



Guide to the LPX Listed Private Equity Index Series  
Version 3.1

Designed to represent  
**Alternative Asset Classes.**



# Guide to the LPX Listed Private Equity Index Series

LPX AG

2018

## Notice and Disclaimer<sup>1</sup>

This document “Guide to the LPX Equity Indices”, hereafter “Guide”, and all the information contained in it, including all text, data, tables and all other information (collectively, the “information”) may not be reproduced or re-disseminated in a whole or in part without prior written permission from LPX AG. Any use of the LPX indices or other information requires a license from LPX AG. All information set out in this Guide is for informational purpose only. The information may not be used to verify or correct other data, to create indices, or in connection with offering, sponsoring, managing or marketing any securities, portfolios, financial instruments or other products.

None of the information constitutes an offer to buy or sell, or a recommendation of, any security, financial instrument and financial product or trading strategy, and LPX AG does not endorse, approve or otherwise express any opinion regarding any issuer, securities, financial products or instruments or trading strategies that may be described or mentioned herein. Further, none of the information is intended to constitute investment or tax advice or a recommendation to make any kind of investment decision.

Without limiting any of the foregoing, in no event shall LPX AG have any liability regarding any of the information for any direct, indirect, special, punitive, consequential or any other damages.

The Guide sets out the ground rules for the construction and maintenance of the LPX Listed Private Equity Index Series.

---

<sup>1</sup>LPX is a registered trademark of LPX AG. Licences are issued for the commercial use of any aspects of the LPX indices. Any commercial use of LPX trademarks and/or LPX indices without a valid licence agreement is not permitted.

## Contents

<b>1</b>	<b>General Index Information</b>	<b>1</b>
1.1	LPX Listed Private Equity Index Series . . . . .	1
1.2	Reference Date, Weighting and Cap . . . . .	4
1.3	Prices . . . . .	4
1.4	Calculation Frequency . . . . .	5
1.5	Country Allocation . . . . .	5
1.6	Currency Conversion . . . . .	6
1.7	Error Correction Policy . . . . .	6
<b>2</b>	<b>Choice of Index Constituents</b>	<b>6</b>
2.1	Data Basis . . . . .	6
2.2	Liquidity Analysis (LA) . . . . .	6
<b>3</b>	<b>Calculation Methods</b>	<b>10</b>
3.1	Index Formulae (Single Stock Distribution Reinvestment) . . . . .	10
3.2	Index Formulae (Dividend Reinvestment across all Constituents) . . . . .	10
3.3	Cap . . . . .	10
3.4	Free-float adjusted Cap . . . . .	11
3.5	Corporate Actions . . . . .	11
<b>4</b>	<b>Chaining</b>	<b>13</b>
<b>5</b>	<b>Amendments</b>	<b>14</b>
<b>6</b>	<b>Data Vendor Codes</b>	<b>15</b>

## List of Tables

1	Characteristics of the LPX Listed Private Equity Index Series . . . . .	4
2	LPX Base Universe - Global Stock Exchanges . . . . .	5
3	Ratios of Liquidity Analysis . . . . .	7
4	Ranking-Supported Adjustments . . . . .	8
5	Example: Subscription Rights . . . . .	13
6	Data Vendor Codes - Total Return Indices . . . . .	15
7	Data Vendor Codes - Price Indices . . . . .	16

## 1 General Index Information

LPX AG was the first to publish a Listed Private Equity Index Series (LPX Indices), which have become the most widely used in the financial industry in particular by institutional investors. The LPX indices contribute to the investment process by serving as a relevant and representative performance benchmark and as an effective research tool. The design, development and delivery of the LPX indices ensure that they are investable, tradable and transparent.

LPX reserves the right to deviate from the rules set forth in this Index Guide in case the properties of the base universe impede to follow the stipulated index construction rules. In such a case all relevant stakeholders will be informed and changes to the index construction methodology will be communicated on the LPX corporate website at the earliest possible date.

### 1.1 LPX Listed Private Equity Index Series

The LPX Listed Private Equity Index Series consist of global, regional, and style indices. The composition of the LPX indices in terms of eligible index constituents follows the methodology as described in Section 2. The LPX Listed Private Equity Index Series are structured as follows.

#### LPX Composite

The LPX Composite is designed to represent the global performance of Listed Private Equity and comprises the most highly capitalised and liquid Listed Private Equity companies. The index is diversified across regions, private equity investment styles, financing styles and vintages.

The reference currency of the LPX Composite Index is EUR, CHF and GBP. The index is available as a Price Index, Total Return (Net) and Total Return (Gross).

#### LPX50

The LPX50 is designed to represent the global performance of the 50 most highly capitalised and liquid Listed Private Equity companies. The index is diversified across regions, private equity investment styles, financing styles and vintages.

The reference currency of the LPX50 Index is EUR, CHF and USD. The index is available as a Price Index and Total Return (Net).

#### LPX Major Market

The LPX Major Market is designed to represent the global performance of the 25 most highly capitalised and liquid Listed Private Equity companies. The index is diversified across regions, private equity investment styles, financing styles and vintages.

The reference currency of the LPX Major Market Index is EUR and CHF. The index is available as a Price Index and Total Return (Net).

#### LPX Europe

The LPX Europe is designed to represent the performance of Listed Private Equity companies, which are listed on a European stock exchange. The LPX Europe comprises the 30 most highly capitalised and liquid companies and is diversified across private equity investment styles, financing styles and vintages.

The reference currency of the LPX Europe Index is EUR and CHF. The index is available as a Price Index and Total Return (Net).

### **LPX UK**

The LPX UK is designed to represent the performance of Listed Private Equity companies, which are listed on a UK stock exchange. The LPX UK comprises the 30 most highly capitalised and liquid companies and is diversified across private equity investment styles, financing styles and vintages.

The reference currency of the LPX UK Index is EUR, CHF and GBP. The index is available as a Price Index and Total Return (Net).

### **LPX America**

The LPX America is designed to represent the performance of Listed Private Equity companies, which are listed on a North American stock exchange. The LPX America comprises the 30 most highly capitalised and liquid companies and is diversified across private equity investment styles, financing styles and vintages.

The reference currency of the LPX America Index is EUR and CHF. The index is available as a Price Index and Total Return (Net).

### **LPX Buyout**

The LPX Buyout is designed to represent the global performance of Listed Private Equity companies, which pursue a Buyout private equity investment strategy. The LPX Buyout comprises the 30 most highly capitalised and liquid companies and is diversified across regions, financing styles and vintages.

The reference currency of the LPX Buyout Index is EUR and CHF. The index is available as a Price Index and Total Return (Net).

### **LPX Venture**

The LPX Venture is designed to represent the global performance of Listed Private Equity companies, which predominately provide Venture capital. The LPX Venture comprises the 30 most highly capitalised and liquid companies and is diversified across regions, financing styles and vintages.

The reference currency of the LPX Venture Index is EUR and CHF. The index is available as a Price Index and Total Return (Net).

### **LPX Direct**

The LPX Direct represents the most actively traded LPE companies covered by LPX AG that mainly pursue a direct private equity investment strategy. A listed private equity company is an eligible candidate for the Index if its direct private equity investments, as well as cash and cash equivalent positions and post-Initial Public Offering listed investments, represent more than 80% of the total assets of the company. LPX AG considers direct private equity investments to be direct investments noted on the balance sheet of the listed private equity company in the equity, mezzanine or debt facility of an underlying private company or investments in limited partnerships managed by the management portion of the listed private equity company. The reference currency of the LPX Direct Index is EUR, CHF and USD. The index is available as a Price Index and Total Return (Net).

**LPX Fund of Funds (FoF)**

The LPX FoF is designed to represent the global performance of Listed Private Equity companies, which pursue a Indirect private equity investment strategy through PE limited partnerships. The LPX FoF comprises the 30 most highly capitalised and liquid companies and is diversified across regions, financing styles and vintages.

The reference currency of the LPX Indirect Index is EUR and CHF. The index is available as a Price Index and Total Return (Net).

**LPX Mezzanine**

The LPX Mezzanine is designed to represent the global performance of Listed Private Equity companies, which predominately provide Mezzanine capital. The LPX Mezzanine comprises the 30 most highly capitalised and liquid companies and is diversified across private equity investment styles, regions and vintages.

The reference currency of the LPX Mezzanine Index is EUR and CHF. The index is available as a Price Index and Total Return (Net).

## 1.2 Reference Date, Weighting and Cap

The reference date is chosen such that a minimum of 10 initial constituents is ensured. The LPX indices are calculated according to the calculation algorithm described in Section 3 of this Guide. In order to limit the weight of individual constituents in the indices, a cap (the variable is defined as "CAP" in this Guide) is set for the market capitalisation of any single constituent of the index (see Section 3 for details). If the number of constituents of an index is 15 or more, a cap of 15% or less is implemented for any single constituent (refer to Table 1.2 for the current cap applied in the respective index). An overview of the characteristics of the LPX indices is presented in Table 1.2.

Index	Maximum # Constituents	Reference date	CAP	Chaining dates <sup>b</sup>
LPX Composite	n.a.	31.12.2001	10%	14.06 and 14.12
LPX50	50	31.12.1993	10%	14.06 and 14.12
LPX Major Market	25	31.12.1997	10%	14.01 and 14.07
LPX Buyout	30	31.12.1993	10%	14.02 and 14.08
LPX Mezzanine	30	31.12.2003	10%	14.02 and 14.08
LPX Venture	30	31.12.1993	15%	14.02 and 14.08
LPX Direct	30	31.12.1998	10%	14.02 and 14.08
LPX Direct US <sup>a</sup>	30	31.12.1998	10%	14.01 and 14.04 14.07 and 14.10
LPX Indirect	30	31.12.1999	10%	14.02 and 14.08
LPX America	30	31.12.1997	10%	14.03 and 14.09
LPX Europe	30	31.12.1993	10%	14.03 and 14.09
LPX UK	30	31.12.1998	10%	14.03 and 14.09

**Table 1:** Characteristics of the LPX Listed Private Equity Index Series

<sup>a</sup> The capping methodology for the LPX Direct US (LPXDITU) is outlined in Section 3.4.

<sup>b</sup> For the ordinary chaining dates as depicted in Table 1.2, the following rule applies: In case the chaining date falls on a Saturday, Sunday or Monday, the chaining date is preponed to the previous Friday. Generally, the share fixing takes place in T-5, where T refers to the chaining date. For the LPXDITU, the share fixing takes place in T-1, where T refers to the chaining date. The effective date of the chaining is by definition T+1. The index changes (i.e., index mutations) are communicated on the LPX AG corporate website at the earliest possible date.

## 1.3 Prices

Official closing prices from the primary stock exchanges of the respective index constituent securities are used for the calculation of the LPX indices. All exchange closing prices are sourced from Thomson Reuters. In case the official closing price of a constituent instrument is not available (i.e., suspension, illiquidity, bank holiday, etc.), the previous official closing price is used for the specific instrument for index calculation. In the event of a suspension during trading hours, the last price determined before such a suspension is used for subsequent calculations. If such suspension occurs before the start of trading, the closing price of the previous day is used. In the event of an exchange holiday, the closing prices from the previous day are used. LPX AG publishes the indices for every day except for Saturdays and Sundays. There are generally no index holidays for the LPX indices.

## 1.4 Calculation Frequency

Generally, official closing index values are calculated and disseminated via appropriate channels. Furthermore, the LPX indices are calculated in real-time during official trading hours and disseminated to a broad array of data vendors (e.g., Thomson Reuters, Bloomberg, etc.). For details on the underlying data provider mnemonics refer to Section 6.

## 1.5 Country Allocation

The LPX base universe includes companies that are traded on regulated exchanges worldwide. The base universe is continuously reviewed and new eligible companies are added in accordance to Section 2.1. The constituents of the LPX base universe are traded on the stock exchanges as outlined in Table 2.<sup>2</sup>

Country	Exchange Name	MIC <sup>a</sup>
Australia	Australian Stock Exchange (ASE)	XASX
Belgium/Luxembourg	EN Brussels	XBRU
Brazil	Sao Paulo Stock Exchange (BOVESPA)	BVMF
Canada	Toronto Stock Exchange (TSX)	XTSE
Denmark	The Copenhagen Stock Exchange (OMX Exchange)	XCSE
Finland	OMX Helsinki (OMX Exchange)	XHEL
France	NYSE Euronext	XPAR
Germany	Deutsche Börse XETRA	XETR
Greece	Athens Exchange SE	XATH
Hong Kong	HKEx (Hong Kong Exchanges and Clearing)	XHKG
Italy	Borsa Italiana SpA	MTAA
Japan	Tokyo Stock Exchange (TSE)	XTKS
Netherlands	NYSE Euronext	XAMS
Singapore	Singapore Stock Exchange (SGX)	XLON
South Afrika	JSE	XJSE
Spain	Soc.Bol SIBE	XMCE
Sweden	Stockholm Stock Exchange (OMX Exchange)	XSTO
Switzerland	SWX Swiss Exchange	XSWX
Switzerland	Virt-X Exchange	XVTX
United Kingdom	London Stock Exchange (LSE)	XLON
United States	NYSE (New York Stock Exchange)	XNYS
United States	NASDAQ National Market System	XNGS
United States	NASDAQ National Market System	XNMS

**Table 2:** LPX Base Universe - Global Stock Exchanges

<sup>a</sup> refers to Market Identification Code ISO 10383 (MIC).

<sup>2</sup>LPX AG reserves the right to add further exchanges to the list above.



## 1.6 Currency Conversion

The foreign exchange rates used in the calculation of the LPX Listed Private Equity Index Series are the WM/Reuters Closing Spot Rates, compiled by the WM Company. In the event that WM/Reuters Closing Spot Rates are not published by the WM Company, the previous day's rates will be used to calculate the LPX Listed Private Equity Index Series.

## 1.7 Error Correction Policy

The objective is to maintain the LPX indices to the highest standards of accuracy and integrity, using reliable data sources and following best practice in statistical and operational procedures. Where material errors occur in data or in calculation procedures, these are corrected promptly (i.e. within one business day). However, LPX AG is conscious of the risk of damaging the confidence of users through the frequent publication of amendments where trivial statistical errors have occurred that do not materially affect the accuracy of the published index series.

# 2 Choice of Index Constituents

## 2.1 Data Basis

Listed private equity (LPE) constitutes the liquid part of the asset class private equity. Among the different structures of LPE, it can be distinguished between LPE fund managers, direct LPE investment companies and LPE fund of funds. This can be compared to the unlisted private equity market where single dominant structure prevails: the limited partnerships (L.P.). This well-known structure, as well as direct LPE companies and LPE fund of funds have in common that they regularly publish a so called "fair value" or "net asset value" (NAV).

A database of LPE companies listed worldwide, to the extent known to LPX AG, serves as the base universe for the construction of the LPX Listed Private Equity Index Series. In order to be eligible for the inclusion in the database, the predominant business purpose of the company (at least 50% of total assets) must lie in the area of Private Equity (stake in companies not admitted for exchange quotation). Total assets are calculated by LPX AG through a standardised model that is applied to every company of the universe. The Private Equity part contains direct Private Equity investments, fund investments ("limited partnerships"), the valuation of the Private Equity fund management business as well as the position "cash & cash equivalents" and "listed investments". Additionally the company must be quoted at an eligible stock exchange as outlined in Table 2. Within the framework of a continuous research process, LPX AG checks whether a company currently in the base universe is still an eligible constituent or whether new companies that have previously not been considered should be included.

Based on the fair value of the private equity portfolio for each LPE instrument, LPX determines the private equity investment styles (i.e., buyout, venture, and growth). The instruments are classified according to the investment style, which dominates the total private equity portfolio. This is also true for the categories (i.e., direct, private equity fund of funds, fund manager, and mezzanine). The regional affiliation is based on the domiciliation of the LPE vehicle. The information to classify the private equity portfolio is based on publicly available information.

## 2.2 Liquidity Analysis (LA)

The LPX Listed Private Equity Index Series are adjusted for liquidity where liquidity is defined as how often and in what volume an instrument is traded on the underlying primary stock exchange.

The rationale behind the liquidity analysis is to ensure that the LPX indices are representative and replicable. For the liquidity analysis annual averages are used for every potential LPX index member<sup>3</sup>. Specifically, the following ratios are calculated within the framework of the liquidity analysis:

### Ratios

The specific liquidity ratios are:

- a maximum average bid-ask spread (BAS)
- an average minimum market capitalisation [mEUR] (MV)
- an average minimum trading volume per trading day measured relative to the market capitalisation (TV)
- a minimum trade continuity (CT)

### Criteria

The following table summarizes the criteria that are applied to each of the LPX indices. In the event a company does not fulfil one of the criteria, the company is not eligible for inclusion in the respective index, which means that the criteria are so-called “KO criteria”.

LPX Index	BAS <sup>a</sup>	TV <sup>a</sup>	MV <sup>a</sup>	CT <sup>a</sup>	Ranking <sup>c</sup>
LPX Composite	4.0%	0.03%/0.05% <sup>b</sup>	20	>75%	MC
LPX50	3.0%	0.05%	80	>80%	MC
LPX Major Market	1.5%	0.08%	150	>95%	MC
LPX Buyout	1.5%	0.08%	150	>95%	MC
LPX Mezzanine	3.0%	0.08%	80	>80%	MC
LPX Venture	4.0%	0.06%	20	>75%	MC
LPX Direct	1.5%	0.08%	150	>95%	MC
LPX FoF	4.0%	0.06%	20	>75%	MC
LPX America	3.0%	0.08%	80	>80%	MC
LPX Europe	3.0%	0.06%	80	>80%	MC
LPX UK	4.0%	0.06%	20	>75%	MC

**Table 3:** Ratios of Liquidity Analysis

<sup>a</sup> LPX reserves the right to deviate from the liquidity thresholds as depicted in Table 3, in case of minor violations in order to minimize fluctuations in the index. LPX reserves the right to consult stakeholders regarding the current liquidity of index constituent securities.

<sup>b</sup> different values for leaving/entering the index.

<sup>c</sup> Ranking that is oriented to the market capitalisation (at the time of the liquidity analysis) refers to Ranking MC.

<sup>3</sup>The use of annual averages implies that a minimum trading history of one year is a prerequisite for an instrument to become a potential eligible member of a LPX index.

## Ranking

Generally, the LPX Listed Private Equity Index Series are ranked according to the market capitalisation of the underlying constituents. Specifically, the companies that fulfil the liquidity criteria as outlined in Table 3 are brought into a ranking list according to their market capitalisation (at the time of the liquidity analysis).

## Time and Frequency of the Liquidity Analysis

The liquidity analysis is carried out twice a year on the first trading day in December and June and serves as a basis for the composition of the LPX Listed Private Equity Index Series.

## Ordinary Adjustment

An ordinary adjustment of the LPX indices takes place according to the predefined chaining dates for the LPX indices as outlined in Table 1.2 on a half-yearly (quarterly) basis based on closing prices of the respective chaining date. The effective date of the new composition is, by definition, one trading day after the chaining date. Companies that no longer fulfil one of the “KO criteria” as outlined in Table 3 are replaced. In such a case, the successor is the company with the highest rank better than “ $n$ ”<sup>4</sup> that was not previously included in the index, where “ $n$ ” indicates the number of companies in the respective index.

Index	R1	R2	R3
LPX50	60	50	25
LPX Major Market	$[n \times 1.2]$	n	$[\frac{n}{2}]$
LPX Buyout	$[n \times 1.2]$	n	$[\frac{n}{2}]$
LPX Composite	$[n \times 1.2]$	n	$[\frac{n}{2}]$
LPX Europe	$[n \times 1.2]$	n	$[\frac{n}{2}]$
LPX America	$[n \times 1.2]$	n	$[\frac{n}{2}]$
LPX Venture	$[n \times 1.2]$	n	$[\frac{n}{2}]$
LPX Direct	$[n \times 1.2]$	n	$[\frac{n}{2}]$
LPX FoF	$[n \times 1.2]$	n	$[\frac{n}{2}]$
LPX UK	$[n \times 1.2]$	n	$[\frac{n}{2}]$
LPX Mezzanine	$[n \times 1.2]$	n	$[\frac{n}{2}]$

**Table 4:** Ranking-Supported Adjustments

A constituent of the index that is ranked in the respective ranking list at R1 or worse is replaced, assuming a constituent exists, which is ranked at R2 or better in the ranking list. A non-index-constituent that is ranked at R3 or better in the respective ranking list is included in the index, if a company currently in the index has a lower rank than R2.

At the end of the process of ordinary adjustments, there is a new constituent list for the respective index. At the same time, a new ranking list of possible successors is created. These ranking lists are created using the methodology as outlined in Table 3, i.e., those companies (not currently in the index) with the highest market capitalisation get the top rank and are therefore the first candidates to advance in case of an ordinary adjustment.

<sup>4</sup> $[x]$  denotes the largest integer smaller than  $x$ .

**Extraordinary Adjustment**

Adjustments due to extraordinary events will also be carried out. LPX AG reserves the right to deviate from the said rules for ordinary or extraordinary adjustment in exceptional cases. The adjustments applied will be communicated in advance via appropriate channels.

**Constituent Replacement due to a Delisting** Constituents that have applied for a de-listing at an exchange or for whom bankruptcy proceedings have been adjudicated will be excluded from the index effective not later the day when the security is last traded at an exchange. In case the security is removed before that date, LPX AG will communicate the change in index composition in advance via appropriate channels. The company with the highest rank of the successor list will succeed in the index as outlined in Section 2.2.

**Merger of Two Index Constituents** If an existing index constituent is acquired for eligible shares (or a combination of eligible shares and cash) by another index constituent, the existing constituent is deleted (not later than) on the effective date of acquisition. The company with the highest rank of the successor list will succeed in the index as outlined in Section 2.2.

**Merger of an Index Constituent with a Non-Index Constituent** If an existing index constituent is acquired for eligible shares (or a combination of eligible shares and cash) by a quoted non-constituent, the merged company is continued in the index if eligible in all other respects of this Guide. If the requirements defined in Section 2.1 are not fulfilled, the merged company is replaced by the company with the highest rank of the successor list.

**Spin-off** If an existing index constituent spins off a company, the spun-off company enters the index for a period of minimum 5 trading days. After that period the company will be removed from the index or, in case all criteria are met, will remain in the index.

### 3 Calculation Methods

#### 3.1 Index Formulae (Single Stock Distribution Reinvestment)

The calculation of the LPX indices follows the following formulae:<sup>5</sup>

$$I_t^{TR} = k_t^{TR} \times \frac{\sum_{i=1}^{n_t} p_{i,t} \times w_{i,t} \times aa_{i,t} \times c_{i,t}^{TR}}{\sum_{i=1}^{n_0} p_{i,0} \times aa_{i,0} \times w_{i,0}} \times Basis_0^{TR} \quad (1)$$

$$I_t^{PI} = k_t^{PI} \times \frac{\sum_{i=1}^{n_t} p_{i,t} \times w_{i,t} \times aa_{i,t} \times c_{i,t}^{PI}}{\sum_{i=1}^{n_0} p_{i,0} \times aa_{i,0} \times w_{i,0}} \times Basis_0^{PI} \quad (2)$$

$TR, PI$	Total Return, Price Index
$I_t^{TR}, I_t^{PI}$	Index level (TR, PI)
$k$	Index-specific chaining factor
$n$	Number of constituents in the index
$p$	Price in local currency
$w$	Exchange rate
$aa$	Capped number of shares (constant between chaining dates)
$c$	Current adjustment factor
$Basis$	Index-specific constant value
$t$	Index of time (daily)
$i$	Index of index constituents

#### 3.2 Index Formulae (Dividend Reinvestment across all Constituents)

The LPX Composite index follows a calculation formulae that assumes dividend reinvestment across all index constituents  $i$ . The index calculation formulae is given by

$$I_t^{TR} = I_{t-1}^{TR} \times \frac{\sum_{i=1}^{n_t} p_{i,t} \times w_{i,t} \times aa_{i,t} \times e_{i,t}}{\sum_{i=1}^{n_{t-1}} p_{i,t-1} \times aa_{i,t-1} \times w_{i,t-1} \times E_{i,t-1} - \sum_{j=1}^{d_t} DI_{j,t}^{TR} \times (1 - Q) \times aa_{j,t} \times w_{j,t} \times e_{j,t}} \quad (3)$$

$$I_t^{PI} = I_{t-1}^{PI} \times \frac{\sum_{i=1}^{n_t} p_{i,t} \times w_{i,t} \times aa_{i,t} \times e_{i,t}}{\sum_{i=1}^{n_{t-1}} p_{i,t-1} \times aa_{i,t-1} \times w_{i,t-1} \times E_{i,t-1} - \sum_{j=1}^{d_t} DI_{j,t}^{PI} \times (1 - Q) \times aa_{j,t} \times w_{j,t} \times e_{j,t}} \quad (4)$$

#### 3.3 Cap

One week before each chaining date, the weight of any constituent (i.e., the number of shares  $aa_i$ ) is determined in such a way that "Current CAP" holds for every index constituent, as defined in Table 1.2. Between each chaining date, which occurs semi-annually or quarterly, depending on the respective index,  $aa_i$  remains constant. This methodology is applied to all LPX index series except for the LPX Direct US index, which is treated in accordance to the methodology as described in Section 3.4. The chaining dates of the LPX indices are outlined in Table 1.2.

<sup>5</sup>The formulae described in Section 3.1 apply to all LPX indices with the exception of the LPX Composite, which is calculated according the index calculation algorithm outlined in Section 3.2.

$TR, PI$	Total Return, Price Index
$I_t^{TR}, I_t^{PI}$	Index level (TR, PI)
$d$	Number of constituents that go ex dividend
$DI^{TR}$	Cash dividends and special distributions
$DI^{PI}$	Cash dividends and special distributions excluding regular dividends
$e$	Current adjustment factor (see formula 7)
$j$	index $j = 1, 2 \dots, d$ denotes the companies that go ex dividend
$Q$	Denotes flat withholding tax of 25 %
	Deviations: For the LPX Direct Index, $Q$ denotes a flat withholding tax of 15 %, except for US incorporated securities, where $Q = 0$

### 3.4 Free-float adjusted Cap

For the LPX Direct US index an extended capping methodology applies. For each ordinary chaining, which is conducted on a quarterly basis, the “Free Float Factor” for each index constituent security is determined based on publicly available information. The minimum Free Float Factor for an eligible constituent instrument is 20%. The free-float adjusted market capitalization is determined for each index constituent security and ranked in descending order. In case that the sum of weights of the index constituents that show a weight greater than 4.8% exceeds 45% (hereinafter referred to as “Limit”), the weight of the first stock, which causes the breach of the Limit, is capped to 4.5%. This process is conducted iteratively until the Limit holds. The excess of the free-float adjusted market capitalization of the capped index constituents is allocated value-weighted to the remaining stocks of the index, which show an index weight smaller than 4.5%. In case this reallocation process leads to a weight greater than 4.5% for a constituent security (i.e., the first stock that is not capped to 4.5%), the stock is capped to 4.5% until the Limit holds and none uncapped stock after reallocation shows a weight greater than 4.5%.

### 3.5 Corporate Actions

For the calculation of the LPX indices the following corporate actions are taken into account. The adjustment factors are defined for both price (PI) and total return (TR) index. The following formulae is applied to determine the adjustment factors:

$$c_{i,t}^{TR} = a_{i,t}^{TR} \times b_{i,t}^{TR} \times e_{i,t}^{TR} \times f_{i,t}^{TR} \quad (5)$$

$$c_{i,t}^{PI} = a_{i,t}^{PI} \times b_{i,t}^{PI} \times e_{i,t}^{PI} \times f_{i,t}^{PI} \quad (6)$$

$$e_{i,t} = b_{i,t}^{PI} \times e_{i,t}^{PI} \times f_{i,t}^{PI} \quad (7)$$

where the auxiliary factors  $a, b, e, f$ , for both the price (PI) and total return (TR) version are defined in the following paragraphs.

#### Cash Dividends and Special Distributions

Cash dividends include regular dividends (denoted by and expressed per share on the ex date), as well as special cash dividends. Other special distributions include bonus shares as well as spin-offs (denoted by SD and expressed per share on the ex date). For the TR indices all cash dividends and special distributions are included in the calculation. In contrast, for the PI indices only the special distributions are considered. The following formulae applies to the auxiliary factor  $a$ :

$$a_{i,t}^{TR} = \begin{cases} 1, & \text{if } t = 1 \\ a_{i,t-1}^{TR} & \text{if } t \neq k, D_{i,t} = 0, SD_{i,t} = 0 \\ \left(1 + \frac{(1-Q)D_{i,t}}{p_{i,t-1} - (1-Q)D_{i,t}}\right) \times a_{i,t-1}^{TR} \text{ or } \left(1 + \frac{(1-Q)SD_{i,t}}{p_{i,t-1} - (1-Q)SD_{i,t}}\right) \times a_{i,t-1}^{TR}, & \text{if } t \neq k, D_{i,t} \neq 0 \text{ or } SD_{i,t} \neq 0 \end{cases} \quad (8)$$

$$a_{i,t}^{PI} = \begin{cases} 1, & \text{if } t = 1 \\ a_{i,t-1}^{PI} & \text{if } t \neq k, SD_{i,t} = 0 \\ \left(1 + \frac{(1-Q)SD_{i,t}}{p_{i,t-1} - (1-Q)SD_{i,t}}\right) \times a_{i,t-1}^{PI} \text{ or } \left(1 + \frac{(1-Q)SD_{i,t}}{p_{i,t-1} - (1-Q)SD_{i,t}}\right) \times a_{i,t-1}^{TR}, & \text{if } t \neq k, SD_{i,t} \neq 0 \end{cases} \quad (9)$$

with

$k$	Index of chaining dates
$t$	Index of time (daily)
$i$	Index of constituents

### Stock Splits and Reverse Splits

This section does not only include stock splits, but also reverse splits (stock consolidation). The split ratio is denoted by  $SPR$  on the ex date. The auxiliary adjustment factor  $b$  is calculated according to the following formulae

$$b_{i,t}^{TR} = \begin{cases} 1, & \text{if } t = 1 \\ b_{i,t-1}^{TR} & \text{if } t \neq k, SPR_{i,t} = 1 \\ SPR_{i,t} \times b_{i,t-1}^{TR} & \text{if } t \neq k, SPR_{i,t} \neq 0 \end{cases} \quad (10)$$

$$b_{i,t}^{PI} = b_{i,t}^{TR} \text{ for all } i,t \quad (11)$$

### Bonus Shares of the same Company

Bonus shares from the same company are treated equivalently as a stock split. The variable  $B$  denotes the number of bonus shares per share held on the ex date. The auxiliary adjustment factor  $b$  is calculated according to the following formulae

$$e_{i,t}^{TR} = \begin{cases} 1, & \text{if } t = k \\ e_{i,t-1}^{TR} & \text{if } t \neq k, B_{i,t} = 0 \\ (1 + B_{i,t}) \times e_{i,t-1}^{TR} & \text{if } t \neq k, B_{i,t} \neq 0 \end{cases} \quad (12)$$

$$e_{i,t}^{PI} = e_{i,t}^{TR} \text{ for all } i,t \quad (13)$$

### Subscription Rights

Subscription rights are not taken into account by LPX AG until the ex date, where the value of the subscription rights is reinvested in the company according to the subscription rate ratio  $SRR$  leading

to the same amount of invested capital than before the transaction. The auxiliary adjustment factor  $f$  is calculated according to the following formulae

$$f_{i,t}^{TR} = \begin{cases} 1, & \text{if } t = k \\ f_{i,t-1}^{TR} & \text{if } t \neq k, SRR_{i,t} = 1 \\ SRR_{i,t} \times f_{i,t-1}^{TR} & \text{if } t \neq k, SRR_{i,t} \neq 0 \end{cases} \quad (14)$$

$$f_{i,t}^{PI} = f_{i,t}^{TR} \text{ for all } i,t \quad (15)$$

An representative example is presented below:

	Formulae	Constituent
Shares to be issued	(1)	1000
Old number of shares	(2)	3000
Share price <sub>t-1</sub>	(3)	100
Issue price of new shares	(4)	80
Subscription ratio	(5)	3
Expected share price after the issue	(6) = [(1) × (4) + (2) × (3)] ÷ [(1) + (2)]	95
Value of subscription right (share price dilution)	(7) = [(3) - (6)]	5
Number of shares in the index	(8)	3000
Value of subscription rights	(9) = [(7) × (8)]	15000
Number of additional shares	(10) = [(9) ÷ (6)]	157.89
Correction factor	(11) = [(10) + (8)] ÷ (8)	1.052632

**Table 5:** Example: Subscription Rights

### Other Corporate Actions

Any corporate actions, which have not been outlined in the aforementioned paragraphs, but which will be taken into account for the calculation of the LPX index series, are communicated in advance via appropriate channels.

## 4 Chaining

An overview on the ordinary chaining dates of the LPX Listed Private Equity Index Series is provided in Table 1.2. Due to extraordinary corporate events as outlined in Section 3 there may be also extraordinary chaining, which follow the same methodology as for the ordinary chaining. On every calculation day, LPX AG determines a chaining factor. The index-specific chaining factor  $K$  is calculated as follows:

$$k_t^{TR} = \begin{cases} 1, & \text{if } t = 0 \\ \frac{TRIndex}{ZW_{t=j}} & \text{if } t = j + 1 \\ k_{t-1}^{TR} & \text{if } t \neq j + 1, t \neq 0 \end{cases} \quad (16)$$

$$k_t^{PI} = \begin{cases} 1, & \text{if } t = 0 \\ \frac{PIIndex}{ZW_{t=j}} & \text{if } t = j + 1 \\ k_{t-1}^{PI} & \text{if } t \neq j + 1, t \neq 0 \end{cases} \quad (17)$$



The index is calculated with the old index composition at a chaining date, while the intermediate value  $ZW$  is calculated with the new index composition. The intermediate value is calculated as follows:

$$ZW_{t=j}^{TR} = \frac{\sum_{i=1}^{n_t} p_{i,t} \times w_{i,t} \times aa_{i,t}}{\sum_{i=1}^{n_t} p_{i,0} \times w_{i,0} \times aa_{i,0}} \times Basis_0^{TR} \quad (18)$$

$$ZW_{t=j}^{PI} = \frac{\sum_{i=1}^{n_t} p_{i,t} \times w_{i,t} \times aa_{i,t}}{\sum_{i=1}^{n_t} p_{i,0} \times w_{i,0} \times aa_{i,0}} \times Basis_0^{PI} \quad (19)$$

## 5 Amendments

- i The design and calculation methodology of the LPX Listed Private Equity Index Series is overseen by index oversight on a regular basis at least once per year. The Index Oversight Directive is available upon request to all stakeholders. In case of a revision of the Guide, all stakeholders will be informed as soon as possible. The Guide is publicly available on the LPX corporate website.
- ii For complaints please contact [complaints@lpx-group.com](mailto:complaints@lpx-group.com). Details concerning the LPX complaint process can be obtained upon request.

## 6 Data Vendor Codes

The LPX indices are available via major third party data providers. An overview on the various data vendor codes is depicted in the following table.

Total Return TR							
Name	CCY	Base Date	Valor CH	ISIN	Bloomberg	Datastream	Reuters
LPX Composite	EUR	31.12.01	CH2561635	CH0025616357	LPXCMPTR	LPXCOME	.LPXCMTR
	CHF	31.12.01	CH3064810	CH0030648106	LPXCMPTC		.LPXCMTC
	GBP	31.12.01	n/a	DE000SLA3PE7	LPXRCGTR	n/a	.LPXRCGTR
LPX50	EUR	31.12.93	CH2273754	CH0022737545	LPX50TR	LPX50IE	.LPX50TR
	CHF	31.12.93	CH3064806	CH0030648064	LPX50TC		.LPX50TC
	USD	31.12.93		DE000SLA0PN4	LPX50TU		
LPX Major Market	EUR	31.12.97	CH2223370	CH0022233701	LPXMMITR	LPXMAME	.LPXMMTR
	CHF	31.12.97	CH2876564	CH0028765649	LPXMMITC		.LPXMMTC
LPX Buyout	EUR	31.12.93	CH2602948	CH0026029485	LPXABOTR	LPXBUYE	.LPXBOTR
	CHF	31.12.93	CH2691113	CH0026911138	LPXABOTC		.LPXBOTC
LPX Mezzanine	EUR	31.12.03	CH3064813	CH0030648130	LPXMEZTR	LPXMEZE	.LPXMZTR
	CHF	31.12.03	CH3064814	CH0030648148	LPXMEZTC		.LPXMZTC
LPX Venture	EUR	31.12.93	CH2614410	CH0026144102	LPXVENTR	LPXVENE	.LPXVETR
	CHF	31.12.93	CH3064807	CH0030648072	LPXVENTC		.LPXVETC
LPX Direct	EUR	31.12.98	CH3630400	CH0036304001	LPXIDITR	LPXDIRE	.LPXDITR
LPX Direct US	USD	31.12.98	n/a	DE000SLA4DT9	LPXDITU	n/a	.LPXDITU
LPX FoF	EUR	31.12.99	CH2614436	CH0026144367	LPXINDTR	LPXINDE	.LPXINTR
	CHF	31.12.99	CH3064809	CH0030648098	LPXINDTC		.LPXINTC
LPX America	EUR	31.12.97	CH2614430	CH0026144300	LPXAMETR	LPXAMRE	.LPXAMTR
	CHF	31.12.97	CH3064808	CH0030648080	LPXAMETC		.LPXAMTC
LPX Europe	EUR	31.12.93	CH2614420	CH0026144201	LPXEURTR	LPXEURE	.LPXEUTR
	CHF	31.12.93	CH2876579	CH0028765797	LPXEURTC		.LPXEUTC
LPX UK	EUR	31.12.98	CH3064811	CH0030648114	LPXUKTR	LPXUKIE	.LPXUKTR
	GBP	31.12.98	CH3064812	DE000SLA9PE4	LPXIUKTU		.LPXIUKTU

**Table 6:** Data Vendor Codes - Total Return Indices

Price Index PI							
Name	CCY	Base Date	Valor CH	ISIN	Bloomberg	Datastream	Reuters
LPX Composite	EUR	31.12.01	CH2561655	CH0025616555	LPXCMPI	LPXCOME	.LPXCMPI
	CHF	31.12.01	CH3064819	CH0030648197	LPXCMPPC		.LPXCMPC
	GBP	31.12.01	n/a	DE000SLA2PE9	LPXRCGPI	n/a	.LPXRCGPI
LPX50	EUR	31.12.93	CH2390630	CH0023906305	LPX50PI	LPX50IE	.LPX50PI
	CHF	31.12.93	CH3064815	CH0030648155	LPX50PC		.LPX50PC
	USD	31.12.93		DE000LSA1PN2	LPX50PU		
LPX Major Market	EUR	31.12.97	CH2354257	CH0023542571	LPXMMIPI	LPXMAME	.LPXMMPI
	CHF	31.12.97	CH2876538	CH0028765383	LPXMMIPC		.LPXMMPC
LPX Buyout	EUR	31.12.93	CH2602950	CH0026029501	LPXABOPI	LPXBUYE	.LPXBOPI
	CHF	31.12.93	CH2691116	CH0026911161	LPXABOPC		.LPXBOPC
LPX Mezzanine	EUR	31.12.03	CH3064823	CH0030648239	LPXMEZPI	LPXMEZE	.LPXMZPI
	CHF	31.12.03	CH3064824	CH0030648247	LPXMEZPC		.LPXMZPC
LPX Venture	EUR	31.12.93	CH2614412	CH0026144128	LPXVENPI	LPXVENE	.LPXVEPI
	CHF	31.12.93	CH3064816	CH0030648163	LPXVENPC		.LPXVEPC
LPX Direct	EUR	31.12.98	CH3630412	CH0036304126	LPXIDIPI	LPXDIRE	.LPXDIPI
LPX Direct US	USD	31.12.98	CH3630412	DE000SLA4DP7	LPXDIPU	n/a	.LPXDIPU
LPX FoF	EUR	31.12.99	CH2614451	CH0026144516	LPXINDPI	LPXINDE	.LPXINPI
	CHF	31.12.99	CH3064818	CH0030648189	LPXINDPC		.LPXINPC
LPX America	EUR	31.12.97	CH2614432	CH0026144326	LPXAMEPI	LPXAMRE	.LPXAMPI
	CHF	31.12.97	CH3064817	CH0030648171	LPXAMEPC		.LPXAMPC
LPX Europe	EUR	31.12.93	CH2614423	CH0026144235	LPXEURPI	LPXEURE	.LPXEUPI
	CHF	31.12.93	CH2876573	CH0028765730	LPXEURPC		.LPXEUPC
LPX UK	EUR	31.12.98	CH3064820	CH0030648205	LPXUKPI	LPXUKIE	.LPXUKPI

Table 7: Data Vendor Codes - Price Indices

# LPX GROUP

LPX AG  
Florastrasse 17  
8008 Zürich  
Switzerland

T: +41 (0) 44 38 290 20

F: +41 (0) 44 38 290 21

M: [info@lpx.ch](mailto:info@lpx.ch)

W: [www.lpx-group.com](http://www.lpx-group.com)

W: [www.lpx.ch](http://www.lpx.ch)

W: [www.nmx-infra.ch](http://www.nmx-infra.ch)

