LIMEYARD™

Index Methodology Guide

December 2018

Contents

I. INTRODUCTION

Financial markets indices consist of a hypothetical portfolio of securities that represent a particular asset class, a sector, a market or a segment of it, or an investment style. Not all indices are created equal and each index related to the stock and bond markets has its own calculation methodology. Indices may be used by a variety of market participants including asset owners, portfolio managers, broker/dealers, and researchers for a variety of purposes ranging from benchmarking to investment.
The portfolio of underlying securities of an index is usually referred to as hypothetical, as market participants cannot invest directly in an index. Exposure to an asset class, a sector, a geography or a strategy represented by an index can be achieved either through a replication of the list of constituents and their respective weightings, or through investable instruments based on that index. LIMEYARD does not sponsor, endorse, sell, promote or manage any investment product that seeks to provide an investment return based on the performance of any index. LIMEYARD makes no assurance that investment products based on the market indices listed in this document will accurately track the performance of the index itself or return positive performance. Accordingly, past performance of the index is not necessarily indicative of results that the index may achieve in the future.

This document covers the mathematics of equity index calculations and assumes some level of familiarity with mathematical notation and simple operations. Any exceptions to these index calculation rules are reviewed and approved by the LIMEYARD's Oversight Committee, as defined below in the benchmark governance section, and are publicly announced in advance of the implementation.

Most of the LIMEYARD's Equity Indices are market-cap-weighted, i.e. they are capitalization-weighted indices. The LIMEYARD Equity Indices are calculated according to a modification of the original Laspeyres index formula. The Laspeyres index calculates price indices by dividing expense on a specific basket in the current period (the sum of p*q for each product in the basket considered when calculating the index) by how much the same basket would cost in the base period (using quantities at period 0).

$$I = \frac{\sum_{c=1}^{k}(p_{c,t_n})*(q_{c,t_0})}{\sum_{c=1}^{k}(p_{c,t_0})*(q_{c,t_0})} \qquad (1)$$

In the modification to (1), the quantity measure in the numerator, q_{c,t_0}, is replaced by $s_{k,t}$, so the numerator becomes a measure of the current market value, and the product in the denominator is replaced by the index divisor, which both represent the initial market value and sets the base value for the index, which measures price changes against a fixed base-quantity weight. The result of these modifications is equation (2) below for the index level:

$$I_L = \frac{\sum_{k=1}^{n}(p_{k,t})*(s_{k,t})}{Divisor} \qquad (2)$$

Each LIMEYARD Equity Index has a unique index divisor, which is adjusted to offset the change in market value of the index due to corporate actions that cause changes in the market value of the stocks in the index, changes in the composition of the index constituents, or changes in shares outstanding.

Divisor adjustments are implemented after the close of trading since the closing prices are used to calculate the new divisor, based on the index changes that are being made.

LIMEYARD calculates the change in prices of yesterday's index basket as they have changed from yesterday to today. Any price changes in the underlying stocks are tracked on a daily basis, but changes in share quantity are not taken into account until the following day of calculation.

II. PRICE RETURN INDEX

The Price Return Index measures an index's whole market performance, including price performance and adjustments for corporate actions.

At the time *t* the Price Return Index is calculated by LIMEYARD using the following formula:

Price Return Index

$$PRI_t = \frac{\sum_{k=1}^{n}\left(p_{k,t} * s_{k,t} * ff_{k,t} * cf_{k,t} * F_{k,t}\right)}{Index\ Divisor_t} = \frac{M_t}{Index\ Divisor_t}$$

Where:

$$M_t = \sum_{k=1}^{n}(p_{k,t} * s_{k,t} * ff_{k,t} * cf_{k,t} * F_{k,t})$$

PRI_t = Price Return Index level at time *t*
M_t = Free-float market capitalization of the index at time *t*
$Index\ Divisor_t$= Divisor of the index at time *t*
t = Time of calculation of the index
k = Number of constituent stocks
$p_{k,t}$ = Closing price of the underlying stock *k* at time *t*
$s_{k,t}$ = Number of shares of the underlying stock *k* at time *t*
$ff_{k,t}$ = Free float of the underlying stock *k* at time *t*

$cf_{k,t}$ = Cap factor of the underlying stock *k* at time *t*
$F_{k,t}$ = Foreign exchange rate from company's *k* local currency into the index currency at time *t*

III. NET TOTAL RETURN INDEX

The Net Total Return Index measures an index's whole market performance, including price performance and adjustments for corporate actions and dividend distributions.

At the time *t,* the Net Total Return Index is calculated by LIMEYARD using the following formula:

Net Total Return Index

$$\mathrm{NTRI_t} = \frac{\sum_{k=1}^{n}((p_{k,t} - D_{k,t}) * s_{k,t} * ff_{k,t} * cf_{k,t} * F_{k,t})}{Index\ Divisor_t} = \frac{M_t}{Index\ Divisor_t}$$

Where:

$$M_t = \sum_{k=1}^{n}((p_{k,t} - D_{k,t}) * s_{k,t} * ff_{k,t} * cf_{k,t} * F_{k,t})$$

$NTRI_t$ = Net total return index level at time *t*
M_t = Free-float market capitalization of the index at time *t*
$Index\ Divisor_t$= Divisor of the index at time *t*
t = Time the index is calculated
k = Number of companies
$D_{k,t}$ = Dividend distribution of the underlying stock *k* announced by the company for time *t* adjusted with the Withholding Tax Rate τ_k
$p_{k,t}$ = Closing price of the underlying stock *k* at time *t*
$s_{k,t}$ = Number of shares of the underlying stock *k* at time *t*
$ff_{k,t}$ = Free float of the underlying stock *k* at time *t*
$cf_{k,t}$ = Cap factor of the underlying stock *k* at time *t*
$F_{k,t}$ = Foreign exchange rate from company's *k* local currency into the index currency at time *t*

IV. INDEX DIVISOR

The index divisor captures the impact of corporate events and rebalancing changes. The adjustment to the index divisor is key to the index maintenance process. The index maintenance should not determine any change to the level of the index to the extent it reflects changes in shares outstanding, corporate actions, addition or deletion of stocks to the index.
Under most circumstances, the index divisor remains constant, although it can change when the index's underlying stocks are added or dropped from the index basket, or when corporate actions

occur. Generally speaking, any change to the stocks in the index that makes changes to the total market value of the index while holding stock prices constant requires a divisor adjustment.
It is useful to make a distinction between changes in the divisor determined by the index-management process from those triggered by corporate actions of the index constituents. In the traditional index-management process, when a company is added to or deleted from the index, the net change in the market value of the index is calculated. Then, the net change in the market value is used to calculate the new divisor. The market values of stocks being added or deleted are based on the prices, shares outstanding, investable factors (IF, i.e. free-float adjustment) and any other share-count adjustments.
The table below lists the main corporate actions and index-management-related changes, with notes about the necessary changes and whether the divisor is adjusted.

Corporate action and index management-related changes	Description of corporate action and index management-related changes impact	Divisor's adjustment Market Cap / price-weighted index
Company addition/deletion	The stock is added/dropped from the index. The net change in market value determines the divisor adjustment.	Yes/Yes
Spin-off	A spin-off refers to the creation of a separate company through the sale or distribution of new shares of an existing business or division of a parent company. If the parent company decides to sell only a minority stake in the business, the divestiture is called a partial spin-off. Shareholders of the parent company would normally receive a proportionate number of shares in the new entity. On the ex-date of a spin-off, an adjustment factor calculated on the terms of the transaction and the market price of the spun-off security is applied to the price of the security of the parent company. Each individual index methodology specifies whether the spin-off will be eligible to remain in the index beyond the ex-date. Generally speaking, if the spun-off company qualifies for inclusion, it is included as of the close of its first trading day. In order to decide whether the spun-off entity qualifies for inclusion, the full company market capitalization of the spun-off entity is estimated by LIMEYARD prior to the spin-off being effective. The estimate is generally based on public information provided by the parent company and, as a prerequisite, a listing on one of the eligible exchanges, pricing, and instrument reference data must be available.	Yes/Yes

Corporate action and index management-related changes	Description of corporate action and index management-related changes impact	Divisor's adjustment Market Cap / price-weighted index
Stock split and reverse split	Shares outstanding revised to reflect the new number of shares. No divisor adjustment is required since the number of shares outstanding and new adjusted price offset each other.	No/No
Rights offering	In a rights issue, the company offers existing shareholders the right to purchase new shares, generally at a price below the current market price. Rights issues result in capital inflow, and increase both the number of shares and the free-float-adjusted market capitalization of a security. An adjustment factor is applied to the market price of the security on the ex-date of a rights issue to maintain the weight to be the same as the company had before the rights offering. At the same time, the number of shares is generally increased as of the close of the ex-date, except for rights issues that are offered at a premium to the market price and are not fully underwritten.	Yes/No
Changes in shares outstanding	As shares outstanding change as a result of secondary issuance, share repurchase or buy-back, the share count is revised to reflect the change. The divisor is then adjusted to keep the index weight the same.	Yes/No
Change in the investable factor (IF)	An increase (or decrease) in the IF increases (or decreases) the total market value of the index. The divisor is adjusted to sterilize the change in market value caused by the change to the IF.	Yes
Cash dividend	Cash distributions that are within the scope of the regular dividend policy or that the company defines as a regular distribution.	Yes/Yes
Stock dividend	A dividend payment is made in the form of additional shares, rather than a cash payout. This is also known as a "scrip dividend." Generally, shares issued following stock dividends/bonus issues are entitled to forthcoming cash dividends paid by the company. However, in rare cases, the shares issued are not entitled to the forthcoming cash dividend. In cases where the shares issued are not entitled to the forthcoming dividend, if the cash dividend amount is known before the ex-date of the stock dividend and if the impact of the cash dividend is deemed significant, the market price of the security is	No/No

Corporate action and index management-related changes	Description of corporate action and index management-related changes impact	Divisor's adjustment Market Cap / price-weighted index
	adjusted with an adjustment factor that takes into account the forthcoming cash dividend.	
Stock dividend (from treasury stocks)	A dividend payment is made in the form of additional shares taken from treasury stocks, which are shares that were originally a part of the float and shares outstanding but were subsequently repurchased by the company and decommissioned. Depending on the size of the stock dividend distribution, the free float of the company may be reviewed following the event.	Yes/Yes
Special cash dividend	A special cash dividend is an extraordinary cash distribution of cash made by a company to its shareholders, taking the funds from annual profits and/or reserves. The price of the stock making the special dividend payment is reduced by the per-share special dividend amount (net of withholding tax, if applicable) after the close of trading on the day before the ex-date. The divisor adjustment reflects the drop-in index market value attributable to the special cash.	Yes/Yes
Merger or acquisition	Mergers and acquisitions can result in a potential addition or deletion of an index constituent, as well as a change in price and/or number of shares in cases where stocks were used in the purchase. Changes to the index are made only once the merger or acquisition is declared unconditional and approved by the regulatory agencies and authorities. If the surviving company is already an index member, it is retained in the index. If the surviving company does not meet eligibility criteria, it is removed.	Yes, if there is a removal/ Yes, if there is a removal
Constituent change	The company entering the index goes in at the weight of the company leaving the index.	No/No

Divisor adjustments are made "after the close", meaning that after the close of trading, the closing prices are used to calculate the new divisor based on whatever changes are being made. It is, then, possible to provide two complete descriptions of the index – one as it existed at the close of trading, and one as it will exist at the next opening of trading.

For Market capitalization weighted indices, the index divisor for a given day *t* is defined as the ratio of the index market capitalization (*t*) and the index level *(t*).

$$Index\ Divisor_t = \frac{\mathrm{M_t}}{\mathrm{I_t}}$$

Where:
$Index\ Divisor_t$ = Divisor of the index at time t
M_t = Free-float market capitalization of the index at time t
I_t = Index level at time t

Changes in weights due to corporate actions are distributed proportionally across all underlying stocks of the index basket. The new index divisor is calculated as follows:

$$Index\ Divisor_t = \frac{Index\ Divisor_{t-1} * \sum_{\mathrm{k=1}}^{\mathrm{n}}(p_{k,t} * s_{k,t} * ff_{k,t} * cf_{k,t} * F_{k,t}) \pm \Delta MC_t}{\sum_{k=1}^{n}(p_{k,t} * s_{k,t-1} * ff_{k,t-1} * cf_{k,t-1} * F_{k,t})}$$

Where:
$Index\ Divisor_t$= divisor of the index at time *t*
$Index\ Divisor_{t-1}$= divisor of the index at time *t-1*
t = Time of the calculation of the index
k = Number of companies
$p_{k,t}$ = Closing price of the underlying stock *k* at time *t*
$s_{k,t}$ = Number of shares of the underlying stock *k* at time *t*
$s_{k,t-1}$ = Number of shares of the underlying stock *k* at time *t-1*
$ff_{k,t}$ = Free float of the underlying stock *k* at time *t*
$ff_{k,t-1}$ = Free float of the underlying stock *k* at time *t-1*
$cf_{k,t}$ = Cap factor of the underlying stock *k* at time *t*
$cf_{k,t-1}$ = Cap factor of the underlying stock *k* at time *t-1*
$F_{k,t}$ = Foreign exchange rate from company's *k* local currency into the index currency at time *t*
ΔMC_t = The difference between the closing market capitalization of the index, and the adjusted closing market capitalization of the index.

For price weighted indices, the index divisor for a given day *t* is defined as the ratio of the index synthetic market capitalization (*t*) and the index level *(t*).

$$Index\ Divisor_t = \frac{\mathrm{M_t}}{\mathrm{I_t}}$$

Where:
$Index\ Divisor_t$ = Divisor of the index at time t
M_t = synthetic market capitalization of the index at time t
I_t = Index level at time t

Changes in weights due to corporate actions are distributed proportionally across all underlying stocks of the index basket. The new index divisor is calculated as follows:

$$Index\ Divisor_t = \frac{Index\ Divisor_{t-1} * \sum_{\mathrm{k=1}}^{\mathrm{n}}(p_{k,t} * wf_{k,t} * cf_{k,t} * F_{k,t}) \pm \Delta MC_t}{\sum_{k=1}^{n}(p_{k,t} * wf_{k,t-1} * cf_{k,t-1} * F_{k,t})}$$

Where:
$Index\ Divisor_t$= divisor of the index at time *t*
$Index\ Divisor_{t-1}$= divisor of the index at time *t-1*
t = Time of the calculation of the index
k = Number of companies
$p_{k,t}$ = Closing price of the underlying stock *k* at time *t*
$wf_{k,t}$ = Weighting factor of the underlying stock *k* at time *t*
$wf_{k,t-1}$ = Weighting factor of the underlying stock *k* at time *t-1*
$cf_{k,t}$ = Cap factor of the underlying stock *k* at time *t*
$cf_{k,t-1}$ = Cap factor of the underlying stock *k* at time *t-1*
$F_{k,t}$ = Foreign exchange rate from company's *k* local currency into the index currency at time *t*
ΔMC_t = The difference between the closing market capitalization of the index, and the adjusted closing market capitalization of the index.

The reference data source for FX is the WM/Reuters closing spot and forward rates calculated daily at 16:00 London time. These rates are available on Reuters pages "WMRSTOP01" and "WMRFORWARD01", Bloomberg page "WMCO" and Datastream. Thomson Reuters is the benchmark administrator for the WM/Reuters Rates and thus has primary responsibility for all aspects of the benchmark determination process. This includes the development, determination and dissemination, operation and governance of the spot, forward and non-deliverable forward rate services. Please refer to the WM/Reuters FX Benchmarks methodology guide for more information on the determination of spot, forward and non-deliverable forward benchmark rates.

V. REAL-TIME AND END-OF-DAY INDICES

The LIMEYARD indices are computed and disseminated at different calculation frequency:

- Real-time indices: Calculated and disseminated every 15 seconds during the index calculation period.
- End-of-day indices: Calculated and disseminated once a day at the end of the index calculation period.

The index values are disseminated over the web and can be procured directly from data vendors and clients through an FTP server. For further information, please contact info@limeyard.ch.

VI. CORPORATE ACTIONS

Corporate actions affect the total market capitalization of the index basket.

Adjustments are made to the index divisor to eliminate the impact of these corporate actions.

All corporate actions are implemented at the ex-date of the events. Adjustments in the closing price of the underlying stock, as well as its share quantity or weight factor, will be made according to the ratio details.

All corporate actions adjustments will be announced at least two trading days before the implementation if publicly available information allow, and implemented on the day the corporate actions come into effect. Conversely, changes resulting from corporate events that could not be implemented on or near the dates they come into effect, such as private placements and secondary offerings, and where no price adjustment is necessary, are implemented at the following scheduled index review date.

Below is the list of the corporate actions with the corresponding adjustment formula. If not specified differently, the adjustment is the same for both market capitalization and price-weighted indices.

1. Dividend distributions

1.1. Regular cash dividend

A regular cash dividend is defined as distribution made to holders of the underlying stocks, which is not considered a special dividend. The distribution date follows the timetable of the underlying stock dividend policy; also, the funds for dividend distribution come from operating income or retained earnings.

Only Total Return Indices are adjusted for regular cash dividends.

$$adjusted\ p_{k,t} = p_{k,t} - d_{k,t} * (1 - \tau_k)$$

Where:
$p_{k,t}$ = Closing price of the underlying stock *k* at time t
$d_{k,t}$ = Dividend distribution of the underlying stock k announced by the company for time t
τ_k = Withholding tax rate

1.2. Special cash dividend or return of capital

A special dividend payment happens outside of an underlying stock's regular pattern of dividend payments.

They are distinct from regular dividends. Special dividends may be declared after exceptionally strong company earnings results or as a result of a corporate decision to implement changes to its financial structure or to spin off a subsidiary company to its shareholders.

Price Return and Total Return Indices are adjusted for special cash dividends.

$$adjusted\ p_{k,t} = p_{k,t} - d_{k,t} * (1 - \tau_k)$$

Where:
$p_{k,t}$ = Closing price of the underlying stock k at time t
$d_{k,t}$ = Dividend distribution of the underlying stock k announced by the company for time t
τ_k = Withholding tax rate. No withholding tax is applied to Gross Return and Price Return Indices.

1.3. Swiss return of capital

If a Swiss company distributes a return of capital in lieu of a dividend distribution not taxed, and this distribution is part of the company dividend policy, then the return of capital will be considered as a regular cash distribution.

Only Total Return Indices are adjusted for regular cash dividends.

$$adjusted\ p_{k,t} = p_{k,t} - d_{k,t} * (1 - \tau_k)$$

Where:
$p_{k,t}$ = Closing price of the underlying stock k at time t
$d_{k,t}$ = Dividend distribution of the underlying stock k announced by the company for time t
τ_k = Withholding tax rate

2. Rights issue

A rights issue is defined as a corporate event where an underlying stock offers additional shares to existing shareholders. The shares are offered at a price different than the current market price, known as the subscription price. This corporate action impacts the price of the underlying stock as well as the shares outstanding.

2.1. Rights out of the money

If the subscription price equals or is superior to the underlying stock closing price on the day before the effective date, no adjustment is made.

2.2. Rights in the money

The subscription price is lower than the closing price on the day before the effective date.
The shareholder will receive B new shares for A old shares held at the $Subs_{k,t}$ subscription price.

Price Return and Total Return Indices are adjusted accordingly on the ex-date based on the following formula:

$$adjusted\ p_{k,t} = (p_{k,t} * A + Subs_{k,t} * B)/(A + B)$$

$$adjusted\ s_{k,t} = s_{k,t} * (\mathrm{A} + \mathrm{B})/\mathrm{A}$$

For price-weighted indices:

$$adjusted\ p_{k,t} = (p_{k,t} * A + Subs_{k,t} * B)/(A + B)$$

$$adjusted\ w_{k,t} = w_{k,t} * \frac{p_{k,t}}{adjusted\ p_{k,t}}$$

Where:
$p_{k,t}$ = Closing price of the underlying stock k at time t
$s_{k,t}$ = Number of shares of the underlying stock *k* at time *t*
$Subs_{k,t}$ = Subscription price of the rights issue of the underlying stock k at time t
$w_{k,t}$ = weighting factor of the underlying stock *k* at time *t*

2.3. Rights issue with dividend disadvantage

A rights issue with dividend disadvantage occurs when the new listed shares are not eligible for the dividend distribution.

$$adjusted\ p_{k,t} = (p_{k,t} * A + (Subs_{k,t} + d_{k,t} * (1 - \tau_k)) * B)/(A + B)$$

$$adjusted\ s_{k,t} = s_{k,t} * (\mathrm{A} + \mathrm{B})/\mathrm{A}$$

For price-weighted indices:

$$adjusted\ p_{k,t} = (p_{k,t} * A + (Subs_{k,t} + d_{k,t} * (1 - \tau_k)) * B)/(A + B)$$

$$adjusted\ w_{k,t} = w_{k,t} * \frac{p_{k,t}}{adjusted\ p_{k,t}}$$

Where:
$p_{k,t}$ = Closing price of the underlying stock *k* at time *t*
$s_{k,t}$ = Number of shares of the underlying stock *k* at time *t*
$Subs_{k,t}$ = Subscription price of the rights issue of the underlying stock *k* at time *t*
$d_{k,t}$ = Dividend distribution of the underlying stock *k* announced by the company for time *t*
τ_k = Withholding tax rate
$w_{k,t}$ = weighting factor of the underlying stock *k* at time *t*

3. Stock split, reverse split or stock consolidation

A stock split refers to the corporate action in which a company divides its outstanding shares into multiple shares. The stock split does not add any real value to the company, given the total dollar value of the shares remains the same compared to the pre-split amount, despite the number of shares outstanding increases by a specific multiple. A stock split is also referred to as a scrip issue, bonus issue, capitalization issue, or free issue.

A reverse stock split is exactly the opposite of a stock split, and refers to the corporate action in which a company reduces its number of outstanding shares by a set multiple. As in a traditional stock split, given the share price also changes, a reverse split determines no material change in the valuation of the company. However, some investors can be cashed out of their positions if they hold a small number of shares.
These corporate actions do not change the market capitalization of the underlying stock.

We have a stock split ratio of B for A.

Price Return and Total Return Indices are adjusted on the ex-date based on the following formula:

$$adjusted\ p_{k,t} = p_{k,t} * A/B$$

$$adjusted\ s_{k,t} = s_{k,t} * \mathrm{B/A}$$

For price-weighted indices:

$$adjusted\ p_{k,t} = p_{k,t} * A/B$$

$$adjusted\ w_{k,t} = w_{k,t} * \mathrm{B/A}$$

Where:
$p_{k,t}$ = Closing price of the underlying stock *k* at time *t*
$s_{k,t}$ = Number of shares of the underlying stock *k* at time *t*
$w_{k,t}$ = weighting factor of the underlying stock *k* at time *t*

4. Stock dividend

A stock dividend is defined as corporate event where the underlying stockholder will receive a number of stocks on a free basis.

4.1. Regular stock dividend

The shareholder will receive B new shares for A old shares held.
Price Return and Total Return Indices are adjusted on the ex-date based on the following formula:

$$adjusted\ p_{k,t} = \frac{p_{k,t} * A}{A+B}$$

$$adjusted\ s_{k,t} = s_{k,t} * \mathrm{(A+B)/A}$$

For price weighted index:

$$adjusted\ p_{k,t} = \frac{p_{k,t} * A}{A+B}$$

$$adjusted\ w_{k,t} = w_{k,t} * \mathrm{(A+B)/A}$$

Where:
$p_{k,t}$ = Closing price of the underlying stock *k* at time *t*
$s_{k,t}$ = Number of shares of the underlying stock *k* at time *t*
$w_{k,t}$ = weighting factor of the underlying stock *k* at time *t*

4.2. Stock dividend of another company

The shareholder will receive B new shares of another company for A old shares held. It can be considered as an exceptional distribution. There is an adjustment price, but no share adjustment.

Price Return and Total Return Indices are adjusted on the ex-date based on the following formula:

$$adjusted\ p_{k,t} = \frac{p_{k,t} * A - (price\ of\ the\ other\ company * B)}{A}$$

Where:
$p_{k,t}$ = Closing price of the underlying stock *k* at time *t*

4.3. Stock dividend from treasury stocks or distribution rights with cash equivalent

The shareholder will receive B new shares for A old shares held (where new shares are coming from the underlying stock treasury shares) or receive B rights for A shares held (or cash equivalent). These corporate events are considered as exceptional distributions. Stock dividends from treasury stocks will be adjusted as cash dividends.

Price adjustments occur without any share adjustments.

4.3.1. If the exceptional distribution is considered as a regular dividend distribution, only Total Return Indices are adjusted.

$$adjusted\ p_{k,t} = p_{k,t} - \frac{p_{k,t} * B}{A+B}$$

Where:
p_{kt} = Closing price of the underlying stock *k* at time *t*

Ratio of B new shares for A old shares held.

4.3.2. If the exceptional distribution is considered as a special dividend distribution. Price Return and Total Return Indices are adjusted at the ex-date based on the following formula:

$$adjusted\ p_{k,t} = p_{k,t} - \frac{p_{k,t} * B}{A+B}$$

Where:
$p_{k,t}$ = Closing price of the underlying stock *k* at time *t*

Ratio of B new shares for A old shares held.

4.1. Rights issue exceptions

If the subscription price is not available, and/or the rights are not tradable on the market, no price adjustment will be made to the underlying stock at the ex-date, and the shares of the underlying stock will be updated once the shares are listed or at the rebalancing of the index basket.

For extremely dilutive rights issues, the underlying stock would be removed from the basket index two trading days before the effective date. If the time to remove the stock is too short and after approval of market investigations, the rights will be added to the index at the ex-date and removed at its first closing price.

5. Repurchase of shares

It is defined as when the company is repurchasing outstanding shares from the market in cash.

The company tenders B shares at a tender price of P.

$$adjusted\ p_{k,t} = \frac{(p_{k,t} * Old\ number\ of\ shares) - (P * B)}{Old\ number\ of\ shares - B}$$

$$adjusted\ s_{k,t} = Old\ number\ of\ shares - B$$

For price-weighted indices:

$$adjusted\ p_{k,t} = \frac{(p_{k,t} * Old\ number\ of\ shares) - (P * B)}{Old\ number\ of\ shares - B}$$

$$adjusted\ w_{k,t} = w_{k,t} * \frac{p_{k,t}}{adjusted\ p_{k,t}}$$

Where:
$s_{k,t}$ = Number of shares of the underlying stock *k* at time *t*
$w_{k,t}$ = Number of shares of the underlying stock *k* at time *t*
$p_{k,t}$ = Closing price of the underlying stock *k* at time *t* before tender
P = Tender price of the company
B = Number of tendered shares

6. Spin-off

A spin-off is the corporate event where the underlying stock divests a subsidiary or division to set up a new and independent listed company.

On the ex-date of a spin-off, an adjustment factor calculated on the terms of the transaction and the market price of the spun-off security is applied to the price of the security of the parent company to avoid a drop in its free float-adjusted market capitalization. The shares of the divested company is distributed at a set ratio and estimated price. As this price is often an estimated price, each spun-off stock is temporarily added at the effective day to the affected indices until the spun-off security begins trading. Then it is removed the day after or the day it starts to trade at its first closing price. Generally speaking, if the spun-off company qualifies for inclusion, it is included as of the close of its first trading day. In order to decide whether the spun-off entity qualifies for inclusion, the full company market capitalization of the spun-off entity is estimated by LIMEYARD prior to the spin-off being effective. The estimate is generally based on public information provided by the parent company and, as a prerequisite, a listing on one of the eligible exchanges, pricing and instrument reference data must be available.

In those cases, where the distribution of the spun-off company is subject to a withholding tax, LIMEYARD reinvests a negative cash amount in the corresponding LIMEYARD Net Total Return Index on the ex-date.

$$adjusted\ p_{k,t} = \frac{p_{k,t} * A - price\ of\ spun-off\ company * B}{A}$$

$p_{k,t}$ = Closing price of the underlying stock *k* at time *t*
Ratio of B shares for A old shares held.
As a general practice, LIMEYARD will announce the deletion of the company from all indices following the standard rules for index replacements if sufficient notice period can be given.

The company may enter the indices again at the next periodic index review, but only after the new shares have been listed.

7. Additions and deletions

In case of an addition to the list of constituents, i.e. when a company is added to the index, or a deletion from the list of constituents, i.e. a company is deleted from the index (because of quarterly review changes, corporate actions, or trading suspensions), no price adjustments are made.

8. Free float and shares change

The free float of a given company (the investable factor) refers to its shares quota that can be publicly traded. In order to be listed on certain stock exchanges, companies have to comply with particular free-float requirements established by the exchange. The requirements usually refer to a percentage of the total number of shares issued by the company and/or to a certain number of shares worth a certain amount. The free-float factor and outstanding shares are updated at the review index calendar using the latest available data. In between the reviews, if the change day-on-day in the free float and/or the outstanding shares is greater than ±10%, an update of the free float and or shares will be effected immediately. The announcement of the change will be made at least two trading days before the implementation date. No price adjustment will be made.

9. Mergers and acquisitions

A merger is defined as a corporate event that amalgamates two existing companies into a new company. Seven different types of mergers are usually defined, as shown below
Horizontal merger: Two firms operating in same industry or producing similar products combine together.
Vertical merger: Two firms that make parts or components for finished goods or products combine.
Conglomerate merger: The combination of two firms operating in industries unrelated to each other.
Concentric merger: The combination of two or more firms which are related to each other in terms of customer groups, functions or technology.
Forward merger: Where the target merges into the buyer.
Reverse merger: Where the buyer merges into the target, and the shareholders of the buyer get stock in the target. This is treated as a stock acquisition by the buyer.
Subsidiary merger: When the buyer sets up an acquisition subsidiary that merges into the target.

An acquisition or takeover is defined as a corporate event where a company buys control and ownership of another company. An acquisition occurs when a buying company obtains more than 50% ownership in a target company. Acquisitions can be paid for in cash, in the acquiring company's stock, or a combination of both.
Mergers and acquisitions can result in a potential addition or deletion of an index constituent, as well as a change in price and/or number of shares in cases where stock was used in the purchase. If the surviving company is already an index member, it is retained in the index. If the surviving company does not meet eligibility criteria, it is removed. The change will be made once the merger or acquisition is declared unconditional and approved by the regulatory agencies and authorities.
The announcement of the change will be made at least two trading days before the implementation date.

10. Bankruptcy, suspension, illiquidity, and official delisting

A bankruptcy is a corporate event referring to a legal status of an entity that cannot repay the debts it owes to creditors because of financial distress, and so becomes insolvent. In most jurisdictions, bankruptcy is imposed by a court order, often initiated by the debtor.
If the company has filed for bankruptcy without any indication of compensation to shareholders, the underlying stock will be removed from the index at a zero price (0.00001). Alternatively, the stock

of the insolvent company will be deleted from the index based on either the traded stock price on its primary market, if available, or the OTC stock price.

If the constituent is suspended from trading for more than five days, or it is not being traded for ten consecutive days, it will be removed from LIMEYARD indices at a zero price (0.00001) if the quotation has not been resumed.

Changes are announced immediately, implemented two trading days later, and become effective the next trading day after implementation.

11. Sector changes

Sector changes of constituents of a given index determine an update of the index. The timing of the update depends on the cause of the change:

- Changes in the primary revenue source of the company are announced on the next quarterly component announcement date, implemented on the quarterly implementation date and come into effect the next trading day after the implementation.
- Changes due to corporate actions are announced immediately, implemented two trading days later and come into effect the next trading day after the implementation.

12. Corporate actions implementation order

When several corporate actions are to occur on the same effective date, the order of the adjustments will follow the company corporate action order as it was announced.

13. Extraordinary corporate actions and extreme market conditions

For extraordinary corporate actions or extreme market conditions that impact the calculation, investability or tradability of the basket indices, LIMEYARD's Oversight Committee, under the responsibility and guidelines set forth by LIMEYARD's Management Committee – with both committees defined below in the benchmark governance section – will launch a market consultation.
Based on the result of the market consultation, LIMEYARD’s Management Committee will define the index adjustment and the criteria for the implementation to resolve the issue.

VII. PRICE AND RETURN INDICES

All LIMEYARD indices are calculated in price, gross total return and net total return (based on maximum withholding tax rates) versions. Dividend payments are reinvested in total return indices only. Total Return indices are available as gross return versions, calculated with a full dividend reinvestment, and as net return investment, where dividends minus the withholding taxes are reinvested. Please refer to the section on dividends withholding tax rate in the appendices for more information on tax withholding rates utilized in the calculation of Net Total Return Indices.

VIII. INPUT DATA AND DATA PRECISION

The input data used to process stock prices and calculate the LIMEYARD equity indices are Thomson Reuters data. For all non-equity indices, the individual index methodologies contain specific references to the pricing sources and types.

- The opening price: the first traded price during the official trading hours of the stock's trading system; in case the opening price is not yet available, the previous day's closing/adjusted price is used.
- The intraday price: the currently traded price during the official trading hours of the stock's trading system. When the stock is not traded, the last available stock price is used; this can either be the last available intraday stock price (i.e. if the stock is temporarily suspended) or the last available closing/adjusted price (i.e. if the stock exchange is closed).
- The closing price: the last traded price or auction price during the official trading hours of the stock's trading system is used. If the stock has not traded throughout the trading session, then the previous day's closing/adjusted price is used.
- The adjusted price: the closing price is adjusted to reflect a stock's corporate action that will come into effect the next trading day.
- Stock prices in local currency are converted to the currency of denomination of the index using WM/Reuters FX rates.

The data precision for the following input variables of the index calculation is defined as (unless stated differently in the individual index methodologies):

- Adjusted prices calculated as a result of corporate actions: rounded to sixteen decimal places
- Number of shares calculated as a result of corporate actions: rounded to sixteen decimal places
- WM/Reuters currency rates: rounded to five decimal places
- Free float factors: rounded to four decimal places
- Index divisors and market capitalization: rounded to thirteen decimal places
- Index values: rounded to two decimal places for dissemination
- Input data (e.g. pricing) and other underlying data, as applicable in index calculation: rounded to thirteen decimal places
- Product of (number of shares * free-float factor * weighting-cap factor): rounded to thirteen decimal places
- Product of (weight factor * weighting cap factor): rounded to thirteen decimal places
- Weights: expressed in percentage with thirteen decimals

IX. COUNTRY AND REGIONAL CLASSIFICATIONS

Each company and its securities included in the LIMEYARD equity index universe are classified in one and only one country. LIMEYARD has adopted the United Nations (UN) country classifications and aggregation methodology. For analytical purposes, UN's World Economic Situation and Prospects (WESP) classifies all countries of the world into one of three broad categories: developed economies, economies in transition and developing economies. The composition of these groupings is intended to reflect basic economic country conditions. Several countries (in particular the economies in transition) have characteristics that could place them in more than one category; however, for purposes of analysis, the groupings have been made mutually exclusive. Within each broad category, some subgroups are defined based either on geographical location or on ad hoc criteria, such as the subgroup of "major developed economies", which is based on the membership of the Group of Seven. Geographical regions for developing economies are as follows: Africa, East Asia, South Asia, Western Asia, and Latin America and the Caribbean.

The country classification of a company is generally determined by the company's country of incorporation and the primary listing of its securities. The general classification approach is to classify a company in the country of incorporation if its securities have a primary listing in that country.

However, in some cases, a company's securities may be incorporated in one country to benefit from tax, legal, and/or regulatory advantages, while its securities have a primary listing in a different country. That is the case for companies that incorporate in countries with limited, if not nil, public domestic equity markets and stocks trading, such as the Bahamas, Bermuda, British Virgin Islands, Cayman Islands, Channel Islands, Luxembourg, Marshall Islands, Netherlands Antilles, and Panama.

In such cases where a company's securities have a primary listing outside of the country of incorporation, an additional analysis is performed by LIMEYARD to determine the company's country classification. Thus, additional criteria that include: the location of its headquarters; the security's secondary listings, if any; the geographic distribution of the company's shareholder base; the country in which investors consider the company to be most properly classified; the geographic distribution of its operations (in terms of assets and revenues); the company's history are considered in the determination of the company's country classification.

A formal reassessment of all country classifications is done annually in Q1, when a classification decision is made for each country.

In case a country announces to change its currency and its companies adopt a new local currency at a future date LIMEYARD will review the regional classifications and index compositions. Changes will be implemented with a minimum of two trading days' notice, provided that orderly trading conditions in the original currency are met following the announcement.

Furthermore, LIMEYARD may review a country's eligibility to any index at short notice in case of major market disruptions in that country.

X. INDUSTRY CLASSIFICATION

LIMEYARD uses the ICB industry classification.

The Industry Classification Benchmark (ICB) is an industry classification taxonomy which groups together companies that have similar sources of primary revenue.

The ICB uses a system of 10 industries, partitioned into 19 supersectors, which are further divided into 41 sectors, which then contain 114 subsectors

Unless explicitly stated otherwise in the specific index methodology section, all companies that are classified into Equity Investment Instruments (ICB 8985) and Non-equity Investment Instruments (ICB 8995) are not eligible for inclusion into the indices.

XI. CLOSING DATA

The closing data for the LIMEYARD indices are disseminated after the index dissemination period for the relevant region. For each LIMEYARD index, the closing data include the following sets of data:

- Stock prices: Both closing and adjusted prices for all constituents of the LIMEYARD indices.
- Index-related values: Closing values, market capitalization, and divisors.
- Currency rates used in the calculation.
- Corporate actions and dividends: Effective the next trading day.
- Other information such as weightings and industry sector.

XII. FREE FLOAT FACTORS

Free-float market capitalization takes into consideration only those shares issued by the company that are readily available for trading in the market. Within a given index of the LIMEYARD index family each stock is assigned a unique free-float factor.
Generally speaking, equity stakes that are larger than 5% of the equity capital in circulation and whose holding is of a long-term nature are excluded from the free-float adjusted index calculation. In particular, free-float factors generally exclude promoters' holding, strategic entities ownership, block ownership, government holdings, cross-ownership (i.e., stock owned either by the company itself, in the form of treasury shares, or owned by other companies); and other locked-in shares that are not readily available in the market for trading.
Block ownership is not applied to holdings of custodian nominees, fiduciary or trustees companies, mutual funds, investment companies with short-term investment strategies, pension funds and similar entities.
The free-float factors are reviewed on a quarterly basis. They are published on the quarterly announcement date and implemented on the quarterly review implementation date.

XIII. BUFFER THRESHOLDS

Buffer thresholds are used in the periodic reviews process to reduce turnover of the index. Based on an index-specific characteristic, an upper and a lower limit is set around the index target coverage. Stocks ranked at and above the upper limit are selected for the index. The remaining stocks necessary to achieve the target coverage (fixed number of stocks or free-float adjusted market capitalization percentile threshold) are selected from the highest-ranked remaining current stocks between the upper and lower limits. If the target coverage is still not attained, the highest remaining stocks are selected until the target coverage is achieved.

XIV. LIQUIDITY AND WEIGHTING CAP FACTORS

Liquidity screenings based on a minimum average daily traded value (ADTV) over a given time period are applied during the period review process as defined in each specific index methodology section. A company's ADTV is based on the trading volumes of the specific listing used for the index calculation.
Whenever the determined ADTV level does not allow a selection of the defined number of constituents in a fixed component index, the liquidity threshold is downwardly adjusted. In case of specific circumstances that negatively affect the aggregated liquidity and market capitalization of the reference markets, the liquidity requirements can be lowered, Alternatively, the period index review can be postponed to the next quarterly review date. In such cases, the composition remains unchanged, but new weighting factors will be implemented. Changes to the weighting factors will be communicated in advance of the implementation dates.

In order to ensure a sufficient level of diversification and avoid the dominance of a single stock, country or sector in a given index, weighting cap factors are introduced. Weighting cap factors impose limits on the maximum weighting for a constituent at the time of the review.
Individual index methodologies within this Index Methodology Guide provide additional information about weighting cap factors. Weighting cap factors are updated incident to the regular quarterly index review process and are not adjusted for corporate actions.

XV. INDEX REVIEW

All LIMEYARD indices are reviewed on a regular basis to ensure the index composition accurately reflects the evolution of the underlying equity markets and an up-to-date index basket of securities, with the aim to maintain investability of constituents and replicability of the indices, as well as index stability and low index turnover. The free float factors and outstanding number of shares are reviewed quarterly based on the most recent available data. The rebalancing is conducted on a quarterly basis after the market close every third Friday in March, June, September and December, to come into effect the next trading day.
If the day of the implementation of the rebalancing is a non-trading day, then the rebalancing date is the next trading day.

The most recent free-float data as known to LIMEYARD are used for the component selection. The cut-off dates for free float data are on the last trading days of February, May, August and November. Data arriving after the cut-off dates are implemented in the following quarterly review.
For the calculation of weightings and cap factors, the closing prices on the Wednesday of the week prior to the week of the 3rd Friday in March, June, September and December are used.

XVI. INDEX METHODOLOGY REVIEW AND TRANSITION

LIMEYARD constantly monitors the execution of the index calculation in order to ensure the validity of the index methodology rules. Also, as a result of changes in the underlying market/sectors/factors that a given index is intended to track, as well as of developments in the industry, periodically and on ad-hoc basis LIMEYARD conducts general methodology reviews. As a result of these activities, LIMEYARD may decide to introduce changes to the methodology. While LIMEYARD's Management Committee, as defined in the benchmark governance section below, is responsible to assess the need for and the implementation of methodology changes, LIMEYARD's Oversight Committee reviews the assessment made by the Management Committee, request consultation, if necessary, and oversee the implementation of methodology changes.
Material changes to the methodology are notified to customers at least three months before their implementation in order to properly manage index users' transition to the revised rules. At the same time, those changes are updated in the Index Methodology Guide. All changes are tracked in a specific section of the Index Methodology Guide named "History of Changes to the Index Methodology Guide".

XVII. EXTREME MARKET CONDITIONS AND DISRUPTIONS, COMPANY EVENTS

In case the investability and tradability of a given index are affected by market turmoil or company event or disruptions and considered significant by the LIMEYARD Management Committee, as defined in the benchmark governance section below, one of the following or a combination of the following actions are taken. For all such changes, a minimum notification period of two trading days will be given. The actions may include, but not be limited to, the followings:

- Change of weights of index constituents by adjusting the number of shares, free-float factors, liquidity or weighting cap-factors
- Adjustment of index compositions
- Application of expert judgment for index constituents' pricing data
- Adjustment of operational procedures
- Postponement of index adjustments

XVIII. CALCULATION ERRORS AND ERROR REPORTS

All input data in the index calculation process is subject to a number of validations and cross checking.

In the case of a material error in the input data or in a given index calculation, if the impact of the error is greater or equal to 30 basis points (bps) on the index value, the index affected by 30 bps or more is restated.
Advanced notice of the restatement is given to customers and issuers of financial products pegged to the wrongly calculated index.

In certain circumstances, such as errors in the list of constituents or in the dividend amount after the dividend ex-date, LIMEYARD reserves the right to restate the index values even if the impact is lower than the 30 basis points correction threshold. LIMEYARD applies a 24-month correction period.
Errors on historical values older than 24 months are not revised. Action on dividend errors is taken only if the error is discovered within 12 months of the ex-date.

Intraday tick data is not corrected retroactively.

XIX. INDEX TERMINATION POLICY

When it becomes evident from a number of circumstances that a given index no longer represents the underlying market/sectors/factors that it is intended to track, and the methodology cannot be adapted to the new conditions, the termination of the index may be required. Generally speaking, these circumstances, which are completely out of LIMEYARD's control, may refer to regulatory changes; size and liquidity of the underlying market segment; lack of underlying eligible securities; significant changes to the underlying market structure; or geopolitical events. Additionally, low usage by customers or methodology convergence among indices may result in LIMEYARD's proposal to terminate an index.
The Management Committee at LIMEYARD, as detailed in the benchmark governance section below, is responsible for taking decisions in respect of termination of the index, based on the review assessment and procedures approval by the Oversight Committee.
A market consultation with the involved clients will be initiated for the termination of an index or index family for which outstanding products are present in the market to the best of LIMEYARD's knowledge.
The termination of a customised benchmark is always handled in consultation with the relevant client.
LIMEYARD would announce the termination of the index with advance notice in order to manage clients' and involved parties' expectations. LIMEYARD will endeavour to continue calculating the index for an announced period of time, before the effective termination date.

XX. BENCHMARK GOVERNANCE

LIMEYARD has a corporate governance structure that comprises three governance bodies: the Oversight Committee, the Management Committee and the Board of Directors. Business procedures and controls are designed to promote consistency throughout the process. The corporate risk framework is intended to enforce independent governance, reporting and risk management.
An Oversight Committee has been appointed to oversee benchmark management and operations; ensure compliance with benchmark published methodologies; monitor risks and issues in the benchmark provision; assess benchmark calculation errors; review and oversee the management

of complaints; and provide advice and challenge to the Management Committee. The Management Committee has responsibility for enforcing benchmark compliance, based on advice and instrumental and preliminary activities run by the Oversight Committee. The Oversight Committee comprises expert members selected on the basis of their experience and knowledge.

The Board of Directors ensures that an appropriate and effective internal control system including risk management and compliance is implemented and maintained in regard to all business activities, with a special focus on calculation, administration and dissemination of benchmarks. The Board of Directors issues all necessary policies and directives required. Within the Governance structure, the Board of Directors is responsible for broader oversight of the benchmarks. In addition, the Board of Directors is responsible for reporting to the relevant competent authorities any misconduct by contributors, where the benchmark is based on input data from contributors or administrators, of which the oversight function becomes aware, and any anomalous or suspicious input data.

LIMEYARD performs periodic due diligence on third parties and data sources. LIMEYARD welcomes any enquiries with regards to the determination of the benchmarks.

XXI. HISTORY OF CHANGES TO THE INDEX METHODOLOGY

January 2018: Changes to the data precision policy; changes to the methodology of the LIMEYARD USA TMI and the LIMEYARD USA; changes to the methodology of the LIMEYARD Europe TMI and the LIMEYARD Europe; addition of the LIMEYARD Swiss Market Benchmark family.

April 2018: Updates to the table of dividends withholding tax rate by country. Changes to the rules on IPOs treatment for the following indices: LIMEYARD Europe TMI Index, LIMEYARD Europe Index, LIMEYARD USA TMI Index, LIMEYARD USA Index, LIMEYARD Swiss Market Benchmark family.

July 2018: Includes the new LIMEYARD 600 Index.

July 2018: Clarification on treatment of taxed special dividends.

August 2018: Includes the new LIMEYARD 500 Index.

December 2018: Includes the new LIMEYARD EURO CORE 50 Index, LIMEYARD TSC USA Water Risk Index “powered by WaterBeta”.

XXII. LIMEYARD SWISS MARKET BENCHMARK FAMILY

The LIMEYARD Swiss Market Benchmark Family is designed to measure the performance of the large- and mid-cap segments of the Swiss market universe, which includes shares of companies domiciled in Switzerland or the Principality of Liechtenstein. The LIMEYARD Swiss Market Benchmark Family includes two different indices.

The LIMEYARD Swiss Market Benchmark comprises the 60 largest and most liquid stocks in the Swiss equity market. The index covers more than 92% of the free-float-adjusted market capitalization of the Swiss equity market.

The LIMEYARD Swiss Blue Chip Index comprises 30 of the largest stocks from the Swiss market universe. The index covers more than 85% of the free-float-adjusted market capitalization of the Swiss equity market.

Key facts:
Index constituents are selected based on the free-float adjusted market capitalization of each component. The index constituents are weighted according to their respective free-float market capitalization. Further, the eligible universe is filtered according to a liquidity screening process. Both the LIMEYARD Swiss Market Benchmark and the LIMEYARD Swiss Blue Chip Index contain highly liquid stocks.

Methodology:
The LIMEYARD Swiss Market Benchmark and the LIMEYARD Swiss Blue Chip Index are rules-based and transparent and reflect a comprehensive and consistent approach to index construction. The shares and the free-float factor of the selected constituents are reviewed on a quarterly basis.

Buffer rules:
Both the LIMEYARD Swiss Market Benchmark and the LIMEYARD Swiss Blue Chip Index are constructed with a “fixed number of securities” approach. To reduce index turnover and enhance index stability, buffer rules are applied at review periods to 90% of the fixed number of securities in both the LIMEYARD Swiss Market Benchmark and the LIMEYARD Swiss Blue Chip Index.
For instance, the LIMEYARD Swiss Market Benchmark targets 60 securities within the Swiss market-eligible universe, and the buffers are applied between ranks 54 and 60. Stocks are ranked based on free-float market capitalization; those ranked within the top 90% of the target stock count are automatically chosen for index inclusion. The remaining stocks necessary to achieve the target coverage (fixed number of stocks) are selected from the highest-ranked remaining current stocks between the upper (54) and lower limits (66). All stocks that are current constituents that fall within the top 110% of the target stock count are then chosen for index inclusion in the order of their free-float market capitalization. In the case that at the end of this process the target constituent count has not been reached, the remaining stocks are selected based on their free-float market capitalization.

Index characteristics:
Selection feature: Free-float adjusted market capitalization, primary share class only.

Weighting: Free-float market capitalization.
Cap factor: Both the LIMEYARD Swiss Market Benchmark and the LIMEYARD Swiss Blue Chip Index apply an 18% cap factor on individual index components at the index review.
Type of calculation: End of day.
Index type: Price and gross total return in CHF.
Review frequency: Quarterly (March, June, September, December). Component eligibility is based on an average daily turnover value (ADTV) over the last three months of at least 1 million CHF.

IPOs and spin-offs:
Spin-offs are added as of the close of their respective first trading days if they qualify for the inclusion. Each spun-off stock qualifies for addition to the index, if it lies within the upper buffer threshold at the last review of the index. The spun-off replaces the lowest ranked stock in that index, as of the last review. Qualifying spin-off stocks are added in sequence: The largest qualifying spin-off stock replaces the original stock in the index. The next qualifying spun-off stock replaces the lowest ranked stock in the index. Similarly, for any other qualifying spun-off stocks.

LIMEYARD strives to maintain all companies and securities in its equity indices with the objective of reflecting, on a timely basis, the evolution of the underlying stock markets that the indices are intended to represent.
Generally speaking, IPOs are added at the next index review, if they fulfill a given index inclusion criteria.
However, for IPOs with a relatively significant free float market capitalization and liquidity, an early inclusion can be considered by the LIMEYARD's Oversight Committee. In such a case, the IPO is added on the eleventh day of trading and replaces the index component that is ranked lowest at the IPO's first trading day. LIMEYARD will announce such an inclusion at least two trading days before the inclusion date.
Whenever an IPOs is considered for an early inclusion, in cases where the effective inclusion date of IPOs is close to a scheduled Index Review (five days before and five days after the Review date), the date of inclusion will be made effective to coincide with the Index Review date in order to reduce the index turnover.
IPOs treatment may differ from index to index and interested parties are advised to refer to each index methodology for further details on IPOs rules.

Replacements: A deleted stock is replaced at the next review.

XXIV. LIMEYARD EUROPE 600 INDEX

The LIMEYARD EUROPE 600 is designed to measure the performance of the large-, mid-, and small-cap segments across 17 developed market (DM) countries in Europe. Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.
The index covers approximately 90% of the free-float adjusted market capitalization of the pan-European equity market.

Methodology:

Universe: Stocks from the following European countries: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.
Selection feature: Top 600 companies in terms of free-float adjusted market capitalization; primary share line only
Weighting: Free-float market capitalization
Cap factor: 20% cap factor on individual index components
Type of calculation: End of day
Base value and date: 100 on September 24, 2007
Index Type: Price return, net total return, and gross total return in EUR
Review frequency: Quarterly (March, June, September, December). Component eligibility is based on an average daily turnover value (ADTV) over the last three months of at least 1 million EUR.
Buffer rules: 550 - 650 buffer rule

IPOs and spin-offs:
Spin-offs are added as of the close of their respective first trading days if they qualify for the inclusion. Each spun-off stock qualifies for addition to the index, if it lies within the upper buffer threshold on the latest selection list for the index. The spun-off replaces the lowest ranked stock in that index, as determined by the selection list. Qualifying spin-off stocks are added in sequence: The largest qualifying spin-off stock replaces the original stock in the index. The next qualifying spun-off stock replaces the lowest ranked stock in the index. Similarly, for any other qualifying spun-off stocks.

LIMEYARD strives to maintain all companies and securities in its equity indices with the objective of reflecting, on a timely basis, the evolution of the underlying stock markets that the indices are intended to represent.
Generally speaking, IPOs are added at the next index review, if they fulfill a given index inclusion criteria.
However, for IPOs with a relatively significant free float market capitalization and liquidity, an early inclusion can be considered by the LIMEYARD's Oversight Committee. In such a case, the IPO is added on the eleventh day of trading and replaces the index component that is ranked lowest at the IPO's first trading day. LIMEYARD will announce such an inclusion at least two trading days before the inclusion date.
Whenever an IPOs is considered for an early inclusion, in cases where the effective inclusion date of IPOs is close to a scheduled Index Review (five days before and five days after the Review date), the date of inclusion will be made effective to coincide with the Index Review date in order to reduce the index turnover.

IPOs treatment may differ from index to index and interested parties are advised to refer to each index methodology for further details on IPOs rules.

Replacements: A deleted stock is replaced immediately to maintain the fixed number of stocks. The replacement is based on the latest selection list that is updated monthly.

XXV. LIMEYARD TSC USA WATER RISK INDEX "POWERED BY WATERBETA™"

LIMEYARD TSC USA Water Risk Index "powered by waterBeta™" aims to capture water-risk imparted idiosyncratic beta in the 50 largest companies in terms of free float market capitalization. The constituents based on the LIMEYARD USA 500 are selected by their free float market capitalization.

Key facts:
The Index contains a selection of 50 components selected from the LIMEYARD USA 500 Index, ensuring tradability. The waterBeta™ methodology integrates physical, financial, and capital markets risk.

Methodology:

Universe: LYMEYARD USA 500
Selection feature: Top 50 companies in terms of free-float adjusted market capitalization
Weighting: price-weighted, proportionally to the calculated $beta\_score$.

At review, for every selected stock i, its beta to the LIMEYARD USA 500 is combined with its $waterBeta$ score:

$$combined\_beta_i = \frac{beta_i}{beta_i + waterBeta_i}$$

Where:
$beta\_i$ is the beta for stock i to the LIMEYARD USA 500 computed with daily returns for a period of 63 trading days.
$waterBeta\_i$, provided by Equarius, quantify and value the impact of water risk on stock volatility.

The combined beta is then transformed

$$beta\_score_i = \begin{cases} 1 + combined\_beta_i & if\ combined\_beta_i > 0 \\ max(1 + combined\_beta_i, 0) & if\ combined\_beta_i \leq 0 \end{cases}$$

Cap factor: 8.5% cap factor on individual index components, at review
Type of calculation: End of day
Base value and date: 100 on September 23, 2008
Index Type: Price return, net total return, and gross total return in USD
Review frequency: Quarterly (March, June, September, December).
Buffer rules: 20%, (40 – 60 buffer rule)

Replacements: If the component count of the index falls below 50, such as if a takeover, merger, delisting or extended suspension lead to a deletion in accordance with the index rules, a replacement does not take place until the next ordinary index review.

Spin-offs: Spin-offs are added as of the close of their respective first trading days if they qualify for the inclusion

XXVI. LIMEYARD EURO CORE 50 INDEX

The LIMEYARD Core Euro 50 is designed to measure the performance of the 50 largest supersector leaders in terms of free-float market cap across 11 Developed Market (DM) countries in the eurozone. The index includes exchange-listed companies from the following European countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.

Key facts:
Index constituents are selected based on the free-float adjusted market capitalization of each component. The index constituents are weighted according to their respective free-float market capitalization.

The eligible Universe is defined as the largest companies of the LIMEYARD Europe 600 selected among the 19 ICB’s supersectors.

Methodology:

Selection feature: for the Annual review (September) the constituents of the parent index, the LIMEYARD EUROPE 600, are split in 19 groups according to their ICB supersector classification. The stocks in each group are then ranked in terms of free-float market cap.
The largest stocks are added to the selection list until the coverage of each supersector is less than 60%, if by adding the next company, is coverage is closer to 60% the company is added to the selection list.
The selection list is then ranked in terms of free-float market capitalization. and the top 50 constituents are selected.

Weighting: Free-float market capitalization
Cap factor: 10% cap factor on individual index components, at review
Type of calculation: End of day
Base value and date: 100 on September 24, 2007
Index Type: Price return, net total return, and gross total return in EUR
Review frequency: Share and free float data: Quarterly (March, June, September, December); component selection: annually Component eligibility is the same as the parent index.
Buffer rules: 20%, (40 – 60 buffer rule)

Fast exit:
The membership to the index is reviewed at the end of every month.
A component is deleted from the index if it ranks 75 or below on the monthly selection list for two consecutive months.

Fast entry:
On a quarterly base (March, June, September, December) the index is review for fast track additions.
A component is added to the index if it ranks 25 or above on the monthly selection list.
If a stock is added to the index, it replaces the smallest stock in the index.

Replacements: A deleted stock is replaced immediately to maintain the fixed number of stocks. The replacement is based on the latest selection list that is updated monthly.

Spin-offs: Spin-offs are added as of the close of their respective first trading days if they qualify for the inclusion. If it lies within the upper buffer threshold on the latest selection list for the index it replaces the lowest ranked stock in that index, as determined by the selection list. Otherwise, it is deleted from the index at its first closing price. Qualifying spin-off stocks are added in sequence: The largest qualifying spin-off stock replaces the original stock in the index. The next qualifying spun-off stock replaces the lowest ranked stock in the index. Similarly, for any other qualifying spun-off stocks.

IPOs: IPOs are added at the next ordinary index review, if they fulfil a given index inclusion criteria. However, LIMEYARD reserves the right to conduct an early inclusion for exceptionally significant IPOs, upon decision of LIMEYARD's Oversight Committee.

XXVII. APPENDICES

1. Dividends withholding tax rate (maximum, non-resident) by country

Tax withholding rates below will be applied to gross dividends to calculate the net dividends to be utilized in the calculation of Net Total Return Indices. The rates below represent the withholding tax on dividends applicable to non-resident institutional investors. "Country" refers to the country of incorporation for the relevant company paying dividends. The withholding rates below are taken from third-party sources. LIMEYARD has not verified the accuracy of the withholding rates and take no responsibility for the update of the rates. At the same time, LIMEYARD does not provide tax advice, and readers should consult their own tax counsel for any tax advice.

Country	**Code**	**WHT**
Australia	AU	30.00%
Austria	AT	27.50%
Belgium	BE	30.00%
Brazil	BR	0.00%
Canada	CA	25.00%
China	CN	10.00%
Czech Republic	CZ	35.00%
Denmark	DK	27.00%
Finland	FI	30.00%
France	FR	30.00%
Germany	DE	26.375%(1)
Greece	GR	15.00%
India	IN	0.00%
Ireland	IE	20.00%
Italy	IT	26.00%
Luxembourg	LU	15.00%
Netherlands	NL	15.00%
New Zealand	NZ	30.00%

Country	Code	WHT
Norway	NO	25.00%
Poland	PL	19.00%
Portugal	PT	25.00%
Russian Federation	RU	15.00%
Spain	ES	19.00%
Sweden	SE	30.00%
Switzerland	CH	35.00%
United Kingdom	GB	0.00%
USA	US	30.00%
(1) Including the solidarity surcharge		

2. Dissemination calendar

The LIMEYARD indices are disseminated from Monday to Friday from 0:00 CET until 22:30 CET, except on Christmas Day, Boxing Day, New Year's Day, Good Friday and Easter Monday.