

# Ibbotson Asset Allocation Methodology



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## An Innovative Leader

Ibbotson Associates has created a proprietary asset allocation methodology based on years of financial research and investment theories. Today, we offer a top-down investment management process to build portfolios based on academically-based asset allocation principles for financial institutions. Our portfolio construction methodology is a standardized five-step process that is tailored to our clients' specific investment needs.

## Capital Market Assumptions

We begin by analyzing the available opportunity set of asset classes and constructing long-term expected returns, standard deviations, and correlation coefficients. Because forecasting is a critical and pivotal step in the asset allocation process, our capital markets team develops capital market forecasts each year for every asset class by using a combination of relative historical return data, current market information, and market-implied volatility information. We also evaluate non-normal return properties such as skewness and kurtosis. Each forecast becomes an input for the optimization techniques used in Step 2.

## 2a. Strategic Asset Allocation

When developing strategic asset allocation models for TradeKing Advisors Core ETF portfolios, we employ

a variety of advanced techniques, including traditional mean-variance optimization, higher moment optimization (mean-conditional value-at-risk), surplus optimization (liability-driven investing), resampling techniques, simulation analysis, and sensitivity analysis.

While heavy users of mean-variance optimization (MVO), a technique used in determining an efficient asset allocation mix that maximizes return for a given level or risk, we have gone beyond traditional MVO. We now prefer higher moment optimization techniques, mean-conditional value-at-risk (Mean-CVaR), that recognizes asset class returns are not normally distributed.

Monte Carlo simulations are performed in an attempt to provide a reasonably accurate picture of the distribution potential outcomes associated with different policy portfolios to better assess the types of portfolios that best fit an investors' risk tolerance.

After determining the relative opportunity set, we conduct a series of optimizations (resampling and sensitivity analysis) based on both historical and forward-looking capital markets assumptions. The result is a set of efficient frontiers built under the opportunity set constraints determined in the simulation phase. The final policy portfolio will be determined based on the assessment of this information.

## Ibbotson Investment Management Process



### Step 1: Capital Market Assumptions

- ▶ Identify opportunity set
  - ▶ Expected returns
  - ▶ Standard deviation
  - ▶ Correlations
- ▶ Skewness
- ▶ Kurtosis

### Step 2a: Strategic Asset Allocation

- ▶ Mean-conditional value-at-risk optimization
- ▶ Liability-relative & mean-variance optimization
- ▶ Resampling
- ▶ Yield (income) preference optimization
- ▶ Sensitivity analysis and stress testing

### Step 2b: Dynamic/Tactical Asset Allocation

- ▶ Fundamental dynamic asset allocation
- ▶ Quantitative tactical models:
  - ▶ Target volatility
  - ▶ Momentum
  - ▶ Global tactical asset allocation

### Step 3: Manager Selection

- ▶ Qualitative Analysis
- ▶ Price Forward-looking alpha:
  - ▶ Liquidity
  - ▶ Momentum
- ▶ Holdings-based/returns-based style analysis

### Step 4: Portfolio Construction

- ▶ Fund of funds optimization
- ▶ Alpha-tracking error optimization
- ▶ Active risk budgeting
- ▶ Non-normal return strategies
- ▶ Higher momentum optimization

### Step 5: Monitor

- ▶ Internal portfolio review
- ▶ Rebalancing
- ▶ Detailed performance attribution
- ▶ Custom benchmarking
- ▶ Annual review

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## 2b. Dynamic /Tactical Asset Allocation

Our dynamic/tactical programs, designed for TradeKing Advisors Momentum ETF portfolios, take advantage of short-term misalignments between asset classes while remaining focused on an academically-based, long-term strategic strategy. The goal of our reallocation decisions will be to outperform the strategic models while controlling the portfolio's level of risk. For example, the Momentum ETF portfolios are designed to capitalize on market trends, overweighting asset classes with the most positive momentum signals and underweighting those with the most negative signals.

## 3. Manager Research

The objective of analyzing funds/managers is to determine their true investment style, identify superior managers, forecast the alpha of the managers, and identify manager-specific tracking error. To accomplish these goals, we begin with a proprietary peer group analysis. For active funds a holdings- and returns-based style analysis is performed. A manager's long- and short-term alpha, tracking error, and information ratio is also examined. Managers that score well based on our quantitative analysis are then subjected to a thorough five factor qualitative evaluation.

Our qualitative analysis examines five pillars that we have identified as being helpful in predicting future success; including: parent, people, process, performance, and price to form the final selection of active funds within each peer group. For ETF-based products, the fund selection process focuses on fees, liquidity, and tracking measurements versus the desired asset class or index.

## 4. Portfolio Construction

Once the asset class models are determined and the investment managers are selected for inclusion in the portfolio, our primary focus is to select managers that have the potential to add alpha, while maintaining a reasonable level of risk. Our primary construction tools

are our forward-looking alpha, tracking error, and alpha correlations to recommend an initial combination of managers to finalize the strategic asset class models.

## 5. Monitor

In order to ensure that a portfolio remains aligned with its specified strategic asset allocation target our investment professionals consistently monitor and review each portfolio. There are various reasons why an asset allocation or a fund-specific portfolio may need to be changed over time. Varying market conditions, manager changes, and fund-style drift are just a few of the reasons that can cause a portfolio to stray from its targeted strategic allocation.

Attribution for each portfolio is calculated and analyzed quarterly at the asset class and underlying fund manager levels. At the asset class level, attribution helps us, our clients, and investors understand the primary drivers of return. At the underlying fund manager level, we blend a customized benchmark for each manager based on returns-based style analysis, holdings-based style analysis, and manager conversations. Each manager's performance is then compared to the customized benchmark.

Our five-step investment process is consistently applied to all projects. This approach enables us to create a solid foundation from which innovative solutions are developed and customized to each client.

## About Ibbotson

Ibbotson Associates is a leading independent asset allocation provider offering investment advisory services, retirement advice programs, and customized research. Ibbotson applies academic research to create real-world solutions for financial institutions. Our clients include many of the top brokerage firms, insurance companies, banks, asset managers, and retirement plan providers. Ibbotson was founded in 1977 and is a Morningstar company.

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