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Special Report

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Primer: Using The Fed Model Properly

Is the stock market overvalued or undervalued? One way we can answer this question is by using the Fed's valuation model for stocks, comparing the earnings yield of an index (the inverse of the P/E ratio) to the yield of the 10-year Treasury Note.

The Fed's Model

The Fed achieves its stock valuation number by using the following equation:

> (10-year Treasury Note yield / Earnings Yield of S&P 500)-1

Basically it compares how the S&P 500 is performing against the benchmark of the 10-year Treasury Note.

What Doesn't Work – Growth Stocks

In June 1999, *The Leuthold Group* (www.leutholdgroup.com) did a special study on the Fed's valuation model. This model measures the relative valuation of the S&P 500 and the 10-year Treasury Note. They found the Fed Model was **not** a particularly good forecaster of upcoming market performance. We agree with their results.

Rather than dismiss the Fed Model as having little practical use, we decided to test it against both the S&P500/BARRA Growth Index ("Growth Index") and S&P 500/BARRA Value Index ("Value Index"). We found that this same model is a good predictor of the Value Index. How can this be?

In testing valuation models on the Growth Index, we found it to be a poor indicator of the overall S&P 500's performance.

The Overall S&P 500 Returns Based on The Valuation of the Growth Index

Environment	Total Return	% of the Time
All Periods	14.90%	100.00%
When Growth Stocks Are **Overvalued** (above zero)	15.18%	87.25%
When Growth Stocks Are **Overvalued** (above zero) and 10-Year Yields are **Rising** (YoY change is Positive)	10.63%	33.56%
When Growth Stocks Are **Undervalued** (below zero)	12.98%	12.75%
When Growth Stocks Are **Undervalued** (below zero) and 10-Year Yields are Falling (YoY change is Negative)	N/A	0.00%

The table above shows how the S&P 500 performs when the Growth Index is undervalued/ overvalued based on the "Fed model." Notice the Growth Index is **not** a good predictor of future movement. The market actually does better during periods when the Growth Index is overvalued and worse than average when it is undervalued.

What Does Work – Value Stocks

When earnings growth carries a large variable-weight in the Fed model (as it is with the Growth Index), comparing earnings yields to interest rates is of little use. However, when earnings growth is stable, like it is with the Value Index, comparing earnings yields to interest rates seems to work. The table below illustrates this.

The Overall S&P 500 Returns Based on The Valuation of the Value Index

Environment	Total Return	% of the Time
All Periods	14.90%	100.00%
When Value Stocks Are **Overvalued** (above zero)	10.93%	32.55%
When Value Stocks Are **Overvalued** (above zero) and 10-Year Yields are **Rising** (YoY change is Positive)	3.31%	6.71%
When Value Stocks Are **Undervalued** (below zero)	16.81%	67.45%
When Value Stocks Are **Undervalued** (below zero) and 10-Year Yields are Falling (YoY change is Negative)	22.76%	27.85%

This table shows how the S&P 500 performs when the Value Index is undervalued/overvalued based on the "Fed model." Notice the Value Index is a good predictor of the performance of the overall S&P 500. The market performs above average when the Value Index is undervalued and below average when it is overvalued.

Since one is not paying for extraordinary growth with an index of value stocks, the "competition" with interest rates becomes critical. **The Fed had the right idea with their valuation model – they just used the wrong index (there are too many growth stocks in the S&P 500 for this model to work effectively).** Looking at the S&P 500 as a whole, the results are as follows.

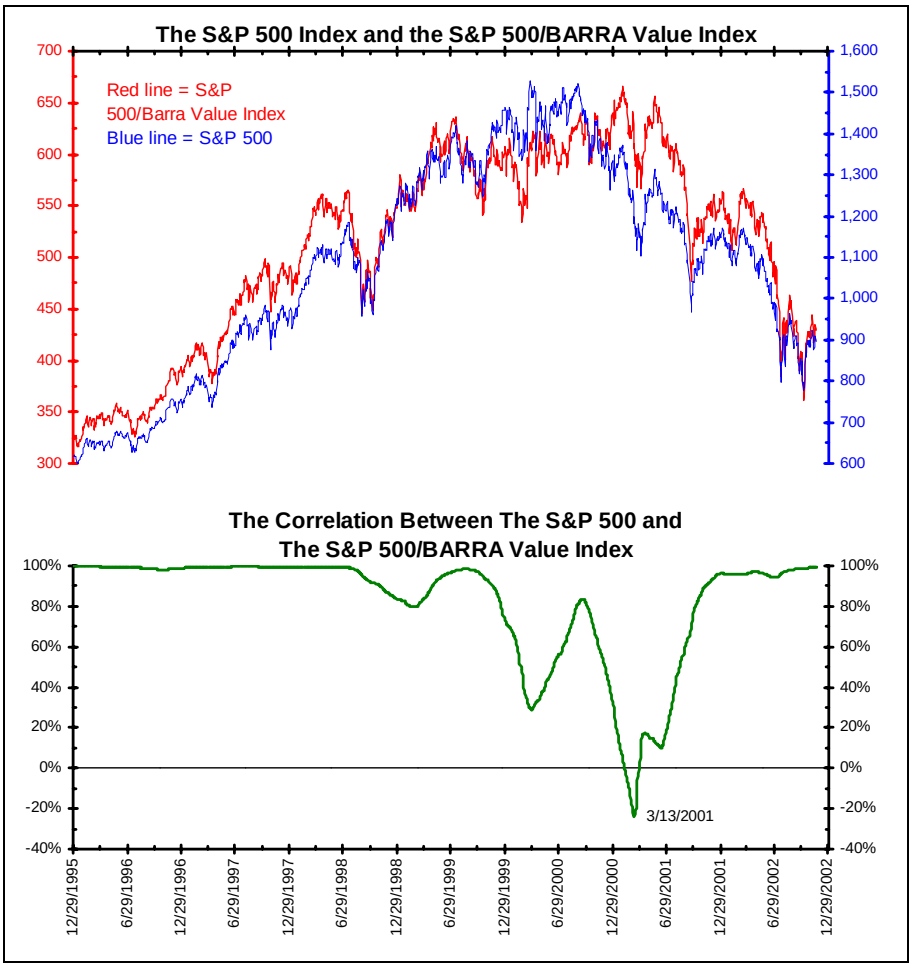
The Overall S&P 500 Returns Based on The Valuation of the Overall S&P 500

Environment	Total Return	% of the Time
All Periods	14.90%	100.00%
When S&P 500 Is **Overvalued** (above zero)	14.57%	77.85%
When S&P 500 Is **Overvalued** (above zero) and 10-Year Yields are **Rising** (YoY change is Positive)	8.01%	25.84%
When S&P 500 Is **Undervalued** (below zero)	16.04%	22.15%
When S&P 500 Is **Undervalued** (below zero) and 10-Year Yields are Falling (YoY change is Negative)	23.91%	1.68%

The overall returns of the S&P 500 based on its valuation according to the Fed model are not very impressive. While undervalued periods do outperform all periods and overvalued periods do underperform all periods, the differences are not that impressive when compared to the Value Index alone. The addition of growth stocks in the overall S&P 500 dilutes the Fed model's effectiveness when compared to the Value Index only.

To further emphasize why we believe the Value Index can be used to predict the overall S&P 500, see the chart below. It shows the correlation between the S&P 500 and the Value Index for the last seven years. Notice that from 1996 to mid-1998, the Value Index and the overall S&P 500 were almost perfectly correlated. This correlation broke down at the height of the equity bubble in 1999/2000.

Currently, the Value Index and the overall S&P 500 are back to 99% correlated. Unless we develop another equity bubble in the immediate future, it is reasonable to expect the Overall S&P 500 to move higher if "good fundamentals" (undervalued) are pushing the Value Index higher.



Why Use the 10-Year Treasury Note as the Benchmark Interest Rate?

Another criticism of the Fed model is the use of the 10-year Treasury Note as a benchmark to compare against the earnings ratio. Some argue Baa yields or the yield of the Merrill Corporate Index should be used since they are the credit of the S&P 500.

We agree with the Fed's use of the 10-year Treasury Note for a couple of reasons. First, stocks are considered a long-term investment. Using a shorter-term yield would not provide as good a "duration match" as long-term interest rates.

Secondly, we argue the 10-year Treasury Note has the same credit rating as the **entire** S&P 500 Index. In essence, **both have the same default risk**. To further this point, the next table shows the results of the Fed model using Baa yields as a benchmark instead of 10-year Treasury yields. Notice that overvalued and undervalued periods show almost identical results. If this is indeed the better interest rate to use, we see no support from the 1977 to 2002 results. If we used the yield of the Merrill Corporate Master Index, we get nearly identical results.

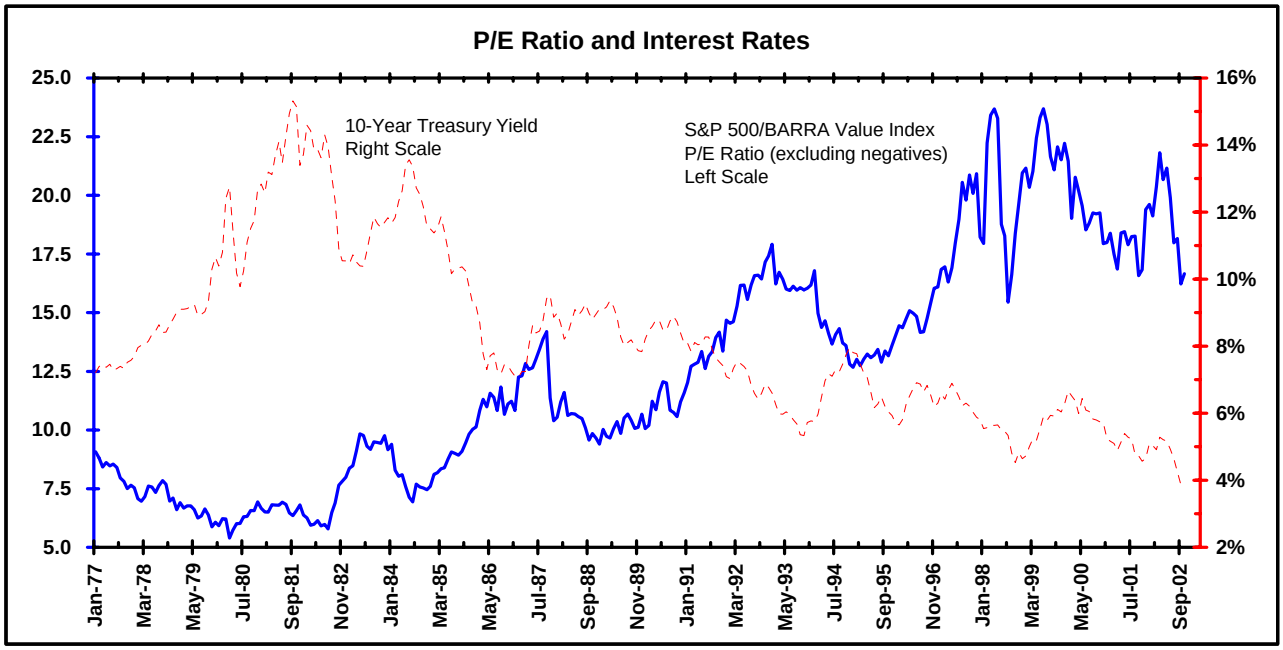
The Overall S&P 500 Returns Based on The Valuation of the Value Index And Using Baa Yields

Environment	Total Return	% of the Time
All Periods	14.90%	100.00%
When Value Stocks Are **Overvalued** (above zero)	14.89%	82.21%
When Value Stocks Are **Overvalued** (above zero) and 10-Year Yields are **Rising** (YoY change is Positive)	8.51%	30.54%
When Value Stocks Are **Undervalued** (below zero)	14.94%	17.79%
When Value Stocks Are **Undervalued** (below zero) and 10-Year Yields are Falling (YoY change is Negative)	47.08%	1.01%

For these reasons, we believe the 10-year Treasury Note is the best interest rate for our version of the "Fed Model."

Why Exclude Negative Earnings?

The chart below shows the inputs we use with our version of the Fed model – the P/E ratio of the Value Index ("excluding negative earnings") and the yield of the 10-year Treasury Note. Why exclude negative earnings? We wanted to look at only those companies with positive earnings to determine what the market wants to "pay for" earnings. If a company does not consistently earn profits, it will soon be dropped from the S&P 500 Index. Therefore, we want to look at the core of companies who will likely remain in the S&P 500 for a long time – those that are still making a profit. As of October 31, the Value Index currently had a market capitalization of almost $3.9 trillion (as compared to the NASDAQ's $2.29 trillion market capitalization), and has a P/E ratio (excluding negatives) of 16.66.

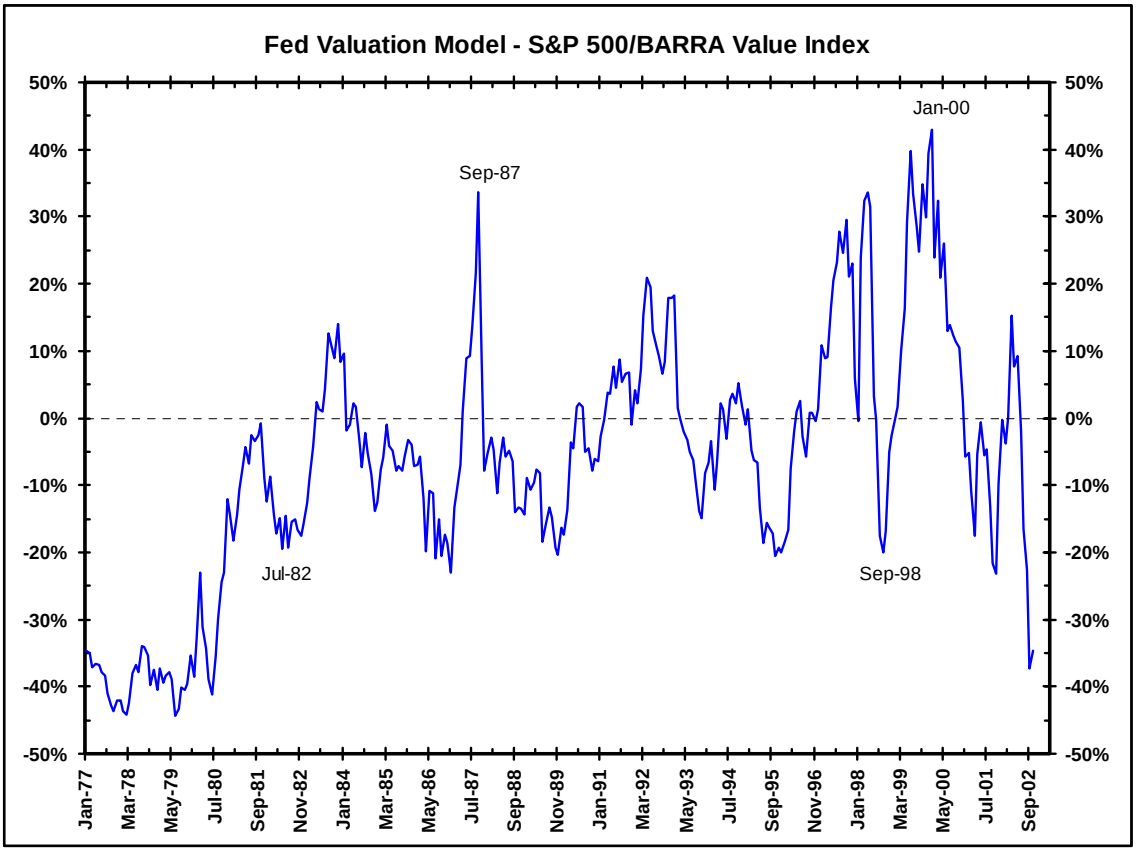


Are Stocks Now Undervalued?

At first glance, a P/E ratio of approximately 16 doesn't look very "cheap." After all, this P/E ratio was near 5 in 1980.

However, when the earnings yield (the inverse of the P/E ratio) is compared to yield of the 10-year Treasury Note (the inputs from the chart above), value stocks appear to be "very cheap." See the chart below.

As of October 31, the earnings yield (excluding negatives) of the Value Index was 6.00% (1 / 16.66) and the yield of the 10-Year Treasury Note was 3.92%. The earnings yield was 34.64% above the yield of the 10-year Treasury Note. **Or, Value Stocks were 34.64% "undervalued" relative to the level of the 10-Year Treasury Note.**



Conclusion

Since the bear market began in March 2000, the overall S&P 500 has seen four rallies of at least 15% - April 2001, September 2001, July 2002 and October 2002. In the first three instances, the rally started when the Fed showed the Value Index to be undervalued by an average of 15%. In each instance, the overall S&P 500 rallied from their oversold state until the Value Index became overvalued. On average, these rallies carried about 15%.

The most recent rally started on October 10 with the Value Index a massive 37% undervalued – its most undervalued state in almost 23 years. Even after a strong October (the overall S&P 500 was up nearly 9%), the Fed Model shows the Value Index was still undervalued by nearly 35% (thanks to rebounding earnings offsetting higher interest rates and rising stock prices).

Yes, the overall S&P 500 has room to move higher per this model. However, as stocks rally, the yield of the 10-year Treasury Note will likely move higher as well. This means the Value Index will probably reach an overvalued level with the overall S&P 500 rising only a fraction of the 35% this model suggests.

Stocks move up and down for many reasons. One reason, and an important one, is valuation. After 2+ years of declines, a dramatic fall in interest rates, and the end of the 2001/2002 recession, the Value Index is at its most undervalued state in 23 years. If the overall S&P 500 fails to rally from this point forward, we do not believe the problem will be valuation. In our current environment of investment choices, a strong case can be made that "stocks are cheap."

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