

Earnings, Inflation, and Future Stock and Bond Returns¹

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Thank you very much. I am honored to follow one of my heroes in the investment industry, Jack Bogle, founder of the Vanguard Group. I think I was among the first to own Vanguard's money market fund back in the 1970s and the path-breaking S&P 500 Index Trust. Both funds were important breakthroughs. I remember my mentor, Professor Paul Samuelson of the Massachusetts Institute of Technology, crying out for the creation of a stock index fund while I was a graduate student there in the late 1960s.

Before I start my presentation, I want to note that I found it disturbing that the ninth-best performing stock the day following President Obama's re-election, which saw the Dow plunge by more than 330 points, was Smith and Wesson, the largest firearms manufacturer in the United States. Let me mention that I'm nowhere near that pessimistic and have a much more optimistic view of the equity market than either Jack Bogle or any of those investors driven to buy guns.

LONG-SERIES HISTORICAL RETURNS

It is very important to develop long historical time series to gain understanding of the historical returns in financial markets. The American Philosophical Society will soon celebrate its 270th birthday. It is one of the few institutions that go back further than the 210-year time series I have developed. No other researcher has compiled a longer return series on major classes of financial assets—stocks, bonds, treasury bills, gold, and the dollar.

¹ Read 10 November 2012, as part of a symposium on investment.

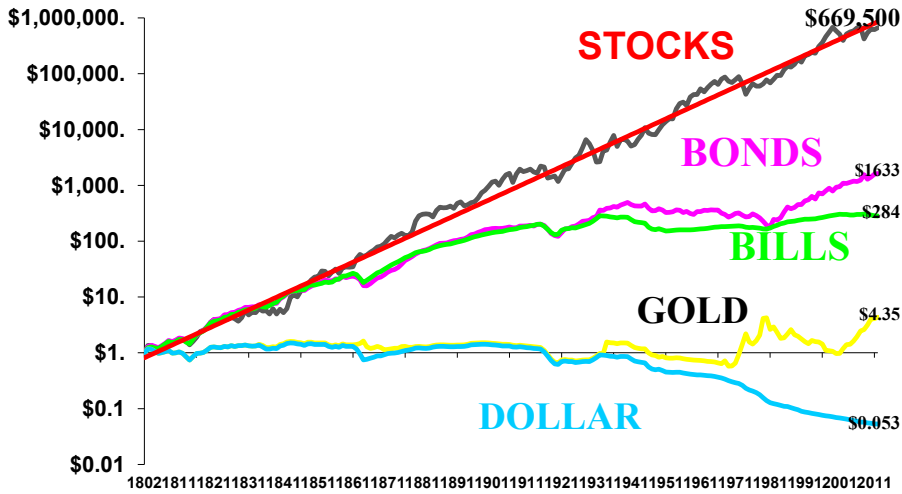


FIGURE 1. Long-Term real returns.

Figure 1 shows how wealth accumulates by investing in these assets over the past two centuries.

These accumulations, which are measured after inflation, assume that all cash flows from the assets, such as dividends and interest, are reinvested back in the asset class. A single dollar invested in stocks in 1802 grows to more than \$669,000 after inflation by 30 June 2012, whereas a dollar in Treasury bonds grows to \$1,633 and a dollar in Treasury bills to only \$284.

With gold prices soaring today, investors often ask, “Dr. Siegel, where does gold fit in a long-term portfolio?” Well, if your great-great-grandfather back in 1802 bought a little nugget of gold that cost him \$1.00 and put it in a vault to be opened 210 years later by his great-great-great-granddaughter, the price after inflation of that nugget of gold would have soared all the way to \$4.35, representing a gain of less than 1% per year. Nevertheless, gold does much better than the U.S. dollar, which has declined almost 95% in purchasing power over the last 210 years, almost all of it coming since World War II.

But what I find most remarkable in Figure 1 is the accumulation in stocks. All these returns are plotted on a logarithmic scale, which means that a straight line represents a constant after-inflation rate of return. It is apparent that there is no other asset class that, in the long run, has a more stable return than equities, although in the short run, stocks are

the most volatile. All these little wiggles that are apparent in the growth of stock wealth are those widely publicized bull markets and bear markets that so frighten investors. But when you view these fluctuations in a long-run context, they look like mere blips in the long-term upward thrust of stock returns.

Indeed, the most important conclusions of *Stocks for the Long Run* is that stocks are the most volatile asset class in the short run, but the most stable asset class in the long run. Figure 1 also indicates that an investor should particularly want to be in stocks when stock returns are at or below their long-term trend line. But you need to be wary of stocks when total returns are far above the trend line, such as in March 2000, at the top of the technology and Internet bubble. From that top, stock returns have been only about 2.5% per year, just barely above the rate of inflation. It is not surprising that stock returns have not been good since valuations were also at record levels in 2000. In contrast to the peak in March 2000, stocks fell in March 2009 well below their trend line, signaling excellent returns going forward. As of today, we are still below the trend line, suggesting above-average returns over the next 2 to 3 years.

Figure 1 also shows the long-run annual real returns on these major asset classes. The annual after-inflation-rate return on stocks—dividends plus capital gains—is 6.6% per year. The long-run annual real return is 3.6% on bonds, 2.7% on Treasury bills, and 0.7% on gold. Gold does protect you against inflation but has very little extra return. The dollar has depreciated in purchasing power almost 1.5% per year—and since World War II at about 3% per year. As I noted earlier, the dollar is now worth about 5% of what it was bought at in the beginning of the nineteenth century.

The persistence of the long-run real return on stocks is remarkable. The real return on stocks was 6.7% per year from 1802–70, 6.6% from 1871–1926, and 6.6% from 1926 to the present. A number of researchers have dubbed the long-run real return of stocks, which ranges from 6.6% to 6.7% per year, “Siegel’s Constant” because of its remarkable stability.

Economists have a name for a statistical series that has short-term volatility but long-term stability. We say that it displays *mean reversion*. Such a series wanders away from the trend line in the short run but over longer periods reverts to the mean. Stock returns have displayed strong mean reversion over the past two centuries.

It is also important to note that inflation has had no negative effect on real stock returns since the end of World War II. Stocks are claims on real assets—physical capital, land, machines, factories, trademarks, etc.—that rise in price with the general price level. Stocks are excellent

long-term hedges against inflation, although they are not good short-term hedges.

Despite this long-run stability of stock returns, there are certainly many periods when stock returns can be well above or well below Siegel's Constant. The greatest bull market in world history occurred from 1982 through 1999—and in the United States, stocks returned 13.6% per year after inflation, more than twice the historical average. At that time, many financial advisors thought that the new norm for stock returns would be between 12% and 15% per year. That was too optimistic. But the pessimists today, such as Bill Gross of PIMCO, are also wrong in that they believe future real stock returns will be only 3% and 4%.

After I wrote the first edition of *Stocks for the Long Run*, three British economists (Michael Staunton, Elroy Dimson, and Terry Marsh) investigated stock returns in 15 different countries. They wanted to determine whether the behavior of stock returns that I found in the United States would be replicated in other economies and respond to the critics of my research who claimed that the high stock returns that I found for the United States were unique because the United States was arguably the most successful capitalist economy in history.

Staunton, Dimson, and Marsh calculated the real stock, bond, and Treasury bill returns for 15 countries from 1900–2000. I have updated their results to the present. It is surprising that both Australia and South Africa have had higher stock returns over the last 110 years than the United States. Indeed, U.S. real stock returns are about one percentage per year above the average return of 5.5% above inflation of all the countries analyzed. But stock returns swamped both bond and bill returns in all countries; in those countries where stock returns were lower than the global average, investors in fixed income assets did even worse. This means that the difference between stock and fixed-income returns, which is called the *equity premium*, is remarkably constant at between 3% and 4% per year around the world.

Returning to U.S. data, we see that bond returns, in contrast to stock returns, have declined over time. Over the entire period 1802 to the present, the real return on bonds, at 3.6% per year, is about 3 percentage points below stocks. However, since 1945, real bond returns have fallen to less than 2% per year. Many investors exclaim, “Professor Siegel, you’re right—stocks are better in the long run, but I can’t take the volatility of the stock market.” And I understand this concern because in the short run, stock returns are much more volatile than bond returns.

But in the longer run, stocks are less risky than bonds. There was a 35-year period from 1946 through 1981 when the real returns on U.S.

Treasury bonds were negative. In contrast, there has never been a 35-year period in U.S. history when investors received negative after-inflation stock returns. Surprisingly, there has never been even a 20-year period in U.S. stock market history when stocks have had negative after-inflation returns. By the way, I believe that we are now entering into one of those periods when bond returns will be negative, and we will talk about that shortly. Certainly, Treasury bonds have done very well in recent years as interest rates have fallen dramatically. From the stock market peak of 2000, bonds have certainly outperformed stocks.

But what can we expect of bond returns in the future? From recent record low yields, this is not a hard question to answer. Look at the yield on Treasury Inflation Protected Securities (TIPS), which compensate investors for inflation: in other words, their yield is a true after-inflation return. The United States is actually one of the last major countries to issue this type of security and did so in January 1997. About 2 weeks before they were issued, I received a call from a Dow Jones reporter who asked me what I thought the yield would be on these securities. I had just published the first edition of *Stocks for the Long Run*. My research indicated that the long-term real returns on government bonds were between 3% and 3.5% per year, so I gave him that range. In fact, when these bonds were floated they were priced at a yield of 3.3%, and their yield subsequently rose to almost 4.5% in 2000.

But then the yield on TIPS began a long downward path. For much of the past decade, the yields on long-term TIPS have actually been around 2%, but since the financial crisis, their yield has declined rapidly. In fact, the yield on TIPS has now turned negative, having fallen to nearly -1% per year!

This is truly shocking! A negative yield means that investors are giving a chunk of money to our federal government and saying, "Give me no cash payments over the next 10 years, and 10 years from now, give me back only 90% of the money I'm giving you today, measured after inflation." Incredibly, investors are throwing billions of dollars at this investment! It's astounding that one could be so pessimistic about the future as to accept no income with only 90% of your principal returned.

This must be a terrible investment. Economic theory suggests that the yields on TIPS should be approximately equal to real GDP growth. Indeed, in the 1990s, average real GDP growth was 3% to 3.5% per year, and that's what TIPS yields were. Certainly growth has slowed, and that is why TIPS yields had fallen to the 2% to 2.5% range over most of the past decade. But nobody I know is projecting that real

economic growth will be negative over the next decade. Current TIPS yields are completely unjustified.

Why are these real yields so low? Certainly part of the demand for Treasury bonds comes from pension funds that are “de-risking” their portfolios by swapping out of stocks into bonds. Another part is the increased risk aversion of investors who have lived through two severe bear markets over the last decade. But even these factors cannot justify yields as low as they have gone. In short, bonds are in a bubble facing big trouble.

FUTURE REAL RETURNS ON STOCKS

If investors want to determine the future real return on stocks, the most important variable is the *price–earnings ratio* (P/E). It measures what investors are paying for a dollar’s worth of earnings. We have data going back 140 years on earnings; the average P/E ratio for the U.S. market is 15. If you turn the P/E ratio on its head—in other words, take the inverse of it (earnings over prices)—you get a very important variable called the *earnings yield*. The earnings yield is analogous to the well-known dividend yield, which is computed by dividing the dividend paid on a stock by its price. In fact, if a firm paid out all of its earnings as dividends, the earnings yield would equal the dividend yield. It turns out that the earnings yield is an excellent predictor of long-run real stock returns.

It is no coincidence that the average earnings yield on the market over the past century of $1/15$, or 6.7%, is virtually identical with the average annual real return on stocks. Jack [Bogle] showed that the average P/E ratio over the past 60 years is slightly higher, about 16.

The P/E ratio on the market is not independent of other economic variables and is related to the level of interest rates. In the post-World War II period, we have had very low P/E ratios when interest rates and inflation were very high. When interest rates are low, the P/E ratio on the market has risen. In fact, when interest rates are in the low-to-moderate range (i.e., less than 8% on the 10-year Treasury bond) the average P/E ratio in the market has actually been 19 in the postwar period.

Operating earnings on the S&P 500 were about \$96 in 2011, and they are anticipated to be about \$100 this year [2012] and \$106 in 2013. Given the level of the S&P 500 Index on 9 November, which was 1,380, the P/E ratio of the market is 13.8 based on 2012 earnings and 13 based on the next 12 months of earnings. So, we are below the long-run average P/E ratio, and we are well below the average P/E ratio in a low-to-moderate interest rate environment. At 15 times earnings,

the S&P 500 Index should be 1,593, 15% above current levels; calculated at 19 times earnings, the average valuation in low-to-moderate interest rate environments, the S&P should be more than 2,000, more than 40% above current levels.

If investors take a 13 P/E ratio and flip it on its head, they obtain an earnings yield of 7.5%, which is the forward-looking real return on stocks. No one knows what will happen to the market on a year-by-year basis. But over the next 3 to 5 years, return forecasts become more certain. A 7.5% real return on stocks is more than 8 percentage points above TIPS bonds, whose return is now negative. The average historical premium of stock returns over bond returns is between 3% and 3.5%, so that the current premium is well above twice that large. In the last 50 years, I have rarely seen the gap between stock and bond returns this high, except at the bottom of bear markets.

In summary, I believe that stocks are overwhelming buys at these levels. Look again at the 210-year history of stock returns. In these two centuries, the United States has gone through the Civil War, World War I, World War II, the Great Depression of the 1930s, and the Great Inflation of the 1970s. We've had severe financial crises, the last one just 4 years ago.

All of these events have temporarily knocked stocks off their long-term trend. But we have always returned to that trend. Anyone who's bet against America or the stock market in the long run has been a loser. I believe that if they bet against the market now, they're going to be losers once again.