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# Investing for the Next 10 Years

April 2018

## Introduction

Whether the first quarter of 2018 will go down as an important, late-cycle sea change for financial markets remains to be seen. However, the return of market volatility has undoubtedly motivated many investors to reevaluate their expectations for future returns and downside risks. As detailed in this paper, empirical evidence strongly suggests that returns for both stocks and bonds over the next decade are likely to lag the robust gains experienced since the spring of 2009. Considering the less favorable return environment forecasted by a variety of leading metrics, we believe that investors could be well-served by implementing a highly disciplined core-satellite approach to global asset allocation which emphasizes multi-dimensional diversification and drawdown mitigation.

## A Low Return World

It is a truism that an asset's return is strongly influenced by its initial purchase price. Regardless of the eventual selling price: the lower the purchase price of an asset, the higher its forward return, and vice versa. A similar (inverse) relationship exists between valuations and forward returns (because valuations depend upon the current price of an asset). Thus, as valuations fluctuate, so too do forward return expectations, in the same manner as with prices.

This inverse relationship between current valuations and forward returns serves as the foundation for many of the methods used to forecast longer-term equity market performance. Some of the more popular approaches use such valuation indicators as the Cyclically-Adjusted Price-to-Earnings (CAPE) Ratio, the Market-Cap-to-GDP ratio, and the Equity Q ratio (Tobin Q). Empirically, the forecasts produced by these indicators have substantial correlations—ranging from 0.70 to 0.90—with actual 10-year forward equity-market returns (which explains their popularity). At present, each of these approaches are forecasting very low single-digit annualized U.S. equity market returns over the next 10 years—on the order of -2.5% to +2.6% per year.

| | Shiller CAPE | Market-Cap-to-GDP | Tobin Q | AIAE |
|---|---|---|---|---|
| Expected Annualized Return Next 10 Years | 1.4% | -2.5% | 2.6% | 4.5% |
| Correlation with Actual 10-Year Forward Annualized Returns | 0.73 | 0.80 | 0.78 | 0.92 |

A lesser-known, but perhaps more powerful, method for forecasting long-term equity returns—which also happens to be our preferred method—was first articulated by the pseudonymous financial pundit "Jesse Livermore," who writes at the website Philosophical Economics. Livermore's approach uses quarterly Federal Reserve Z.1 data to evaluate the ratio of the total market value of equities to the combined total market value of equities plus bonds.



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By looking at total holdings of owners of U.S. assets, this ratio essentially tells us the average investor allocation to stocks. Livermore dubbed this the Aggregate Investor's Allocation to Equities, a term we refer to as "AIAE". What we find is that when investors (in the aggregate) have less allocation to equities today, future equity returns are higher and vice versa (very much like the relationship between current valuations and future returns). A statistically rigorous, walk-forward analysis of out-of-sample AIAE forecasts from 1950 to the present reveals that it has a correlation with 10-year forward equity returns of approximately 0.91 (the single highest correlation we have observed of any similar approach).

To give one an idea of the AIAE's general forecasting ability, in the summer of 1982, when U.S. equity markets were in the embryonic phase of what would turn out to be one of the strongest bull markets in history, the AIAE was forecasting returns of 18% annualized from 1982 until 1992. The market delivered 17.5% annualized returns over that period. In contrast, at the top of the dotcom bubble in the spring of 2000, the AIAE was forecasting annualized returns of -1% over the ensuing 10 years—and the market returned -0.2% annualized over that time-period. Finally, in the spring of 2009, during the nadir of the Great Financial Crisis, the AIAE was forecasting annualized returns of 16% from 2009 until 2019. We are currently nine years into that 10-year forecasting period and so far, the market has produced roughly 17% annualized returns.

Presuming the AIAE's forecasting capability remains consistent with its robust track record—we contend investors and advisors should consider the following inferences about the coming 10-year period:

1. Based on our evaluations of each of the popular methods used to forecast longer-term U.S. equity market performance, including the AIAE, it is unlikely that investors will experience conditions resembling the unrelenting bull market that has come to pass in the years since the Great Recession.
2. At present, the AIAE is forecasting 4.5% annualized nominal returns for U.S. equities from now until early-2028.
3. It is important to also remember that indicators like the AIAE tell us nothing about the path the market will likely take over the next 10 years – but rather only forecast the ultimate destination. As with all market cycles, equities will likely undergo both substantial rallies and drawdowns rather than rising smoothly at a 4.5% annualized pace each year. Given the current readings for the AIAE indicator, we anticipate a significant increase in volatility over the next ten years, especially when compared to 2017's all-time low readings on the market's collective "fear gauge" or VIX.
4. While short-term bond returns are notoriously difficult to forecast, starting bond yields have proven to be a rough, but solid, predictor of long-term fixed income returns – often explaining 90%+ of annualized returns from bonds. For example, Vanguard founder John Bogle has advocated using today's current 10-year Treasury yield to approximate ten-year return forecasts for the fixed income portion of a portfolio. Others suggest using the entry yield on the Barclays U.S. Aggregate Bond Index of investment-grade U.S. bonds. Either way, low (high) starting yields have been associated with similarly low (high) long-term returns. At the end of the first quarter



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of 2018, 10-year U.S. Treasury yields stood at 2.74 while the Barclays U.S. Aggregate Bond Index yielded 3.14%

5. These more muted potential return forecasts have important implications for retirement savings decisions and retirement income distribution strategies. For investors holding a blended, passive portfolio of 60% equities (and applying a nominal 4.5% return assumption) and 40% bonds (using a nominal 3.0% return assumption), the weight of the evidence currently points to using 3%-4% annualized nominal return assumptions over the coming ten-year horizon for financial planning purposes.
6. If inflation were to spike or remain elevated during this period, real returns for both stocks and bonds would be further degraded.
7. According to the research in the book Stock Cycles by Michael Alexander (which looked at 200 years of U.S. equity market history), secular bear and bull markets essentially alternate every 15 or so years (usually lasting at least 9 years and sometimes up to 20 years in length). Bear markets have averaged 0% real returns on an annualized basis, while bull markets have average 12%. Put them together and we arrive at the oft-quoted average of approximately 6% real returns in the U.S. over the last two centuries.
8. Moreover, Alexander suggests the causes of those bear and bull markets have alternated between high inflation/disinflation and low real earnings growth/high real earnings growth. To illustrate, the Great Depression bear market from 1929-1949 was driven by low real earnings growth. In contrast, the following bull market from 1949-1965 was driven by high real earnings growth. The bear market from 1965-1982 was driven by high inflation, while the bull from 1982-2000 was powered by disinflation. Finally, the bear market cycle from 2000-2009 was driven by low real earnings growth. The current equity bull market, which began in 2009, has been fueled by high real earnings growth. If long-term cycles hold true to form, inflationary forces should play a large hand in the next bear market phase.
9. Therefore, to improve retirement outcomes, investors should consider saving more and evaluate opportunities to enhance returns through the use of active management techniques.

The prospect for lower returns and higher volatility for both equity and fixed income asset classes over the next ten years argues for a more dynamic, core-satellite approach to portfolio construction. We favor combining independent core and tactical components for their process and time horizon diversification.

Realizing the compounding and tax-efficiency benefits of long-term returns requires dampening the impact of major portfolio declines. For example, if a portfolio loses 50%, it needs a 100% return to get back to even. Tactical asset allocation (TAA) techniques—i.e., intermittently adjusting the satellite portion of a portfolio's exposures based on intermediate-term risk-reward calculations—play an important role in managing tail risk. We also believe a core portfolio should not ignore the possibility that a single, large loss could derail a financial plan even for individuals with long investing horizons. To use a flying analogy, tactical portfolios offer the potential for some protection by adjusting to unexpected in-flight turbulence.



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The core portfolio should offer the optimal flight plan before take-off based on a variety of factors, including a realistic assessment of potential risks along the planned route.

## Improving Core Portfolio Construction

With risk management in mind, we construct global strategic core allocations with an eye toward diversification by asset class, geography, capitalization, style, and risk factor. We focus on building portfolios that are likely to be relatively resilient in periods of severe market turbulence by acknowledging that the relationship between risk and return is not static and is influenced by the aggregate investor positioning (discussed above), relative valuations, and the prevailing macroeconomic backdrop.

The classic "Portfolio Selection" article written by Harry Markowitz in 1952 concluded that investors should not choose portfolios that simply maximize expected return but should rather choose portfolios that offer the highest expected return for a given level of variance. In the decades since Markowitz's seminal paper was published, mean-variance analysis has developed into the standard procedure for attempting to construct optimal portfolios. However, several potential shortcomings of mean-variance based optimization have been widely identified in subsequent literature. Specific limitations of mean-variance optimization include an assumption that returns are normally distributed and that investors have quadratic utility, meaning they are indifferent to whether variance is to the upside or to the downside. Of particular importance to us, mean variance optimization ignores the potential impact of fat tail events where returns deviate dramatically from long-term means. These shortcomings have thus often led to disappointing out-of-sample performance and limited the practical usage of mean-variance optimization for professional asset allocation.

Instead, we believe current best practices in quantitative portfolio construction include utilizing a *combination* of techniques including full-scale optimization, block-bootstrapping, fully flexible views, and realistic long-term return assumptions.



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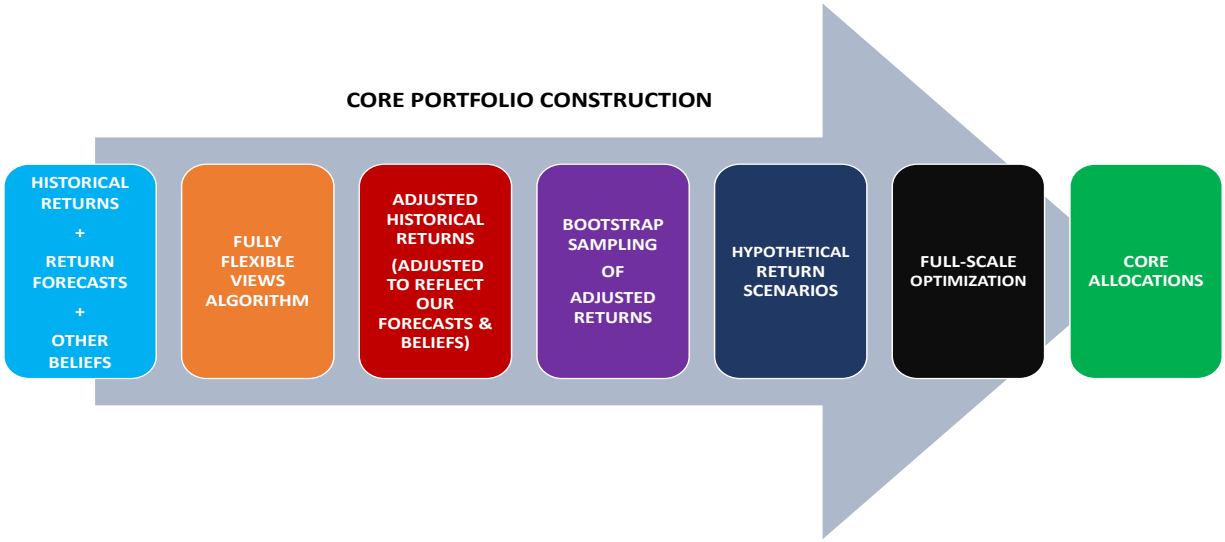


In recent years an alternative optimization procedure, known as full-scale optimization ("FSO"), has begun to be utilized in portfolio construction (Adler and Kritzman 2007). Full-scale optimization utilizes refined search algorithms to identify the optimal portfolio based on any set of return distributions and any description of investor preferences. In contrast to mean-variance optimization, FSO considers all features of return data rather than just averages. We believe, when used in conjunction with additional statistical techniques and constraints, FSO represents a robust methodology for constructing global core portfolios.

Additional elements of our optimization process that we believe are likely to lead to more effective core portfolios are bootstrap resampling and fully flexible views (Meucci 2010).

- Bootstrap resampling is a technique which enables the practitioner to generate alternative potential market trajectories by reshuffling the sequence of historical returns, thereby gaining an understanding of how a portfolio might perform in an extremely diverse set of return environments.
- Fully flexible views, meanwhile, is a technique that can help mitigate the impact of estimation errors by allowing for the ability to rank order characteristics such as expected returns, volatilities, correlations, and tail risks. This, in turn, allows practitioners to generate portfolios that may be more resilient in extreme downside scenarios than traditional mean-variance optimized portfolios. Because FSO captures all elements of a return series, it also offers a more robust methodology for allocating to alternative asset classes, which often have returns that are not normally distributed.



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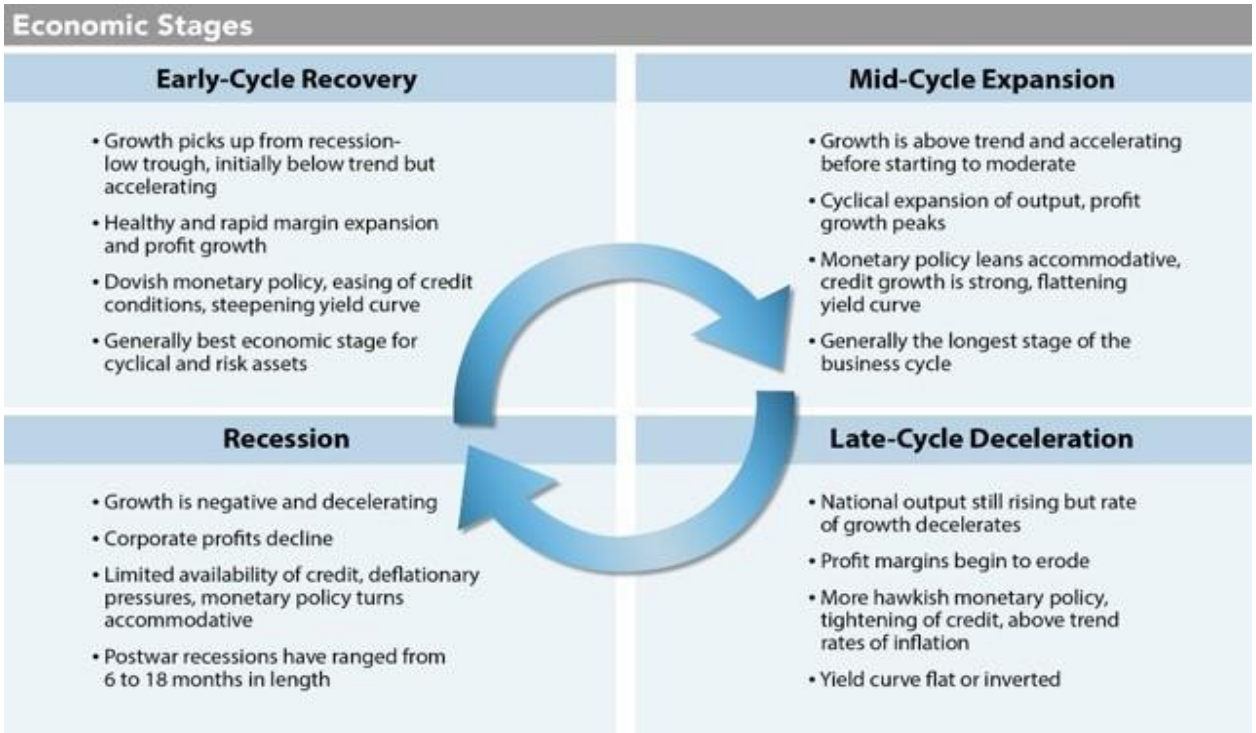
Another important component of our core portfolio construction process is a consideration of the current and future macroeconomic backdrop. Economic conditions can and do shift – thereby warranting different core asset allocations in an attempt to capture the relationship between financial markets and the broader economy. In our view, there are four dominant economic regimes or scenarios that can influence the optimal core portfolio exposures:

- Early-Cycle Recovery: accelerating growth from cycle trough; best economic regime for cyclical risk assets
- Mid-Cycle Expansion: Growth is above trend but potentially moderating; profit growth peaks, generally the longest stage of cycle
- Late-Cycle Deceleration: Rate of national output growth decelerates; profit margins begin to erode; inflationary pressures build; more restrictive monetary policy; yield curve flat or inverted
- Recession: Negative and decelerating growth; falling corporate profits; widespread deflationary pressures




Asset class performance, correlations, and volatilities can be expected to perform somewhat differently in each of these macro regimes. However, economic forecasting is a challenging and often imprecise exercise. Therefore, we do not attempt to predict specific discreet beginning and end points of economic cycles – which are very difficult to forecast and can be interrupted by exogenous shocks. Instead, we employ a weighted, probabilistic framework that accounts for each major economic scenario but is tilted toward our directional assessment (rather than magnitude) of the current economic climate.



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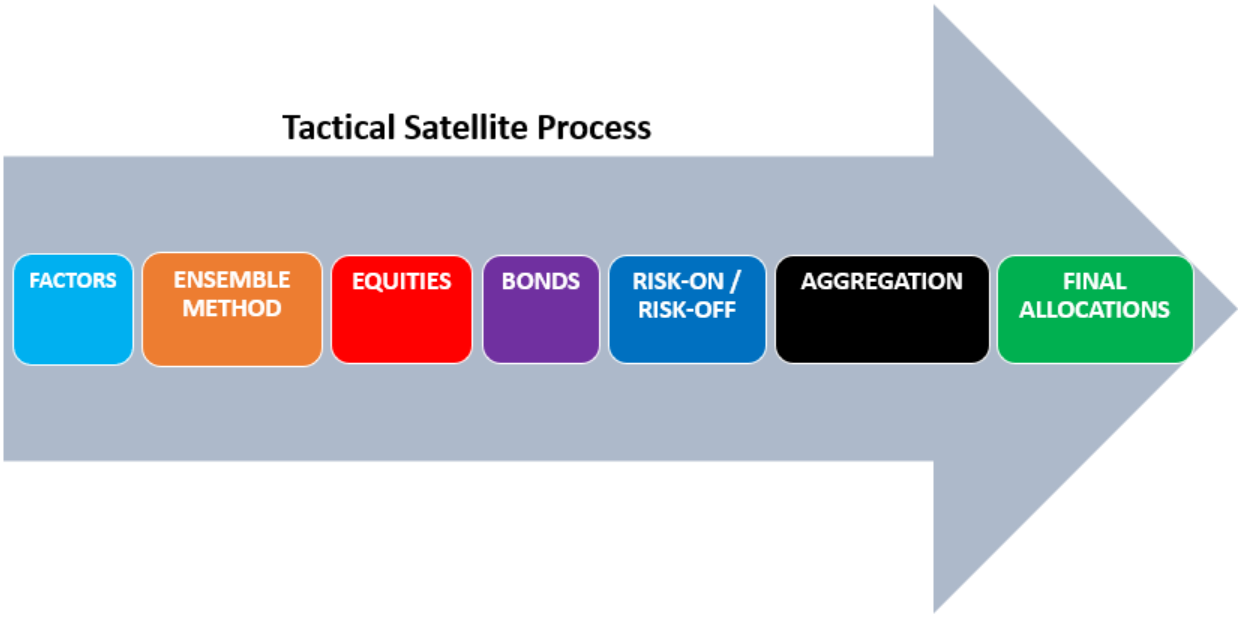
## Satellite - Tactical Asset Allocation

The tactical satellite is used to complement core holdings and seeks to capture shorter-term changes in market structure or investor sentiment – thereby attempting to determine when it is appropriate to broadly emphasize offense (pursue opportunities) or defense (provide protection) for some portion of the portfolio. While there is no single Holy Grail indicator for tactical asset allocation, there are certain types of tactical strategies that, historically, have tended to outperform passive 60-40 portfolios over full market cycles. Outperformance can be generated by both asset selection and downside protection. But perhaps the biggest key to the full-cycle outperformance of these strategies is that they generally help investors mitigate large losses during major bear markets.

In the aggregate, these strategies span a range of factors (e.g., macroeconomic, fundamental, technical, sentiment) as well as a range of frequencies (daily, weekly, monthly, or quarterly). They seek to take advantage of the time-variation in the equity risk premium. However, it is unknowable which of these disparate tactical strategies will have the best future performance. Therefore, much like how we apply a combination of techniques for core portfolio construction, we utilize an "ensemble method" in our tactical methodology, combining several systematic techniques into one model to decrease variance and bias as well as improve predictions. This ongoing "consensus" tactical opinion enables us to dynamically adjust the overall allocation to equities and bonds in the satellite portion of the portfolio without constraint. Therefore, the strategy can hold between 0% and 100% equity at any given point in time.




Once we have determined our desired high-level allocations to equities and bonds using this ensemble of tactical indicators, we then drill down within equities (using equity-specific factors) to identify the most attractive countries, sectors, and sizes; and within bonds (using bond-specific factors) to identify where we wish to be along the duration and credit spectrums.



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Since the primary focus of our TAA satellite process is to protect against major market drawdowns, we use a combination of techniques that are both "proactive" and "reactive" in how they respond to market turbulence. The proactive strategies attempt to provide advance-warning of a potential increase in market volatility. These strategies look at factors such as the short-term correlations between asset classes, the compression or expansion of equity risk premiums, and the relative positioning of various types of market participants in the futures and options markets, among others. On the reactive side, we incorporate a variety of proprietary momentum indicators to gauge intermediate-term market trend and determine when it is appropriate to broadly emphasize offense (pursue opportunities) or defense (provide protection). As these indicators become progressively more negative, we "react" by commensurately shifting more and more capital out of "risk assets" and into less volatile vehicles such as cash or short-term bonds.

While no approach to drawdown mitigation is infallible, we believe the combination of multiple tactical factors across multiple frequencies with multiple layers of risk-awareness provides a systematic framework that can help investors navigate a wide range of market environments. In light of current valuations (or, in the case of the AIAE, current market-wide allocations), the muted expected returns to a blended portfolio, and the almost certain increase in future volatility, such a framework may prove to be particularly well-suited to the coming years.

## Conclusion

The past nine years have been very rewarding for passive investors, particularly those concentrated in U.S. stocks. Unsurprisingly, the popularity of low cost index-based investment solutions has never been higher. However, we believe there is a strong case that the coming decade could be more challenging for benchmark-based, passive strategies. Headwinds include nominal returns for stocks and bonds that are likely to be subpar, a maturing economic recovery, and the potential reemergence of long-dormant global inflationary pressures. In short, it is not difficult to envision a prolonged period of modest market returns combined with heightened volatility. In our view, a core-satellite approach to multi-asset portfolio construction which blends broad diversification, tax awareness, cost sensitivity, and sophisticated risk-management techniques is well-suited for such a complex environment.



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## Index Definition

**Barclays U.S. Aggregate** Bond- A broad base index, maintained by Barclays Capital, and is often used to represent investment grade bonds being traded in the U.S. Barclays Capital (BarCap) U.S. Aggregate Bond Index is made up of the Barclays Capital U.S. Government/Corporate Bond Index, Mortgage-Backed Securities Index, and Asset-Based Securities Index, including securities that are of investment grade quality or better, have at least one year to maturity, and have an outstanding par value of at least $100 million.

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