



INDEX RULE BOOK

CAC® Low Risk &

AEX® Low Risk Indices

Version 15-01

Effective from 1 October 2015

indices.euronext.com

Index

1. Index Summary	1
2. Governance and Disclaimer	3
2.1 Indices	3
2.2 Supervisor	3
2.3 Compiler	3
2.4 Cases not covered in rules	3
2.5 Rule book changes	3
2.6 Liability	3
2.7 Ownership and trademarks	3
3. Publication	4
3.1 Dissemination of index values	4
3.2 Exceptional market conditions and corrections	4
3.3 Announcement policy	4
4. Calculation	5
4.1 Calculation of the price index	5
4.2 Currency conversion	5
4.3 Total return index calculation	5
5. Index reviews	6
5.1 General aim and frequency of reviews	6
5.2 Index universe and selection principle	6
5.3 Periodical update of weighting	7
6. Corporate Actions	8
6.1 General	8
6.2 Removal of constituents	8
6.3 Split up / spin-off	8
6.4 Early inclusion of non-constituents	8
6.5 Dividends	9
6.6 Rights issues and other rights	9
6.7 Bonus Issues, stock splits and reverse stock splits	9
6.8 Changes in number of shares or Free Float	9
7. Index Calculation Formulas	10
8. Definitions	11
8.1 Conseil Scientifique	11
8.2 AEX Steering Committee	11
8.3 Compiler	11

1. INDEX SUMMARY

Factsheet	CAC® Low Risk & AEX® Low Risk Indices
Index names	CAC® Low Risk Index, AEX® Low Risk Index
Index type	Price indices; Net return index and Gross return index versions are also available.
Index governance structure	Euronext acts as Supervisor of the index. The day-to-day management is carried out by Euronext. Finvex Group is the Constituent Agent and determines on a monthly basis the constituents and their weights.
Eligible stocks	SBF 120 index constituents or AEX and AMX index constituents
Selection	Stock are selected from the starting universe and screened for liquidity and risk characteristics two days prior to the review date.
Number of constituents	CACLR: 25-50 AEXLR 20-30
Weighting	Risk optimised weighting as determined by Finvex Group.
Capping	Minimum weight of 1% and Max weight equal to the lowest of the market capitalization weight in the universe plus 2% and the market capitalization weight times 20.
Review of composition	Monthly
Review of free float and capping	n.a.
Review of number of shares	Monthly
Base Currency	Euro

Reference Data

Index name	Isincode	Mnemo	Bloomberg Code	Reuters code	Base date	Base value	Publication since
CAC® Low Risk	QS0011245329	CACL	CACL	.CACL	18-01-02	1000	15-10-12
CAC® Low Risk NR	QS0011245337	CALRN	CALRN	.CALRN	18-01-02	1000	15-10-12
CAC® Low Risk GR	QS0011245345	CALRG	CALRG	.CALRG	18-01-02	1000	15-10-12
AEX® Low Risk	QS0011245295	AEXLR	AEXLR	.AEXLR	18-01-02	1000	15-10-12
AEX® Low Risk NR	QS0011245303	AELRN	AELRN	.AELRN	18-01-02	1000	15-10-12
AEX® Low Risk GR	QS0011245311	AELRG	AELRG	.AELRG	18-01-02	1000	15-10-12

2. GOVERNANCE AND DISCLAIMER

2.1 INDICES

This rule book applies to the following indices(hereinafter “index”) owned by Euronext N.V. or its subsidiaries (hereinafter jointly “Euronext”):

- AEX Low Risk Index
- CAC Low Risk Index

The indices have been created in cooperation with Finvex Group. Finvex Group is a specialist research, portfolio construction and index design firm having its registered offices at Arenbergstraat 44, 1000 Brussels, Belgium.

2.2 SUPERVISOR

Euronext acts as supervisor of the index (“Supervisor”). The Supervisor is responsible for monitoring the selection of constituents for the index and ensuring that the index offers a reliable and representative view of the market.

Finvex Group is responsible for the periodical selection and reweighting of constituents for the index. The AEX Steering Committee and the Conseil Scientifique respectively act as independent Supervisors of the index’ underlying indices.

2.3 COMPILER

Euronext is the compiler of the index (“Compiler”). The Compiler is responsible for the day-to-day management of the index and is also responsible for decisions regarding the interpretation of these rules.

2.4 CASES NOT COVERED IN RULES

In cases which are not expressly covered in these rules, operational adjustments will take place along the lines of the aim of the index. Operational adjustments may also take place if, in the opinion of the Compiler, it is desirable to do so to maintain a fair and orderly market in derivatives on this index and/or this is in the best interests of the investors in products based on the index and/or the proper functioning of the markets. The Compiler will report to the Supervisor if it took a decision about a case which is not specifically covered in the rules for comments and review.

2.5 RULE BOOK CHANGES

These rules may be supplemented, amended in whole or in part, revised or withdrawn at any time. Supplements, amendments, revisions and withdrawals may also lead to changes in the way the index is compiled or calculated or affect the index in another way. The Compiler will submit all decisions regarding supplementing, amending, revising or withdrawing these rules to the Supervisor for recommendations or approval.

2.6 LIABILITY

Euronext, the Compiler and the Supervisor are not liable for any losses resulting from supplementing, amending, revising or withdrawing the rules for the index.

The Compiler will do everything within its power to ensure the accuracy of the composition, calculation, publication and adjustment of the index in accordance with relevant rules. However, neither Euronext, nor Finvex Group, nor the Compiler, nor the Supervisor are liable for any inaccuracy in index composition, share prices, calculations and the publication of the index, the information used for making adjustments to the index and the actual adjustments. Furthermore, Euronext, Finvex Group, the Compiler and the Supervisor do not guarantee the continuity of the composition of the index, the continuity of the method of calculation of the index, the continuity of the dissemination of the index levels, and the continuity of the calculation of the index.

2.7 OWNERSHIP AND TRADEMARKS

Euronext owns all intellectual and other property rights to the index, including the name, the composition and the calculation of the index. AEX®, AEX-Index®, AMX®, AMX-Index®, SBF®, SBF 120® and CAC® are registered trademarks of Euronext.

3. PUBLICATION

3.1 DISSEMINATION OF INDEX VALUES

3.1.1 Opening

The opening level is calculated using the last known prices of traded constituents or in the case of constituents that have non-traded, halted or suspended status, the previous day reference prices or estimated prices (for IPOs, buyouts and swap offers).

The official opening level is the first level published after a share price is available for all constituents. Index levels published before the official opening level is published are considered pre-opening index levels.

If, for whatever reason, share prices are not available for all constituents five minutes after Euronext Markets (as defined in the Euronext harmonised rule book) started regular daytime trading, the official opening level will be published as soon as the companies whose share prices are available of the current trading day represent at least 80% of the value of the index at the close of the previous trading day.

3.1.2 Calculation and dissemination

The index is calculated based on the most recent prices of transactions concluded on Euronext Markets. The level of the index is in principle published every 15 seconds. The index is calculated from 09:00 hours until Euronext Markets stop regular daytime trading on the days when the Euronext Markets are open for trading.

3.1.3 Closing level

The closing level is the last level disseminated on the trading day.

3.2 EXCEPTIONAL MARKET CONDITIONS AND CORRECTIONS

The Compiler retains the right to delay the publication of the opening level of the index. Furthermore, the Compiler retains the right to suspend the publication of the level of the index to mark the level of the index indicative if it believes that circumstances prevent the proper calculation of the index.

If prices are cancelled, the index will not be recalculated unless the Compiler decides otherwise.

If the index remains in pre-opening phase during the entire trading session, the last published pre-opening level of the index will be used as the official closing level of the index for that day. In such cases, the Compiler will not calculate an official opening level for the index.

3.3 ANNOUNCEMENT POLICY

The announcement policy is described in the Euronext Indices Announcement policy document that is available on indices.euronext.com/index-rules.

4. CALCULATION

4.1 CALCULATION OF THE PRICE INDEX

The index is calculated on a price return basis. The calculation is based on the current Free Float (see section 8. Definitions) market capitalization divided by the divisor. The divisor was determined on the initial capitalization base of the index and the base level. The divisor is adapted as a result of corporate actions and composition changes.

4.2 CURRENCY CONVERSION

The base currency of the index is Euro (“Base Currency”).

Share prices that are quoted in other currencies than the Base Currency will be converted to the Base Currency using the last known exchange rate observed on Reuters. Closing prices will be converted based on the most recent WM/Reuters spot rates, which are published each business day around 17:00 CET.

4.3 TOTAL RETURN INDEX CALCULATION

4.3.1 Return indices

A net total return index as well as a gross total return index, is calculated and disseminated at the same frequency as the price index. The return indices are obtained by reinvesting the net and gross dividends respectively.

4.3.2 Withholding tax rate

The net dividend is calculated as the gross dividend minus the applicable withholding tax. A table detailing the percentages that are applied is available on the website of Euronext.

4.3.3 Ordinary dividends in shares

If a dividend is distributed in the form of shares only and if this is regarded as ordinary dividend, the return index will be reinvesting a cash equivalent of the dividend. If shareholders may choose between cash or shares the amount which is reinvested will be based on the cash option.

4.3.4 Conversion of dividends declared in other currencies

If a dividend for a constituent is declared in another currency than the Base Currency of the index, then the Compiler will in first instance use the Base Currency amount if investors have the option to be paid in that currency. If the dividend amount is available only in currencies that deviate from the Base Currency, the Compiler will convert the dividend amount using the reference rate for the cum-day (the business day prior to the ex-date). In principle the reference rate will be based on the foreign exchange reference rates as published daily by the ECB.

5. INDEX REVIEWS

5.1 GENERAL AIM AND FREQUENCY OF REVIEWS

5.1.1 General aim of the periodical review

The general aim of the periodical review of the index is to ensure that the selection and weighting of the constituents continues to reflect the underlying market or market segment it represents.

5.1.2 Effective date of reviews

The reviews become effective after the market close of the third Friday monthly.

5.2 INDEX UNIVERSE AND SELECTION PRINCIPLE

5.2.1 Index universe

At each periodical review companies are selected for the index from the set of companies that are expected to be included in the underlying indices after the close of the business day on the date of the periodical adjustment. The underlying indices are AEX, AMX and SBF 120.

5.2.2 Selection criteria

In a first step, the stock specific liquidity risk is reduced through the application of a liquidity filter. Stocks that can be selected for the liquid pool need to have a daily liquidity (measured as the six month average daily volume) of at least:

- EUR 2.5 million for the CAC Low Risk Index
- EUR 2 million for the AEX Low Risk Index

If the retained stocks represent less than 75% of the selection universe in terms of number of stocks, then the 75% most liquid stocks are retained and considered as part of the liquid pool.

A second step of risk reduction is applied to the liquid pool of stocks for the CAC Low Risk Index in order to make this large pool more homogeneous. This step consists of various financial risk analyses based on information derived from the stock prices. Stocks that exhibit more stable financial risk characteristics in terms of downside risk analysis, advanced tail risk analysis and contribution to portfolio risk are retained in the stability pool.

The following step applied to the creation of both indices is portfolio optimisation. The starting point is the estimation process of the covariance and correlation matrices where GARCH models and DCC models are used for ex-ante volatility and time varying beta estimation. Non-normality is captured by a combination of parametric and semi-parametric techniques and rolling window and Hamilton regime switching techniques are used to create robustness in the forecasts. The optimisation model is further constrained by specific hard and soft constraints.

Hard constraints:

- Discrete number of stocks in the resulting optimised index:
 - o Between 25 and 50 for the CAC Low Risk Index
 - o Between 20 and 30 for the AEX Low Risk Index
- Minimum weight per share (cf. section 5.3):
 - o 1% minimum weight for both the CAC Low Risk Index and the AEX Low Risk Index
- Maximum weight per share (cf. section 5.3):
 - o lowest of current weight +2% and current weight x20 for the CAC Low Risk Index
 - o lowest of current weight +2% and current weight x15 for the AEX Low Risk Index

Soft constraints (for the CAC Low Risk Index):

- Target an ex-ante expected variance below a low risk unconstrained equally weighted benchmark
- Target reduced turnover

5.2.3 Selected line

As only one listing – the most active one - is permitted per company, the listing representing the company's ordinary shares is generally used.

5.3 PERIODICAL UPDATE OF WEIGHTING

5.3.1 Weighting in shares

The new weightings in shares of the constituents are based on the new composition of the underlying universe in combination with information on the closing prices of those shares up to and including two trading days prior to the review date, normally the Wednesday.

The new weightings are calculated such that each constituent will have a weight in the index that reflects the optimized risk weight for the component within the overall portfolio. The weighting of the constituent shares will be rounded to the fifth decimal place.

Individual index component weights are capped at the time of the review to ensure the minimum weight is at least 1% and the maximum weight is the lowest of the selection universe market capitalization weight plus 2% and the selection universe market capitalization weight times the maximum multiplier. The maximum multiplier is 15 for the AEX and 20 for the CAC.

5.3.2 Free Float

Not applied for the index.

5.3.3 Capping

Capping factors are not applied, but are reflected in the component weightings.

6. CORPORATE ACTIONS

6.1 GENERAL

The index may be adjusted in order to maintain the continuity of the index level and the composition. The underlying aim is that the index continues to reflect as closely as possible the value of the underlying portfolio.

Adjustments take place in reaction to events that occur with constituents in order to mitigate or eliminate the effect of that event on the index.

6.2 REMOVAL OF CONSTITUENTS

Constituents which are removed from an underlying universe will be removed simultaneously from the Low Risk index.

If a company is removed from the index, the divisor will be adapted to maintain the index level.

6.2.1 Mergers and acquisitions

If the effect of a merger or takeover is that one constituent is absorbed by another constituent the resulting company will remain a constituent of the index. If the merger offer takes place in the form of shares the shares of the target will be replaced by the shares of the acquirer in accordance with the terms of the offer, unless the acquirer won't be included in the underlying universe.

Companies which are added to the composition of the underlying universe or which are re-entered after a temporary removal, will not be added to the Low Risk Indices until the next periodical review.

6.2.2 Delistings, suspensions and company distress

Constituents which are removed from an underlying universe will be removed simultaneously from the Low Risk Index.

The company will be deleted from the index based on either the last known price established during regular daytime trading or else a price determined by the Compiler, whereby the company may also be deleted at EUR 0.

6.2.3 Pricing sources

In the event that the trading in shares is suspended, the last known price established during regular daytime trading will be used.

6.3 SPLIT UP / SPIN-OFF

In the event that a company included in the index is split up, the companies resulting from the split, including the original company where appropriate will continue to be included in the index providing they still qualify as an eligible company in their own right. The index may then temporarily consist of fewer than, or more than 25 companies until the next periodical review takes place.

For the purposes of these rules a split up is taken to mean a legal demerger, a spin-off or another situation which the Compiler deems to be similar.

In case the shareholder of the company which was originally included in the index does not automatically receive shares in a company which is created as a result of the split up, this company is considered to be a newly listed company.

The removal of any non-qualifying company resulting from a split up will take place after the close of the first day of trading in the shares of that company. If all companies resulting from the split are to be removed, the removal will take place at the close of the last trading day before the split.

6.4 EARLY INCLUSION OF NON-CONSTITUENTS

As a rule newly listed companies are considered for inclusion in the index at the time of the periodical index rebalancing if they are added to one of the underlying indices.

6.5 DIVIDENDS

6.5.1 Distinction ordinary and special dividend

The price index will be adjusted for dividends that are special.

The following criteria will be applied to decide whether a dividend should be considered a special dividend:

- a) The declaration of a company of a dividend additional to those dividends declared as part of the company's normal results and dividend reporting cycle; merely an adjustment to the timing of the declaration of a company's expected dividend would not be considered as a special dividend circumstance; or
- b) The identification of an element of a dividend paid in line with a company's normal results and dividend reporting cycle as an element that is unambiguously additional to the company's normal payment.

For the purpose of clarification, no adjustment will be made for the following situations:

1. Payment of ordinary dividends, irrespective of how they are financed;
2. Issue of redeemable shares or any other entitlement in lieu of an ordinary dividend; or
3. Unexpected increase or decrease, resumption or cessation, or change in frequency to an ordinary dividend.

6.5.2 Adjustment for special dividend

The adjustment of the index takes place by a reduction of the closing price of the share in question.

Subsequently the divisor will be adapted in order to maintain the index level. The adjustments will be based on gross amounts.

6.6 RIGHTS ISSUES AND OTHER RIGHTS

In the event of a rights issue the index is adjusted based on the value of the rights only. The divisor will be adapted in such a way that the level of the index remains the same.

The index will be adjusted only if the rights represent a positive value.

The index will also be adjusted if a value can be attributed to a subscription right for convertible bonds, bonds with warrants or warrants with preferential rights for shareholders or similar situations.

6.7 BONUS ISSUES, STOCK SPLITS AND REVERSE STOCK SPLITS

For bonus issues, stock splits and reverse stock splits, the number of shares included in the index will be adjusted in accordance with the ratio given in the corporate action. The divisor will not be changed because of this. The Compiler may regard a bonus issue as the issue of an entitlement in lieu of an ordinary dividend and therefore treat this in accordance with 6.5.1.

6.8 CHANGES IN NUMBER OF SHARES OR FREE FLOAT

Not applicable for this index.

7. INDEX CALCULATION FORMULAS

The general formula for the **price index** is:

$$I_t = \frac{\sum_{i=1}^N Q_{i,t} F_{i,t} f_{i,t} C_{i,t} X_{i,t}}{d_t}$$

Where:

- t Time of calculation
- N Number of constituent equities in index
- $Q_{i,t}$ Number of shares of equity i included in the index on day t
- $F_{i,t}$ Free Float factor of equity i ¹
- $f_{i,t}$ Capping factor of equity i ¹
- $C_{i,t}$ Price of equity i on t
- $X_{i,t}$ Current exchange rate on t ¹
- d_t Divisor of the index on day t

The **total return index** calculation takes two steps: the first step is to transpose the announced dividend payment into index points. This is called the XD adjustment. This uses the following formula:

$$\text{XD adjustment} = \sum_{i=1}^N \frac{g_i * w_i}{d}$$

Where:

- N Number of constituent equities in index
- g_i The announced dividend per share of the i^{th} component stock (for net return index withholding tax is deducted from this dividend);
- w_i The weighting of the i^{th} component stock in the index, based on number of shares included in the index, Free Float factor, capping factor and exchange rate;
- d Divisor of the index.

The second step of the calculation uses the figures calculated in step one (XD adjustment). The dividend is assumed to be reinvested at the close of the ex-date.

$$TR_t = TR_{t-1} \left(\frac{IV_t + XD}{IV_{t-1}} \right)$$

Where:

- TR_{t-1} : Total return index value yesterday;
- TR_t : Total return index value on t;
- IV_{t-1} : Underlying price index yesterday;
- IV_t : Underlying price index on t;

¹ Factor is equal to 1 if not applied for the index

8. DEFINITIONS

8.1 CONSEIL SCIENTIFIQUE

Committee consisting of independent persons which acts as supervisor to the CAC index family and to which all decisions regarding supplementing, amending, revising or withdrawing these rules are submitted for approval. The composition and responsibilities of the Conseil Scientifique are laid down in the Rules of Procedure document that is available on the website.

8.2 AEX STEERING COMMITTEE

Committee consisting of independent persons which acts as supervisor to the AEX index family and to which all decisions regarding supplementing, amending, revising or withdrawing these rules are submitted for approval. The composition and responsibilities of the AEX Steering Committee are laid down in the Rules of Procedure document that is available on the website www.euronext.com.

8.3 COMPILER

Committee of Euronext officials appointed by Euronext.