



INDEX METHODOLOGY

# NASDAQ IFED US LARGE-CAP LOW VOLATILITY INDEX™

## IFEDLV

### INDEX DESCRIPTION

The Nasdaq *IFED* US Large-Cap Low Volatility Index™ (Nasdaq *IFED-LV*™) is designed to maximize exposure to those U.S. large-cap, low volatility equities best positioned to benefit from prevailing market conditions. As the Index Contributor, Economic Index Associates (EIA) utilizes a combination of Federal Reserve policy signals and key firm metrics to select index components at each index rebalance according to the transparent, rules-based *IFED*™ strategy defined herein.

### SECURITY ELIGIBILITY CRITERIA

#### Listing exchanges

A security must be listed on a national securities exchange in the U.S.

#### Seasoning

A security's issuer must have three years of accounting and stock return history.

#### Security types

Ineligible organizational structures and share types include the following: (i) business development companies ("BDCs"), (ii) limited partnerships ("LPs"); (iii) master limited partnerships ("MLPs"), (iv) limited liability companies ("LLCs"), (v) closed-end funds, (vi) ETFs, (vii) ETNs, (viii) royalty trusts, (ix) special purpose acquisition companies ("SPACs"), (x) preferred stock, (xi) convertible preferred stock, (xii) unit trusts, (xiii) equity warrants, (xiv) convertible bonds, (xv) investment trusts, (xvi) rights, and (xvii) American Depositary Receipts ("ADRs").

## INDEX CALENDAR

### Reconstitution and rebalance schedule

There are two events that prompt a reconstitution and rebalance of the Index:

#### 1. A change in the market environment

A change in the market environment initiates a change in the portfolio to replace stocks that were optimally positioned relative to the prior environment with stocks positioned to capitalize on the new environment.

A shift in the market environment results via a signalled shift in Fed policy, which occurs from one of two alternative channels: 1) a change in “Stringency,” which is based on a two-basis-point or greater change in the 3-month cumulative average monthly federal funds rate, which is derived from calendar month data, or 2) a change in the Fed’s primary credit rate (change in “Stance”). A policy shift identified by a change in Stringency occurs after calendar month end, whereas a policy shift associated with Stance can occur any time during a month.

#### 2. A change in financial metrics with no market environment change

As of June 1 in any given year, if there has been no change in the market environment for the prior six months, a rebalance date is scheduled on the seventh business day in June. The portfolio holdings are then updated to reflect new holdings that are better positioned to capitalize on the prevailing environment. Since the market environment has not changed, many portfolio constituents will remain; however, their weights are likely to change.

### Identifying rebalance events

There are three situations that initiate a rebalance event as follows:

- Stringency initiated: A change in Stringency at month end based on monthly effective federal funds rate data,
- Stance initiated: A change in Stance based on an announced change in the discount window primary credit rate by the Federal Reserve,
- Stale Metric Update initiated: Reaching the first business day in June without a change in either Stringency or Stance during the prior six-month period.

Assuming the event occurs, the rebalance “Event Date” for the three rebalance situations is as follows:

- Stringency – the final business day of the month,
- Stance – the day of the Fed announcement,
- Stale Metric Update – the last business day prior to June 1st.

EIA convenes an Index Committee meeting at the end of each month to determine whether a change in Stringency occurred at month end. Furthermore, scheduled FOMC meetings and Federal Reserve announcements are monitored to determine whether a change in Stance occurred intramonth.

Note that the Federal Reserve may (potentially) announce a change in the discount window primary credit rate (DPCR) at any time. Therefore, EIA convenes the Index Committee after a DPCR change has been announced and confirms a change in Stance within one business day after the Event Date. Changes in Stringency are based on calendar month data, and thus, occur only at month end. Market environment shifts based on a change in Stringency are distributed within one business day after the Event Date.

The following table sets out the timing for rebalance events associated with each index rebalance.

Event	Description
Notification of an Index Rebalance	<ul style="list-style-type: none"> <li>Written notification to licensees of an index rebalance occurs within one business day after the Event Date, which is defined as: <ul style="list-style-type: none"> <li>i. the last business day in a calendar month for a change in Stringency;</li> <li>ii. the business day of the Fed announcement for a change in Stance; or,</li> <li>iii. the business day preceding June 1 if there has been no change in the market environment over the prior six months</li> </ul> </li> </ul>
Finalize New Index Components and Target Weights	<ul style="list-style-type: none"> <li>Written confirmation to licensees of new index components with the target weights effective for the share freeze date occurs no later than 6pm US Eastern Time (ET) on the second business day after the Event Date</li> </ul>
Freeze Date	<ul style="list-style-type: none"> <li>Index shares are fixed at the open of the 4th business day after the Event Date using the closing prices on the 3<sup>rd</sup> business day after the Event Date. The Freeze Date is the 4<sup>th</sup> business day after the Event Date.</li> <li>Licensees are provided with the proforma file for the new index components on each business day after the Freeze Date</li> </ul>
Rebalance Date	<ul style="list-style-type: none"> <li>The rebalance is implemented in equal parts over the 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> business days after the Event Date</li> <li>Note that the Index Committee (defined below) may at a future point in time conduct index rebalances over more than three business days</li> </ul>

## Holiday schedule

The Calculation Agent does not follow any holiday calendar. The Index is calculated on all weekdays. In situations when the exchange is closed for a trading holiday and no closing price is available, the Index will be calculated based on the last regular trade reported for each stock before the exchange closed. Also, when the exchange is forced to close early due to unforeseen events, the Index will be calculated based on the closing prices published by the exchange.

## Index calculation and dissemination schedule

The Index is calculated during the trading day based on the Last Sale Price and disseminated once per second from 9:30:00 through 16:00:00 US Eastern Time. The closing value of the Index may change after market hours due to corrections to the Last Sale Price of the Index Securities.

## CONSTITUENT SELECTION

The Nasdaq *IFED* US Large-Cap Low Volatility Index is constructed and maintained by EIA according to the following steps:

1. The prevailing market environment is defined as one of the following (described in Appendix A):
  - Expansive
  - Restrictive
  - Indeterminate
2. The issuer of each eligible security is scored according to the twelve firm-specific metrics described in Appendix B.
3. Based on the prevailing environment, each eligible security is assigned a composite *IFED Score* (described in Appendix C).
4. One security per issuer is permitted. If an issuer has multiple otherwise-eligible securities, the security with the highest prior-month trading volume is generally considered for inclusion in the Index. The Index Committee reserves the right to deem another security more appropriate.
5. After an initial liquidity screen is applied (see Appendix D), US equities ranked outside the largest 500 by market capitalization are removed from consideration.
6. From the remaining 500 large-cap US equities, the index considers the 150 stocks with the lowest volatility. Stock volatility is calculated as: 50% x 12-month daily volatility + 50% x 3-year daily volatility.
7. Finally, the index selects the 75 stocks with the highest *IFED Scores*. Each stock is then weighted by its *IFED Score* subject to a capacity cap and maximum component weight (see Appendix D).

## CONSTITUENT WEIGHTING

### Constituent weighting scheme

The Index is a modified *IFED Score*-weighted index.

### Constituent weighting process

Each selected stock is weighted according to its *IFED Score*, subject to a capacity cap and maximum security weight. These constraints are detailed in Appendix D.

A two-step process is applied for calculating the initial weights:

- The *IFED Scores* are rescaled to ensure that all scores take on positive values while preserving existing relations between firm *IFED Scores*. The positive *IFED Scores* are then converted to portfolio weights.

The original *IFED Score* of security  $i$  is defined as  $S_i$ , the rescaled *IFED Score* of security  $i$  as  $S_{A,i}$ . For an *IFED* index with  $n$  constituents, the following formula is applied for rescaling:

$$S_{A,i} = \frac{[S_i - \min(S_1 \cdots S_n)]}{[\max(S_1 \cdots S_n) - \min(S_1 \cdots S_n)]} \times (n - 1) + 1$$

- The initial weight,  $W_i$ , of each security  $i$  is determined by dividing its rescaled *IFED Score* by the sum of all rescaled *IFED Scores*.

$$W_i = \frac{S_{A,i}}{\sum_{k=1}^n S_{A,k}}$$

Final security weights are determined by applying weight constraints, as detailed in Appendix D, to the initial weights  $W_i$ . Final weights are rounded to 12 decimal places.

## INDEX MAINTENANCE

### Index maintenance and corporate action policy

Announcements of additions and deletions of Index Constituent Securities due to various corporate actions will be decided by the Calculation Agent and will be communicated to the Index Contributor (EIA) well ahead of time. In addition, important news items as well as corporate actions with respect to all the Index Constituent Securities will be informed to the Index Contributor on a weekly basis. Announcements can be found on the Calculation Agent's website at <https://indxx.com/>. The Index Contributor will also announce changes to the Index methodology and corporate action policy on its website at <https://economicindexassociates.com/>.

### Index Committee

The Index is managed by a team (the "Index Committee") composed of principals from the Index Contributor (EIA), who are responsible for decisions regarding the composition of each *IFED* index as well as any amendments to its index methodology. The Index Committee may, when it believes it is necessary to ensure index integrity, exercise reasonable discretion in making changes to index composition and methodology. The Index Committee reviews the index methodology annually (or more frequently as needed) to ensure that it is "fit for purpose" (i.e., results in an accurate and reliable representation of the economic realities that the applicable index seeks to measure and eliminates factors that might result in any distortions). By way of example, possible changes to the Index Contributor's index methodology may originate from: (a) feedback from licensees; (b) new academic and practitioner research findings; (c) the Index Contributor's own empirical research and testing; or (d) liquidity constraints associated with assets under management tracking an index. If the financial markets experience an extraordinary event, the Index Committee will decide on the implementation of any necessary adjustments to pre-established procedures. By way of example, an extraordinary event may pertain to a single stock or stocks that the Index Committee decides to exclude from an index due to a disorderly market. A disorderly market in a security may be characterized by excessive volatility, trading volume, short interest and/or other factors deemed relevant by the Index Committee.

## APPENDIX A: DEFINING THE MARKET ENVIRONMENT

EIA's proprietary monetary policy measure (the *IFED* indicator) classifies the market environment as expansive, restrictive or indeterminate. The *IFED* indicator relies on the confluence of two observable components of monetary policy signals, which are referenced as "Stance" and "Stringency." These two components are based on unique Fed policy interest rates and are used to capture different dimensions of Fed monetary policy intentions.

- Stance is designed to capture the Fed's strategic, long-term monetary policy intentions.
- Stringency is designed to capture the Fed's actions in the market for short-term funding.

The two measures generally align as Fed actions in the short-term market usually align with its broad policy intentions. There are, however, situations in which the two tend to contradict one another, which creates an indeterminate environment.

### **Broad Fed Policy Intention (Stance)**

The first component used to classify the market environment is Stance. Stance is based on the Federal Reserve discount window primary credit rate (formerly known as the discount rate). The primary credit rate is the basic interest rate charged to most banks for loans issued via the discount window. This rate is relied upon even though the discount window is used sparingly as an actual funding source. Changes in the primary credit rate are widely acknowledged as providing a valid "signal" of the Fed's long-term, future strategic monetary policy intentions. Changes in the primary credit rate signal a shift in future Fed policy, whereas the actual implementation of Fed policy is accomplished via other mechanisms (i.e., open market operations). Based on the recognized signalling properties of primary credit rate changes, the *IFED* indicator relies heavily on changes in this rate.

*Expansive:* Initiated by a decrease in the Fed primary credit rate (formerly the discount rate).

Subsequent decreases in the rate only serve to reinforce the Fed's expansive stance. Stance remains expansive until the Fed increases the primary credit rate.

*Restrictive:* Initiated by an increase in the Fed primary credit rate. Subsequent increases in the rate only serve to reinforce the Fed's restrictive stance. Stance remains restrictive until the primary credit rate is decreased.

### **Fed Actions in the Short-Term Market (Stringency)**

The second component used to classify the market environment is Stringency. Stringency relies on the monthly average of the effective federal funds rate, which is derived by calendar month. The monthly average rate is used to alleviate potential issues created by the observed volatility in daily or weekly values of the fed funds rate. Furthermore, the approach uses the three-month cumulative change in the monthly average rate and applies a two-basis-point hurdle. Together, these requirements alleviate issues with erroneously labelling a transitory change in the rate as an intentional shift in Fed policy.

*Expansive:* Initiated by a decrease in the cumulative monthly average federal funds rate of two basis points or more. Subsequent decreases in the cumulative average rate only serve to reinforce that the Fed's actions in the short-term market continue to be expansive. Stringency remains expansive until the cumulative monthly average rate increases by at least two basis points.

*Restrictive*: Initiated by an increase in the cumulative monthly average federal funds rate of two basis points or more. Subsequent increases in the cumulative average rate only serve to reinforce that the actions in the short-term market continue to be restrictive. Stringency remains restrictive until the cumulative average rate decreases by at least two basis points.

### Combined Measure of Market Conditions

- **Expansive**: Both Stance and Stringency are expansive.
- **Restrictive**: Both Stance and Stringency are restrictive.
- **Indeterminate**: One measure is expansive, and the other is restrictive.

The following table summarizes the alternative market environment classifications:

Alternative Market Environment Classifications			
		Broad Fed Policy (Stance)	
		<i>Expansive</i>	<i>Restrictive</i>
Fed Actions in Short-Term Market (Stringency)	<i>Expansive</i>	Expansive	Indeterminate
	<i>Restrictive</i>	Indeterminate	Restrictive

### Mechanism to Avoid Misclassification of Shifts and Reduce Transactions Costs

A final mechanism is implemented to reduce transactions costs and alleviate problems with the misclassification of a transitory rate change as a Fed policy shift. Specifically, without a definitive signal of a shift in Fed policy, a three-month minimum elapsed interval per market environment is required. It is widely acknowledged that the actions and policies of the Fed are dictated by the Fed's evaluation of current conditions and its forecasts of conditions over the next several months. Thus, actual shifts in Fed policy are spaced considerably.

The Fed's deliberate operating procedure is not consistent with a policy reversal over a one- or two-month period. Therefore, except when a definitive policy shift is signalled, the market environments are constrained to extend for at least three calendar months to screen out false signals that would inappropriately disrupt the portfolio allocation and produce undue transactions costs. A shift in direction in the primary credit rate serves as a definitive signal of a change in Fed policy, and thus, voids the three-month minimum requirement and creates an immediate change in the market environment.

When a reconstitution of the index is warranted, the accounting variables used in calculating the firm metrics are sourced from a company's latest 10-k filing; or its 8-k filing if the 10-k is not yet available. All market variables are adjusted for stock splits and stock dividends and are calculated using data at market close on the last trading day of the most recent prior calendar month.

## APPENDIX B: CALCULATING THE 12 FIRM-SPECIFIC METRICS

The twelve firm-specific metrics were selected based on academic research that confirms their economic merits, and each metric is calculated according to the approach prescribed in the related research. Academically robust empirical analyses were performed to establish that each metric corresponds with a systematic return pattern relative to signalled shifts in Fed policy.

The metrics gauge a stock's positioning relative to the prevailing environment and are calculated as follows:

### Market Capitalization (Size)

Size denotes the market capitalization of a stock as of end of month  $t-1$ .

### Past Stock Performance: Long-term (5-yr) (PastRet)

PastRet denotes long-term past return performance, measured as the total stock return from month  $t-60$  to month  $t-13$ .

If a stock's trading history is less than 36 months, or if a monthly return is missing during month  $t-36$  to  $t-13$ , the stock is excluded.

If the trading history is between 36 and 48 months and a monthly return is missing during month  $t-48$  to month  $t-36$ , PastRet = cumulative return from month  $t-36$  to month  $t-13$ .

If the trading history is between 48 and 60 months and a monthly return is missing during month  $t-60$  to month  $t-48$ , PastRet = cumulative return from month  $t-48$  to month  $t-13$ .

### Past Stock Performance: Short-term (1-yr) (MOM)

MOM denotes short-term past return performance, which is the cumulative stock return from month  $t-12$  to month  $t-2$ .

If the trading history is less than 12 months, or if a monthly return is missing during the past 12 months, the stock is excluded.

### Dividend Yield (DivYld)

DivYld denotes total dividend divided by market cap in month  $t-1$ , where total dividend = net income minus the change in book equity (BE) from year  $t-1$  to year  $t$ .

### Cash Holdings (Cash/TA)

Cash/TA denotes the percentage of assets held as cash equivalents and is measured as cash plus short-term investments divided by total assets.

### Residual Variability (Ivol60)

Ivol60 denotes the volatility of residuals from a market model regression estimated over 60 months from month  $t-60$  to month  $t-1$ . The same treatment is applied for missing returns as applied for PastRet. Ivol60 relies on the following regression to compute the residual:

$$R_s - R_f = a + b_1 \cdot (R_M - R_f) + \varepsilon.$$

$$Ivol60 = \sqrt{Mean(\varepsilon^2)}.$$



With:

$R_M$ : Monthly return of market cap weighted index composed of all stocks with an *IFED Score*, rebalanced monthly,

$R_s$ : Monthly stock return of firm  $s$ ,

$\varepsilon$ : Residual of the regression, a vector of 60 numbers,

$R_f$ : Monthly risk-free rate, one-month Treasury bill rate,

### **Change in Net Operating Assets (ChgNOA)**

Net operating assets (NOA) = operating assets – non-debt liabilities = (total assets – cash & short-term investments) – (total liabilities – total debt)

ChgNOA = NOA year  $t$  – NOA year  $t-1$

Total debt = total long-term debt + minority interest + notes payable + book value of preferred stock

Stocks are excluded if total long-term debt is missing; whereas, minority interest, notes payable and book value of preferred stock are used if available.

### **Balance Sheet Bloat (BSBloat)**

BSBloat denotes the level of net operating assets,  $BSBloat = (\text{operating assets in year } t \text{ minus operating liabilities in year } t) / \text{total assets in year } t-1$

Operating assets = total assets – cash & short-term investment

Operating liabilities = total assets – total debt – book equity

The coefficient on BSBloat is set to 0 for financial firms due to their unique balance sheet structures

### **Equity Issuance (EqtyIss)**

EqtyIss denotes the log of one-year change in split adjusted number of shares

$EqtyIss = \log(\text{shares month } t-1 / \text{shares month } t-12)$

### **Debt Ratio (Debt/TA)**

Debt/TA denotes debt ratio, which = total debt divided by total assets

### **Gross Profit Margin (GP/TA)**

GP/TA denotes gross profit margin,  $GP/TA = (\text{total revenue} - \text{cost of goods sold (COGS)}) / \text{total assets}$

COGS for financial firms is calculated as total interest expense + provision for credit losses

### **Value Effect (ValueEff)**

ValueEff relies on a combination of three price multiples: BEME, EBITDA/EV and Sales/ME

BEME denotes book-equity to market-equity, calculated as BE divided by ME, where book-equity (BE) = book value of shareholder's equity plus balance sheet deferred taxes (if available) minus book value of preferred stock (if available), where preferred stock (PREF) is based on redemption, liquidation or par value. ME denotes market capitalization as of end of month  $t-1$ .

EBITDA/EV is measured as earnings before interest, taxes and depreciation divided by enterprise value (EV), where EV is the sum of: (ME, total debt, and PREF) less Cash.

Sales/ME is measured as total revenue divided by ME.

ValueEff is derived as an equal-weighted combination of the non-missing price multiples. If EBITDA, EV or BE are negative, the respective multiple is considered “missing” and ValueEff is derived over the non-missing measure(s).

## APPENDIX C: CONSTRUCTION OF IFED SCORE

### Determining Pre-Weight Z-Scores

For each firm, the pre-weight z-score for a firm metric is based on the metric’s rank relative to the other firms in the *IFED* universe, namely the common stocks of all eligible U.S. companies<sup>1</sup>. The greater the difference in ranking from the average ranking, the greater the impact on the firm’s *IFED Score*.

A special circumstance exists; however, for two firm metrics, PastRet and GP/TA, during indeterminate environments. For these two performance-based metrics, during indeterminate environments only, moderate z-scores have the greatest positive impact on the *IFED Score*. In indeterminate conditions, moderate z-scores have greater impact because the evidence suggests that when market conditions are not clearly defined, stocks with moderate levels of past stock and profit performance exhibit the best future stock performance. The unique treatment for these two metrics, during indeterminate environments, is as follows: the metric z-score is set as 1 if a firm’s metric ranks in the middle quintile (quintile 3), it is set as 0.5 if it ranks in quintile 2 or 4, and it is set as 0 if it is in quintile 1 or 5.

### Calculation of Pre-Weight Z-Scores

Calculation of z-scores:  $z_{ij} = \frac{(Rank_{ij} - \overline{Rank})}{Std(Rank)}$ ,  $z_{ij}$  denotes the z score of stock  $j$  for metric  $i$ . Where,  $\overline{Rank}$  is the mean of the ranks for metric  $i$  and Std (Rank) is the standard deviation of the ranks for metric  $i$  across all stocks in the *IFED* universe.

When the ranks for a metric are equal across firms, the z scores are the same and the next non-equal rank assumes a rank value equal to its observation number in the ranked series. For example, for the Debt/TA metric, if the first ten stocks have Debt/TA values of 0, they are all ranked 1 and the next stock receives a rank of 11 for the Debt/TA metric.

The value effect z-score involves a unique calculation since it represents a combination of three separate price multiples. A preliminary z-score is calculated for each of the non-missing price multiples. The final value effect z-score is derived as the mean of the non-missing z-scores for the price multiples.

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<sup>1</sup> EIA may deem a foreign domiciled company as a U.S. company for index purposes if its primary listing, headquarters and incorporation are in the U.S. and/or a “domicile of convenience.” The final determination of domicile eligibility is made by EIA in consultation with Nasdaq. In making its determination, EIA and Nasdaq may consider other factors including, but not limited to, operational headquarters location, ownership information, location of officers, directors and employees, investor perception and other factors deemed to be relevant. A stock may be considered for exclusion on the basis of corporate governance, accounting policies, lack of transparency and lack of representation, despite meeting all the criteria provided in the *IFED* index methodology.

## Determining Weighted Z-Scores

After the pre-weight z-scores are determined for each metric and for each firm, each pre-weight z-score is then weighted by its relative importance and direction of influence as detailed in Exhibit 1 below. The resulting weighted z-scores are designed to capture that metric's contribution to the underlying stock's exposure to the prevailing market environment. A relatively high weighted z-score indicates that the metric contributes significantly to the stock's exposure. Finally, the weighted z-scores are summed to arrive at a composite z-score for the stock (i.e., its *IFED Score*) for the prevailing environment. The higher a stock's *IFED Score*, the better positioned the stock is to capitalize on the prevailing market environment and the greater the allocation the stock receives in the index. Each stock will have a different *IFED Score* for each of the three market environments.

### Exhibit 1. Weighted Z-Score Calculation: Relationship and Weights

Firm Financial Metric	Weight Applied to Metric's Z-score		
	Expansive	Indeterminate	Restrictive
Market capitalization (Size)	-2	0	0
Past stock performance			
Long-term (5-yr) (PastRet)	-2	+2	+1
Short-term (1-yr) (MOM)	+2	0	+2
Dividend yield (DivYld)	+1	+2	+1
Cash holdings (Cash/TA)	0	+1	+2
Residual variability (Ivol60)	0	-1	0
Change in net operating assets (ChgNOA)	-1	0	-1
Balance sheet bloat (BSBloat)	-2	-1	-2
Equity issuance (EqtyIss)	0	-2	0
Debt ratio (Debt/TA)	0	0	-1
Gross profit margin (GP/TA)	+2	+1	0
Value Effect (ValueEff)	+1	+2	+2

The weights reported in Exhibit 1 reflect the importance of the metrics during each environment and the direction of influence. For example, market capitalization (Size) is assigned a weight of -2 during expansive environments but gets a 0 weight in the other two environments. This indicates that market cap is a very important feature during expansive conditions and smaller firms (the negative sign) are better positioned to capitalize on the expansive environment. In contrast, firm size is unimportant in the other two environments, which is reflected by the 0 assigned weight.

## APPENDIX D: LIQUIDITY, CAPACITY AND SECURITY WEIGHT CONSTRAINTS

The Nasdaq *IFED-LV* index employs the liquidity screen and capacity cap set out in this section. The liquidity screen is applied to all stocks with an *IFED Score* to identify the 500 largest stocks that meet a minimum liquidity requirement. From these 500 large-cap stocks, the index considers the 150 stocks with the lowest volatility. From the 150 low volatility stocks, the 75 stocks with the highest *IFED Scores* are selected for Nasdaq *IFED-LV* at each rebalance. Index constituents are weighted by their *IFED Scores* within the index subject to the capacity cap and maximum component weight as set out herein.

### 1. Liquidity Screen

Before selecting the 500 largest U.S. stocks, liquidity screens are applied. Specifically, stocks are excluded from consideration if they do not have an ADV > \$4 million or a liquidity ratio (L) of at least 50%, where the liquidity ratio (L) is measured as:

$$L = \frac{\sum_{n=1}^{12} P_{t-n} \cdot V_{t-n}}{MCAP_t}$$

With:

- $P_{t-n}$ : Monthly close price  $n$  months prior to month  $t$ ,
- $V_{t-n}$ : Total share monthly volume  $n$  months prior to month  $t$ ,
- $MCAP_t$ : Float-adjusted market capitalization in month  $t$ .

From the resulting 500 largest U.S. stocks, the 150 stocks with the lowest volatility become potential constituents for the Nasdaq *IFED-LV* index. From this set of 150 low volatility stocks, the 75 stocks with the highest *IFED Scores* are selected for the index and the capacity cap (as defined below) is applied to the 75.

### 2. Capacity Cap

The weight of a component stock is capped using a multiple of the stock's relative average daily trading volume (ADV) as follows:

$$\text{Capacity Cap for } Stock_i = \frac{\text{Liquidity Multiplier} \times \text{ADV of } Stock_i}{\sum_{j=1}^n \text{ADV of } Stock_j}$$

With:

- *Liquidity Multiplier* = 6,
- *ADV of Stock<sub>i</sub>* = Average Daily Trading Volume (ADV) for stock  $i$  over the 90 calendar days prior to the Event Date, including the Event Date.
- To address situations where a stock's recent trading activity is disproportionately high, the Capacity Cap formula is adjusted where necessary as follows:

If  $ADV\ of\ Stock_i > \frac{3 \times MKT_i}{252}$ ,  $ADV\ of\ Stock_i = \frac{3 \times MKT_i}{252}$ , where  $MKT_i$  is the free-float market cap<sup>2</sup> of stock  $i$  on the Event Date.

For those stocks where the *IFED Score*-weighted allocation exceeds its capacity cap, the weight of the stock is set at its capacity cap and the exceeding weight is reassigned to other stocks in the index on a pro-rata basis by *IFED Score* (subject to the Maximum Component Weight defined below).

### 3. Maximum Component Weight

To form Nasdaq *IFED-LV* at each rebalance, we apply the following maximum weight constraint: no stock can exceed 7.5% of Index weight.

If a stock's *IFED Score*-weighted allocation exceeds the maximum weight constraint, the weight of the stock is set at 7.5% and the exceeding weight is reassigned to other stocks in the Index on a pro-rata basis by *IFED Score* (subject to each stock's Capacity Cap).

In the unlikely event that a feasible solution is not achieved, the Index Committee will convene to consider: a) an increase in the Liquidity Multiplier; and/or; b) implementation of the index rebalance over additional business days.

## ADDITIONAL INFORMATION

### Announcements

The announcements related to the Index shall be conducted by the Calculation Agent.

### Base Value and Date

The base value of the Index is deemed to be 1000 as of December 31, 1998. The Index was first calculated on July 13, 2022.

### Historical and Estimated Historical Performance

The level of the Index is deemed to have been 1000.00 on December 31, 1998, which is referred to as the "Base Date." The Index Contributor began calculating and publicly disseminating the Index on July 13, 2022. Therefore, historical information presented prior to July 13, 2022, is hypothetical and is provided as an illustration of how the Index would have performed during the period had the Index Contributor calculated the Index prior to July 13, 2022, using the methodology it currently uses. These data do not reflect actual performance, nor was a contemporaneous investment model run of the Index. Only historical information for the period from and after July 13, 2022, is based on the actual performance of the Index. The estimated historical performance of the Index that has been calculated by the Index Contributor and included in this prospectus supplement is subject to significant limitations, including the fact that the Index Contributor had the benefit of hindsight both in developing the Index

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<sup>2</sup> Free float market capitalization is calculated by subtracting shares held by insiders and those deemed to be stagnant shareholders from the shares outstanding. Stagnant holders include ESOPs, ESOTs, QUESTs, employee benefit trusts, corporations not actively managing money, venture capital companies and shares held by governments.

methodology and in calculating the estimated historical performance of the Index. If the estimated historical performance of the Index was calculated based on different assumptions, or if the estimated historical performance information covered a longer or different time-period, the estimated hypothetical performance of the Index might look materially different.

## **Contact information**

For any questions regarding an Index, contact the Nasdaq Index Client Services team at [indexservices@nasdaq.com](mailto:indexservices@nasdaq.com).

## **Index dissemination**

Index values and weightings information are available through Nasdaq Global Index Watch (GIW) website at <https://indexes.nasdaq.com/> as well as the Calculation Agent's website at <https://indxx.com/>.

For more detailed information regarding Index Dissemination, refer to the **Nasdaq Index Methodology Guide**.

## **Website**

For further information, refer to Nasdaq GIW website at <https://indexes.nasdaq.com/>.

# **GOVERNANCE**

## **Index governance**

All Nasdaq Indexes are managed by the governance committee structure and have transparent governance, oversight, and accountability procedures for the index determination process. For further details on the Index Methodology and Governance overlay, refer to the **Nasdaq Index Methodology Guide**.

## **Nasdaq Index Management Committee**

The Nasdaq Index Management Committee is responsible for the overall oversight of activities related to the development, issuance, and operation of Nasdaq Indexes. The Committee reviews and approves all new Index Methodologies as well as updates to existing methodologies. For a detailed overview of the Index Management Committee, refer to the **Nasdaq Index Methodology Guide**.

## **Nasdaq U.S. Oversight Committee**

The U.S. Oversight Committee is responsible for the oversight of the overall Benchmark determination process and is responsible for the overall governance of the U.S.-based Index business including review and approval of the control framework, certain policies and procedures, certain methodologies and methodology changes and other Index management oversight.

For a detailed overview of the U.S. Oversight Committee, refer to the **Nasdaq Index Methodology Guide**.

## **Internal reviews of methodology**

All new methodologies or updates to existing methodologies must be reviewed by the Index Management Committee. Additionally, all in-scope Index methodologies are subject to an annual review by the Index Management Committee and U.S. Oversight Committee. For a detailed description on internal reviews of the Methodology, refer to the **Nasdaq Index Methodology Guide**.

## **Communication with stakeholders and consultations**

In certain circumstances, Nasdaq will seek feedback from clients and market participants via consultations. For a detailed description on Consultations and Communications with Stakeholders, refer to the **Nasdaq Index Methodology Guide**.

## **Index cessation**

Nasdaq has a documented procedure that is followed for Index Cessation that includes termination/retirement of an Index or Index Family. For more information, refer to the **Nasdaq Index Cessation Policy**.

## **Discretionary adjustment**

This Index Methodology was created by Nasdaq to achieve the aforementioned objective of measuring the underlying purpose of each Index governed by this methodology document. Any deviations from this methodology are made in the sole judgment and discretion of Nasdaq so that the Index continues to achieve its objective.

For more information on potential adjustments including Calculation and Pricing Disruptions, Expert Judgment, and Unexpected Reconstitution/Rebalances, Refer to the **Nasdaq Index Methodology Guide**.

## **GLOSSARY OF TERMS AS USED IN THIS DOCUMENT**

For the glossary of key terms, refer to the **Nasdaq Index Methodology Guide**.

## DISCLAIMER

Nasdaq may, from time to time, exercise reasonable discretion as it deems appropriate in order to ensure Index integrity, including but not limited to, quantitative inclusion criteria. Nasdaq may also, due to special circumstances, if deemed essential, apply discretionary adjustments to ensure and maintain the high quality of the index construction and calculation. Nasdaq does not guarantee that any Index accurately reflects future market performance.

Neither Nasdaq, Inc., nor any of its affiliates (collectively “Nasdaq”) makes any recommendation to buy or sell any security or any representation about the financial condition of any company. Investors should undertake their own due diligence and carefully evaluate companies before investing. The information contained herein is provided for informational and educational purposes only, and nothing contained herein should be construed as investment advice, either on behalf of a particular security or an overall investment strategy. **ADVICE FROM A SECURITIES PROFESSIONAL IS STRONGLY ADVISED.**