

Strategic Allocation

Long-term investment planning that reflects changing market conditions



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Whether an investor is an individual looking to provide for spending during retirement, a pension fund looking to provide future benefits to participants, or an institution looking to provide a long-term stream of operating funds, a central goal of long-term investment planning is to construct a portfolio containing a mix of assets that is well-suited to meet those needs, with an appropriate level of risk.

Two popular approaches for long-term investment planning are “target date” strategies that set allocations to equities and fixed income based on the number of years until retirement, and “fixed allocation” approaches that invest a constant percentage of assets in stocks, bonds, and money-market securities, with little or no variation.

The striking feature shared by these approaches is that the amount invested in stocks, bonds, and other securities has absolutely *nothing* to do with investment valuations or prevailing market conditions; even if the securities being held are profoundly overvalued or undervalued relative to historical norms. Indeed, the assumptions made by investors and pension funds about likely future investment returns are often set based on average historical returns, even when prevailing market valuations are nowhere near the valuations that produced those historical returns.

Still, while investment valuations are a powerful driver of long-term investment returns, they often have little impact during shorter segments of the market cycle. During recessions or financial crises, risk-aversion among investors can drive already-undervalued markets to even more depressed extremes. In these environments, focusing only on valuations may result in significant interim investment losses or “drawdowns.” Conversely, during booms or periods of strong government intervention, speculative pressures can drive already-overvalued markets to even more elevated extremes. In these environments, focusing only on valuations may result in missed returns.

Strategic Allocation takes an integrated approach, by combining two components:

- **A value-focused asset allocation component** that jointly considers prevailing stock market valuations and interest rates, and aligns the investment allocation with the “preferred assets” estimated to have the highest average annual expected return, adjusted for risk, to each point in a long-term investment horizon, and;
- **A risk-management component** to adjust exposure during segments of the market cycle where risk-aversion or speculation among market participants may temporarily drive valuations to depressed or elevated levels.

While Strategic Allocation is a disciplined, historically-informed, risk-managed, full-cycle approach to long-term investment, any application of this strategy requires ongoing research and analysis. This is needed particularly because there is no assurance that future market outcomes will adhere to historical relationships between valuations and investment returns.

Valuations and investment returns

A fundamental principle of finance is that the higher the price an investor pays today for some amount of cash in the future, the lower the long-term return the investor can expect on that investment. For example, if one knows the future payments that a bond will provide over time, one can calculate the yield-to-maturity directly from the price. The same basic principle holds for stocks as well, even if the expected future cash flows are more uncertain.

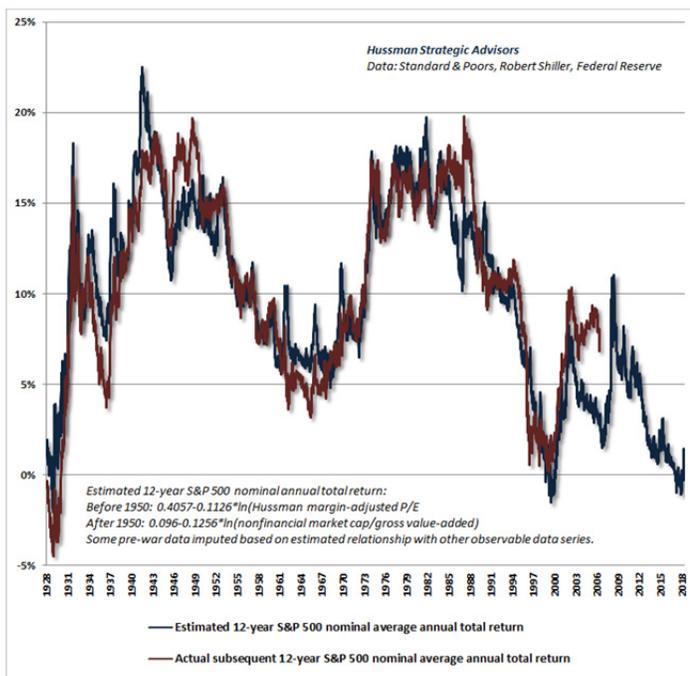
A common approach to stock market valuation is to rely directly on the ratio of stock prices to earnings. However, while corporate earnings are necessary to generate deliverable cash to shareholders, comparing prices to earnings is actually quite a poor way to estimate future investment returns. The reason is simple - most of the variation in earnings, particularly at the index level, is uninformative.

Stocks are not a claim to next year’s earnings, but to a very long-term stream of cash flows that will be delivered into the hands of investors over time. A valuation multiple is nothing but shorthand for a proper discounted cash flow analysis. Accordingly, the denominator of the multiple must be *representative* of decades of expected future cash flows.

Corporate earnings are more variable, historically, than stock prices themselves. Though “operating” earnings are less volatile, they are pro-cyclical; expanding during economic expansions, and retreating during recessions. As a result, to quote the legendary value investor Benjamin Graham, “The purchasers view the good current earnings as equivalent to ‘earning power’ and assume that prosperity is equivalent to safety.”

Not surprisingly, we find that the valuation measures having the strongest correlation with actual subsequent investment returns across history are less volatile, and serve as better “sufficient statistics” for the relevant long-term cash flows. In particular, measures that resemble price/revenue ratios are substantially better correlated with actual subsequent market returns than any earnings-based measure we have tested in historical data.

Below, we illustrate the relationship between (log) valuations and actual subsequent S&P 500 total returns, based on two measures we have introduced over time: the ratio of nonfinancial market capitalization to corporate gross value-added (including estimated foreign revenues) in data from 1950 to 2019, and the Hussman Margin-Adjusted P/E in data prior to 1950, when Federal Reserve Z.1 flow of funds data for nonfinancial corporations was not available.



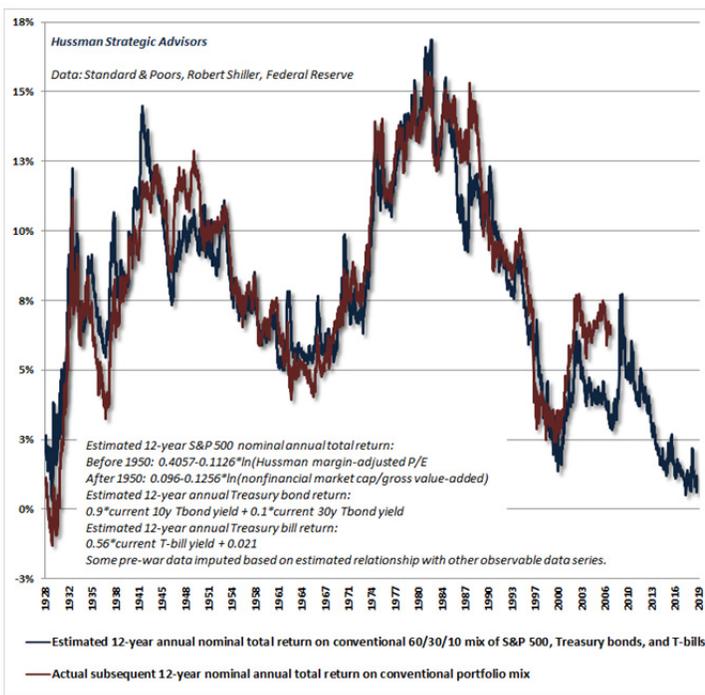
Both measures essentially behave as broad, apples-to-apples market price/revenue ratios, and are more strongly correlated with subsequent market returns than popular earnings-based measures. A 12-year horizon is used because the mean-reversion of valuations is generally most reliable at that point.

Notice that there are a few points where the actual 12-year total return of the S&P 500 substantially exceeded or fell short of the 12-year return that was suggested by prevailing valuations. Historically, market returns that “overshoot” or “undershoot” expectations have not signified a breakdown in the relationship between valuations and market returns, but rather a *temporary valuation extreme* at the end of those 12-year periods.

For example, actual S&P 500 total returns over the 12-year periods following 1988 and 2006 substantially exceeded the returns that would have been projected on the basis of valuations at the time. This was because the end of those 12-year periods coincided with the historic overvaluation of 2000 and 2018. Similarly, the unexpectedly weak S&P 500 total returns in the 12-year periods beginning in 1937 and 1970 reflected the historic undervaluation of 1949 and 1982.

Notably, the periodic “errors” between expected and actual 12-year S&P 500 total returns are well-correlated with the level of consumer confidence at the end of those periods, with a 0.54 correlation in periods ending in 1970 or later, and a 0.71 correlation in periods ending between 1998 through 2018. This underscores the idea that while valuations largely drive long-term investment outcomes, temporary departures from those expectations are driven largely by cyclical factors and investor psychology.

Changes in corporate profit margins across the economic cycle have also had little effect on the very long-term cash flows that equities have provided to investors over time. While reductions in corporate tax rates typically produce immediate increases in corporate profit margins, these increases do not appear to be durable, as U.S. corporations appear to compete on the basis of *after-tax* profit margins. Specifically, in data since 1947, reductions in nonfinancial corporate tax rates have been gradually accompanied by similar reductions in nonfinancial pre-tax profit margins, rather than commensurate increases in after-tax profit margins.



Stock market valuations can be combined with prevailing yields on Treasury securities to estimate the likely total return for a conventional, fixed-allocation portfolio strategy. The accompanying chart shows estimated 12-year total returns for a portfolio invested 60% in the S&P 500, 30% in Treasury bonds, and 10% in Treasury bills, in data since 1928. Recently, our estimate of prospective 12-year total returns for a conventional portfolio mix fell to the lowest level in history, outside of three weeks surrounding the 1929 market peak.

While there is no assurance that future returns will remain strongly related to these measures, we do believe that valuations will continue to fluctuate significantly over time, and will remain inversely related to prospective investment returns.

Speculation and risk-aversion

One of the reasons investors may overlook the level of market valuation in asset allocation decisions is that, despite the impact of valuations on long-term investment returns, valuations often have very little impact on market outcomes over periods substantially shorter than 10-12 years. For example, if overvaluation alone was sufficient to halt a market advance, it would have been impossible to reach the hypervalued extremes of 1929, 2000, or 2018, because those market advances would have ended at lesser extremes.

In our view, the primary driver of market returns over shorter segments of the market cycle is the psychological inclination of investors toward speculation or risk-aversion. This is typically driven by short-term factors, including ordinary economic fluctuations that cause investors to feel optimistic or fearful.

Market internals

Although investor psychology may seem abstract, the best way we have found to measure those attitudes objectively is to examine market behavior itself. The underlying principle is our view that when investors are inclined to speculate, they tend to be indiscriminate about it. Conversely, when investors are inclined toward risk-aversion, they tend to become increasingly selective. So we can learn a great deal about investor attitudes from the “uniformity” and “divergence” of market action across thousands of individual securities, sectors, industries, and security-types, including debt securities of varying creditworthiness.

It is often argued that if valuations have pushed to extreme levels without a collapse, there must be something wrong with the valuation measures. In our view, that is not how valuations work. A central feature of full-cycle investing is that when investors are inclined toward speculation, which we infer from the joint market behavior of thousands of securities (“internals”), valuations can mean very little for extended segments of the market cycle.

When the market demonstrates divergences and breakdowns in the behavior of various sectors, that loss of “uniformity” is often a signal that investor preferences have subtly shifted toward risk-aversion. This shift is a key feature that can help to distinguish an overvalued market that moves higher from an overvalued market that loses value. Indeed, the combination of deteriorating market internals in an overvalued market was a central feature that we emphasized in real-time, prior to the 2000-2002 and 2007-2009 market collapses:

“The information contained in earnings, balance sheets and economic releases is only a fraction of what is known by others. The action of prices and trading volume reveals other important information that traders are willing to back with real money. This is why trend uniformity is so crucial to our Market Climate approach. Historically, when trend uniformity has been positive, stocks have generally ignored valuation, no matter how extreme. When the market loses that uniformity, valuations often matter suddenly and with a vengeance. This is a lesson best learned before a crash rather than after one. Valuations, trend uniformity, and yield pressures are now uniformly unfavorable, and the market faces extreme risk in this environment.”

– *John P. Hussman, Ph.D., Hussman Investment Research & Insight, October 3, 2000*

“One of the best indications of the speculative willingness of investors is the ‘uniformity’ of positive market action across a broad range of internals. Probably the most important aspect of last week’s decline was the decisive negative shift in these measures. Since early October of last year, I have at least generally been able to say in these weekly comments that ‘market action is favorable on the basis of price trends and other market internals.’ Now, it also happens that once the market reaches overvalued, overbought and overbullish conditions, stocks have historically lagged Treasury bills, on average, even when those internals have been positive (a fact which kept us hedged). Still, the favorable market internals did tell us that investors were still willing to speculate, however abruptly that willingness might end. Evidently, it just ended, and the reversal is broad-based.”

– *John P. Hussman, Ph.D., Hussman Market Comment, July 30, 2007*

Periods of divergent market internals include a disproportionate number of steep market declines. Between 1940 and 2019, periods when market internals had lost favorable uniformity represented about 42% the data, but included over 88% of instances when the S&P 500 fell by -10% or more within the subsequent 4-week period, 92% of instances when the S&P 500 fell by -15% or more, and every instance when the S&P 500 fell by -20% or more within the subsequent 4-week period. While there is no assurance that deterioration in our measures of market internals will precede similar market losses in the future, these regularities support the general proposition that deteriorating market action indicates increasing risk-aversion on the part of investors.

It is notable that in market cycles prior to 2008, there was generally a “limit” to speculation. Sufficiently extreme combinations of stock market overvaluation, extended price trends, and optimistic sentiment among market participants were generally associated with poor subsequent market returns. However, in the face of zero interest rate policies by the Federal Reserve after 2008, it became detrimental to anticipate market losses in response to these “overvalued, overbought, overbullish” extremes, except in periods when market internals had also deteriorated. Valuations and internals remained useful, but it was necessary to abandon the idea that speculation had “limits.”

Though extremely overextended conditions can justify reduced exposure to stock market risk, we adapted our own investment practices in 2017 to exclude positions reflecting the expectation of actual market *losses*, except in periods of unfavorable market internals. The Strategic Allocation approach allows significant variation in equity market exposure, but is intended to always maintain at least a modest, positive exposure to stock market fluctuations.

Moving-average strategies

Though crude measures of market behavior such as moving-average strategies generally do not augment expected returns compared to a passive investment strategy, they can still be useful in reducing potential downside risk.

Consider the popular strategy of switching from equities to Treasury bills in periods when the S&P 500 is below its 40-week moving average (MA40w). In weekly data from 1940 to 2018, this strategy would have lagged a passive investment position in the S&P 500 Index, even before taxes and transaction costs, and would have averaged about 3.5 shifts per year, more than twice the number of shifts observed in our broader gauges of market internals. Even so, the strategy would have substantially reduced the extent of periodic losses. In weekly data since 1940, the maximum loss of the MA40w switching strategy was only -23%, compared with -55% for a passive, fully-invested position the S&P 500 Index.

Put simply, incorporating a systematic risk-management component using market internals or even crude moving-average strategies has the potential to considerably reduce the impact of periodic market losses, but these strategies may vary in their ability to augment long-term returns. It is important to emphasize that none of these strategies can eliminate the risk of losses or periods of missed returns. In our view, a historically-informed approach is essential. The response of investors to changes in prevailing market conditions should generally be larger when the expected market return/risk profile differs substantially across those conditions, and smaller when the expected market return/risk profile differs less markedly.

Strategic Allocation

Rather than selecting a static asset allocation regardless of valuations, the Strategic Allocation approach involves a two-step process. First, a value-focused asset allocation is identified by taking prevailing equity market valuations and bond yields explicitly into account. Then, a risk-management component is added to address shorter-term inclinations of investors toward speculation or risk-aversion, adjusting exposure in segments of the market cycle where overvalued markets may become more overvalued, or undervalued markets may become more undervalued.

Value-focused asset allocation

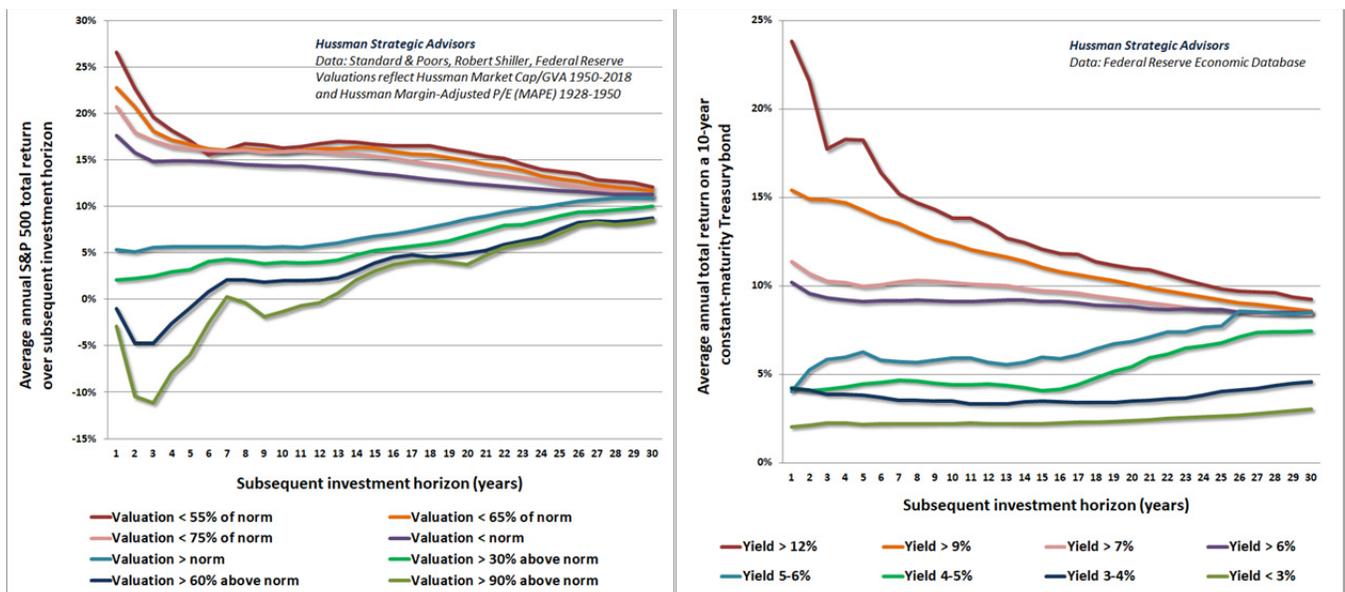
Conceptually, the investment portfolio is viewed as a set of individual allocations, with the goal of providing for the future inflation-adjusted spending needs of the investor. The funds allocated to provide for each year of a long-term (multi-decade) spending horizon are allotted to the asset class estimated to have the highest average annual expected return, adjusted for risk, between today and that point in the investment horizon. We call this the “preferred asset” for that point in the investment horizon.

The present value of each allocation is calculated by discounting it using the expected return of its respective preferred asset. These allocations are combined so that the overall value-focused asset allocation to stocks, bonds, and Treasury bills reflects the share of total present value allotted to each of these “preferred assets.” These allocations sum to 100%.

In choosing the investment horizon used to determine the value-focused asset allocation, it is not necessary to proliferate a large number of “target dates.” This is because, under plausible long-term return assumptions, the asset allocation stabilizes once the target investment horizon exceeds about 20 years, because the present values of long-dated distributions have progressively diminishing effect.

As a convention, we use a 36-year horizon, representing a 64-year old investor wishing to distribute expenditures across a potential 100-year lifespan. Again, however, under typical long-term return assumptions, the resulting asset allocation is robust to a wide range of alternative horizons.

The examples below illustrate the relationship between initial valuations and subsequent average annual total returns for the S&P 500 Index and 10-year Treasury bonds, in actual data since 1928. Equity valuation is measured by the ratio of nonfinancial market capitalization to corporate gross value-added (including estimated foreign revenues) in data from 1950 to 2019, and the Hussman Margin-Adjusted P/E in data prior to 1950. Both measures are normalized so that a log valuation of 0 reflects historical norms. These measures are described further in the Data Appendix. There is no assurance that these measures will remain reliable in the future.



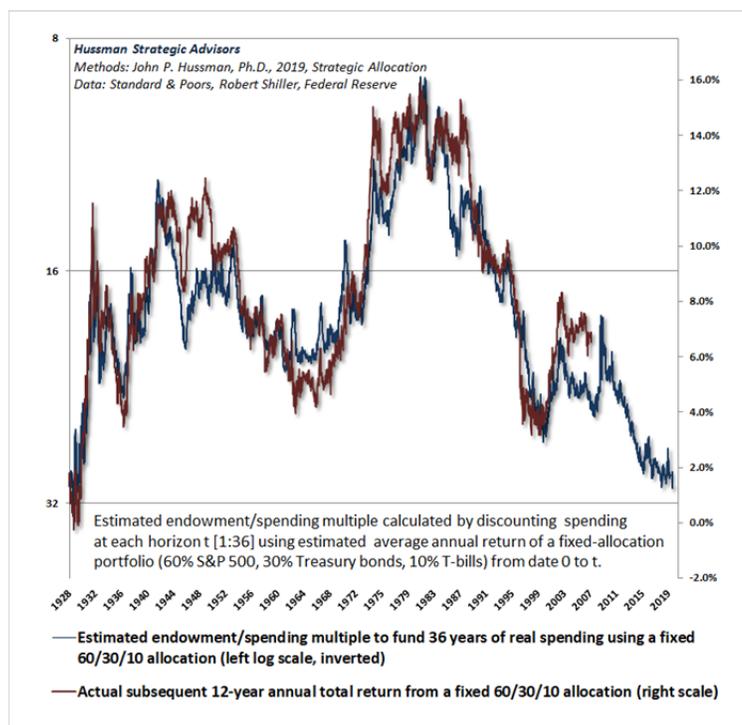
These “curves” are consistent with mean-reversion – the idea that substantial departures of market valuations from their norms tend to gradually “decay” over time. In doing so, low stock market valuations or high interest rates tend to be followed by significantly above-average subsequent returns, while high stock market valuations or low interest rates tend to be followed by significantly below-average returns. Of course, individual outcomes can vary substantially.

To avoid the use of statistics or overfitting, the estimated return trajectories for stocks, bonds, and T-bills in the examples below reflect two basic assumptions: 1) substantial departures of (log) stock market valuations from their historical norms are assumed “decay” geometrically over time, and 2) the norms used for values such as nominal economic growth, the average equity market dividend yield, and market volatility are chosen to be roughly consistent with historical averages. For bonds, the expected return for horizon T is estimated as the simple weighted average of the yields on Treasury bills, 10-year Treasury bonds, and 30-year Treasury bonds. For T-bills, the trajectory of returns is derived by assuming simple geometric decay toward a norm of 4% (or more generally, expected inflation + 1%).

Given these assumptions, estimates of future average annual market returns can be calculated as finite geometric series. No statistics are required. These estimation methods may differ from those used in practice by Hussman Strategic Advisors. A risk penalty, particularly for short-horizon returns, is subtracted from equity and bond market projections.

Endowment-to-Spending

A useful way to understand the relationship between valuations, investment returns, and future cash flows is to consider the “Endowment-to-Spending” ratio, which we can define as the present endowment that would be required in order to fund annual spending distributions for 36 years, starting at \$1 and adjusting annually for inflation. Conceptually, the required endowment can be viewed as the sum of 36 individual portfolios, each with its own investment horizon. Assuming a fixed portfolio allocation invested 60% in stocks, 30% in bonds, and 10% in T-bills, with a 3% annual increase in spending, the required endowment is calculated by discounting each future dollar amount to present value, using the estimated average annual returns expected from today to each of those horizons.



The estimated Endowment-to-Spending ratio is shown here on an inverted log scale (blue line, left), along with the actual subsequent average annual nominal total return of a conventional 60%, 30%, 10% portfolio mix over the following 15-year period (red line, right). A 15-year period is chosen here because it represents a typical “duration” of a 36-year endowment, defined as the average horizon at which cash flows are received by the investor, weighting each horizon by the present value allotted to each.

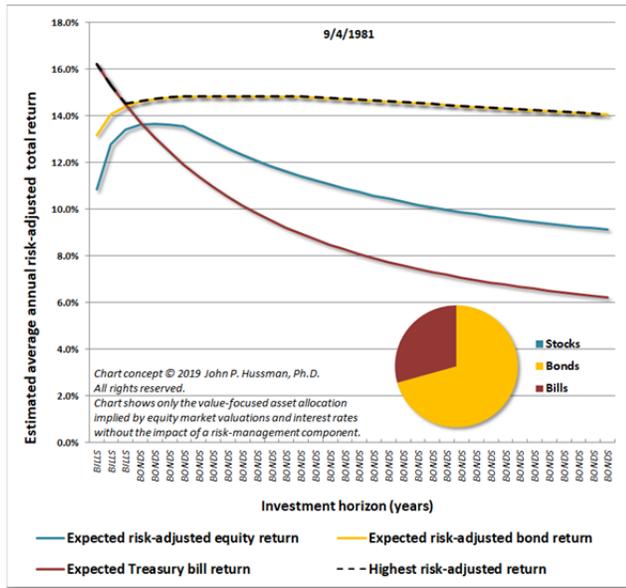
Note that for a fixed-allocation investment strategy, the Endowment-to-Spending ratio is strongly related to actual subsequent investment returns. The reciprocal of the Endowment-to-Spending ratio is the expected “withdrawal rate” that the fixed-allocation portfolio can sustain over time. In our view, this rate is strongly determined by valuations.

Case-examples

As an alternative to static asset allocation regardless of valuations, Strategic Allocation begins by determining a value-focused asset allocation. Consider an investor looking to provide for a long-term stream of future spending. The value-focused asset allocation identifies the asset having the highest estimated average annual risk-adjusted expected return at each horizon (the “preferred asset”), that will be responsible for providing that year’s distribution. The present value of each distribution is calculated by discounting that distribution using the expected return of its respective preferred asset. The overall portfolio allocation for stocks, bonds, and Treasury bills is calculated as the sum of present values allotted to each respective asset, divided by the total present value allotted to all assets.

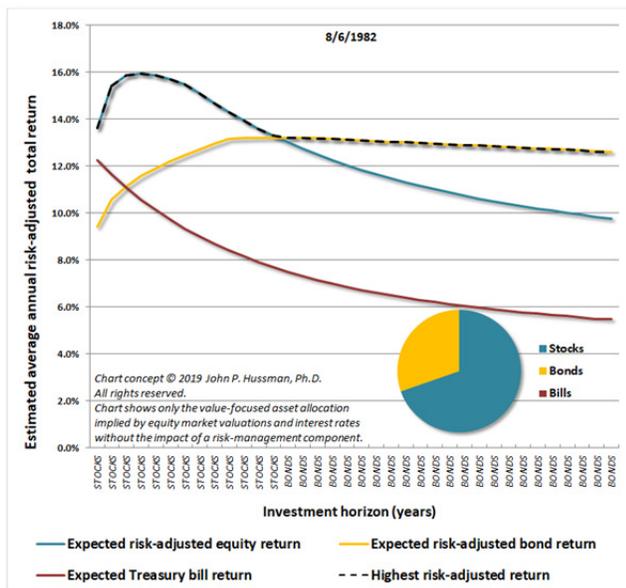
To illustrate how equity valuations and interest rates jointly affect the value-focused asset allocation, the following charts illustrate these calculations at several important points in recent decades. The blue, yellow, and red lines show the estimated trajectory of average expected risk-adjusted returns for equities, bonds, and Treasury bills, respectively, at horizons of 1 to 36 years. The dashed black line shows the maximum expected return at each horizon.

The charts below reflect the value-focused asset allocation only, and do not reflect a risk-management component.



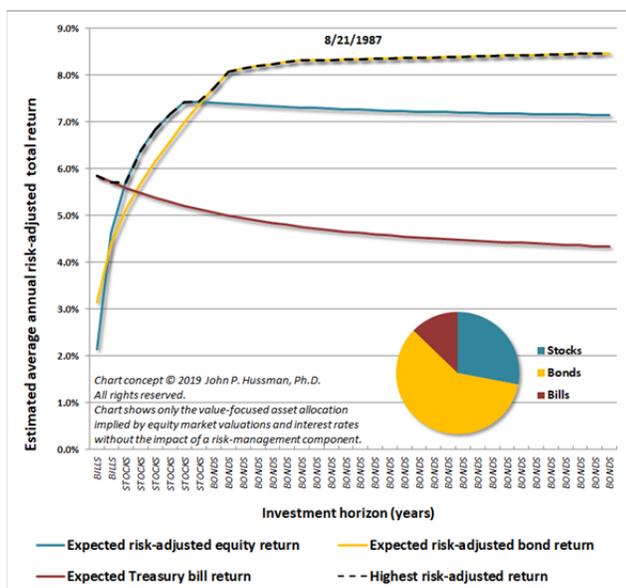
September 1981 interest rate peak

This period featured extremely high long-term and short-term interest rates. While U.S. equity market valuations were also depressed, suggesting high risk-adjusted returns for several years, the unusually high level of interest rates suggested a significant allocation in bonds. Though Treasury bills represented the preferred asset only for the first three years of expected distributions, the level of interest rates was so high that these early distributions still represented a significant fraction of the present value required to finance the entire stream of expected future distributions.



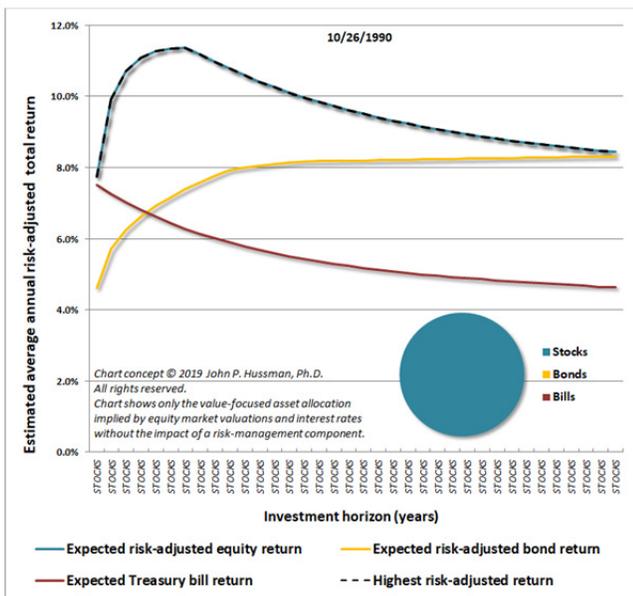
August 1982 stock market low

While interest rates peaked in 1981, the stock market continued to fall in response to an ongoing recession. The decline in stock valuations boosted the expected returns on equities, while a retreat in interest rates lowered the expected return profile for bonds and T-bills. As a result, despite the penalty for potential risk, stocks became the preferred investment asset even for distributions expected in the first few years of the investment horizon. With bond yields still well over 12%, bonds remained the preferred asset for longer-term distributions.



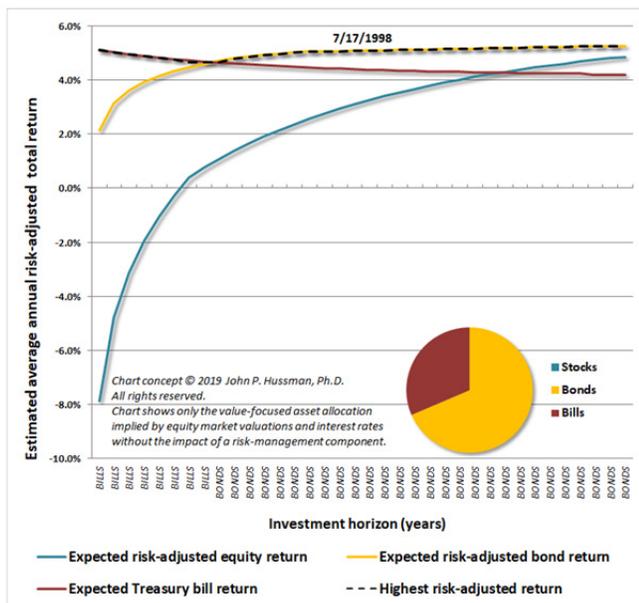
August 1987 stock market peak

After several years of advancing stock market valuations, the equity market had become overvalued, though expected risk-adjusted returns remained in the high single-digits looking out more than a few years. With Treasury bond yields still over 8%, bonds remained the preferred asset for longer-term distributions. Even though stock market valuations were nowhere near the extremes observed in 2000, 2007, or 2018, the value-focused asset allocation still leaned toward a relatively conservative allocation to stocks, with bonds representing the preferred asset for the majority of future investment horizons.



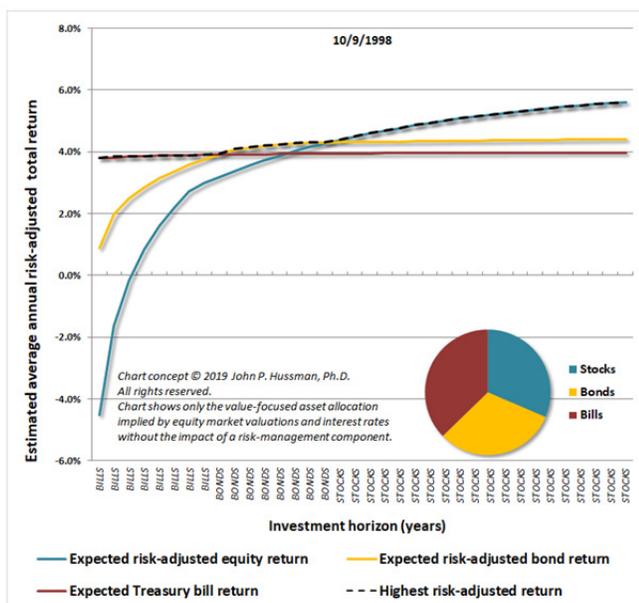
October 1990 stock market low

Despite a U.S. recession and bond yields still over 8%, stock market valuations became sufficiently undervalued that even adjusted for risk, stocks were the preferred asset at all horizons. In practice, the actual amount of equity exposure would likely have been limited until year-end, when the S&P 500 was about 5-6% higher, because our measures of market internals, as well as simple moving-average strategies, still indicated risk-aversion among investors at the October low. The role of the risk-management feature of Strategic Allocation is to avoid excessively aggressive or defensive investment stances during periods where risk-aversion or speculation may drive valuations far from their norms.



July 1998 stock market peak

Though technically not a bull market high, this peak was followed by a nearly 20% decline in the S&P 500. Market conditions featured Treasury yields above 5%, coupled with very elevated stock market valuations. Treasury bills were the preferred asset for early years, with bonds representing the preferred asset for later years. Valuations at the time did not support the use of stocks as the preferred asset for any investment horizon out to 36 years. Within a few months, a steep market decline would change these market conditions.

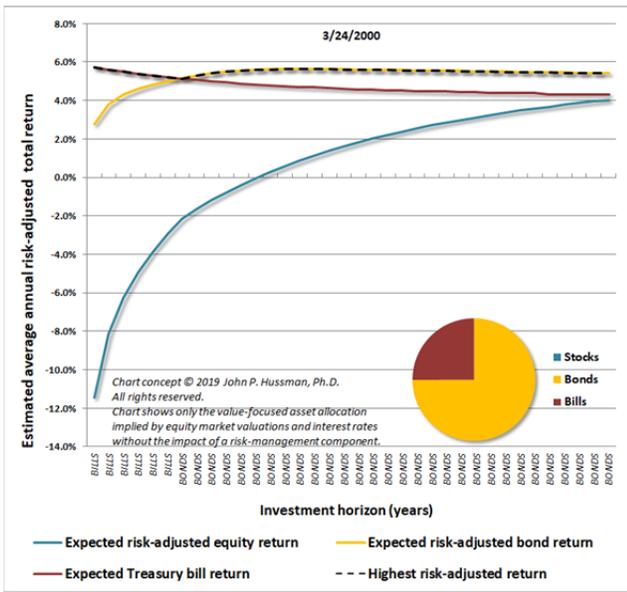


October 1998 intermediate stock market low

While stock market valuations remained well above their long-term norms in October 1998, the market decline associated with the "Asian crisis," coupled with a retreat in Treasury yields, was enough to produce more balanced set of preferred assets. The stock market advance continued until March 2000, yet the S&P 500 Index would eventually lose all of those gains, trading at a lower level in 2002 and again in 2009. This underscores the difference between stock market behavior over complete cycles, versus its behavior over shorter segments of the market cycle.

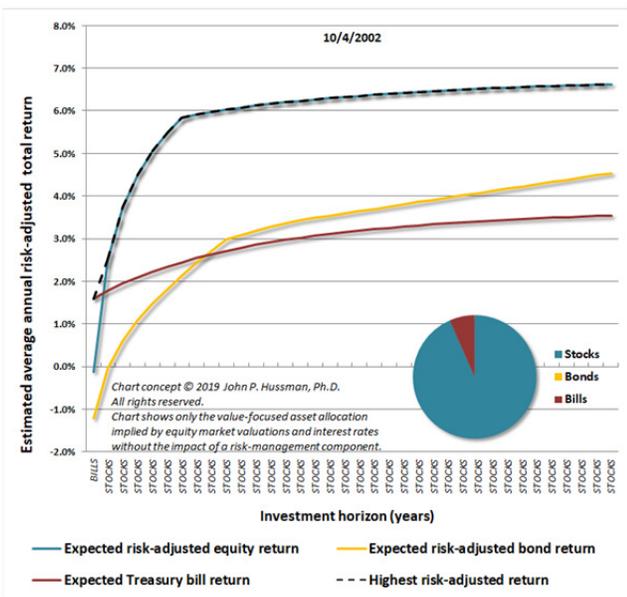
March 2000 stock market peak

One of the interesting features of the 2000 market peak is that while equity market valuations were extreme, Treasury yields were still fairly reasonable. As a result, investors still faced an acceptable set of investment opportunities despite poor expected returns on stocks. The value-focused asset allocation at this point primarily represented Treasury bonds, with a moderate allocation to Treasury bills, primarily because of the risk-penalty applied to bonds in early years to allow for the uncertainty of returns.



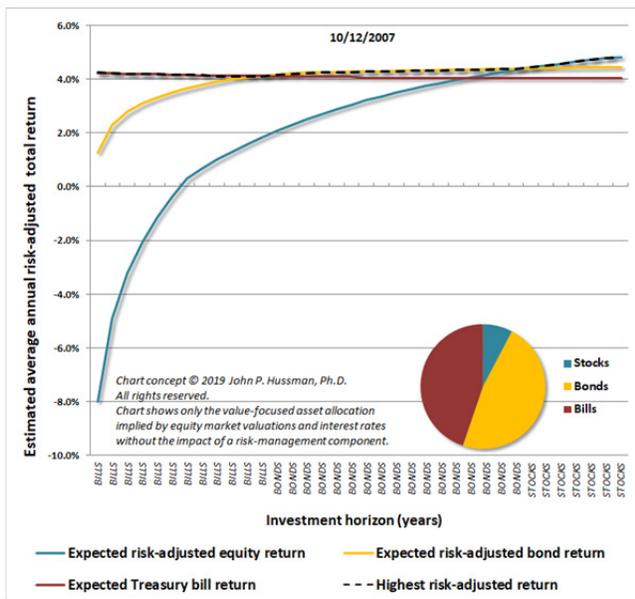
October 2002 stock market low

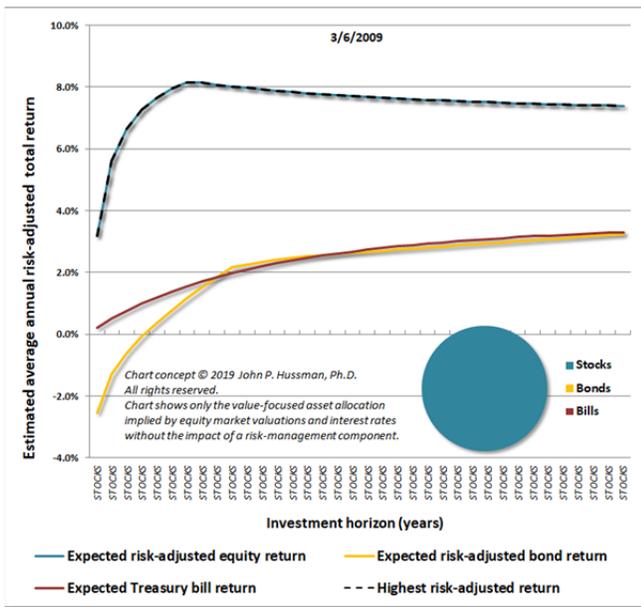
Despite a nearly 50% decline in the S&P 500 between 2000 and 2002, the stock market low of 2002 occurred at the highest level of valuations ever observed at a bear market low. Yet given the depressed level of Treasury yields at the time, stocks still represented the preferred asset for most horizons. This is an example of how low yields can encourage risk-taking, but is also a situation that requires attention to the longer-term risks involved. From the standpoint of absolute valuations, the October 2002 low did not represent a durable market trough. Though the S&P 500 would nearly double by 2007, it would go on to lose that entire total return by March 2009.



October 2007 stock market peak

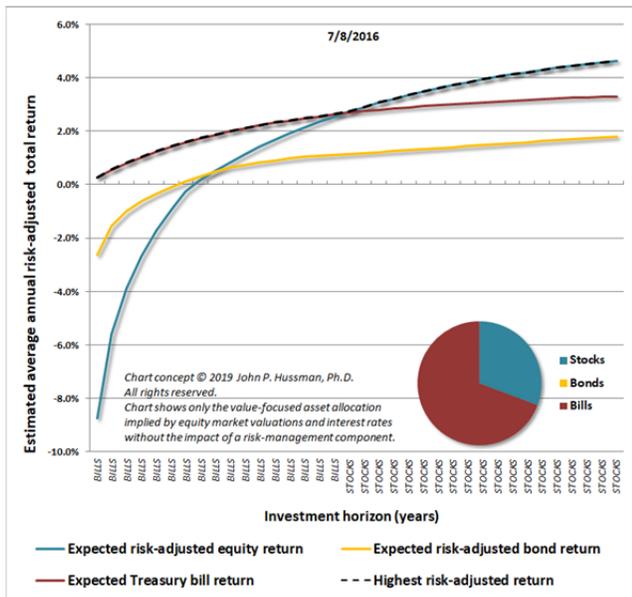
Even before the “global financial crisis” of 2008 was underway, several years of yield-seeking speculation by investors had already driven stock market valuations back to extreme levels that warranted reduced exposure to equities. Despite their relatively modest yields, Treasury securities represented the preferred asset except at the longest investment horizons.





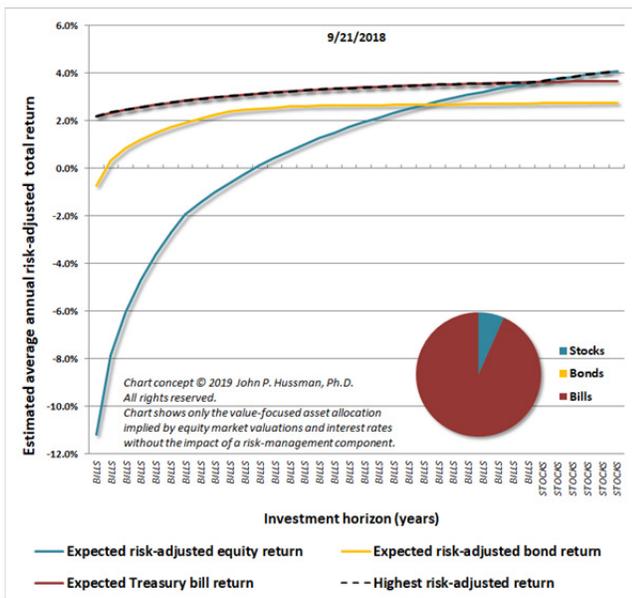
March 2009 stock market low

Stock market valuations plunged below their historical norms by March 2009, though not dramatically so. At the same time, interest rates stood at very low levels. This combination made stocks the preferred asset at every investment horizon. As in 1990, the risk-management component of the Strategic Allocation strategy would likely have limited the exposure to equities until early April 2009 (using our measures of internals) or as late as July 2009 (using the 40-week average). Because interest rates were so low, using valuations alone would have encouraged high equity allocations as early as September 2008, and could otherwise have resulted in a significant loss by March 2009.



July 2016 interest rate low

With Treasury bill yields at 0.25%, and 10-year Treasury bond yields at just 1.35%, yield-seeking speculation by investors had again pushed stock market valuations to extremely high levels, driving expected long-term stock market returns into low-single digits. Yet because risk-adjusted expected returns on stocks were still higher than those available on bonds, a value-focused allocation still identified stocks as the preferred asset at some horizons. Because of the extremely high level of stock valuations, this is a situation that requires significant attention to the long-term risks involved, and would generally warrant caution due to the potential for full-cycle market losses.



September 2018 stock market peak

The combination of market conditions at the September 2018 stock market peak was notable for the dismal investment opportunity set that was available to investors at the time. We estimate that this represented the most hostile investment conditions in history, outside of a three-week period surrounding the 1929 market peak. While stocks were included among preferred assets at very long horizons, this was only because the prospective returns on Treasury securities were even lower. Again, such extreme valuations require significant attention to the long-term risks involved, and generally warrant caution due to the potential for full-cycle market losses.

Risk management

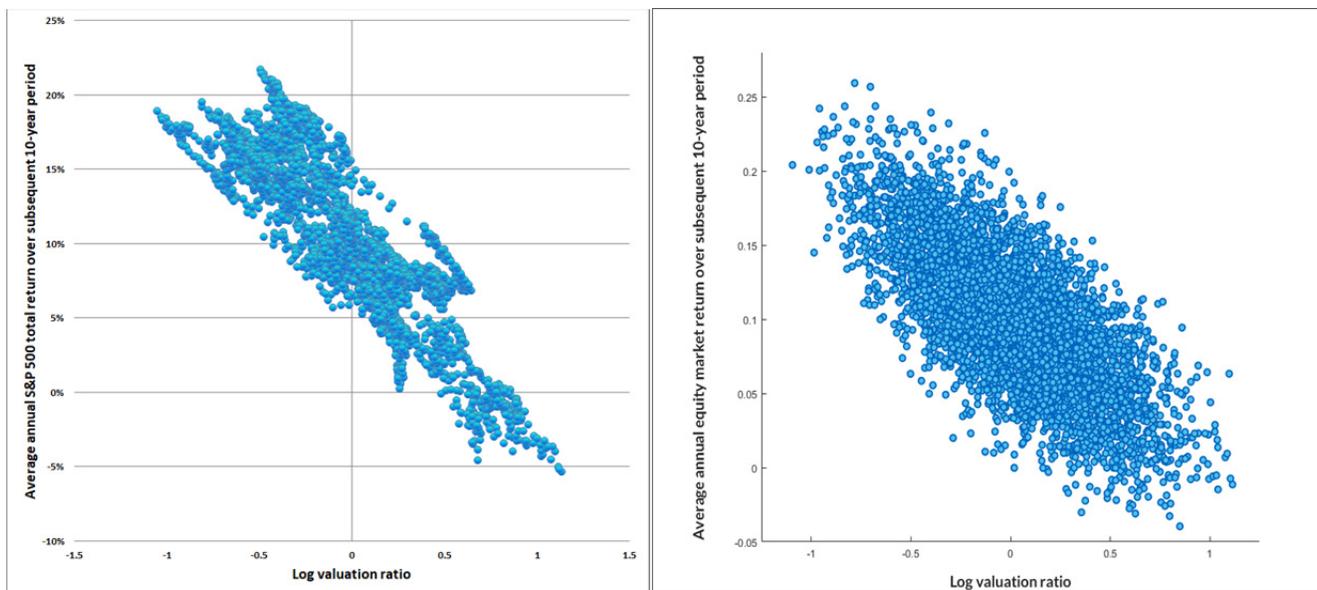
It is important to recognize that, applied in isolation, the value-focused asset allocation can produce losses when undervalued markets are driven to even lower valuations, as in 1974 and late-2008. It may also experience missed returns in speculative periods when overvalued markets are driven to even higher valuations.

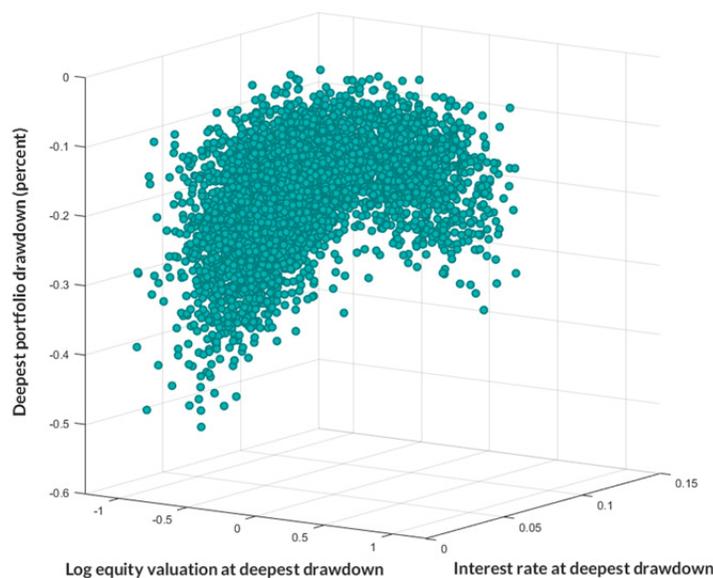
Depressed valuations can become even more depressed, and elevated valuations can become even more elevated. The risk-management component of the Strategic Allocation approach is intended not only to limit equity exposure when market action is unfavorable, but also to avoid overly defensive investment allocations when market action is uniformly positive. This is accomplished by increasing or decreasing the allocation to equities in response to shifts in market action. As a practical matter, changes in exposure to general equity market fluctuations can often be efficiently executed using futures or index option combinations. Still, the risk-management component should not be expected to eliminate the potential for periods of loss or underperformance.

Monte Carlo simulations

For regulatory reasons, we do not report hypothetical investment returns from historical tests or Monte Carlo simulations. However, in order to examine potential risk factors associated with the Strategic Allocation approach, the same basic equations used to project returns were used to simulate returns in response to random shocks to the stock and bond markets. A total of 5000 simulations were performed, each initialized by choosing the log stock market valuation, 10-year Treasury bond yield, and 3-month Treasury bill yield prevailing at a random date between 1928 and 2018. Random trajectories of stock, bond, and Treasury bill returns were then generated under the assumption of geometric decay in valuations, and weakly correlated shocks in the stock and bond markets.

The simulations clearly reproduced an important feature of the actual equity market: high stock market valuations are associated with low subsequent returns, and vice versa. In the scatterplots below, the left plot shows the actual relationship between log valuations and average annual S&P 500 total returns over the subsequent 10-year period based on MarketCap/GVA and the Hussman Margin-Adjusted P/E, in data since 1928 (see the Data Appendix for details on these measures). Valuations are scaled so that a log valuation of zero represents the historical norm. The right plot shows the same relationship based on 5000 Monte Carlo simulations, assuming randomly chosen starting valuations coupled with geometric decay in log valuations, and random shocks with volatility similar to the annual volatility of the S&P 500.





Across 5000 simulated return trajectories, we also observed that the deepest interim losses for the value-focused asset allocation *component* of the Strategic Allocation approach tended to emerge in simulations where equity valuations fell to unusually low levels at some point during the investment horizon, coupled with interest rates that were not high enough to establish bonds or T-bills as the preferred asset. This result underscores the importance of the risk-management component, which is intended to limit premature equity exposure when market action remains unfavorable, and also to avoid overly defensive investment allocations when market action remains uniformly positive.

Given that the Strategic Allocation approach selects the asset with the highest estimated annual risk-adjusted return for each investment horizon, it seemed likely that the approach would make the long-term expected value of the investment portfolio independent of the initial equity market valuation at the beginning of the investment horizon. However, based on Monte Carlo analysis, starting valuations still matter for the Strategic Allocation approach.

Apparently, low starting valuations were typically of benefit to both a fixed allocation approach and to the Strategic Allocation strategy, because they essentially “loaded” the expected trajectory of future long-term market returns with additional potential gains. Conversely, high starting valuations were undesirable for both strategies because they removed some potential gains from the expected trajectory of future long-term market returns.

While these Monte Carlo simulations were calibrated to replicate important features of U.S. financial markets in order to examine potential risk factors, the simulations do not reflect the results of an actual portfolio, and should not be interpreted as an exhaustive analysis of potential risks, or as a performance record of any kind.

Summary

The Strategic Allocation strategy is a disciplined, value-conscious, historically-informed, risk-managed, full-cycle investment approach for investors seeking to provide for a long-term stream of future expenditures, combining:

- **A value-focused asset allocation component** that:
 - Jointly considers prevailing stock market valuations together with the level of interest rates;
 - Assigns a portion of the portfolio to the asset class estimated to have the highest average annual expected return, adjusted for risk, between today and each future year of a long-term horizon;
 - Combines these annual allocations so that the overall allocation to stocks, bonds, and Treasury bills reflects the share of total present value allotted to each of these “preferred assets.”
- **A risk-management component** to adjust exposure during segments of the market cycle where pressures toward risk-aversion or speculation may temporarily drive valuations outside of their typical range. This component is intended to avoid overly aggressive investment allocations when market action is uniformly negative (conveying that investors are inclined toward risk-aversion), and also to avoid overly defensive investment allocations when market action is uniformly positive (conveying that investors are inclined toward speculation).

This approach can be applied in a wide variety of actual market conditions observed in decades of prior market cycles, including typical market conditions as well as speculative bubbles and financial market collapses, helping to create asset allocations that are responsive to prevailing valuations and investment opportunities.

Strategic Allocation represents a disciplined, value-conscious, historically-informed, risk-managed, full-cycle approach to long-term investment, capable of responding to changes in market conditions in a way that target date and fixed allocation strategies do not. In our view, aligning asset allocations with the valuations that drive long-term returns, while adjusting exposure to allow for shorter-term risk-aversion or speculation among market participants, is a systematic way to respond to the ever-changing landscape of investment risk and opportunity.

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Hussman John P., 2019, Strategic Allocation, White Paper, Hussman Strategic Advisors, Ellicott City, MD.

Data Appendix

Data for average monthly S&P 500 index values and dividends were obtained from Robert Shiller (http://www.econ.yale.edu/~shiller/data/ie_data.xls). Additional data, including Federal Reserve Z.1 flow-of-funds data, was obtained from Standard & Poors (<http://www.standardandpoors.com>), and the Federal Reserve Economic Database (FRED: <https://fred.stlouisfed.org/>).

MarketCap/GVA is a valuation measure introduced by Dr. John P. Hussman (Hussman Market Comment, May 18, 2015), and measures the ratio of nonfinancial market capitalization to nonfinancial gross value-added (including estimated foreign revenues). This measure essentially behaves as a comprehensive, apples-to-apples price/revenue ratio. National nonfinancial corporate gross value-added (GVA) is estimated using Federal Reserve Z.1 flow of funds data as: Domestic nonfinancial GVA * (1+ ProfitsRestOfWorld / DomesticProfits)

The Rest-of-world / domestic profit ratio uses 5-year average of each, and market capitalization is updated intra-quarter based on the most recent weekly closing value for the S&P 500 Index.

The Hussman Margin-Adjusted P/E (MAPE) was introduced by Dr. John P. Hussman in 2014 (see Hussman Market Comment 05/05/14 and 09/04/17) and adjusts the ratio of the S&P 500 to exponentially-smoothed 10-year inflation-adjusted S&P 500 earnings to account for variation in profit margins, resulting in a measure that largely mirrors a market-wide price/revenue ratio. In historical data, this measure has a substantially greater correlation with subsequent market returns than Robert Shiller's cyclically-adjusted P/E (CAPE), which uses a fixed 10-year window and does not adjust for cyclical variation in profit margins.

Disclosure Notice

Past performance does not ensure future results, and there is no assurance that the Hussman Funds will achieve their investment objectives. An investor's shares, when redeemed, may be worth more or less than their original cost.

Strategic Allocation is not a formula but a method of analysis. The foregoing report is intended to illustrate the general framework of this strategy but should not be interpreted as an exhaustive account of the considerations or market analysis techniques used to determine the investment positions of any Fund managed by Hussman Strategic Advisors. Information relating to the investment strategy of any Fund managed by the advisor is described in its Prospectus and Statement of Additional Information. A schedule of investment positions for each Fund is presented in the annual and semi-annual reports.

The Hussman Funds have the ability to vary their exposure to market fluctuations depending on overall market conditions, and they may not track movements in the overall stock and bond markets, particularly over the short-term. While the intent of these strategies include long-term capital appreciation, total return, and protection of capital, the investment return and principal value of each Fund may fluctuate or deviate from overall market returns to a greater degree than other funds that do not employ these strategies. For example, if a Fund has taken a defensive posture and the market advances, the return to investors will be lower than if the portfolio had not been defensive. Alternatively, if a Fund has taken an aggressive posture, a market decline will magnify the Fund's investment losses. Fixed income investments are affected by a number of risks, including fluctuations in interest rates, credit risk, and prepayment risk. In general, as prevailing interest rates rise, fixed income securities prices will fall. Value investing involves the risk that an investment made in undervalued securities may not appreciate in value as anticipated or remain undervalued for long periods of time.

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