

# MuhlenkampMethods

For the Intelligent Investor

Answers to questions you may not even know you have.

## Are Stocks “Too High”?

*This essay was originally published in Muhlenkamp Memorandum Issue 29, January 1994. It looks at the assumptions behind stock valuation models and why they often misprice the stock market. Using the same data, but modifying the model, Ron creates a new valuation model that better anticipates stock prices. Same data—different perspective.*

For 10 years we've been hearing that stocks are “too high” and that prices should decline. Yet during that time, stock prices have quadrupled. In the early 1970s various studies showed that stocks normally sold at 17 times company earnings. So in 1973, when prices fell to 15, then 14, then 13 times earnings many advisers said that stocks were “cheap” and should be bought. They kept saying this as stock prices fell all the way to six or seven times earnings. Since then, when we hear that stocks are “cheap” or “too high,” our response is “relative to what”? It turned out that in 1973, “stocks are cheap” meant relative to recent price-to-earnings (P/E) ratios. In the 1980s, “stocks are high” meant relative to recent P/E ratios and current interest rates. Let me explain.

### Determining Fair Value

The models that seek to determine fair value for stocks use corporate earnings and a capitalization rate (such as a P/E ratio) to arrive at “fair value.” Nearly all such models use interest rates to set the capitalization rate. Current interest rates are *assumed* to be fair, as if there were no emotions in the bond market. Interest rates themselves are never viewed as “too high” or “too low.” (When I was doing basic evaluation work 20 years ago, I initially made the same assumption, but soon found it to be a mistake. I then learned that fair values are determined by inflation and that interest rates and bond prices suffered from the same emotional swings that stock prices do.) For the past 10 years, stocks have been viewed as “too high” in relation to interest rates. In reality, interest rates have been too high. When short-term rates fell in 1990–91, the models that used short-term rates as a base started to show that stocks were fairly priced.



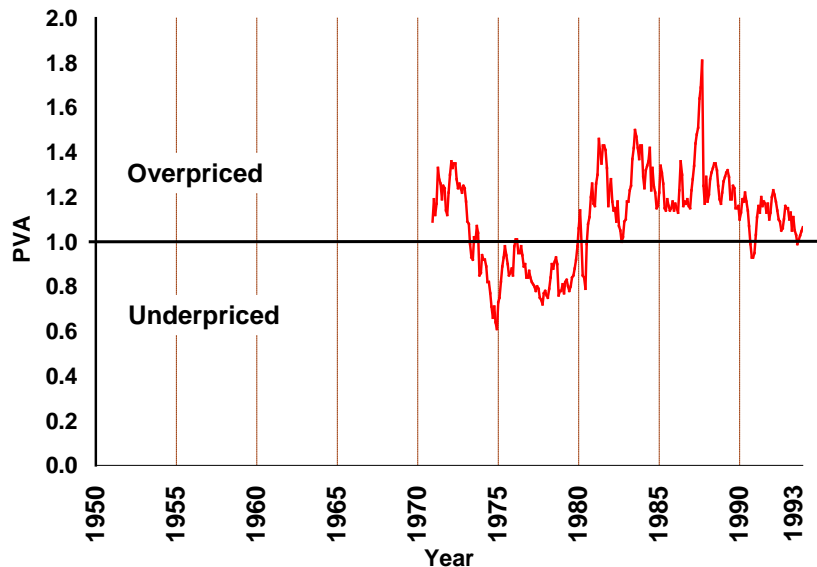
As long-term rates have fallen over the past couple of years, the models that use long-term rates as a base have begun to show that stocks are fairly priced. One database that we purchase, Ford Equity Research, calculates a price-to-value ratio (PVA) for 2000 stocks based on long-term bond rates. Ford’s PVA ratio fell below 1.0 (indicating prices are fair value) in August 1993 for the first time since July 1980 (except for a brief period during the Gulf War). During much of the 1980s stock prices frequently bottomed at a PVA of 1.2. At those levels, the model indicated that stocks were 20% overpriced, but the reality was that interest rates were too high; stocks were a good buy.

We recently received from Ford Equity Research a graph of their PVA for the period 1970–93 as shown in Figure 6.11.

Quoting Ford’s explanation of their model:

*“Ford’s PVA is determined by comparing the price of a company’s stock to that derived by a proprietary dividend discount model (DDM). A PVA greater than 1.00 indicates that a company is overpriced whereas a PVA less than 1.00 implies that a stock is trading below the level justified by its earnings, quality, dividends, growth projections, and prevailing interest rates. Each month Ford publishes the average PVA of all the companies in the Ford Equity Research data base.”*

Figure 6.11 Ford Equity Research PVA, 1970-93

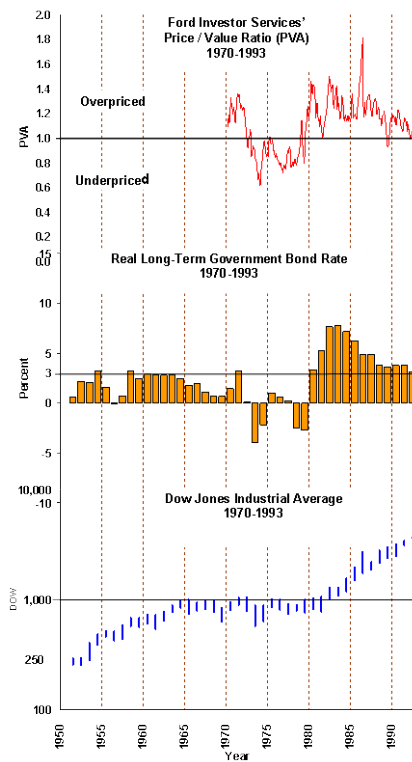


For their “prevailing interest rates,” Ford uses long-term interest rates. The structure of the model produces the result that, if all other things are equal, interest rates that are too low will depress the PVA ratio and indicate that stock prices are too low. Similarly, interest rates that are too high will boost the PVA ratio and indicate that stock prices are too high.

In Figure 6.12 we show Ford’s PVA plot in line with plots of real (adjusted for inflation) long-term government bonds and the Dow Jones Industrial Average.

You can see that for 1970–80 Ford’s PVA is at or below 1.0 when real (adjusted for inflation) interest rates were unusually low. From 1981 to 1993 Ford’s PVA is above 1.0 when real interest rates were unusually high. You can also see that when interest rates were unusually low, causing stocks to appear “cheap,” stock prices moved sideways. In fact, nominal (before inflation) returns in the 1970–80 period were about 3% per year. Conversely, when interest rates were unusually high—causing many to conclude that stocks were too high—stocks in fact returned 15% per year for a quadruple return in 10 years.

**Figure 6.12 Comparing Ford Equity Research PVA, Real Long-Term Government Bonds, and the Dow Jones Industrial Average**

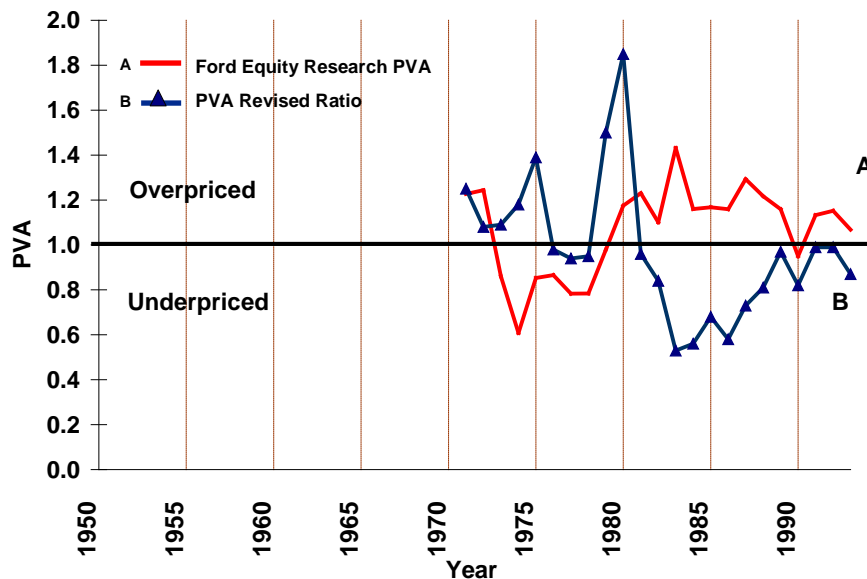


We contacted Ford Equity Research and asked them to rerun their model, but instead of using "prevailing interest rates," we asked them to substitute numbers equal to annual inflation plus 3%. This is equivalent to assuming that real interest rates were at a steady 3% for the period rather than the pattern depicted in the bar chart. For economy, we ran the numbers on an annual rather than a monthly basis. No other changes were made to the model.

This one change in the assumed interest rate (see Figure 6.13) resulted in the line labeled "PVA Revised" (Line B) that we have overlaid on the earlier plot of PVA; the contrast is apparent. PVA Revised indicates that stocks were overvalued for most of the period 1970–80, when nominal returns were 3%, and that stocks were very cheap in the early 1980s and have only recently returned to fair value, after quadrupling in price.

We believe that PVA Revised (Line B) is a much better model than PVA (Line A). It certainly has had much better results. PVA Revised (Line B) approximates the model we've used for valuing stocks for the past 20 years. Note that when real interest rates are 3%, both models give the same values and recently indicated that stock prices are fair.

Figure 6.13 PVA Revised, 1970-93



We’re not denigrating Ford Equity Research; we find their data and many of their conclusions very useful. We’re merely using their plot to illustrate a fundamental flaw in most stock valuation models. Rather than taking inflation into account explicitly, such models use current interest rates and *assume* that such rates incorporate inflation. What we don’t understand is why these assumptions seem to go unquestioned after 20 years of giving signals that are clearly wrong.

## Editor’s Note

*When someone says stock prices are “too high” or “too low,” they are likely using stock valuation models that are based on current interest rates. These models have a very poor track record because often it is the interest rates that are “too high” or “too low.” Always understand the model behind the statements.*

