

Editor's Letter

Stock Market Myths: High P/E ratio, Volatility Tsunami & Share Buybacks

With the stock market's bull run celebrating its 8th anniversary, newspapers' headlines and pundits have been spreading a number of myths regarding the stock market, trying to convince the public that there is something unusual and unreal about this bull run. Here, I want to address three of these myths. First, that the current market valuations (e.g., measured by the price-earnings ratio) are too high and that they presage a 7- to 10-year negative return for the market. The most prominent supporter of this view is GMO's Jeremy Grantham who predicts an annual rate of return of -3.9% for large US stocks over the next seven years.

The second myth is that the current market volatility is too low and that sooner or later there will be a sharp increase in volatility. The most prominent proponent of this view is J.P. Morgan's Marko Kolanovic, who predicts a 50% rise in volatility and potentially a substantial decline in equity prices.

The third myth is that stock buybacks by US companies have artificially increased stock prices and therefore have contributed to the current bubble in US stock market. The latest person claiming that share buybacks are fueling the stock market bubble is Oaktree's Howard Marks.

As you can see, proponents of these myths are distinguished and successful members of the investment community. Therefore, there is a chance that my analysis could contain a few fatal flaws. However, I will attempt to make as few assumptions as possible in presenting rather parsimonious rational explanations to counter their arguments. Also, it is important to point out that several other factors affecting the stock market (e.g., central bank policies) that are ignored here.

The point of this note is that the current levels of equity markets and their volatility levels are where they are for real economic and structural reasons and using them as guide to do market timing and make drastic changes to asset allocation strategies may not be value added. Some academic and industry research show that market timing based on valuation metrics may add some value. However, these approaches work only when valuations are in the extreme and tend to produce many of false positives. For instance, the P/E ratio was above average for all of 1990s and the signal indicated that investors should be in cash or at least reduce their equity allocation significantly. However, investors would have given up on significant gains had they followed this advice. Even after the tech bubble burst, investors were left with 160% cumulative return from 1990-2002 (the bear market bottom was in 2002). A sound asset allocation strategy that diversifies across traditional as well as alternative asset classes is far more likely to add value than a strategy that attempts to time the market based on valuation metrics.

Is the Market's P/E Ratio Too High?

Are stocks overvalued? This is the other side of the same question because the most common and convenient way of arguing in favor of a stock market bubble is to point out that the current S&P 500 P/E, which is 24.7, is 58% above its long-term mean (since 1871) and 31% above its most recent average (since 1961). These are indeed eye-popping figures. A 58% or even 31% drop in the stock market is likely to lead to a deep recession and a financial crisis like the one we experienced in 2007-08.

The stock market is never clearly overvalued or undervalued. One can justify any stock market level by picking the "right" discount rate (i.e., expected future rate of return). The current annual earnings and dividends per share of S&P 500 are approximately \$100 and \$50, respectively. Let's assume a very modest growth rate of 3% per year in dividends per share going forward, which is half the growth rate in dividends since 1961. What expected rate of return would justify the S&P 500's current level of 24.7? A simple constant growth rate model shows that the current level of S&P 500 is consistent with an expected rate of return of 5%. Therefore, the market is overvalued only if one assumes that investors should or will require higher rates of return in future. Stating that the current level of market P/E is too high compared to its historical average and should decline is no different than saying the speed of computer CPUs is too high by historical standards and therefore should decline. There is a reason for each of these occurrences, and both statements will be meaningless unless one is ready to show that the conditions leading to these observations will cease to exist.

Let's dig deeper into the P/E ratio and its determinants. Using the simple Gordon model, the current P/E ratio is given by

$$PE = \frac{(1+g) \times b}{y_{10} + \pi - g}$$

Here, g is the future growth rate in earnings and dividends, b is the payout ratio, y_{10} is the 10-year Treasury yield and π is the premium above the Treasury yield that stocks are required to earn. I will contend that a sensible argument regarding overvaluations of the stock market should focus on the risk premium, π , rather than the P/E ratio. There are other variables that affect the P/E ratio, and if their current levels are justified by economic conditions, then it will be difficult to argue that stock prices are overvalued because the P/E ratio is too high.

The following table displays these and some additional figures for various points in time.

Year	2017	1980	1995	Hypothetical Figures	Average since 1961
S&P500 Actual PE	24.70	7.39	14.80	18.93	
S&P500 Earnings Per Share	100.00	15.00	31.42	100.00	
S&P500 Dividend	49.40	5.06	10.42	49.40	
S&P500 Dividend Yield	2.00%	4.60%	2.24%	2.00%	Current Figures
S&P500 Payout Ratio	49%	34%	33%	49%	
S&P500 Level	2470	110	465	2470	
10-Year Treasury Yield	2.24%	12.70%	6.00%	3.00%	
Nominal GDP Growth	2.50%	12.40%	5.00%	3.00%	Projections
Premium above Treasury	2.3%	4.9%	1.4%	2.7%	
S&P500 Theoretical PE	24.76	7.31	14.64	18.85	

The primary lesson from this table is that the current level of S&P500 can be justified if one accepts that investors demand 2.3% premium per year above the 10-year Treasury yield. How unusual is this? In 1980, the market was extremely undervalued if one were to use the P/E ratio as the benchmark. We can see that the observed P/E ratio of 7.39 could have been justified if one were to assume that the required premium was 4.9% above the 1980 10-year Treasury yield. This is a very attractive premium and much higher than the current premium. However, let's think back to 1980s: The Cold War was going on, inflation was volatile and high, the Iranian revolution had just taken place, the Soviet Union had invaded Afghanistan a year earlier, and there were long lines for fuel at gas stations. No wonder investors demanded such a high premium.

Consider 1995 when the P/E ratio is slightly below historical average and stocks were considered fairly valued. The premium above the 10-year Treasury demanded by investors back then was only 1.4%, which under normal circumstances would signal a highly overvalued market. The Internet was not as widely spread as it is today, but there were far fewer references to a stock market bubble back in 1995. Alan Greenspan's famous speech about irrational exuberance took place almost two years later, in December 1996. Perhaps there were good reasons for investors to demand such a low premium. The US and its allies had won the Cold War, the first Persian Gulf War was over, oil prices were declining, Europe was about to launch the Euro and China was opening its economy.

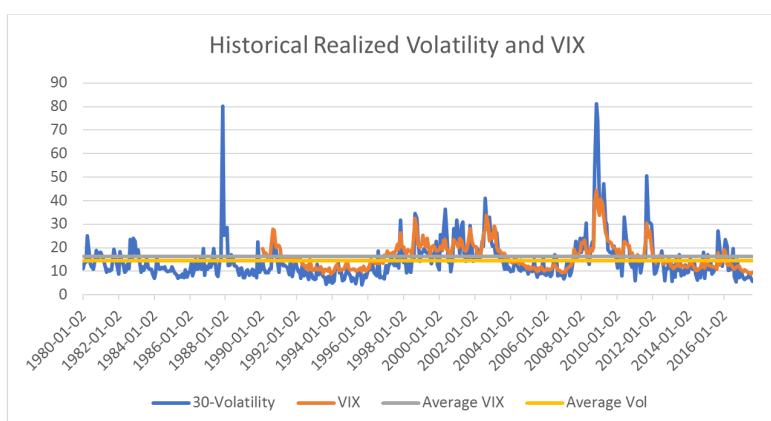
Finally, if we think that the average P/E since 1961 is the right benchmark, then given a 10-year Treasury yield of 3% and nominal GDP growth rate of 3%, a premium of 2.7% would be needed to bring the market back to the historical average (the historical average premium is about 2.7%). In other words, there is no obvious case for a stock market bubble and, by historical standards, investors are expecting a rather reasonable premium, which can easily justify the current P/E level of about 25.

The above analysis does not mean that there will be no pullback in stock prices or that the bull market will continue uninterrupted. Recessions will happen, central banks' policy makers will make mistakes, and national governments will make fiscal and political miscalculations. These would reduce the E in the P/E ratio and/or increase the premium such that it would require a decline in P to bring us to a new equilibrium in the stock market.

Is a Volatility Tsunami on the Way?

J.P. Morgan's Marko Kolanovic warned us in a July 2017 piece that there will be a sharp increase in volatility soon. This was not the first time that Marko Kolanovic has warned us of the incoming tsunami volatility. While there might be good economic reasons to believe that the current P/E ratio is too high (i.e., expected premium is too low) and that it must decline, there is absolutely no economic model or reason to believe that volatility is too low and therefore must increase. The only reason people say that volatility must increase is because it used to be much higher. Well, mortality rate used to be much higher, too. There are real reasons for the decline in mortality rate and volatility. It turns out that this is the easiest myth to debunk.

The following graph displays the historical realized volatility and VIX since 1980 (VIX data is available since 1990).



Clearly, by historical standards, the realized volatility and VIX are low but not unusually low. In any case, I would argue that there are fundamental reasons for volatility to be low and that these reasons are likely to be there going forward and therefore, in the absence some external shocks such as war or social unrest, volatility has permanently declined.

There are two fundamental reasons for the secular decline in volatility (as mentioned, I am ignoring Fed policies). First, creating and holding diversified portfolios has never been easier or less expensive. Investors are far more diversified than they used to be and therefore many idiosyncratic sources of information and volatility are ignored by them. To see this, suppose there are only two types of stocks in an economy: Sunny and Cloudy. Sunny pays dividends only on sunny days and Cloudy pays dividends only on cloudy days. The only relevant pieces of information in this economy will be changes in weather forecasts and interest rates. If investors are poorly diversified, then they would react to changes in weather forecasts as well as interest rates, creating volatility in prices of Sunny and Cloudy. In contrast, consider the case where everyone is holding both stocks. Weather forecasts will become fake news and prices would only react to changes in interest rates. We will have a much less volatile market.

The second reason, in my opinion, is that most of the global wealth is now managed on a fee-only basis. Pundits have largely ignored this fundamental change. Money managers are no longer incentivized to trade and to use buy/sell recommendations to generate trades and fees. Today, Morgan Stanley Wealth Management is the world's largest fee-based asset management company with over \$2.2 trillion in clients' assets in such accounts. Morgan Stanley's inflows per quarter have averaged close to \$20 billion. The same story is going on with other wealth management firms with the largest ones experiencing inflows of \$10-\$20 billion per quarter. These asset management firms have no incentive to trade. They want to put their clients' money to work quickly and inexpensively. This method of asset management has had two profound effects on financial markets. First, it has substantially reduced market volatility, and, second, it has made any stock market dip shallow and short-lived. There is another potential impact of fee-only and passive investment management. The market may experience more flash crashes than before. To the degree that herding is taking place among investors and money managers, the markets may experience long periods of calm followed by a flash crash.

Are Stock Buybacks Responsible for the Rising Stock Market?

Here is a headline from CNBC: "...corporate buybacks have become the chief source of buying in the market and the recent 21% decline in corporate buybacks is the alarm bell that the stock market bubble is about to burst." There are two problems with this statement. First, the headline is from 2 years ago. Second, it is nonsense.

Consider Apple Corporation, which is the largest public company in the world with a market capitalization of roughly \$800 billion. It has about 5 billion shares outstanding with each share selling for about \$160. Suppose Apple's CEO, Tim Cook, decides that 5 billion shares are simply too many and implements a 1-for-5 reverse split. That is, every five shares are converted into one new share. In the absence of any other news or transactions, each new share would sell for \$800, representing a 400% increase in price. Since Apple's weight in the S&P500 index is 3.7%, this should have a meaningful impact on the index. Of course, it will not because the market capitalization of Apple has not changed. That is, the total market value of Apple is still \$800 billion. The size of a pizza does not change if there are 4 large slices as opposed to 8 smaller ones.

One may argue that this example is irrelevant because in a stock buyback a company uses its cash to buy back its shares. Well, a buyback is identical to when a firm pays a one-time special dividend and institutes a reverse split. In fact, if Apple announces a special dividend of \$80 billion along with a 9-for-10 reverse split, the impact on its earnings and capital structure would be identical to when it spends \$80 billion buying back its shares. There is absolutely no difference between the two (I am ignoring the small tax effect on investors). Most commentators ignore this equivalence because it is hard to argue that special dividends plus reverse splits will cause a stock market bubble.

In the absence of any news, a stock buyback would cause Apple's stock price to increase, but the market capitalization of Apple should remain roughly the same, as its market capitalization is determined by its future total earnings, which are basically unaffected by the buyback or the reverse split. In practice, there is typically a small rise in the market capitalization because investors like the fact that the firm is returning its excess cash to shareholders rather than using it to make unwise acquisitions and investments. Also, the buyback may signal that the firm will have plenty of internally generated cash going forward, which should increase the firm's market capitalization. However, both effects will be present when the same firm announces an increase in dividends. The point is that share buybacks or special dividends plus reverse splits will not automatically increase the market capitalization of firms and the level of stock indices. Finally, assuming that markets are on average efficient, buybacks represent zero-NPV investments. However, corporations are not created to make zero-NPV investments. At the end of the day, positive-NPV projects are needed if a firm is to grow, prosper and reward its shareholders for their commitments.

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