

Three Value-Investing Benchmarks

By Gary Smith

Article Highlights

- Intrinsic value can be thought of as the price an investor would be willing to pay to buy a machine (stocks) that generates cash (dividends) every few months.
- John Burr Williams is credited as introducing present value as a method for valuing stocks. His formula can be applied to the broader stock market as well.
- Two other dividend-influenced models can also be used to judge the relative attractiveness/unattractiveness of the stock market: the inverse of Robert Shiller's CAPE ratio and John Bogle's 10-year horizon.

I made it through Yale graduate school on a \$200 monthly stipend.

One hundred dollars paid for rent in a nasty part of New Haven, and \$100 went to food, secondhand clothes, and not much else.

My shoes were held together with duct tape and dinners at the end of the month were often bread and orange juice, sometimes bread and water. I started teaching economics at Yale in 1971, a newly minted Ph.D. with a three-month-old son, \$12,000 annual income and less than \$100 in the bank.

The Yale economics department asked students what courses they would like added to the curriculum and the runaway winners were Karl Marx and the stock market. I wasn't interested in Marx, but the chair of my thesis committee was James Tobin, who would be awarded the Nobel Prize in Economics, in part, for his analysis of financial markets. So, I volunteered to create a stock market course and asked Jim to recommend a textbook. His immediate answer was "The Theory of Investment Value" by John Burr Williams (Fraser Publishing Company reprint edition, 1997). It had been published more than 30 years earlier, in 1938, and was not really a textbook.

Tobin's recommendation was inspired and inspiring. John Burr Williams and Benjamin Graham laid the foundation for value investing—assessing stocks based on the cash they generate rather than trying to predict zigs and zags in stock prices. Their way of thinking is central to the success of many legendary value investors, including Warren Buffett,



Laurence Tisch and Michael Larson.

I didn't use Williams' treatise as a textbook but, over and over, I have relied on the insights I learned from Tobin, Williams, Graham and Buffett.

I've been investing and teaching investing for more than 40 years now and I've learned that some lessons are well worth learning, while others are not. The lessons from these legendary investors are worth learning.

Stocks as a Cash-Generating Machine

Decades ago, investing was haphazard. Investors figured that a stock was worth whatever people were willing to pay. Then John Burr Williams unleashed a revolution by arguing that investors could use something called present value to estimate the intrinsic value of a company's stock.

Think of a stock as a machine that generates cash every few months—cash that happens to be called dividends. The key question is how much you would pay to own the machine in order to get the cash. This is the stock's intrinsic value. People who think this way are called value investors.

In contrast, speculators buy a stock not for the cash it dispenses, but to sell the stock to others for a profit. To a speculator, a stock is worth what somebody else will pay for it; the challenge is to guess what others will pay tomorrow for the stock you buy today. This guessing game is derisively called the Greater Fool Theory: Buy stocks at inflated prices and hope to sell to even bigger fools at still higher prices.

Legendary investor Warren Buffett has this aphorism:

“My favorite holding period is forever.” If we think this way, by never planning to sell we force ourselves to stop speculating about stock prices and focus on the cash generated by the money machine over an indefinite horizon. If you do, you will be a value investor—and glad of it.

*“My favorite holding period is forever.”
—Warren Buffett*

Let’s apply three very simple, but powerful, value-investing benchmarks to three historical situations:

- **March 2000:** I gave a speech at a conference on the booming stock market and the widely publicized “36K” prediction that the Dow Jones industrial average would soon more than triple, from below 12,000 to 36,000. I ended my presentation with this warning: “This is a bubble, and it will end badly.”
- **December 2008:** The S&P 500 index was down 40% from March 2000. The unemployment rate was 7.8% and rising as the economy hurtled into the Great Recession. Who would be crazy enough to buy stocks? I raised my hand. During an interview on a local television show, I said, “This is a buying opportunity that only comes around a half dozen times in a lifetime.”
- **May 2017:** We have had an eight-year bull market and bears warn that 2017 could be its big finale. What returns can value investors expect over the next 10 years?

Monthly data are available with a small time delay from Robert Shiller’s website (www.econ.yale.edu/~shiller/data.htm). Daily data can be found on the Multpl website (www.multpl.com).

The John Burr Williams Equation

A stockholder’s total return is the dividend yield plus capital gains. Instead of trying to predict price changes, a value investor might estimate the total return by the dividend yield plus the percent increase in a stock’s intrinsic

value—the increase in the amount you would pay for the money machine, rather than the change in the market price. In John Burr Williams’ dividend discount model, a stock’s intrinsic value grows as its dividends grow. I call this investment benchmark the John Burr Williams (JBW) equation. The formula is:

$$R = (D \div P) + g$$

Where:

- R is the investor’s total annual return,
- D is the annual dividend,
- P is the current stock price, and
- g is the annual rate of growth of dividends.

We can apply this equation to the overall stock market by calculating the dividend yield for the S&P 500 and making an assumption about the long-run growth of dividends (perhaps by using the long-run growth of the economy). This total return estimate—the dividend yield plus the dividend growth rate—can be compared to the interest rate on long-term Treasury bonds. I use a 5% dividend growth figure; you can easily adjust the calculations using whatever assumptions you are comfortable with.

Table 1 compares the JBW valuations for the S&P 500 in March 2000, December 2008 and May 2017.

In March 2000, the S&P 500 was four times higher than a decade earlier, a 16% annual rate of increase. Add in dividends and investors had made close to 20% a year. Easy money! A survey asked investors what annual rate of return they expected over the next 10 years. The median answer was 15%.

Let’s see what the JBW equation says about that. In March 2000, the S&P 500 dividend yield was 1.16%. Adding in an assumed

5% long-run growth rate for dividends, the predicted total return is 6.16%:

$$R = 1.16\% + 5.00\% = 6.16\%$$

This was not only far below 15%, it was lower than the 6.26% return on 10-year Treasury bonds, indicating that stocks were not an attractive long-term investment. Earning less than Treasury bonds with a lot more risk is not appealing. A 15% return in the JBW model requires a delusional 13.84% long-run annual rate of dividend growth.

In December 2008, in contrast, the S&P 500 dividend yield was 3.23%, and a 5% long-run growth rate gave an 8.23% predicted total return:

$$R = 3.23\% + 5.00\% = 8.23\%$$

This was 5.81 percentage points above the 2.42% return on 10-year Treasury bonds, indicating that stocks were an appealing long-term investment for all but the extremely risk-averse. Making 5.81% more per year, multiplied by the miracle of compound interest, is irresistible. If these return projections turned out to be correct, \$100,000 in Treasury bonds would grow to \$127,000 in 10 years, while \$100,000 in stocks would grow to \$221,000.

As for the most recent data available at the time of this writing, May 2017,

Table 1. Three Different Valuations Using the JBW Equation

The John Burr Williams equation assumes intrinsic value increases as dividends grow. As a valuation measure, the equation is used to compare the total return of the S&P 500 (yield plus dividend growth rate) to the yield of the 10-year Treasury note. Stocks have attractive valuations when their total return is comparatively higher, because the higher return compensates investors for the increased risk.

Starting Date	S&P 500		10-Year Treasury	S&P 500
	Dividend Yield (%)	Total Return (%)	Return (%)	Tot Ret less Treas Ret (%)
March 2000	1.16	6.16	6.26	(0.10)
December 2008	3.23	8.23	2.42	5.81
May 2017	1.93	6.93	2.26	4.67

the S&P 500 dividend yield is 1.93%, and a 5% long-run growth rate gives a 6.93% predicted total return:

$$R = 1.93\% + 5.00\% = 6.93\%$$

If you want to assume a somewhat lower or higher long-run growth of dividends, simply adjust the 5% number in the JBW total return equation.

With 5% dividend growth, a 6.93% total annual return is 4.67 percentage points above the 2.26% return on 10-year Treasury bonds, again indicating that stocks are an attractive long-term investment. This isn't as great as in December 2008, but it is a lot more appealing than March 2000—even though most investors were much more excited about stocks in 2000 than in they were 2008. That's the power of a value-investing perspective.

Robert Shiller's Cyclically Adjusted Earnings Yield

Yale University's Robert Shiller calculates a cyclically adjusted price-earnings ratio (CAPE) by dividing the inflation-adjusted value of the S&P 500 by cyclically adjusted earnings (the average value of the inflation-adjusted earnings over the preceding 10 years). For a value-investing benchmark, we can calculate the cyclically adjusted earnings yield (CAEP) by taking the inverse of CAPE (E/P instead of P/E). The earnings yield is a rough estimate of the real rate of return on stocks, so we can compare this number to the real interest rate on 10-year Treasury bonds.

Table 2 shows the calculations, using an assumed 2.5% rate of inflation, the average over this period (2000–2017). You can adjust the calculations using your personal inflation expectations. In March 2000, the earnings yield (CAEP) was 2.31%, which was 1.45 percentage points lower than the real (inflation-adjusted) Treasury rate, indicating that stock returns would be modest over the next 10 years. In December 2008 and (to a lesser extent) in May 2017, the earnings yield was well above the Treasury rate, indicating that stock returns

Table 2. Three Different Valuations Using CAEP

The CAEP (cyclically adjusted earnings yield) ratio is the inverse of Robert Shiller's CAPE (cyclically adjusted price-earnings) ratio. The real Treasury rate is the 10-year note's yield minus an inflation rate of 2.5%. A positive CAEP ratio implies the earnings yield is above the real (inflation-adjusted) Treasury rate; negative CAEP ratios imply stocks are overvalued relative to bonds.

Starting Date	Shiller's CAPE Ratio (X)	CAEP Ratio (%)	10-Yr Treasury Yield (%)	Real 10-Yr Treas Yield (%)	CAEP less Real 10-Yr Treas Yield (%)
March 2000	43.22	2.31	6.26	3.76	(1.45)
December 2008	15.37	6.51	2.42	(0.08)	6.59
May 2017	29.45	3.49	2.26	(0.24)	3.73

would/should be good over the next 10 year period.

John Bogle's 10-Year Horizon

Vanguard founder John Bogle's model for estimating stock returns over a 10-year horizon is

$$\text{Total return} = \text{dividend yield} + \text{annual growth of earnings} + \text{annual change in P/E}$$

Annual rates of changes are used for the growth of earnings and the change in the price-earnings ratio.

We can use the Bogle equation to assess the attractiveness of stocks in March 2000 and in May 2017, but there is a complication for December 2008. Earnings had fallen by more than 80% from a year earlier because of the severe economic recession. Stock prices only fell 40% because investors anticipated that the recession would be temporary. The price-earnings ratio consequently tripled, from 18 to 59—not because stock prices had risen, but because stock prices had not fallen as much as earnings. To use the Bogle equation, I would need to forecast a surge in earnings as the recession ended and a drop in the price-earnings ratio as earnings surged. It is doable, but more complex than the other calculations in this article, so I will not use the Bogle equation for December 2008.

Table 3 shows the Bogle calculations for March 2000, using the 1.16%

dividend yield for the S&P 500 and assuming a 5% annualized growth in earnings. The price-earnings ratio was 28.3 in March 2000, and I considered four different scenarios for the price-earnings ratio 10 years ahead, in 2010.

The P/E growth percentage is the annual compounded rate of change; for example, if the price-earnings ratio were to fall from 28.3 in 2000 to 10.0 in 2010, the annual rate of change in the P/E is –9.88%. The formula is:

$$28.3(1+g)^{10} = 10$$

which can be restated as:

$$1 + g = (10 \div 28.3)^{1/10}$$

This same formula can be typed out in Excel as:

$$=((10/28.3)^(1/10))-1$$

Where:

- 10 is the future P/E,
- 28.3 is the current P/E and
- the denominator in the fraction 1/10 designates the number of periods.

[Editor's note: When used in a Microsoft Excel formula, the caret symbol (^) means to multiply by a power, in this case 1/10.]

Based on the result, the total return would then be –3.72%:

In March 2000, investors would have to be delirious to expect a 15% annual return over the next 10 years.

Table 3. Four Scenarios for Bogle's Model as of March 2000

John Bogle's model calculates the 10-year return in stock prices as being based on the growth rate in earnings and the change in the price-earnings ratio. The total return for stocks is the forecast 10-year annualized change in the price-earnings ratio plus the forecast annualized earnings growth rate and the current dividend yield.

Scenario	Forecast P/E Ratio in 2010	P/E Growth Rate (%)	Earnings Growth (%)	Dividend Yield (%)	Projected Total Return for Stocks (%)	10-Yr Treasury Yield (%)	Projected Return for Stocks Less Treas Yield (%)
Pessimistic	10.0	(9.88)	5.0	1.16	(3.72)	6.26	(9.98)
Historical	15.0	(6.15)	5.0	1.16	0.01	6.26	(6.25)
Optimistic	35.0	2.15	5.0	1.16	8.31	6.26	2.05
Delirious	60.0	7.80	5.0	1.16	13.96	6.26	7.70

Table 4 shows similar calculations for May 2017, now with a 1.93% dividend yield and again assuming a 5% annual growth in earnings. The S&P 500 price-earnings ratio is 25, and I consider four different scenarios for the price-earnings ratio 10 years later, in 2027. Unless the price-earnings ratio were to drop substantially, stock returns look good over the next 10 years.

You can easily calculate the anticipated total return in the Bogle model by putting in different values for the rate of growth of earnings over the next 10 years and the price-earnings ratio in 2027.

Table 4. Four Scenarios for Bogle's Model as of May 2017

John Bogle's model calculates the 10-year return in stock prices as being based on the growth rate in earnings and the change in the price-earnings ratio. The total return for stocks is the 10-year annualized change in the price-earnings ratio plus the forecast annualized earnings growth rate and the current dividend yield.

Scenario	Forecast P/E Ratio in 2010	P/E Growth Rate (%)	Earnings Growth (%)	Dividend Yield (%)	Projected Total Return for Stocks (%)	10-Yr Treasury Yield (%)	Projected Return for Stocks Less Treas Yield (%)
Historical	15.0	(4.98)	5.0	1.93	1.95	2.26	(0.31)
Small drop	20.0	(2.21)	5.0	1.93	4.72	2.26	2.46
Unchanged	25.0	0.00	5.0	1.93	6.93	2.26	4.67
Optimistic	30.0	1.84	5.0	1.93	8.77	2.26	6.51

Conclusion

It is always good to consider a variety of models in order to gauge the robustness of our conclusions. These three value-investing benchmark models agree. For value investors, stocks were expensive in March 2000, a bargain in December 2008, and attractively priced now.

I don't know what will happen to stock prices over the next few months or years, but 10 years from now, in 2027, I expect value investors who were fully invested in May 2017 to be pleased with the results based on what the models show with my assumptions. ▲

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