

- BNPP WORLD BARRA MULTI-FACTOR
SELECT L/S INDEX**
- BNPP WORLD BARRA MULTI-FACTOR
SELECT L/S VARIANT 1 INDEX**
- BNPP WORLD BARRA MULTI-FACTOR
SELECT LONG INDEX**
- BNPP WORLD BARRA MULTI-FACTOR
SELECT SHORT INDEX**
- BNPP WORLD BARRA MULTI-FACTOR
SELECT L/S EXCESS RETURN INDEX**

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1 Introduction

The BNPP World Barra Multi-Factor Select L/S Index (herein, the “Index”)¹ is developed in collaboration with BNP Paribas and is constructed from a long/short strategy that seeks high active exposure to four style factors - Value, Momentum, Quality and Low Volatility less penalty for total risk. The BNPP World Barra Multi-Factor Select L/S Index is inclusive of annual index fee².

To arrive at the BNPP World Barra Multi-Factor Select L/S Index, the BNPP World Barra Multi-Factor Select L/S Variant 1 Index is constructed first, which combines the BNPP World Barra Multi-Factor Select Long Index, the BNPP World Barra Multi-Factor Select Short Index, and Cash Index in a fixed proportion at each rebalancing. For details on construction of the BNPP World Barra Multi-Factor Select Long Index and the BNPP World Barra Multi-Factor Select Short Index, please refer to section 2.2, 2.3 and 2.4.

The BNPP World Barra Multi-Factor Select L/S Index is then constructed by applying the decrement methodology on the BNPP World Barra Multi-Factor Select L/S Variant 1 Index to account for an annual index fee. Please refer to section 2.5 for more details.

The BNPP World Barra Multi-Factor Select L/S Excess Return Index is designed to represent the performance of an investment strategy tracking the BNPP World Barra Multi-Factor Select L/S Index after deducting interest rates. For more details, please refer to section 2.6³.

¹ The Indexes are governed by a set of methodology and policy documents (“Methodology Set”), including the present index methodology document. Please refer to Appendix I for more details.

² Index fee is applied in accordance with the MSCI Decrement Indexes methodology. Refer to section 2.5 for more details. For more information on the MSCI Decrement Indexes Methodology, please refer to <https://www.msci.com/index-methodology> and Appendix VI.

³ Please refer to the MSCI Excess Return Indexes methodology at www.msci.com/index-methodology.

2 Constructing the Index

The BNPP World Barra Multi-Factor Select L/S Index is constructed using the following steps:

- The BNPP World Barra Multi-Factor Select L/S Variant 1 Index is constructed in accordance with section 2.1.
- An annual index fee⁴ of 0.5% is deducted from the daily index return of the BNPP World Barra Multi-Factor Select L/S Variant 1 Index to arrive at the BNPP World Barra Multi-Factor Select L/S Index.

The BNPP World Barra Multi-Factor Select L/S Excess Return Index is constructed by applying the MSCI Excess Return Indexes Methodology to the BNPP World Barra Multi-Factor Select L/S Index.

2.1 Constructing the BNPP World Barra Multi-Factor Select L/S Variant 1 Index

The BNPP World Barra Multi-Factor Select L/S Variant 1 Index is constructed by combining the following three components:

- BNPP World Barra Multi-Factor Select Long Index
- BNPP World Barra Multi-Factor Select Short Index
- Cash Index⁵

The BNPP World Barra Multi-Factor Select Long Index⁶ and the BNPP World Barra Multi-Factor Select Short Index⁷ are constructed from the Optimized Index⁸. Please refer to section 2.4 for more details on the Optimized Index.

The BNPP World Barra Multi-Factor Select Long Index aims to represent the performance of all securities from the Optimized Index with positive security weights. The BNPP World Barra Multi-Factor Select Short Index aims to represent the performance of all securities from the Optimized Index with negative security weights.

⁴ Index fee is applied in accordance with the MSCI Decrement Indexes methodology. Refer to section 2.5 for more details.

⁵ LIBOR USD rate is used until 31-Dec-2018, SOFR is used effective 01-Jan-2019

⁶ Refer to Section 2.2 for more details

⁷ Refer to Section 2.3 for more details

⁸ Refer to section 2.4 for more details

At each Index Review, the three components are combined based on following weights and return variants to create the BNPP World Barra Multi-Factor Select L/S Variant 1 Index:

Component Index	Weight	Return Variant
BNPP World Barra Multi-Factor Select Long Index	100%	Net Total Return
BNPP World Barra Multi-Factor Select Short Index	-95%	Gross Total Return
Cash Index	95%	Total Return

The level of the Cash Index is determined using the daily Cash Index return (“Daily Cash Index Return”) which is calculated on each day “t” as follows:

$$Cash\ Index_t = Cash\ Index_{t-1} \times (1 + Daily\ Cash\ Index\ Return_t)$$

Where:

$$Daily\ Cash\ Index\ Return_t = CR_{t-1} * \frac{ACT_{(t-1,t)}}{Day\ Count}$$

Where:

CR_{t-1} = Short-Term rate⁹ published on the previous business day t-1

$ACT_{(t-1,t)}$ = Number of actual calendar days between business day t-1 and t

$Day\ Count$ = Day count convention used by the short-term rate

Between successive rebalancing, the weights of the component indexes will evolve based on their respective performance.

2.2 BNPP World Barra Multi-Factor Select Long Index

All the securities from the Optimized Index with positive weights are selected for inclusion in the BNPP World Barra Multi-Factor Select Long Index. The weights of the selected securities from the Optimized Index are then normalized to 100%.

2.3 BNPP World Barra Multi-Factor Select Short Index

All the securities from the Optimized Index with negative weights are selected for inclusion in the BNPP World Barra Multi-Factor Select Short Index. The weights of the selected securities from the Optimized Index are then normalized to 100%.

⁹ LIBOR USD rate is used until 31-Dec-2018, SOFR is used effective 01-Jan-2019

2.4 Optimized Index

The Optimized Index is constructed from the MSCI World Index (the “Parent Index”). The following steps are applied in the construction of the Optimized Index:

- Defining the Reference Index
- Defining the Alpha Score
- Defining the Eligible Universe
- Defining the Optimization Setup
- Determining the Optimized Index

The steps mentioned above are defined in detail in the subsequent sections.

2.4.1. DEFINING THE REFERENCE INDEX

The Reference Index is MSCI World Index that is used as the basis to calculate the relative GICS^{®10} sector exposures.

2.4.2. DEFINING THE ALPHA SCORE

The Alpha score is determined by calculating the winsorized (at +/-3) z-score for a weighted combination of the target factor scores. Below is the detailed calculation for the Alpha score.

Calculation of the Alpha Score:

$$\alpha_i = 0.25 * F_{1,i} + 0.25 * F_{2,i} + 0.25 * F_{3,i} + 0.25 * F_{4,i}$$

$F_{j,i}$ = Factor score of each security, i for each of the target factors, j.

The factor scores for the target factors are defined as follows:

- Momentum ($F_{1,i}$) - The Momentum factor score is winsorized (at +/-3) z-score of the Barra Momentum factor score. The Barra Momentum factor score definition is given in Appendix II.
- Value ($F_{2,i}$) – The winsorized (at +/-3) sector-relative z-score calculated using the security-level exposures to earnings-based, asset-based and whole-firm based valuation metrics from the relevant Barra Equity Model. The factor definition is given in Appendix II.
- Quality ($F_{3,i}$) – The winsorized (at +/-3) sector-relative z-score calculated using the security-level exposures to all quality factors from the relevant Barra Equity Model. The factor definition is given in Appendix II.
- Low Volatility ($F_{4,i}$) – The winsorized (at +/-3) Volatility score for each security is calculated by combining the security-level exposures to all volatility factors from the relevant Barra Equity Model . The factor definition is given in Appendix II.

If any of the factor score ($F_{j,i}$) is missing for a security (i), a value of zero is assigned for that factor score ($F_{j,i}$). A minimum of one factor score is required to calculate the Alpha score.

¹⁰ GICS, the global industry classification standard jointly developed by MSCI Inc. and S&P Dow Jones Indices.

2.4.3. DEFINING THE ELIGIBLE UNIVERSE

The Eligible Universe is constructed from the Parent Index after applying the following screens.

2.4.3.1 LIQUIDITY SCREEN

Securities from the Parent Index with 1-month ADTV greater than or equal to USD 10 million are eligible for inclusion in the Optimized Index.

ADTV is defined as Average Daily Traded Value and is calculated as:

$$ADTV_{1M} = \frac{ATV_{1M}}{252}$$

Where ATV_{1M} ¹¹ is annualized 1-month Average Traded Value of the security.¹²

2.4.3.2 SHORTING COST SCREEN

Securities from the Parent Index with shorting cost less than 200 bps are eligible for inclusion in the Optimized Index.¹³

2.4.3.3 COUNTRY SCREEN

Securities from the Parent Index that belong to Israel or New Zealand are excluded from the Index.

2.4.4. DEFINING THE OPTIMIZATION SETUP

The optimization objective is to maximize the Alpha score (representative of the exposures to the set of target factors) less a penalty for total (net) risk at the time of rebalancing. The Common Factor Risk Aversion and Specific Risk Aversion parameters in the optimization are set to 0.0015 and 0.015, respectively. The currency is US Dollar.

2.4.5. OPTIMIZATION CONSTRAINTS

At each Index Review, the following optimization constraints are employed, which aim to meet the objectives of the Optimized Index while ensuring replicability and investability:

	Parameter	Constraint
1	Maximum number of constituents	150 in each leg (Long and Short)
2	Minimum and Maximum weight of security relative to cash	-2.5%, 2.5%
3	Ex-ante Beta exposure relative to the Reference Index	-0.05, 0.05
4	Exposure to Non-Target Barra Style Factors relative to cash	-0.1, 0.1

¹¹ MSCI Index Calculation Methodology at <https://www.msci.com/index-methodology>

¹² Securities with missing values for ATV are ineligible for selection.

¹³ Securities with missing values for shorting cost are ineligible for selection.

5	Minimum and Maximum weight to a Region relative to cash – APAC, Europe and North America ¹⁴	-5% , 5%
6	Exposure to Industry Factors relative to cash	-10%,10%
7	Minimum and Maximum weight to each GICS [®] sector relative to cash	-5%, 5%
8	Active Weight of GICS [®] sector by side relative to the Reference Index, for both Long side and Short side	-15%,15%
9	Gross leverage	195% (100% Long and 95% short)
10	Weight of Cash	95%
11	1-month ADTV Trade Limit ¹⁵	20%

- At each monthly index rebalancing, the weight of each index constituent will not change more than a predefined Trade Limit linked to the stock's Average Daily Traded Value.
- At each monthly index rebalancing, the weight of an index constituent will not be more than +/- 2.5% in absolute terms. When this constraint conflicts with the Trade Limit constraint defined above, the Trade Limit constraint takes precedence.

2.4.6. DETERMINING THE OPTIMIZED INDEX

The Optimized Index is constructed using the Barra Open Optimizer in combination with the relevant Barra Equity Model¹⁶. The optimization uses the Eligible Universe as the universe of eligible securities and the specified optimization objective and constraints to determine the Optimized Index. Infeasible optimizations are handled as explained in Appendix IV.

2.5 Constructing the BNPP World Barra Multi-Factor Select L/S Index

The Index Fee is applied using the MSCI Decrement Indexes methodology¹⁷ on the BNPP World Barra Multi-Factor Select L/S Variant 1 Index to construct the BNPP World Barra Multi-Factor Select L/S Index. The parameters for the decrement application are noted in Appendix VI.

2.6 Constructing the BNPP World Barra Multi-Factor Select L/S Excess Return Index

The BNPP World Barra Multi-Factor Select L/S Excess Return Index is constructed by applying the MSCI Excess Return Indexes Methodology¹⁸ to the BNPP World Barra Multi-Factor Select L/S Index on each index calculation day¹⁹.

¹⁴ Indexes used to group regions are MSCI Europe Index, MSCI Pacific Index, MSCI North America Index

¹⁵ Refer to Appendix III for more details

¹⁶ Please refer to Appendix V for the detailed information on model usage.

¹⁷ Please refer to the MSCI Decrement Indexes Methodology at <http://www.msci.com/index-methodology>.

¹⁸ Please refer to the MSCI Excess Return Indexes methodology at www.msci.com/index-methodology.

¹⁹ Short-term rate is LIBOR USD rate until 31-Dec-2018 and SOFR is used effective 01-Jan-2019

3 Maintaining the Indexes

3.1 Index Reviews

The BNPP World Barra Multi-Factor Select L/S Variant 1 Index, the BNPP World Barra Multi-Factor Select Long Index and the BNPP World Barra Multi-Factor Select Short Index are reviewed on a monthly basis on the first business day²⁰ of the month ('the effective date').

Barra Equity Model data as of the day before the pro-forma rebalancing day is used. This approach aims to capture timely updates to the risk characteristics of the companies. The pro forma Indexes are in general announced five business days before the effective date.

3.2 Daily Decrement Calculation

The performance of the BNPP World Barra Multi-Factor Select L/S Index is computed by reducing the performance of the BNPP World Barra Multi-Factor Select L/S Variant 1 Index by a fixed percentage, on a daily basis using parameters detailed in Appendix VI.

3.3 Ongoing Event Related Changes

The general treatment of corporate events in the BNPP World Barra Multi-Factor Select Long Index , the BNPP World Barra Multi-Factor Select Short Index and the Optimized Index (herein the "Indexes") aims to minimize turnover outside of Index Reviews. The methodology aims to appropriately represent an investor's participation in an event based on relevant deal terms and pre-event weighting of the index constituents that are involved. Further, changes in index market capitalization that occur as a result of corporate event implementation will be offset by a corresponding change in the Variable Weighting Factor (VWF) of the constituent.

Additionally, if the frequency of Index Reviews in the Parent Index is greater than the frequency of Index Reviews in the Index, the changes made to the Parent Index during intermediate Index Reviews will be neutralized in the Index.

The following section briefly describes the treatment of common corporate events within the Index.

No new securities will be added (except where noted below) to the Index between Index Reviews. Parent Index deletions will be reflected simultaneously.

EVENT TYPE

EVENT DETAILS

New additions to the Parent Index

A new security added to the Parent Index (such as IPO and other early inclusions) will not be added to the Index.

Spin-Offs

All securities created as a result of the spin-off of an existing Index constituent will not be added to the

²⁰ Effective from 02 June 2025 the index business day will be defined as all the index business days except the days that are full holidays in New York Stock Exchange, London Stock Exchange, Deutsche Börse Xetra, Tokyo Stock Exchange, SIX Swiss Exchange, Toronto Stock Exchange, or Nasdaq Copenhagen.

Indexes at the time of event implementation. Reevaluation for continued inclusion in the Indexes will occur at the subsequent Index Review.

Merger/Acquisition

For Mergers and Acquisitions, the acquirer's post event weight will account for the proportionate amount of shares involved in deal consideration, while cash proceeds will be invested across the Index.

If an existing Index constituent is acquired by a non-Index constituent, the existing constituent will be deleted from the Index and the acquiring non-constituent will not be added to the Index.

Changes in Security Characteristics

A security will continue to be an Index constituent if there are changes in characteristics (country, sector, size segment, etc.) Reevaluation for continued inclusion in the Index will occur at the subsequent Index Review.

Further detail and illustration regarding specific treatment of corporate events relevant to this Index can be found in the MSCI Corporate Events Methodology book under the sections detailing the treatment of events in Capped Weighted and Non-Market Capitalization Weighted indexes.

The MSCI Corporate Events methodology book is available at: <https://www.msci.com/index-methodology>

Appendix I: Methodology Set

The indexes are governed by a set of methodology and policy documents (“Methodology Set”), including the present index methodology document as mentioned below:

- Description of methodology set – www.msci.com/index/methodology/latest/ReadMe
- MSCI Corporate Events Methodology – www.msci.com/index/methodology/latest/CE
- MSCI Fundamental Data Methodology – www.msci.com/index/methodology/latest/FundData
- MSCI Index Calculation Methodology – www.msci.com/index/methodology/latest/IndexCalc
- MSCI Index Glossary of Terms – www.msci.com/index/methodology/latest/IndexGlossary
- MSCI Index Policies – www.msci.com/index/methodology/latest/IndexPolicy
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- MSCI Decrement Indexes Methodology – www.msci.com/index/methodology/latest/Decrement
- MSCI Excess Return Indexes Methodology – <https://www.msci.com/index/methodology/latest/ExcessReturn>

The Methodology Set for the Indexes can also be accessed from MSCI’s webpage <https://www.msci.com/index-methodology> in the section ‘Search Methodology by Index Name or Index Code’.

Appendix II: Description of Alpha Score

The GEMTLT style factors targeted in the Optimized Index are the four style factor groups and their combinations: Momentum, Value, Quality and Volatility. The model data will be used from a day prior to the rebalancing date. Following are the definitions of factor groups currently used in the Optimized Index.

Momentum:

The Barra Momentum factor score for each security is the winsorized (at +/- 3) z-score of the Momentum factor taken from the relevant Barra Equity Model (currently GEMTLT).

Value:

The Value score for each security is currently based on earnings-based, asset-based and whole firm-based valuation metrics - currently captured by the following three factors, Book-to-Price, Earnings Yield and Long-term Reversal, from the relevant Barra Equity Model (currently GEMTLT). A sector-relative score is derived from the combined score by standardizing (z-score) the latter within each sector and winsorizing at +/- 3.

$$\text{Value}_i = (0.3) * \text{BtoP}_i + (0.6) * \text{EarningsYield}_i + (0.1) * \text{LT Reversal}_i$$

Quality:

The Quality score for each security is currently based on the following quality factors, Profitability, Investment Quality, Earnings Quality, and Leverage, from the relevant Barra Equity Model (currently GEMTLT). A sector-relative score is derived from the combined score by standardizing (z-score) the latter within each sector and winsorizing at +/- 3.

$$\text{Quality}_i = (0.2917) * \text{Profitability}_i + (0.2916) * \text{Investment Quality}_i + (0.2917) * \text{Earnings Quality}_i + (-1) * (0.125) * \text{Leverage}_i$$

Volatility:

The Volatility score for each security is calculated by combining the security-level exposures to two factors - Beta and Residual Volatility - scores. The Beta and Residual Volatility score for each security is the winsorized (at +/- 3) z-score of Beta and Residual Volatility factor scores, respectively taken from the relevant Barra Equity Model (currently GEMTLT).

$$\text{Volatility}_i = (-1) * (0.6) * \text{Beta}_i + (-1) * (0.4) * \text{Residual Volatility}_i$$

Appendix III: Defining Trade Limits

In the monthly Index Review, the Trade Limit for each security (i.e., the maximum-security weight change) is calculated as 20% of its Average Daily Traded Value, assuming a portfolio value of 1 billion USD:

$$\text{Trade Limit} = (20\% * \text{Average Daily Traded Value}) / 1 \text{ billion}$$

The Average Daily Traded Value of a security is calculated as the average of the daily traded values in the one month prior to the Rebalancing Date. The daily traded value of a security is equal to the number of shares traded during the day, multiplied by the closing price of that security

Appendix IV: Handling Infeasible Optimizations

During the monthly Index Review, in the event that there is no optimal solution that satisfies all the optimization constraints defined in Section 2.4.5, the following constraint is relaxed, until an optimal solution is found:

- Relax the active weight of GICS[®] Sector in each leg in steps of +/-1%, up to a maximum of +/-20%

In the event that no optimal solution is found after all the above constraints have been relaxed over all the iterations, the Optimized Index will not be rebalanced for that monthly Index Review.

Appendix V: New Release of Barra[®] Equity Model or Barra[®] Optimizer

The methodology presently uses MSCI Barra Global Equity Model for Long-Term Investors (“GEMLTL”) for the optimization. A new release of the relevant Barra Equity Model or Barra Optimizer may replace the former version within a suitable timeframe.

Appendix VI: Parameters used for the BNPP World Barra Multi-Factor Select L/S Index

	BNPP World Barra Multi-Factor Select L/S Index	Parameters
1	Currency of Calculation	USD
2	Return Variant of the BNPP World Barra Multi-Factor Select L/S Variant 1 Index	Total Return
3	Decrement Type	Fixed Percentage
4	Decrement Application	Geometric
5	Decrement Value	0.5%
6	Day-count Convention	Actual / 365
7	Index Floor	0
8	Decrement Frequency	Daily

Appendix VII: Changes to this Document

The following sections have been modified as of July 2025:

Section 1: Introduction

- Added footnote referring to the “Methodology Set” in Appendix 1
- Added description of the MSCI World Barra Multi-Factor Select L/S Excess Return Index

Section 2: Constructing the Indexes

- Added description of the MSCI World Barra Multi-Factor Select L/S Excess Return Index

Section 2.1: Constructing the MSCI World Barra Multi-Factor Select L/S Variant 1 Index

- Added Daily Cash Index Return calculation

Section 2.4.3.2 Shorting Cost Screen

- Moved shorting cost screen from section 2.4.5 “Optimization Constraints” to a new section 2.4.3.2

Section 2.4.5: Defining the Optimization Setup

- Added optimization currency

Section 2.6: Constructing the MSCI World Barra Multi-Factor Select L/S Excess Return Index

- Added new section for construction of the MSCI World Barra Multi-Factor Select L/S Excess Return Index

Section I: Methodology Set

- Added Methodology Set for MSCI Excess Return Indexes methodology

Section IV: Handling Infeasible Optimization

- Clarified relaxation of the active weight of GICS® Sector constraint

The following sections have been modified as of October 2025:

Section 2.4.3.1: Liquidity Screen

- Added missing value treatment in footnote 12

Section 2.4.3.2: Shorting Cost Screen

- Added missing value treatment in footnote 13

Section 3.1: Index Reviews

- Removed Euronext Paris and added Nasdaq Copenhagen in footnote 20



The following sections have been modified as of November 2025:

- Rebranded all indexes index from “MSCI World Barra Multi-Factor Select” to “BNPP World Barra Multi-Factor Select Index”

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