

WHITE

PAPER



Value and Momentum



BY BILL SPITZ, PRINCIPAL

In the broadest sense, there are two approaches to making investment decisions: value and momentum. The value method calls for attempting to determine a “fair” value for many different assets and then purchasing those that appear particularly cheap. Momentum investors attempt to capitalize on a well-known tendency for assets that are outperforming to continue to perform well. Within these two broad approaches, there are an infinite number of variations and many investors use some blend of the two. I have written two papers that discuss the foundation of these methods: *The Theory of Everything* and *Momentum or Mania?* They are not meant to be “How to” guides but are designed to provide a conceptual framework of the way in which most investment decisions are made.

continued on next page >

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PART I:

The Theory of Everything

This enjoyable movie chronicles the work of the late physicist Stephen Hawking in his quest for a unified theory of the universe. He was searching for a single theory that would at the same time explain the movement of sub-atomic particles on the one hand, and the behavior of stars and galaxies on the other. In fact, there are two theories, general relativity and quantum theory that seem to explain many cosmic phenomena. But, physicists tell us these two theories are mutually exclusive, they cannot both be right. *So, the search goes on.*

Fortunately, in finance, we have something close to the theory of everything and that is the time value of money, otherwise known as compound interest. The concept and calculation of present and future value are the first things you learn in Finance 100, but it turns out they are the basis of a great deal of investment analysis. While there are certainly many methods of making investment decisions and lots of fancy math and computer algorithms, the time value of money and its offshoot, valuation, are at the heart of the entire field. And, the same basic techniques are used by corporations making capital expenditure decisions and investors in stocks, bonds, real estate, private equity, and so on. At Diversified Trust, our investment decisions are based on many variables including economics, demographics, politics, world affairs, and market forces. But, central to our analysis is the valuation of various asset classes and the resulting projected return on them. So, while you probably aren't interested in a deep dive on this rather technical topic, a brief tutorial will give you some insight into the thinking that drives our asset allocation decisions.

The Basics

The starting point of all finance is the principle that the value of any asset is equal to the present value of the future cash flows that will be received by virtue of owning that asset. Making this calculation involves two basic steps: forecasting the cash flows that will be received, and discounting them at an interest rate that reflects the return that could be earned on other investments as well as the perceived risk or uncertainty in the forecast of those cash flows. In the case of most bonds, the cash flows (interest payments and maturity value) are known, whereas they must be predicted for most other types of assets. For example, in the case of real estate, the future cash flows consist of the annual net income on the property and an assumed future sales price, neither of which can be predicted with certainty.

Actually, there are two basic approaches to this calculation. First, using forecasted cash flows and an appropriate discount rate, one can calculate a "fair" value which is then compared to the current price to determine whether the asset is cheap or expensive. Alternatively, using the forecasted cash flows and actual current market price, you can solve for the discount rate which becomes the expected rate of return on the investment. In order to give this number crunching a sense of relevance, please note that the first method is one of three calculations (along with replacement cost and comparatives) generally used by an appraiser to estimate the fair value of a piece of real estate. And, the second approach is used by corporations to calculate the internal rate of return on a potential investment in a new piece of equipment or plant which is then compared to other possible projects and the company's cost of capital.

Stock Valuation

As previously mentioned, the same technique is frequently used to value either an individual stock or the stock market as a whole. This version of the discounted cash flow analysis is called the dividend discount model and entails forecasting future dividends which are the cash flows you receive as a shareholder. Some people add bells and whistles of various kinds to these models, but we will stick with the basic version. While useful and conceptually straightforward, this method is actually demanding because an analyst must forecast an infinite stream of dividends. Or alternatively, one can forecast dividends for a specified period of time and then assume that the stock is sold which requires a decision as to how it will be valued at the time of sale. Consider the difficulty in forecasting future dividends for companies such as Google or Berkshire Hathaway that do not currently pay a dividend. When will they start and how rapidly will the dividend grow?

For companies that do currently pay a dividend and are growing at a stable rate, there is a shortcut that requires only three inputs: the current dividend (which is known), an assumed growth rate in dividends, and the discount rate. And this calculation can actually be simplified into the well-known and widely used price/earnings or P/E ratio. So, when market commentators suggest that the U.S. stock market should be selling at a P/E of say 23, they are actually making an implicit assumption about its future growth rate and appropriate discount rate. In other words, the P/E is just a greatly simplified discounted cash flow model.

Other Assets

Interestingly, the same shortcuts are used in many other asset classes. Real estate investors discuss the “cap rate” for an asset which is just the reciprocal of the P/E. So, a property selling at a P/E of 20 would have a 5% cap rate. Private equity investors focus on the price/ebitda ratio where ebitda is earnings before interest, taxes, depreciation, and amortization. And, bond traders quote the yield to maturity which is just the discount rate or return that equates the current price of the bond to the present value of future cash flows. You needn't understand the ins and outs of all of this; the point is that these are all basically the same thing- in other words, the theory of everything.

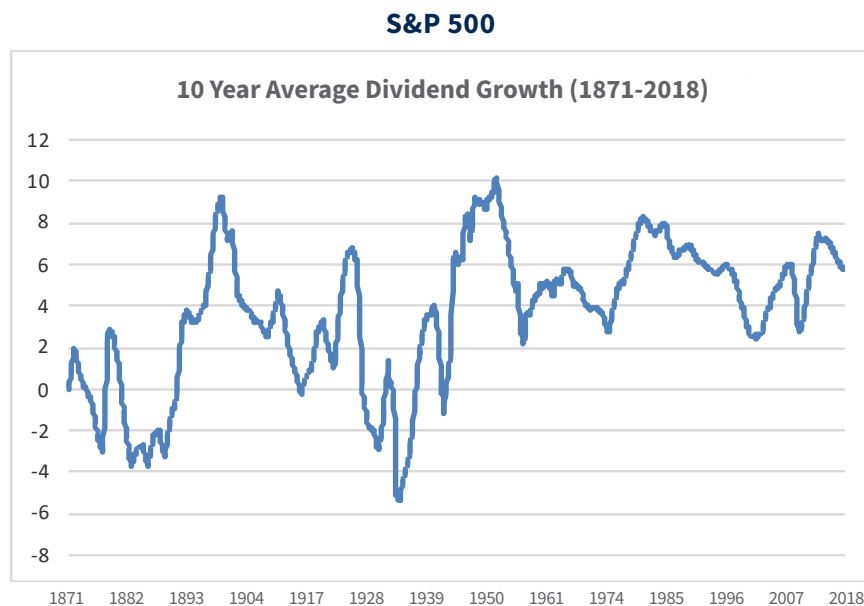
Valuation in Practice

Let's consider the use of these tools in evaluating both individual stocks and the stock market as a whole. Most equity managers use one form or another of these models to calculate either the fair value or projected return on each stock in their universe and these metrics are then used to rank stocks in order of their relative attractiveness. For quantitative managers, this analysis is often a major if not primary input to their actual investment decision whereas more qualitative

managers use it as a screen to identify stocks for further traditional security analysis which includes interviewing management, evaluating products and competitors, and so on. At Diversified Trust, we don't actually select stocks, so let's turn to the evaluation of asset classes such as large capitalization U.S. stocks, emerging market equities, and other categories.

While it is very difficult to accurately forecast future dividends for a given company, long term earnings and dividend growth rates for an overall category such as the S&P 500 are much more stable and predictable. The following chart depicts annualized historical 10 year dividend growth rates for the S&P 500 and you will note that the fluctuations are within reasonable ranges. So, in the absence of a major change in the world, we should be able to forecast future growth rates within a tolerable margin of error.

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We will use the version of the model that assumes a sale of the index at the end of ten years so the next step is to forecast a P/E ratio in year 10 which is then multiplied by future earnings to estimate a future sales price. Typically, practitioners assume that the P/E will regress from its current level to the long term average over the ten year time frame. Then, the present value of annual dividends and the future sales price is compared to the current price to calculate an annualized rate of return.

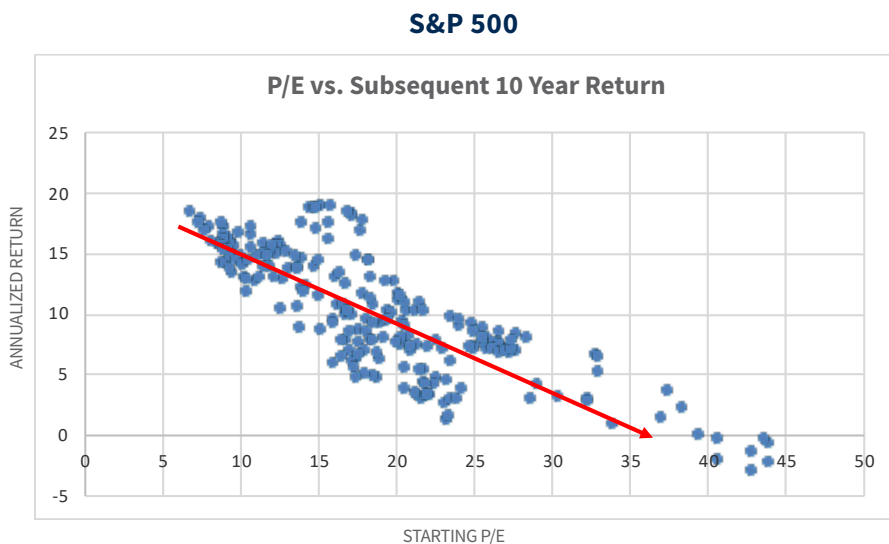
We then combine this expected rate of return with a number of other inputs such as forecasts from other respected investment firms and a model that imputes projected returns from the relationship between different asset classes. The net result of all of this is our forecast of the expected return and risk over the next 7 to 10 years for a variety of asset classes. Finally, using these inputs, computer optimization models, and a dose of judgement, we construct recommended portfolios. I am sure you are bored to tears by these details, but the important message is that constructing portfolios is a blend of art and a good deal of science.

The Illusion of Precision

Given all of this math, why aren't forecasts of stock market behavior more accurate? Basically, there are two ways one can err. First, the forecast of future dividends can be off the mark, although the previous section indicated that the likely error should not be terribly grievous. The more important source of error is the forecast of the future P/E ratio. As previously mentioned, the discount rate and/or P/E are a function of returns on other potential investments and the perceived risk associated with the particular investment under consideration. As a proxy for other investments, most people use the yield on something like the 10 year U.S. Treasury bond which is obviously a known quantity. So, the big unknown is the appropriate risk premium. In other words, how much extra return should one demand for this particular investment versus a safe U.S. Treasury? Interestingly, this risk premium is basically a measure of investor sentiment and therefore fluctuates significantly over time with the rise and fall of investor emotions. It is difficult to know exactly what risk premium is priced into the market at any given time, but a rough guess is that it has historically fluctuated between negative 3% and positive 13% with an average of about 4%. That is a massive spread, and I find it very difficult to conjure up a reason why it should ever be negative. To place this uncertainty in perspective, holding everything else constant, a 1% change in the assumed risk premium changes the fair value by about 30%!

One other interesting tidbit is that the impact on valuation of changes in things like government policy is very hard to predict. For example, using the dividend discount model, a corporate tax cut would likely increase future earnings and dividends (the numerator). But, if this cut is expected to increase the US budget deficit, it might lead to an increase in interest rates. (The denominator) The two effects tug valuations in the opposite direction so the net effect is unclear.

Despite these issues, valuation does provide important information about potential returns as illustrated by the following chart:



This chart covers the period 1951-2018 and shows the subsequent ten year annualized return given the starting P/E. Please note that the line slopes downward to the right which means that a higher beginning valuation as measured by P/E results in a lower subsequent return, just as you would expect. And the pattern is fairly tight which means that the predictive value is good. But, it is important to point out that while the predictive value is strong for a ten year time frame, valuation has little or no forecasting ability over short time periods which tend to be dominated by momentum factors.

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Art and Science

This paper is probably overly technical and includes more information than you ever wanted on valuation, but we think it is very important for our clients and friends to understand our investment process. Putting aside all of the details, the following are the key takeaways:

- **There are widely accepted and time tested methods of forecasting returns on various asset classes.**
- **While we work very hard at refining the inputs to the process, you should understand that they vary considerably over time rendering the forecasts subject to error.**
- **These forecasts do actually have pretty good predictive value over 7-12 year time horizons but provide little or no insight into near term returns.**
- **We combine these forecasts with a number of other inputs to formulate both short and long term recommended portfolio structures using a blend of both technology and judgement.**
- **While the entire process is imperfect, it is greatly superior to a “seat of the pants” approach to building portfolios which is often unduly influenced by recent market behavior and emotions.**

One final comment; because of our belief in this discipline, we typically avoid investments such as gold, art, and Bitcoin which are exceedingly difficult to value because they do not generate cash flows. The absence of cash flows means that the only source of return is the assumption that some other investor will buy from you at a higher price. That may well occur, but these types of investments don't fit our analytical framework, and one lesson that we have learned is that successful investors are disciplined about sticking to their process.

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PART II:

A body in motion stays in motion unless acted upon by an external force.

— SIR ISAAC NEWTON

Momentum or Mania?

All investors make mistakes, and even the most successful practitioners suffer through painful periods when they seem to get it all wrong. But, the best of them carefully study their errors, not to engage in self-pity, but to learn from them thereby sharpening their skills. Looking back on my career, I have made just about every mistake in the book, but have been reasonably diligent in attempting to learn from them. But, despite my efforts, there is one mistake that I make over and over again, and that is to underestimate the power of momentum in economics and finance. But, I have plenty of company as demonstrated by one of the most famous investors of all time, John Maynard Keynes, who purportedly said that markets can stay irrational longer than you can stay solvent.

...markets can stay irrational longer than you can stay solvent.

So, what is momentum?

As per Sir Isaac's First Law, momentum refers to the tendency for assets that are rising in price to continue to do so and vice versa. The same principle can apply to economic measures such as growth and inflation. Why does this phenomenon occur? Let's distinguish between two causes: momentum in underlying fundamentals, and behavioral issues. A period of strong economic growth reduces unemployment, increases personal income, and increases the profits of corporations. This causes a virtuous circle in which consumers increase their spending, companies expand and make investments in people and equipment, and the momentum continues. Similarly, companies that are experiencing strong growth in their earnings due to factors such as the introduction of new products typically see that translated into relative strength or momentum in their stock price. These are both examples of momentum driven by fundamental financial or economic forces. But, momentum can also occur because of human tendencies such as herd behavior, extrapolation of recent trends, and emphasis on data points that support a preconceived notion. And, it is important to note that strong fundamentals may lead to momentum which is then sustained or exacerbated by behavioral factors.

Regardless of why it occurs, there is a good deal of academic research that documents the pervasiveness of momentum which suggests that most investment organizations (including Diversified Trust) should incorporate it in their investment process to at least some extent.

But, at this point, you should be saying to yourself, "Wait a minute, momentum can't go on forever. Otherwise, there would never be economic recessions and you would only need to own one investment; the one with the strongest momentum." So, what's the rub?

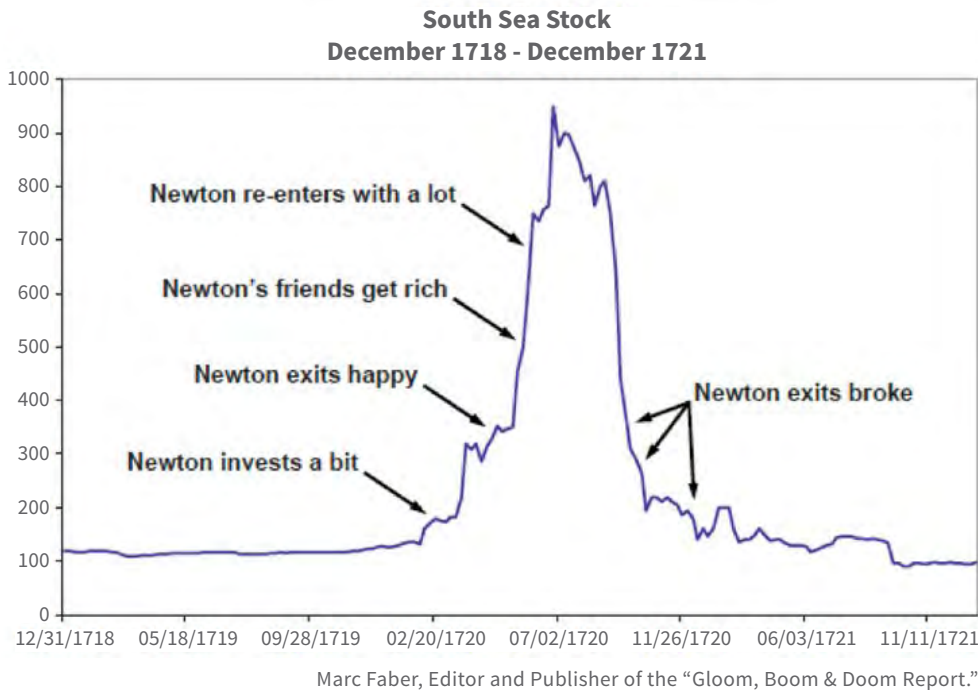
There are two basic problems with the application of momentum to investments. First, what started out as momentum spurred by fundamental economic or financial factors can easily morph into manias. For example, strong equity markets frequently motivate investors to jump into the fray late in the game due to FOMO-the fear of missing out. And, a key ingredient of manias is the second problem which is that momentum works until it doesn't. Momentum can reverse abruptly with occasionally painful consequences. So, while incorporating momentum in an investment process is a legitimate and worthwhile exercise, the challenge is trying to decide whether the momentum is supported by fundamental factors. And if not, it may still be appropriate to ride the trend, but one should be thinking about whether it is getting long in the tooth and nearing the time to hop off. Later, we will examine whether this challenge is relevant to today's environment.

Momentum Gone Wild

It isn't all that interesting to discuss everyday momentum that is based on strong underlying fundamentals, so let's focus on five episodes that arguably represent manias. Each of them is fascinating and merits a separate paper, so I won't do them justice in a paragraph. But a good deal has been written about each of them for those who want to do a little independent research. By the way, they are in chronological order and cover about three hundred years which reinforces the point that we have been and always will be vulnerable to human emotions. Most important, you will note that they almost always begin with a sensible thesis and solid financial underpinnings but ultimately morph into a period of euphoria and speculative frenzy.

The South Sea Bubble 1720

The South Sea Bubble is a little different from the other manias I will discuss because it involved considerable fraud in addition to the usual animal spirits. In 1711, the South Sea Company was granted exclusive trading rights for the "South Seas" which encompassed Central and South America and promised great riches based on the likely trade in gold, silver, and slaves. This basic premise was indeed both rational and exciting leading to initial interest in the stock of the Company. But, actual trade and therefore profits ended up being modest which induced executives to use a variety of nefarious techniques to pump up the stock price. They made wildly unrealistic claims regarding the prospects for the Company, offered shares to politicians through a dubious scheme, and lent money to investors to purchase shares. There were relatively few stocks available at the time which also generated excitement among the broad public due to scarcity value and the prestige of being an owner. At the beginning of 1720, the stock was selling at £128 and rose steadily until it reached a peak of £1000 by August before falling back to £150 in September. Among the casualties were banks and goldsmiths who had provided money to both common folks and aristocrats to purchase shares. In keeping with the quotation at the beginning of this paper, one of the most famous victims was Isaac Newton who was bankrupted.



In the aftermath of his financial disaster, he quipped "I can calculate the movement of the stars, but not the madness of men."

The Crash of 1929

The 1920's through October of 1929 was a fabulous decade for investors that was fueled by very strong fundamentals. Real GDP grew at a healthy 3% rate while inflation averaged -1%. Not surprisingly given the lack of inflation, US Treasury yields fell from 4.9% to 3.5% over the period and corporate earnings grew at a steady 5.1% annual rate. Recognition of these strong trends drew in many new investors and daily volume on the New York Stock Exchange grew from 1 million shares to around 4.5 million. And, the S&P 500 Index rose from 8.92 to 26.15, which when combined with dividends, generated an annual total return of 18.3%. As an indicator of the degree to which the market became overvalued, the S&P P/E rose from 6.3 to 33.1 which compared to an average up until that time of 15 and was not reached again until 1997. Joseph Kennedy famously sold all of his shares and actually shorted the market because he recognized that there was a mania when his shoe shine man started giving him stock tips. From 1929 to 1932, the stock market fell 85%.

The “Nifty Fifty”

Beginning in the late 1960’s, investors became enamored with a group of stocks that came to be known as the “Nifty Fifty.” These were actually fabulous companies that were characterized by market leading positions, strong balance sheets, steady earnings, and high profitability. Some people even considered them “one decision stocks” based on the theory that their quality was such that they should never be sold. Among the better known companies on the list were Avon Products, Coca Cola, Eastman Kodak, General Electric, IBM, Johnson and Johnson, McDonalds, and American Express. Who wouldn’t want to own them! Once again, the initial thesis supporting purchasing these stocks was completely reasonable. The problem was that by 1972, they were selling at an average P/E of 42 as compared to 19 for the S&P 500. Among the crazier valuations were Polaroid at a P/E of 91, McDonalds at 86, and Walt Disney at 82 times. In the 1973-74 bear market, the Dow fell 45% while many of these stocks declined from 50% to 85% with the more painful losses experienced by Polaroid (-85%), Disney (-81%), Avon (-79%), and Xerox (-65%). In all fairness, some of these companies recovered fairly quickly resulting in satisfactory long term returns.

The Late 1990’s Tech Bubble

There is “New Era” hype surrounding many periods in history but the 1990’s truly represented a new world with the dawn of the Information Age. From 1990 to 1997, the percentage of households owning computers increased from 15% to 35% which spawned entirely new industries. Capital gains taxes were reduced in 1997 and the Venture Capital industry was flush with money which fueled the development of thousands of new companies. As a result of widespread optimism, there were lots of stories of individuals quitting traditional jobs to engage in day trading, and NASDAQ (the exchange on which most tech stocks were listed) volume roughly doubled from 1997 to 2000. The exciting prospects for these companies induced investors to forget traditional valuation metrics as demonstrated by the fact that the NASDAQ P/E reached 200 in 2000. During 1999, thirteen stocks rose by more than 1000% and another seven increased by more than 900%. In total, the NASDAQ was up 85% in 1999 as compared to 19.5% for the S&P 500 and there were 450 IPOs. The great irony was that many of these companies had neither sales nor earnings and their business models were frequently unproven if not unworkable. The NASDAQ peaked in March of 2000 and subsequently fell 78% with a number of companies going bankrupt within months of successful public offerings.

The Housing Bubble 1998-2007

For the fifty years leading up to 2000, home prices appreciated about 4% per year with very low volatility—they were probably the last investment category in which you would expect a mania. This relative stability is not surprising because the primary driver of the demand for homes is the number of household formations which has grown at a very steady 1.8% annual rate for many decades. Population and household formation growth continued at roughly the same rate from 2000 to 2007, but something unexpected happened—home prices grew 109%.

Inflation-adjusted U.S. Home Prices, Population, Building Costs, and Bond Yields (1890-2005)



Irrational Exuberance, 2d ed. (Fig 2.1)

This chart indicates that the price explosion was not driven by building costs but by other causes that are complex and still being debated. But the list should include: low interest rates, relaxed credit standards, securitization of mortgages, legislation designed to increase home ownership, and a healthy dose of outright fraud. As was the case in other manias, early success drew many people into the sector as employees of real estate and mortgage companies as well as speculators.

In fact, I actually had a Joe Kennedy moment when my long time tailor told me that he was leaving the garment trade for residential real estate. Between the peak in 2006 and trough in 2012, home prices fell about 28% and did not return to their former levels until late in 2016. And, of course, this collapse was associated with the Global Financial Crisis and resulting bankruptcy of a number of financial institutions around the world.

Manias in Perspective

All of these examples follow a familiar pattern. Based on a reasonable premise and solid fundamentals, early investors did very well only to be followed by less disciplined latecomers who were drawn by the lure of easy money. Unfortunately, as typified by Isaac Newton, they generally fared badly.

Hopefully, this walk down memory lane has been interesting, but why is it relevant today? Let me rattle off a few statistics. The economy has enjoyed uninterrupted growth for nine years with the past five years averaging a steady 2.3%. Inflation has averaged only 1.5% and interest rates continue to hover only moderately above historic lows. In this benign environment, corporate earnings grew at roughly a 6% annual rate although growth has accelerated to around 20% in recent quarters due to both a healthy global economy and the recent corporate tax cut. Profit margins are near record highs and corporations are actively using their profits to repurchase their stock. All of this represents solid fundamental momentum that has rightfully rewarded investors with an annualized return of 14.1% since the end of the financial crisis. And, this fantastic return has been accompanied by remarkably low volatility.

It's been great, but what now? Are we in the process of making the transition from momentum to mania? Of course, the honest answer is that we don't know, but we do believe that we are late in the momentum cycle. As usual, there are positive developments as well as plenty of things to worry about so let's begin with the concerns. Valuations are very high as demonstrated by the cyclically adjusted

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or Shiller P/E which has risen from 13.3 to 32 since 2009. Note that the long term average is 17 although it is important to remember that it hit 44 during the Dot.Com bubble. An additional mitigant might be that the combination of strong earnings and a relatively flat stock market in 2018 has reduced the P/E somewhat based on current earnings. Most other asset classes are similarly expensive as compared to their historic norms. The Federal Reserve has made its intention clear to raise short term interest rates and we are already close to an inverted yield curve which has historically been an accurate predictor of recession. Finally, there is a great deal of noise on the political front with continuing discussion of Brexit, the prospect of trade conflicts, and active shouting matches with North Korea and Iran.

Our research suggests that long term metrics such as valuation multiples are good at predicting returns for the next ten years or so but provide virtually no guidance regarding the outlook for shorter periods. To that end, our Investment Team has been working on a shorter term timing tool that contains a number of indicators such as new orders/shipments, bank lending standards and credit measures. Interestingly, that tool continues to flash green which is also consistent with the strong economic and corporate profit momentum. So, we believe that we are late in the cycle but wouldn't be surprised if the momentum continues for a bit longer.

Based on this view, we are slightly underweight equities versus benchmarks with a moderate tilt toward non-US equities which are more attractively valued. In most portfolios, we have also emphasized what we call diversifiers which are strategies that are designed to yield reasonable returns irrespective of the direction of the stock and bond markets. We are watching short term trends very closely and expect that our next move will be to further de-risk portfolios. In addition to the quantitative metrics, we are also looking for signs of frenzy and euphoria that typically are associated with manias.

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