

# METHODOLOGY FOR IQ<sup>®</sup> HEDGE INDEXES



by MainStay Investments

## Introduction

- This document sets forth the methodology for the following indexes (the “Composite Indexes” and the “Sub Indexes” are collectively referred to as the “Indexes” and each an “Index”):

### Composite Indexes

- IQ<sup>®</sup> Hedge Multi-Strategy Index (the “Multi-Strategy Index”)
- IQ<sup>®</sup> Hedge Macro Index (the “Macro Index”)
- IQ<sup>®</sup> Hedge Market Neutral Index (the “Market Neutral Index”)
- IQ<sup>®</sup> Hedge Long Short Index (the “Long Short Index”)
- IQ<sup>®</sup> Hedge Event Driven Index (the “Event Driven Index”)

### Sub Indexes

- IQ<sup>®</sup> Hedge Emerging Markets Index (the “Emerging Markets Index”)
- IQ<sup>®</sup> Hedge Event-Driven Index (the “Event-Driven Index”)
- IQ<sup>®</sup> Hedge Fixed Income Arbitrage Index (the “Fixed Income Arb Index”)
- IQ<sup>®</sup> Hedge Macro Base Index (the “Macro Base Index”)
- IQ<sup>®</sup> Hedge Market Neutral Base Index (the “Market Neutral Base Index”)
- IQ<sup>®</sup> Hedge Long/Short Base Index (the “Long/Short Base Index”)

- For each Index, IndexIQ uses a rules-based process to select individual Index Components (defined below) that, when combined together, produce an Index designed to replicate the risk-return characteristics of hedge funds generally, not individual hedge funds. This process is referred to as the “Hedge Fund Replication Process.” As set forth above, the Indexes fall into two categories. The first category is Sub Indexes – each of the Sub Indexes employs a Hedge Fund Replication Process that seeks to replicate the risk-adjusted return characteristics of the collective hedge funds *within a particular hedge fund strategy*. The second category is Composite Indexes – each of the Composite Indexes falls into one of two sub-categories. The first sub-category consists of Indexes that, like the Sub Indexes, seek to replicate the risk-adjusted return characteristics of the collective hedge funds *within a particular hedge fund strategy*. The second sub-category consists of one Index, the Multi-Strategy Index, which seeks to replicate the risk-adjusted return characteristics of the overall hedge fund universe. However, in all cases, the Composite Indexes are constructed by combining one or more Sub Indexes in order to accomplish the replication objective. The combination of these Sub Indexes may include an optimization process, whereby Index Components are weighted, pursuant to a rules-based process, in an optimal manner in order to achieve particular investment objectives. Such investment objectives may include, but are not limited to, better replication results, or one or more of superior returns, low volatility, or low correlation relative to the broad equity markets.
- Each Sub Index seeks to replicate the risk-adjusted return characteristics of a particular hedge fund strategy as represented by publicly available hedge fund performance data (i.e., monthly returns of hedge fund indexes) provided by

unaffiliated third parties (each a “Hedge Fund Style Series”). Such data is available from Credit Suisse Hedge Fund Index LLC (“CS”) and Hedge Fund Research, Inc. (“HFR”). CS reports applicable hedge fund performance data on its web site ([www.hedgeindex.com](http://www.hedgeindex.com)) and in press releases on approximately the 15th business day of every month. HFR reports applicable hedge fund performance data on its web site ([www.hedgefundresearch.com](http://www.hedgefundresearch.com)) each business day.

- Each Composite Index is the combination of one or more of the six Sub Indexes, or other sub-indexes developed by IndexIQ, and incorporates varying weighting methodologies depending on the type of Composite Index and its primary objective(s), as more fully described below.
- For any ETF based on a given Index, such Index will be calculated by Solactive AG or another established and unaffiliated calculation agent prior to the launch of such ETF, and the Index value on a price basis will be disseminated every 15 seconds to the Securities Industry Automation Corporation (SIAC) so that such Index value can print to the Consolidated Tape.

### **Eligibility Requirements**

- All of the Index components (collectively, the “Components”) are exchange-traded funds (ETFs) registered under the Investment Company Act of 1940 or other exchange-traded vehicles issuing equity securities (ETVs) organized in the U.S., each with at least \$50 million in assets under management (“AUM”) as of the date of the annual Reconstitution (see below).
- All of the ETF and ETV Components are listed on one of the major U.S. exchanges (NYSE, NYSE Arca, NASDAQ).

### **Sub Index Construction Process**

The process described below applies to each of the Sub Indexes.

#### *Initial Selection of Components*

- IndexIQ identifies all existing ETFs and ETVs that meet the Index Eligibility Requirements set forth above.
- IndexIQ calculates the correlation of the returns of each eligible ETF and ETV relative to the returns of each Hedge Fund Style Series.
- IndexIQ conducts an analysis whereby it utilizes the publicly-available description of the eligible ETFs and ETVs to identify which of these ETFs and

ETVs correspond, based on overlap of investment strategy and/or asset class exposure, to each Hedge Fund Style Series that IndexIQ is seeking to replicate.

- IndexIQ assigns a score to each eligible ETF and ETV based on the extent of the overlap of investment strategy and/or asset class exposure described above, with 3 being high overlap, 2 being moderate overlap, and 1 being low overlap.
- IndexIQ adds the correlation and the score for each ETF and ETV and then ranks the ETFs and ETVs, from highest to lowest, based on the resulting values.
- To the extent that more than one ETF or ETV provides substantially the same investment strategy or asset class exposure, IndexIQ selects the ETF or ETV with the highest AUM level or other objective factor to be representative of such investment strategy or asset class exposure for back testing purposes (see below for a description of the back test process).
- In order to select the Sub Index Components pursuant to the back test process, IndexIQ includes in each Sub Index the ETFs and ETVs (the “Primary Back Test Components”) with the greatest relevance to the Hedge Fund Style Series, as calculated by the process described above.
- Using the Component Weightings process (as described below), IndexIQ conducts multiple back tests to calculate various statistics of a hypothetical Sub Index using the Primary Back Test Components in different combinations. (To the extent that an ETF or ETV did not exist during the back test period, IndexIQ uses the returns of the index underlying such ETF or ETV.)
- In order to choose which of the hypothetical Sub Indexes will constitute the actual Sub Index, IndexIQ examines the following statistics and assigns each a weight factor as follows:

<b><u>Statistic*</u></b>	<b><u>Weight Factor</u></b>
1-Year Return	12
3-Year Annualized Return	36
5-Year Annualized Return	60
1-Year Standard Deviation	8
3-Year Standard Deviation	24
5-Year Standard Deviation	40
Tracking Error (vs. Hedge Fund Style Series)	15
1-Year Correlation (vs. Hedge Fund Style Series)	10
3-Year Correlation (vs. Hedge Fund Style Series)	10
5-Year Correlation (vs. Hedge Fund Style Series)	10
Maximum Aggregate Short Position	N/A
3-Year Turnover	N/A

\* For returns and standard deviation, the statistic is the absolute value of the difference

between the hypothetical Sub Index and the Hedge Fund Style Series so that the statistic measures the similarity between the hypothetical Sub Index and the Hedge Fund Style Series. The Correlation values are 100% less the correlation such that lower values indicate a higher level of positive correlation.

- IndexIQ excludes all hypothetical Sub Indexes that have excessive 3-Year Turnover or excessive Maximum Aggregate Short Positions.
- For each remaining hypothetical Sub Index, IndexIQ multiplies the statistic value times the weight factor to calculate its “back test score.”
- The hypothetical Sub Index that has the lowest back test score (the “Low Back Tested Index”) forms the basis for the final Sub Index.

### *Component Weightings*

- For each Sub Index, IndexIQ calculates the constrained beta coefficients for each Primary Back Test Component from an ordinary least squares (OLS) regression where the dependent variable is the Hedge Fund Style Series return and the independent variables are the Sub Index Component returns.
- The beta coefficients are scaled so that the sum of all beta coefficients is 1.
- Beta coefficients can be either positive or negative indicating either a long or short exposure, respectively.
- The final Sub Index is comprised of its Primary Back Test Components of the Low Back Tested Index, as well as any other ETFs or ETVs that (i) meet the Eligibility Requirements and (ii) are substantially similar to the investment strategies and/or asset class exposures of such Primary Back Test Components. The Primary Back Test Components and the additional ETFs and ETVs, if any, are weighted within a given investment strategy or asset class in the final Sub Index proportionately based on their relative AUM levels.
- IndexIQ seeks to limit the sum of the weights of those Components that generate non-qualifying income under Subchapter M of the Internal Revenue Code to no more than 10% of the total Index weight.

### *Monthly Rebalance*

- IndexIQ rebalances the Component weights for each Sub Index on a monthly basis pursuant to the process described in “Component Weightings” above.

- The monthly rebalance for the Sub Indexes is effective after the close of the 2nd business day following the 15<sup>th</sup> calendar day (or next business day if the 15<sup>th</sup> calendar day is not a business day) of each month.

#### *Annual Reconstitution*

- IndexIQ conducts an annual review of all Sub Index Components once a year during the first calendar quarter, with any change in Components (additions or deletions) (the “Reconstitution”) implemented no later than the second calendar quarter.
- The Reconstitution process is the same as the process described above under “Initial Selection of Components” with consideration given to new ETFs and ETVs that have been launched and/or existing ETFs and ETVs that have, since the last Reconstitution, met the Index Eligibility Requirements.
- To the extent the back testing process, with the addition or deletion of one or more ETFs and ETVs, yields better replication results than the existing Sub Index, as measured by “back test scores”, the Components of the given Sub Index are adjusted accordingly.

#### **Composite Indexes Construction Process**

The process described below applies to the Composite Indexes:

- The Multi-Strategy Composite Index is an optimized weighted composite of all the Sub Indexes, as more fully described below.
- The Macro Index is an optimized weighted composite of the Macro Base Index and the Emerging Markets Index, as more fully described below.
- The Market Neutral Index is an optimized weighted composite of the Market Neutral Base Index and the Fixed Income Arb Index, as more fully described below.
- The Long Short Index consists of the Long Short Base Index.
- The Event Driven Index consists of the Event Driven Base Index.

#### *Initial Selection of Components*

- The Components of each Composite Index include only the Components of the Sub Indexes underlying such Composite Index.

### *Component Weightings – Multi-Strategy Index*

- Each Sub Index weight in the Multi-Strategy Index is determined by a quadratic program algorithm whose objective is to find the optimal combination of Sub Index weights that would have maximized the correlation to the Hedge Fund Style Series of the Multi-Strategy Index, maximized the returns of the Multi-Strategy Index, and minimized the volatility of the Multi-Strategy Index over the prior 12 months. The process uses the prior 12 month returns for each Sub Index as well as for the Hedge Fund Style Series as inputs into the algorithm. The weight assigned to each Sub Index within the Multi-Strategy Index is bounded between -16.7% and 33.3%.
- Each Component's weight within the Sub Index is multiplied by the weight of such Sub Index within the Multi-Strategy Index. The resulting values are summed across all Sub Indexes to determine each Component's base weight in the Multi-Strategy Index.
- Raw weights at the Sub Index level can be either positive or negative indicating either a long or short exposure, respectively.
- The Components of the Multi-Strategy Index include the Primary Back Test Components of the Low Back Tested Index for each Sub Index included in the Multi-Strategy Index, as well as any other ETFs or ETVs that are substantially similar to the investment strategies and/or asset class exposures of such Primary Back Test Components. The Primary Back Test Components and the additional ETFs and ETVs, if any, are weighted within a given investment strategy or asset class in the final Multi-Strategy Index proportionately based on their relative AUM levels. Such additional ETFs and ETVs, if any, may be added to the Multi-Strategy Index between Annual Reconstitutions. In addition, the Multi-Strategy Index may include as Components Financial Instruments or other securities that provide substantially similar exposures as the Primary Back Test Components in the Low Back Tested Index for each Sub Index.
- IndexIQ seeks to limit the sum of the weights of those Components that generate non-qualifying income under Subchapter M of the Internal Revenue Code to no more than 10% of the total Index weight.

### *Component Weightings – Macro Index*

- Each Sub Index weight in the Macro Index is determined by a quadratic program algorithm whose objective is to find the optimal combination of Sub Index weights that would have most closely matched the risk-adjusted returns of the equal weighted combination of the Macro and the Emerging Markets Hedge Fund

Style Series over the prior 12 months. The process uses the prior 12 month returns for each Sub Index. The weight assigned to each Sub Index within the Macro Index is bounded between 25% and 75%.

- Each Component's weight within the Sub Index is multiplied by the weight of such Sub Index within the Macro Index. The resulting values are summed across both Sub Indexes to determine each Component's base weight in the Macro Index.
- Raw weights at the Sub Index level can be either positive or negative indicating either a long or short exposure, respectively.
- The Components of the Macro Index include the Primary Back Test Components of the Low Back Tested Index for each Sub Index included in the Macro Index, as well as any other ETFs or ETVs that are substantially similar to the investment strategies and/or asset class exposures of such Primary Back Test Components. The Primary Back Test Components and the additional ETFs and ETVs, if any, are weighted within a given investment strategy or asset class in the final Macro Index proportionately based on their relative AUM levels. Such additional ETFs and ETVs, if any, may be added to the Multi-Strategy Index between Annual Reconstitutions. In addition, the Macro Index may include as Components Financial Instruments or other securities that provide substantially similar exposures as the Primary Back Test Components in the Low Back Tested Index for each Sub Index.
- IndexIQ seeks to limit the sum of the weights of those Components that generate non-qualifying income under Subchapter M of the Internal Revenue Code to no more than 10% of the total Index weight.

#### *Component Weightings – Market Neutral Index*

- Each Sub Index weight in the Market Neutral Index is determined by a quadratic program algorithm whose objective is to find the optimal combination of Sub Index weights that would have most closely matched the risk-adjusted returns of the equal weighted combination of the Market Neutral and the Fixed Income Hedge Fund Style Series over the prior 12 months. The process uses the prior 12 month returns for each Sub Index. The weight assigned to each Sub Index within the Market Neutral Index is bounded between 25 and 75%.
- Each Component's weight within the Sub Index is multiplied by the weight of such Sub Index within the Market Neutral Index. The resulting values are summed across all Sub Indexes to determine each Component's base weight in the Market Neutral Index.



- Raw weights at the Sub Index level can be either positive or negative indicating either a long or short exposure, respectively.
- The Components of the Market Neutral Index include the Primary Back Test Components of the Low Back Tested Index for each Sub Index included in the Market Neutral Index, as well as any other ETFs or ETVs that are substantially similar to the investment strategies and/or asset class exposures of such Primary Back Test Components. The Primary Back Test Components and the additional ETFs and ETVs, if any, are weighted within a given investment strategy or asset class in the final Market Neutral Index proportionately based on their relative AUM levels. Such additional ETFs and ETVs, if any, may be added to the Market Neutral Index between Annual Reconstitutions. In addition, the Market Neutral Index may include as Components Financial Instruments or other securities that provide substantially similar exposures as Components Financial Instruments or other securities that provide substantially similar exposures as the Primary Back Test Components in the Low Back Tested Index for each Sub Index.
- IndexIQ seeks to limit the sum of the weights of those Components that generate non-qualifying income under Subchapter M of the Internal Revenue Code to no more than 10% of the total Index weight.

*Component Weightings – Long Short Index*

- The Long Short Index is comprised of the Long Short Base index.
- Each Component's weight within the Sub Index is multiplied by the weight of the Sub Index within the Long Short Index.
- Raw weights at the Sub Index level can be either positive or negative indicating either a long or short exposure, respectively.
- The Components of the Long Short Index include the Primary Back Test Components of the Low Back Tested Index for the Sub Index included in the Long Short Index, as well as any other ETFs or ETVs that are substantially similar to the investment strategies and/or asset class exposures of such Primary Back Test Components. The Primary Back Test Components and the additional ETFs and ETVs, if any, are weighted within a given investment strategy or asset class in the final Long Short Index proportionately based on their relative AUM levels. Such additional ETFs and ETVs, if any, may be added to the Long Short Index between Annual Reconstitutions. In addition, the Long Short Index may include as Components Financial Instruments or other securities that provide substantially similar exposures as Components Financial Instruments or other securities that provide substantially similar exposures as the Primary Back Test Components in the Low Back Tested Index for the Sub Index.

- IndexIQ seeks to limit the sum of the weights of those Components that generate non-qualifying income under Subchapter M of the Internal Revenue Code to no more than 10% of the total Index weight.

#### *Component Weightings –Event Driven Index*

- The Event Driven Index is comprised of the Event Driven Base index.
- Each Component’s weight within the Sub Index is multiplied by the weight of the Sub Index within the Event Driven Index.
- Raw weights at the Sub Index level can be either positive or negative indicating either a long or short exposure, respectively.
- The Components of the Event Driven Index include the Primary Back Test Components of the Low Back Tested Index for the Sub Index included in the Event Driven Index, as well as any other ETFs or ETVs that are substantially similar to the investment strategies and/or asset class exposures of such Primary Back Test Components. The Primary Back Test Components and the additional ETFs and ETVs, if any, are weighted within a given investment strategy or asset class in the final Event Driven Index proportionately based on their relative AUM levels. Such additional ETFs and ETVs, if any, may be added to the Event Driven Index between Annual Reconstitutions. In addition, the Event Driven Index may include as Components Financial Instruments or other securities that provide substantially similar exposures as Components Financial Instruments or other securities that provide substantially similar exposures as the Primary Back Test Components in the Low Back Tested Index for the Sub Index.

IndexIQ seeks to limit the sum of the weights of those Components that generate non-qualifying income under Subchapter M of the Internal Revenue Code to no more than 10% of the total Index weight.

#### *Monthly Rebalance*

- The Component weights for the Composite Indexes are rebalanced on a monthly basis pursuant to the process described in “Component Weightings” above for each Composite Index.
- The monthly rebalance for the Composite Indexes is effective after the close of the 3rd business day of each month.

#### *Annual Reconstitution*

- The Reconstitution process carried out for the Sub Indexes, pursuant to which Sub Index Components may be added or deleted (see “Annual Reconstitution” under

“Sub Index Construction Process” above), determines whether Components will be added to or deleted from the Composite Indexes.

**Index Formula**

- Index Return<sub>t</sub> =

$$\begin{aligned}
 & K1 * (UI_t / UI_{t-1} - 1) \\
 & - (K-1) * ((Borrowing Rate + Spread) / 360) * D_{t,t-1} \\
 & - (K2-K1) * (Spread / 360) * D_{t,t-1}
 \end{aligned}$$

Where:

$$UI = \frac{\sum_{i=1}^n (P_i \times IQWF_i)}{Di}$$

P<sub>i</sub> = Price of security i  
 IQWF<sub>i</sub> = IndexIQ Weight Factor  
 Di = Divisor

K1 (K1>=1) = Net Exposure  
 ▪ K=1, Net Exposure=100%  
 ▪ K=2, Net Exposure = 200%

K2 (K2>=1) = Gross Exposure (i.e. sum of the absolute value of all long and short exposures)

Borrowing Rate = Overnight LIBOR in the U.S. or EONIA in Europe

Spread = The amount above the Borrowing Rate paid to obtain synthetic exposure to an asset class

D<sub>t,t-1</sub> = the number of calendar days between t and t-1

- Index Value<sub>t</sub> = Index Value<sub>t-1</sub> \* [1+Index Return<sub>t</sub>]

## **Ongoing Maintenance**

### *Dividends*

- Dividend payments by Components are treated as if they are reinvested in the Indexes in calculating total returns for the Indexes.

### *Extraordinary Circumstances*

- In the event of an extraordinary circumstance in which an Index Component no longer conforms to the objectives of a particular Index, the Index Committee may elect to eliminate the Component from the Index. In such a situation, the Index Committee will seek to find a replacement Component that best conforms to the objective of the Index pursuant to the process set forth above.

### *Spin-Offs*

- In the event of a spin-off from an existing Index component, the spun-off component may remain within the index provided the spun-off component meets the eligibility requirements and selection criteria for inclusion in the index and is consistent with the objective of the index.

## **Base Date & Value**

- The Base Date and Value of the Indexes is October 31, 2007 and 1000, respectively.

## **Rule Changes**

- Any material change in the Index rules may be made only following 60 days public notice published on the IndexIQ website at <http://www.IndexIQ.com>.

## **Index Committee**

- The Indexes are maintained by the Index Committee. There are four members of the Index Committee. The Index Committee meets annually and as necessary on an ad hoc basis to make any extraordinary decisions regarding the Indexes.

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