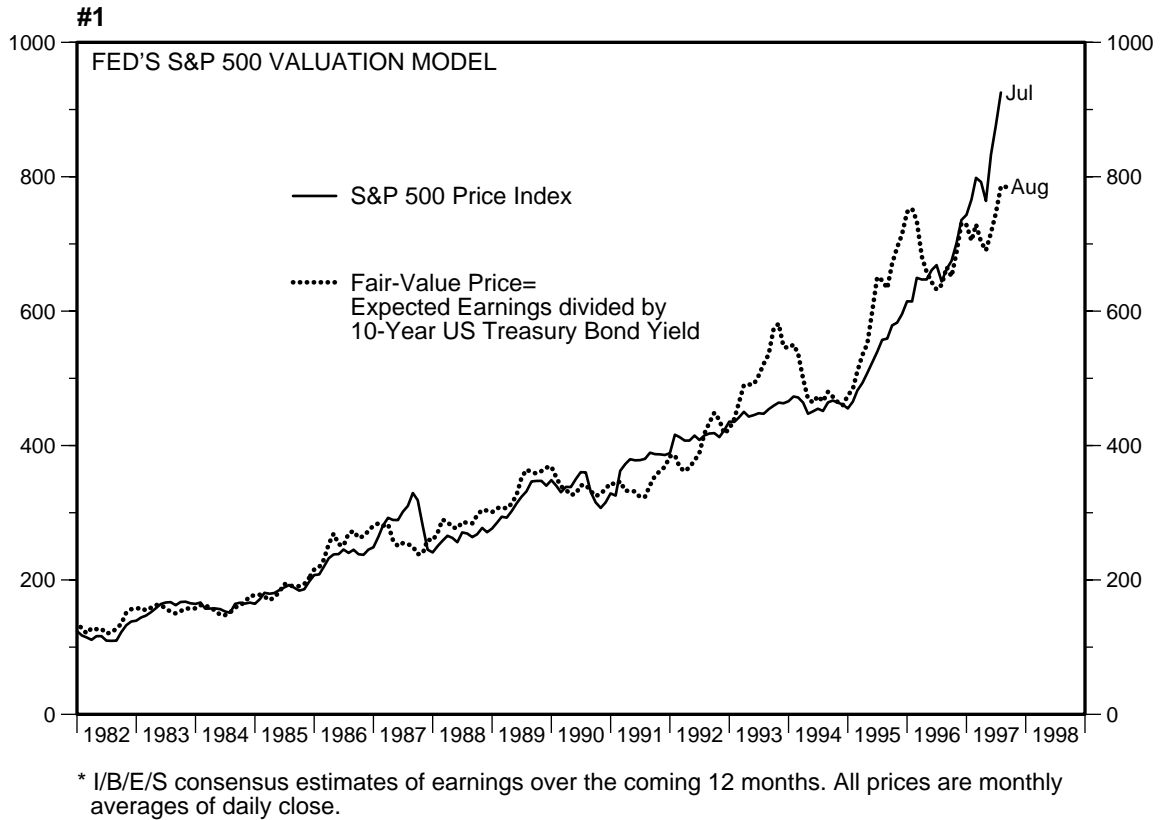
The run-up in stock prices in the spring was bolstered by unexpectedly strong corporate profits for the first quarter. Still, the ratio of prices in the S&P 500 to consensus estimates of earnings over the coming twelve months has risen further from levels that were already unusually high. Changes in this ratio have often been inversely related to changes in long-term Treasury yields, but this year's stock price gains were not matched by a significant net decline in interest rates. As a result, the yield on ten-year Treasury notes now exceeds the ratio of twelve-month-ahead earnings to prices by the largest amount since 1991, when earnings were depressed by the economic slowdown. One important factor behind the increase in stock prices this year appears to be a further rise in analysts' reported expectations of earnings growth over the next three to five years. The average of these expectations has risen fairly steadily since early 1995 and currently stands at a level not seen since the steep recession of the early 1980s, when earnings were expected to bounce back from levels that were quite low.

¹ <http://www.bog.frb.fed.us/boarddocs/hh/9707Report.htm>

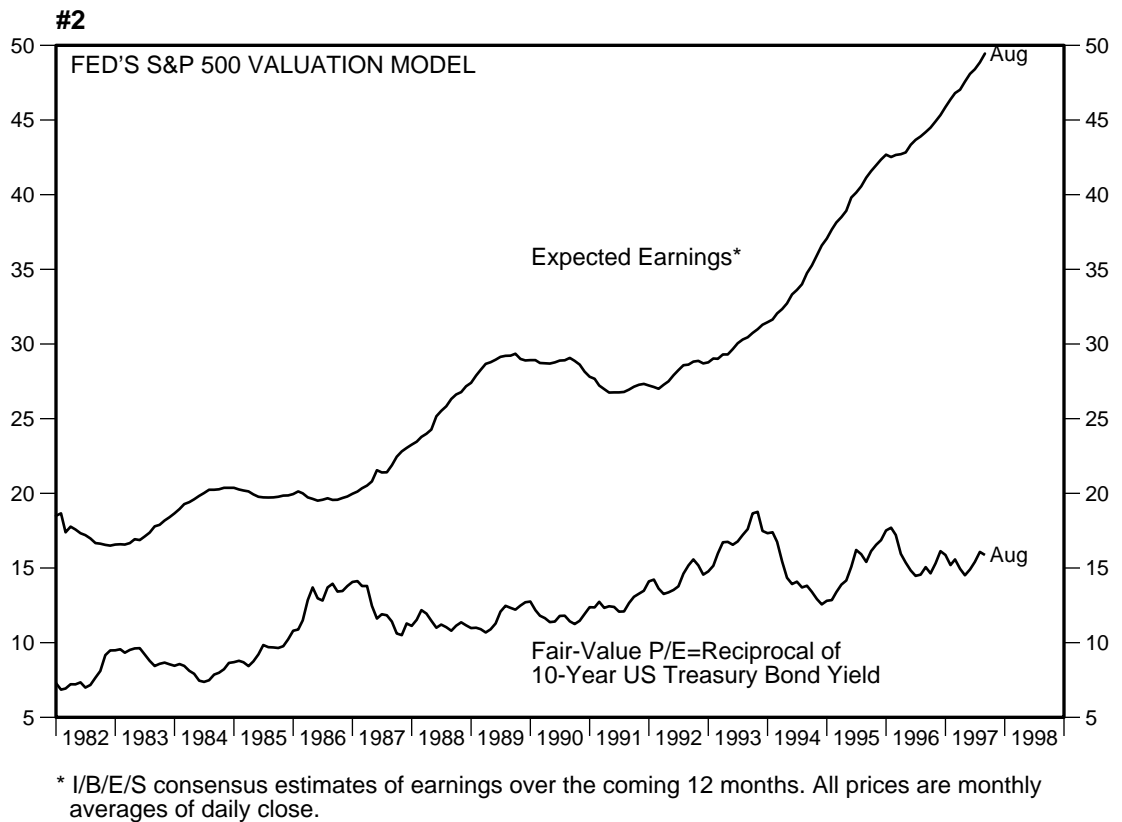
² <http://www.ibes.com/>

- S&P 500 Valuation -

Fed's stock market model shows some irrational exuberance.

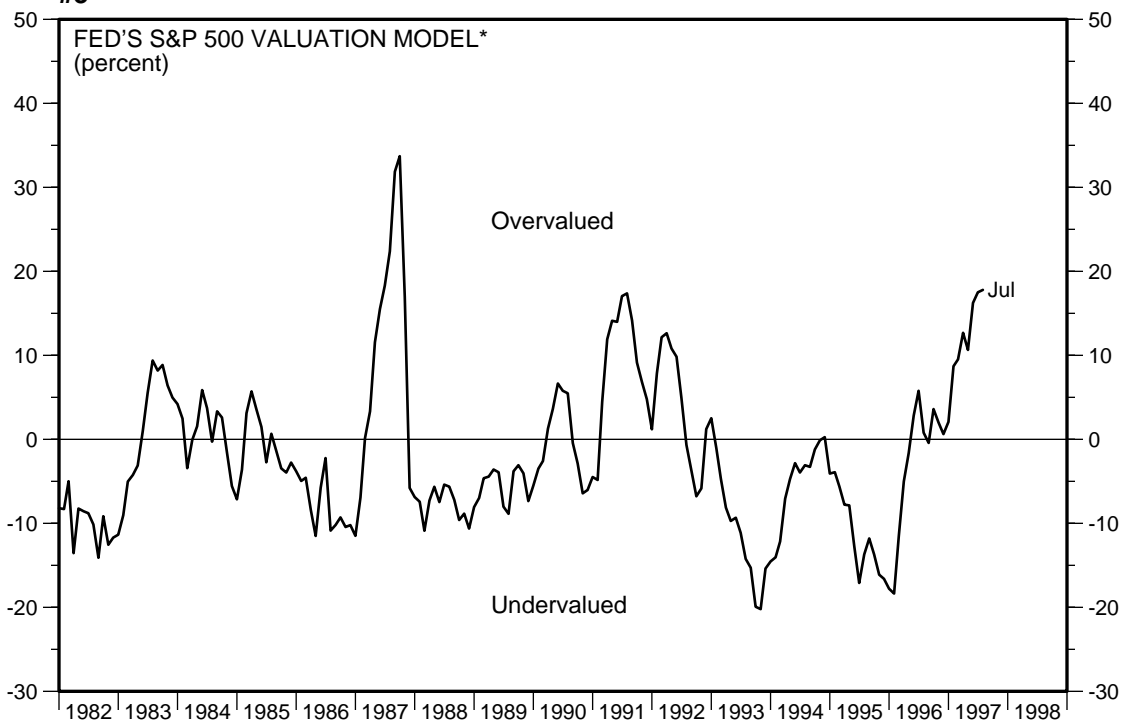


In the Fed's model, the fair-value price is equal to expected earnings divided by the 10-year bond yield.

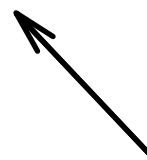


- S&P 500 Valuation -

#3

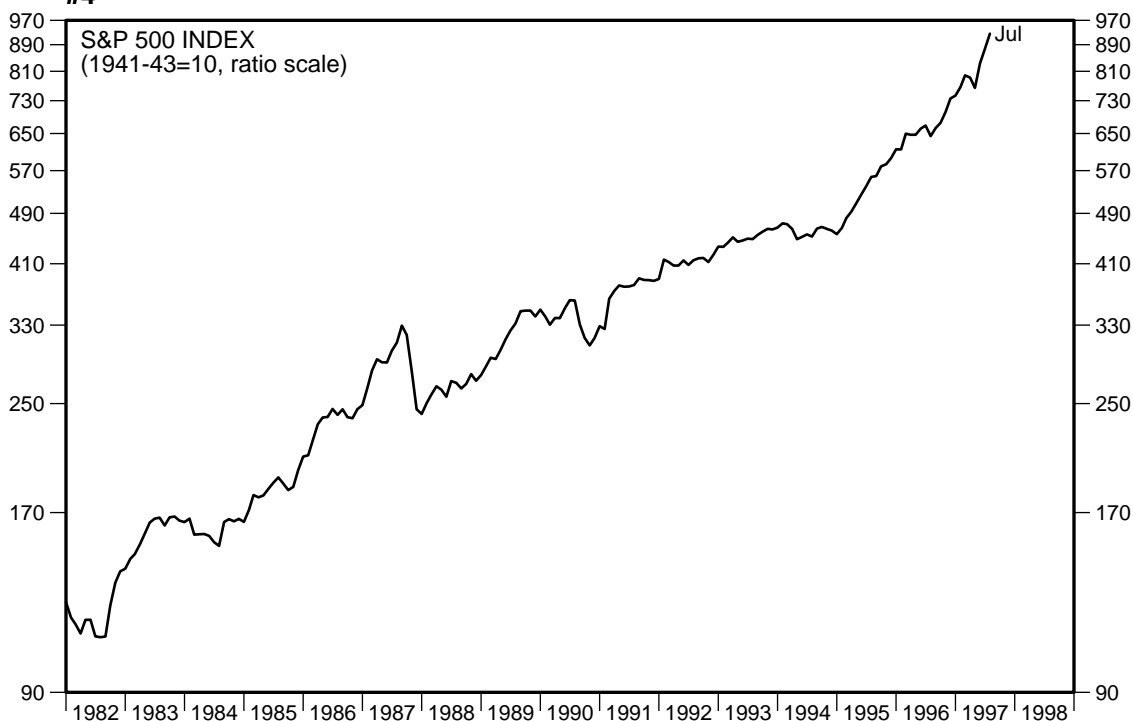


* Ratio of S&P 500 index to I/B/E/S consensus estimates of earnings over the coming 12 months divided by the 10-year bond yield minus 100.



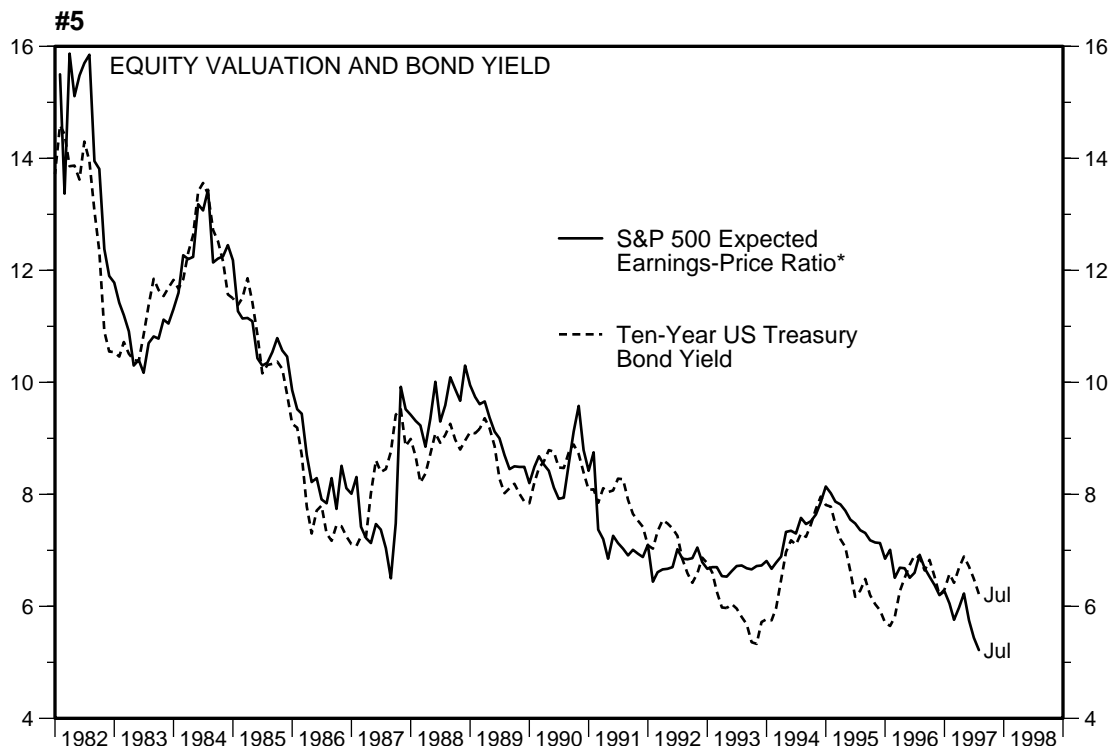
Fed's S&P 500 valuation model suggests stock prices were nearly 20% overvalued in July. Overvaluation can be corrected in three ways: 1) a drop in stock prices, 2) a drop in the bond yield, and/or 3) an increase in expected earnings.

#4



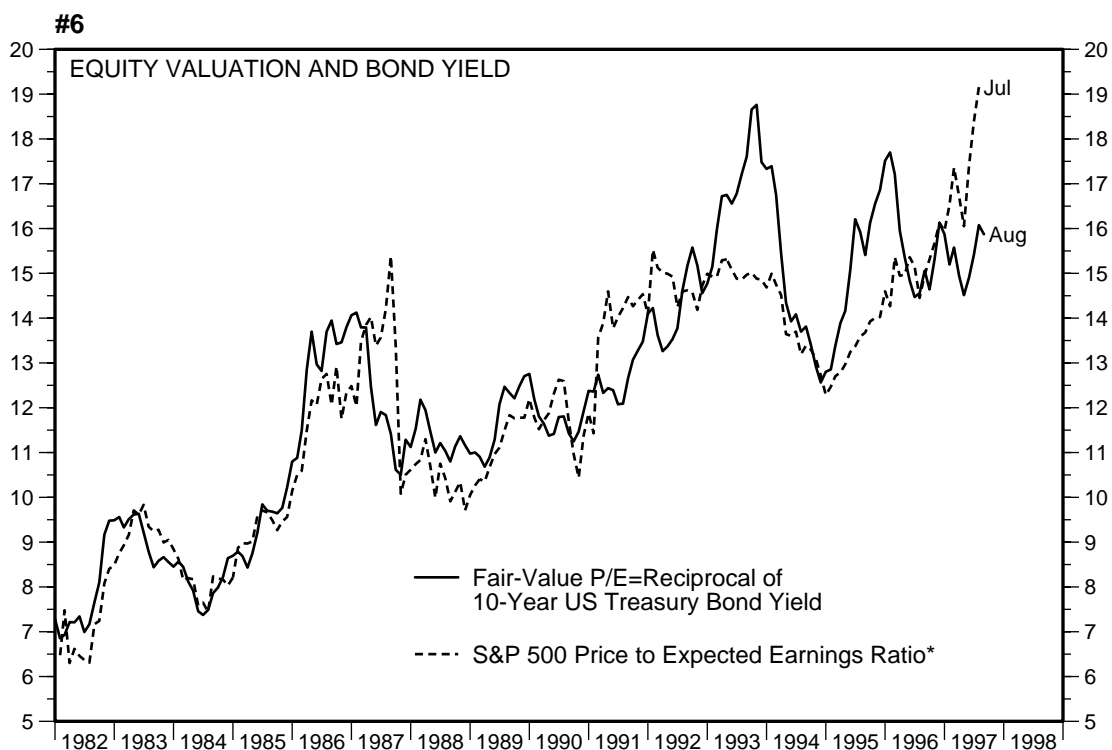
- S&P 500 Valuation -

This chart appeared in the Fed's July Monetary Policy Report to the Congress. Another, more familiar way to look at it follows:



* Earnings-price ratio is based on the I/B/E/S consensus estimates of earnings over the coming 12 months. All prices are monthly averages of daily figures.

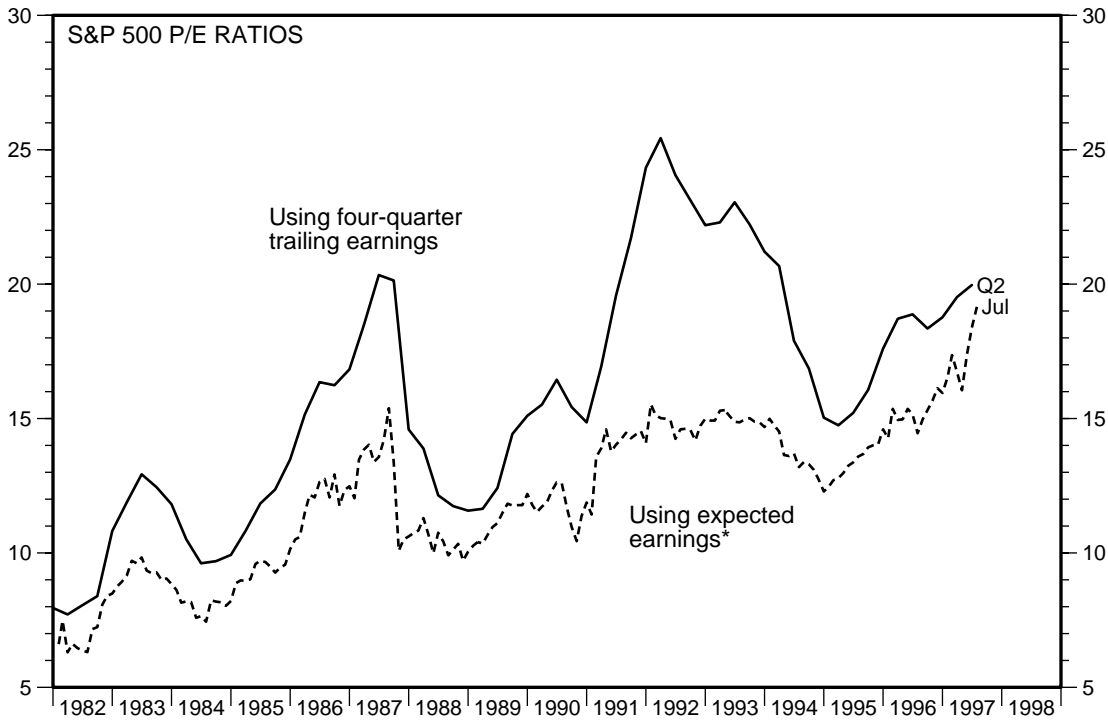
There is a very good correlation between the P/E (based on expected earnings) and the reciprocal of the bond yield. The yield suggests a P/E of 16, well below the market's 19 ratio. Is the market too rich, or right to expect lower yield soon?



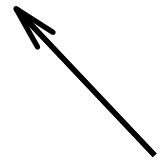
* I/B/E/S consensus estimates of earnings over the coming 12 months. All prices are monthly averages of daily close.

- S&P 500 -

#7

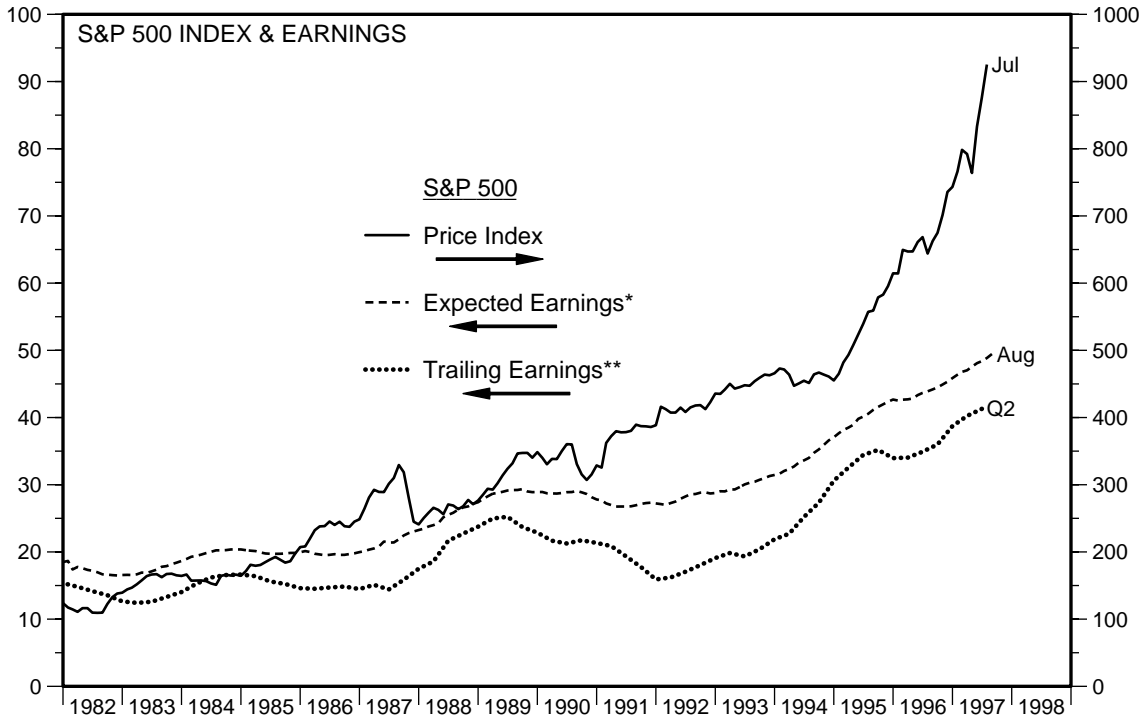


* I/B/E/S consensus estimates of earnings over the coming 12 months. All prices are monthly or quarterly averages of daily close.



Fed's valuation model suggests that stock prices are determined by expected, not actual earnings. So P/E based on trailing earnings is mostly irrelevant to valuation.

#8



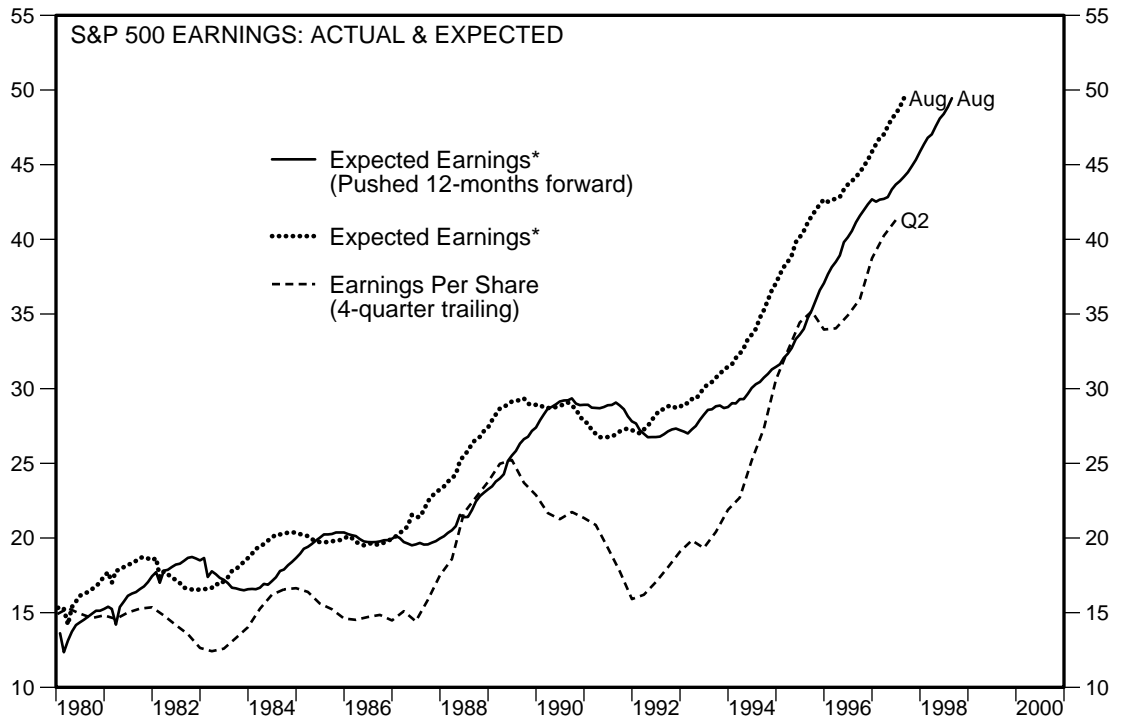
* I/B/E/S consensus estimates of earnings over the coming 12 months. Prices are monthly averages of daily close.

** Four-quarter average.



- S&P Earnings -

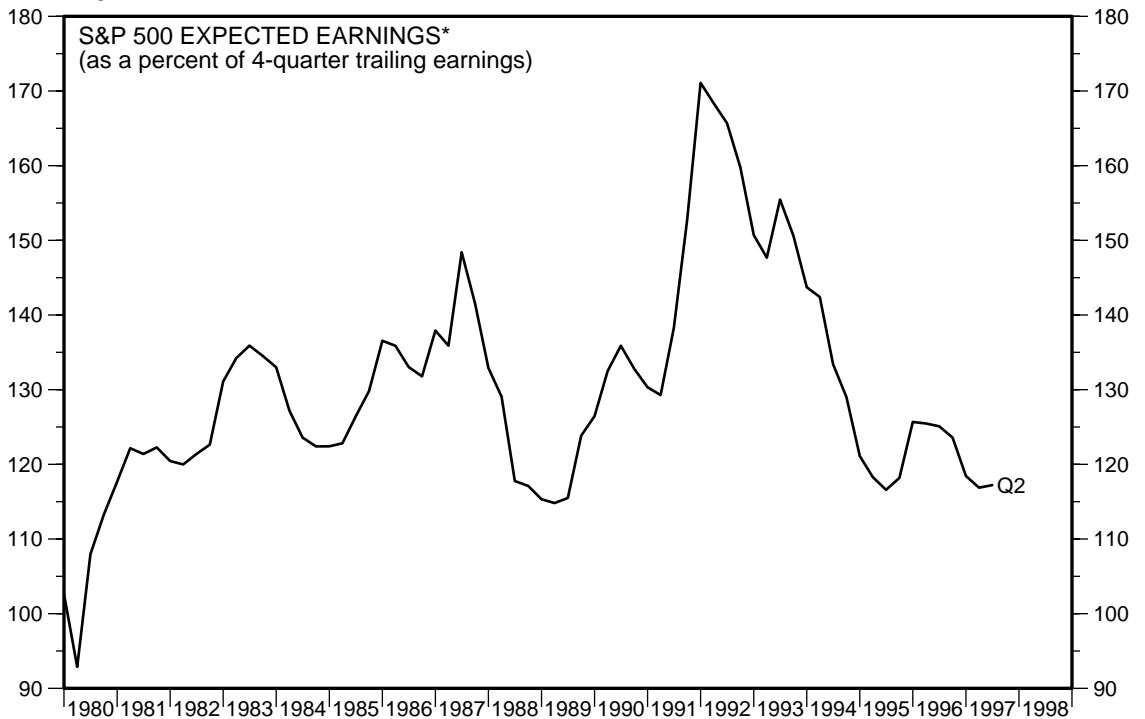
#9



* I/B/E/S consensus estimates of earnings over the coming 12 months.

There is a systematic upward bias in expected earnings as measured by I/B/E/S. Collectively, analysts almost always overestimate actual earnings. Yet the Fed's model clearly supports expected rather than actual earnings for valuation purposes.

#10



* I/B/E/S consensus estimates of earnings over the coming 12 months.

The good news is that while the market is overvalued based on expected earnings, the gap between expected and actual earnings is relatively small now.

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