INDEX GUIDE

MarketVector™ Moody's Analytics US Investment Grade Corporate Bond

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Contents

1 Introduction

In accordance with Art. 13 No. 1 (a) of Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 (the "Benchmark Regulation"), this document provides the rules for establishing, calculating and maintaining the MarketVector™ Bond Index family which is comprised of MVIS®, MarketVector™ and BlueStar® Indexes (together the "Indexes").

MarketVector Indexes GmbH (the "Index Owner") makes no warranties or representations as to the accuracy and/or completeness of the Indexes and does not guarantee the results obtained by persons using the Indexes in connection with trading funds or securities. The Index Owner makes no representations regarding the advisability of investing in any fund or security.

The Index Owner reserves the right to update the rules in this Index Guide at any time. The Index Owner also reserves the right to make, in exceptional cases or in temporary situations, exceptions to the rules in this Index Guide. The Indexes are the property of MarketVector Indexes GmbH. The Index Owner has selected an index calculator to calculate the Indexes.

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1.1 Approval of Index Methodologies

The Index Owner has established the Indexes and their individual methodology covered in this Index Guide. A detailed written "Procedure for Index Development" describes the steps and approvals required to develop, document and approve an Index and its methodology. The intention of the Procedure for Index Development is to ensure that the methodology of an Index meets the requirements of Art. 12 of the Benchmark Regulation and is approved and implemented according to a robust and reliable process. The methodology for each index and its methodology covered in this Index Guide has been analysed by the Index Owner's Index Operations department in order to ensure that it is robust and reliable, has clear rules on use of discretion, allows sustainable validation (based on reasonable back testing) and is traceable and verifiable. Furthermore, the size, liquidity and transparence of the underlying market for each methodology has been tested and particular circumstances for each relevant market have been taken into account.

Each index methodology and the related detailed analysis was presented by the Index Operations Department to the Independent Oversight Function for its approval. Based on the aforementioned approval process and its documentation each Index Methodology was presented to the Management Board (Geschäftsführer) of the Index Owner for final approval.

1.2 Review of this Index Guide

According to Art. 13 No. 1 (b) of the Benchmark Regulation, the Index Owner reviews this Index Guide on an annual basis and immediately in case of special circumstances that require a review. The review takes place in meetings attended by the Independent Oversight Function and the Management Board of the Index Owner. If changes to this Index Guide are considered necessary, the process described in Section 4.2 applies.

2   General Definitions

2.1   Liquidity

Constituents of the indexes must be priced and have sufficient liquidity.

In analysing liquidity of securities for inclusion in the indexes, the Index Owner utilizes analytics published by various data providers. Factors to be considered in analysing liquidity may include, but are not limited to, recent trading volume, number of trades, frequency of trades or trading activity of related securities. If there is insufficient trading volume in a constituent or proposed security to obtain accurate pricing during the immediately preceding month, the security in question will be removed at the next monthly rebalancing.

Liquidity will be tested monthly and rebalancing will occur on each Monthly Rebalancing Date (except in the event of an Event Driven Rebalancing).

2.2   Coupon Payments

The total return gross indexes (TR) include all coupon payments (on a gross basis). No tax is deducted.

2.3   Review Schedule

The Index is rebalanced monthly (the "Monthly Rebalance Date").

The review is based on the (adjusted) closing data on the fifth from the last business day in that month (the "Cutoff Date"). If a security does not trade on a business day, then the last available price for this security will be used.

A "business day" means any day (other than a Saturday or Sunday) on which commercial banks and foreign exchange markets settle payments in Frankfurt.

Adjustments to constituents will be announced four business days prior to the first business day of the next month after close of trading.

The Index is rebalanced after close of business of the last trading day in each month.

The Index Owner can, in exceptional cases, add securities to the index and also remove securities from the index. "

2.4   Dissemination

The end-of-day index values are calculated and disseminated at the end of each Trading Day.

The index is disseminated on days when either the US bond market is open for trading or at least one of the index components of the index is available for trading.

2.5   Pricing Source

Bond prices are sourced from ICE Data Services, LLC.

2.6   Index Currency

The index is calculated with the constituent prices converted to USD, if necessary. Dissemination is in USD.

2 GENERAL DEFINITIONS

Currency pricing is as of 4pm EST with fixed 16:00 London time exchange rates from WM company (please see Reuters page WMRSPOT01 or Bloomberg pages WMCO).

3   Index

The following section defines all relevant index parameters, this includes

- Universe: eligible securities,

- Review: selection and weightings,

- Dissemination: times, currencies and identifiers.

3.1 MVIS® Moody's Analytics US Investment Grade Corporate Bond Index

The MVIS® Moody's Analytics US Investment Grade Corporate Bond Index is designed to track the performance of US dollar-denominated investment grade corporate bonds issued in the US domestic market by US and non-US issuers that offer an excess spread over fair value, while excluding bonds exhibiting the highest probability of being downgraded to non-investment grade, based on proprietary credit risk metrics developed by Moody's Analytics, Inc. ("Moody's Analytics"). The index uses ICE BofA US Corporate Index as its index universe.

The Index Owner constructs the MVIS® Moody's Analytics US Investment Grade Corporate Bond Index using a rules-based methodology that involves the following steps:

1. All bonds from the index universe are grouped into 12 buckets by sector and effective duration. The sectors at this step are defined as financial and non-financial and the duration ranges are 0-3 years, 3-5 years, 5-7 years, 7-10 years and 10-15 years and 15-1000 years.

2. For each bond, an average value of a daily-updated factor called Alpha Factor ("AF") is calculated. This factor measures the excess spread of a bond. AF is calculated as follows:

$$AF_{i,t} = \frac{(\frac{5-day\ average\ OAS_{i,t}}{5-day\ average\ FVS_{i,t}})^2}{Price_{i,t}}$$

Where

- $5-day\ average\ OAS_{i,t}$: 5 day moving average value option adjusted spread for Bond i at time t. A 5-day window as of the Cutoff Date is used in calculating the average OAS. Bonds with zero or negative OAS are excluded.

- $5-day\ average\ FVS_{i,t}$: 5 day moving average value fair value spread for Bond i at time t. A 5-day window as of the Cutoff Date is used in calculating the average FVS. Bonds with zero or negative FVS are excluded.

- $Price_{i,t}$: Price of a bond i at time t. The price as of the as of the Cutoff Date is used.

3. In addition, for each bond, a deterioration probability factor named as Probability of Fallen Angel ("PFA") is calculated. This factor is calculated as follows:

$$PFA_{i,t} = DP_{i,t} * Pr(DowngradeNotches >= notchmin(CurrentRating_{i,t}))$$

Where

- $DP_{i,t}$: 10 day exponential weighted moving average value ("EWMA") deterioration probability ("DP") for Bond i's issuer at time t. In calculating the DP for each bond, a daily-updated downgrade probability factor developed by Moody's Analytics is used. A 10-day window as of the Cutoff Date is used in calculating the EWMA DP. If a bond does not have DP, zero is used instead.

- $Pr(DowngradeNotches >= notchmin(CurrentRating_{i,t}))$: Probability of having a downgrade of sufficient magnitude to produce a fallen angel event, conditional on a downgrade.

- $notchmin(CurrentRating_{i,t})$: Min number of downgrade notches required to produce a fallen angel event, given $CurrentRating_{i,t}$, the current rating of bond i's issuer at time t.

4. All bonds within each bucket are sorted by the 5-day average value of the AF in descending order.

5. Bonds that rank equal to or greater than 95% by 5-day average value of the AF within their respective bucket qualify for the index.

6. Existing components that are between the 60th and 95th percentiles within their respective bucket also qualify for the index if their PFA is smaller than 20%.

Instrument Types

The index is composed of US dollar denominated corporate debt publicly issued in the US domestic market. Qualifying securities must have an investment grade rating (based on its rating in the index universe), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of $750 million.

Original issue zero coupon bonds, 144A securities (with and without registration rights), and pay-in-kind securities (including toggle notes) are included in the index. Callable perpetual securities are included provided they are at least one year from the first call date. Fixed-to-floating rate securities are included provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Contingent capital securities ("cocos") are excluded, but capital securities where conversion can be mandated by a regulatory authority, but which have no specified trigger, are included. Other hybrid capital securities, such as those issues that potentially convert into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms, are also included in the index. Equity-linked securities, securities in legal default, hybrid securitized corporates, eurodollar bonds (USD securities not issued in the US domestic market), taxable and tax-exempt US municipal securities and DRD-eligible securities are excluded from the index.

Non-investment grade bonds are removed from the index at the end of the month in which they are downgraded.

Weighting Methodology

The index uses a modified market cap weighting methodology.

1. Weightings are capped at 25% per business sector in which the issuer of the corporate bonds operates on the index level and the excess weight shall be redistributed proportionally across all other uncapped corporate bonds. The market weight of the uncapped corporate bonds is used as the basis in proportional distribution of the excess weight.

2. Weightings are capped at 3% per issuer of corporate bonds on the index level and the excess weight shall be redistributed proportionally across all other uncapped corporate bonds. The market weight of the uncapped corporate bonds is used as the basis in proportional distribution of the excess weight.

Exceptions in the Backtest of the Index

The index had some exceptions in the backtested period:

- In the very first historical selection (March 2007), the fifth and sixth steps were combined in which bonds equal to or greater than 60% by 5-day average value of the AF within their respective bucket qualify for the index if their PFA is smaller than 20%.

- The 3% issuer cap was not applied until December 2009 review.

The index is rebalanced monthly as of the close of business on the final trading day of each month. There is no minimum number of securities required to comprise the index.

The MVIS® US Moody's Analytics US Investment Grade Corporate Bond Index is calculated as a total return gross index and has the following identifiers:

Index Type	ISIN	SEDOL	WKN	Bloomberg	Reuters
Total Return Gross index	DE000A2QJHW0	BMFKGL1	A2QJHW	MVCI	.MVCI

The index was launched on 19 November 2020 with a base index value of 1000.00 as of 31 March 2007.

The MVIS® Moody's Analytics US BBB Corporate Bond Index is calculated by ICE Data Services, LLC or its affiliates. The calculation of the Index makes use of certain methodologies and calculation formulas as described in the Bond Index Methodologies publication accessible at https://indices.theice.com under the Publication - General Methodology.

4   Ongoing Maintenance

"Event Driven Rebalancing" will only occur following an event which changes the principal amount out-standing (e.g., due to a partial redemption by the issuer, a call or similar event) or changes the pay-out or other fundamental characteristics of the securities, such as a default, including as a result of a bankruptcy or similar event affecting the issuer or a third party guarantor. The Index Owner will consider a security to be in default if it is rated "D" by any one of the three rating agencies mentioned above.

An "Event Driven Rebalancing" may result in the removal of a non-compliant security, or portion thereof, and/or a re-weighting of the index. The Index Owner is responsible for determining if an Event Driven Rebalancing has occurred.

If a Rebalancing Event has occurred after the close of trading on a trading date that is not subject to a recommended early US closing time by SIFMA or, if such day is a trading day but is subject to a recommended early closing time, as published by SIFMA for the US market or on a day that is not a trading day, the index will be adjusted and rebalanced as of the close of business on the next trading day.

4.1   Special Events - MVCI

- In case of a Full Tender, Redemption, Call or Forced Conversion, the constituent is kept in the index with its last available price.

- In case of a Partial Tender, Redemption, Call or Forced Conversion, the constituent is kept in the index with its full weight. The amount outstanding is not adjusted.

- If conversions occur as a result of holder exercises and not as a result of a forced conversion by the issuer, then the resulting rebalancing will not be treated as an Event Driven Rebalancing but, instead, will be reflected in the course of the ordinary monthly rebalancing.

- A bond is identified as trading flat, i.e. the issuer is not able to meet his interest rates payment obligations. Accrued interests and coupons will be set to 0 in the return calculation.

- A debt increase will not be taken into account until the next monthly review.

- If the rating of a bond is set to D from one rating agency, the bond will be kept in the index until the next monthly review.

- In Other Material Events, the Index Owner will review all material changes made to constituents in order to determine whether the constituent continues to satisfy eligibility criteria. In the event of a possible or pending bankruptcy, conservatorship or similar event involving the issuer, the parent of the issuer or the guarantor of the constituent, the Index Owner may, but is not required to remove such constituent. Upon a bankruptcy filing of an issuer, the parent of the issuer or the guarantor of the constituent, the Index Owner may remove the constituent of such issuer at the time of such event even if the security continues to satisfy reporting and other eligibility criteria. In addition, the Index Owner may, but is not required to, remove the constituent upon the occurrence of a material event that could adversely impact the tax treatment to a US tax payer holder or the ability of the index calculator to value the security. For example, to the extent that an issuer of a security is merged with another entity and that merger would result in an adverse change to the holders, the Index Owner may, but would not be required to, remove the security at the next rebalancing, even though the security continues to satisfy reporting and other eligibility criteria.

4.2   Changes to the Index Guide

Any changes to the Index Guide will be reviewed and approved by the Legal and Compliance Department. Legal and Compliance may also request a conclusive description and further information on any change and may consult the operations department on such changes. The key elements to be analysed in this phase of the change process are robustness, transparency, reliability and integrity. The result of the review will be communicated to the operations department. The email will be archived by the operations department.

In case of changes that might immediately change the composition of the index or must be considered material for any other reason also need to be approved by the Independent Oversight Function ("IOF") prior to their publication and implementation.

In case of material changes an advance notice will be published and provided to users. MarketVector Indexes will generally disseminate a notification related to an Index Guide change 30 days prior to the change. A shorter period of time may be applied at MarketVector Indexes' discretion if the index has not been licensed for a financial product to a third party. The notice will describe a clear time frame that gives the opportunity to analyse and comment upon the impact of such proposed material change. Any material comments received in relation to the Index Guide change and MarketVector Indexes' response to those comments will be made publicly accessible after any consultation, except where confidentiality has been requested by the originator of the comments.

4.3   Discretion regarding the Use of Input Data and Extraordinary Events

Pursuant to Art. 12 No.1. (b), MarketVector Indexes has established the following rules identifying how and when discretion may be exercised in the administration of the index.
In case input data are or appear to be qualitatively inferior or different sources provide different data, an extraordinary event, or a situation is not covered by the index rules, MarketVector Indexes may use or change data/index composition at its own discretion according to the following discretion policy after a plausibility check. Regarding input data, this may include:

- Liquidity and size data,

- Country, sector, issuer and type classification,

- Event information,

- Coupons and other secondary data.

Regarding extraordinary events, this may include:

- Trading stops,

- Regulatory actions,

- Detection of fraud,

- Etc.

Any changes must subject to reasonable discretion. The decision on any change must be required, appropriate, commensurable and in line with the index scope and objective and must reasonably consider in a balance weight the interest of Users, investors in related products and the integrity of the market.

Index operations ensures consistency in the use of discretion in its judgement and decision. Employees involved in the operations team must have shown the respective experience and skills. Significant decisions are subject to sign-off by a supervisor. In case of material changes to data the relevant situation will be analysed in detail, described and presented to the IOF and discussed and reviewed with the IOF.

The broad range of possible data quality problems does not allow to define specific steps for each possible instance. MarketVector Indexes will always weight the different interest of the index users, the integrity of the market and other involved parties and determine the least disadvantageous measure that equally considers the relevant interests best.

In order to avoid individual decisions on the use of data in similar cased for the future an update of the index rules can be taken into consideration if applicable. Other possible mitigation measures are the change of input data sources or providers and/or own data research where possible and reasonable.

Records are kept about material judgement or discretion by MarketVector Indexes and will include the reasoning for said judgement or discretion.

4.4 Input Data and Contributor Selection

According to the input data requirements under Art. 11 of the Benchmark Regulation, the following shall apply with regard to the input data used for the management and provision of the index and the relevant input data providers ("Contributors"):

- the input data shall be sufficient to represent accurately and reliably the market or economic reality that the benchmark is intended to measure;

- the input data shall be transaction data, if available and appropriate. If transaction data is not sufficient or is not appropriate to represent accurately and reliably the market or economic reality that the index is intended to measure, input data which is not transaction data may be used, including estimated prices, quotes and committed quotes, or other values;

- the input data shall be verifiable;

- clear guidelines regarding the types of input data, the priority of use of the different types of input data and the exercise of expert judgement, to ensure compliance with the Index Guide and index methodology and the aforementioned requirements are defined in the Code of Conduct for Contributors; and

- where the index is based on input data from Contributors, MarketVector Indexes will obtain, where appropriate, the input data from a reliable and representative panel or sample of Contributors so as to ensure that the resulting index is reliable and representative of the market or economic reality that the index is intended to measure.

In order to control the quality of contributors, MarketVector Indexes will conduct the following controls:

- Evaluate market share, reputation, quality and cost of possible input data sources and providers before selecting them on the basis of the gathered information and data;

- Compare the input data of one Contributor with the input data from one or more other Contributors in order to ensure the integrity and accuracy of the input data and in case of bad quality replace a Contributor with another Contributor.

MarketVector Indexes will not use input data from a contributor if it has any indication that the Contributor does not adhere to its Code of Conduct for Contributors and in such a case shall obtain representative publicly available data.

4.5 Index Formula - MVCI

The index is calculated as

$$Index_t = Index_0 * (1 + TRR_t)$$

with

$Index_t$ = Index Value at time (t),
$Index_0$ = Index value on prior month-end,
TRR_t = Month-to-date index total return at time (t).

For the month-to-date index total return, the following relationship holds:

$$TRR_t = \sum_{i=1}^{n}(BTRR_{i,t} * Wt_{i,0} + TC_{i,m} * Wt_{i,0} * MVA_{i,m})/100.$$

where

$BTRR_{i,t}$ = Month-to-date total return at time (t),
$Wt_{i,0}$ = Beginning of month weight of bond (i),
$TC_{i,m}$ = Transaction cost of bond (i) at month end date(m),
$MVA_{i,m}$ = Market value added percentage to the index for bond (i) at month end date(m),
n = Number of securities in index.

For the month-to-date total return and the index transaction cost, the following relationships hold:

$$
\begin{aligned}
BTRR_{i,t} &= \frac{(p_{i,t} + AI_{i,t} + Cash_{i,t}) * SF_{i,t} * FX_{i,t}}{(p_{i,t-1} + AI_{i,t-1}) * SF_{i,t-1} * FX_{i,t-1}} - 1, \\
Cash_{i,t} &= CC_{i,t} + CS_{i,t} + CE_{i,t}, \\
Wt_{1,0} &= \frac{(p_{i,0} + AI_{i,0}) * SF_{i,0} * A_{i,0} * CF_{i,0} * FX_{i,0}}{\sum_{i=1}^{n}[(p_{i,0} + AI_{i,0}) * SF_{i,0} * A_{i,0} * CF_{i,0} * FX_{i,0}]}, \\
TC_{i,m} &= \frac{spread_{i,m}}{p_{i,m} + AI_{i,m}}, \\
MVA_{i,m} &= max\left(0, \frac{Wt_{i,m} - Wt_{i,m-1}}{Wt_{i,m}}\right).
\end{aligned}
$$

with

$p_{i,t}$	= 4pm EST bid price of bond (i) at time (t),
$AI_{i,t}$	= Accrued Interest of bond (i) at time (t),
$SF_{i,t}$	= Sink Factor of bond (i) at time (t),
$FX_{i,t}$	= Exchange rate of bond (i) at time (t),
$A_{i,t}$	= Amount outstanding of bond (i) at time (t),
$CF_{i,t}$	= Cap/weighting factor of bond (i) at time (t),
$Cash_{i,t}$	= Aggregated cash of bond (i) amount at time (t),
$CC_{i,t}$	= Aggregated coupon payments of bond (i) at time (t), set to 0 at each rebalancing date,
$CS_{i,t}$	= Aggregated sinking payments of bond (i) at time (t), set to 0 at each rebalancing date,
$CE_{i,t}$	= Aggregated extraordinary payments of bond (i) (special event) at time (t), set to 0 at each rebalancing date,
n	= Number of securities in index,
$spread_{i,m}$	= Ask price minus bid price for bond (i) at month end date (m).

For the cash amount, the following relationships hold:

$$
\begin{aligned}
CC_{i,t} &= CC_{i,t-1} + Coupon_{i,t}, \\
CS_{i,t} &= CS_{i,t-1} + SP_{i,t}, \\
CE_{i,t} &= CE_{i,t-1} + RP_{i,t} + RA_{i,t}.
\end{aligned}
$$

with

$Coupon_{i,t}$	= Coupon rate of bond (i) at time (t),
$SP_{i,t}$	= Sinking payment of rate bond (i) at time (t),
$RP_{i,t}$	= Redemption price (incl. accruals and capitalizations) of bond (i) at time (t),
$RA_{i,t}$	= Reinvest Amount of bond (i) at time (t).

4.6   Input Data

The following rounding procedures are used for the index calculation:

- Rounding to 2 decimal places:
  - index values.

All other parameters are not rounded.

4.7   Data Correction and Disruptions

MarketVector Indexes will usually receive information about errors or disruption from calculation agent, client, internal systems (IT) or by monitoring the respective output.
Incorrect or missing input data will be corrected immediately:

- The error is immediately communicated to the calculation agent, if applicable.

- Calculation agent will be asked to investigate the reason for the error.

- An email will be sent to all affected clients to inform them about the error; this includes the reason for the issue and an estimate on when the issue will be solved.

- MarketVector Indexes recalculates missing EOD data points and disseminates to vendors and clients.

In case of a material error,

- Legal and Compliance to check the relevant agreements for liability of the calculation agent.

- If MarketVector Indexes identifies any conduct that may involve manipulation or attempted manipulation of the index by calculation agent it will report this to the regulator.

- Where possible and economically reasonable MarketVector Indexes will try use another calculation agent.

Investigations and communication regarding disruptions with calculation agents will be handled by Compliance and Senior Management. They are either caused by disruptions in calculation or dissemination, which might affect different servicers.

- The disruption is immediately communicated to the calculation/dissemination agent, if applicable.

- Calculation/dissemination agent will be asked to investigate the reason for the disruption.

- An email will be sent to all affected clients to inform them about the disruption; this includes the reason for the issue and an estimate on when the issue will be solved.

- MarketVector Indexes prompts calculation agent to make all efforts to restart index calculation.

- MarketVector Indexes prompts Dissemination agent to make all efforts to restart index dissemination.

- MarketVector Indexes recalculates missing EOD data points and disseminates to vendors and clients.

- Legal and Compliance to check the relevant agreements for liability of the calculation/dissemination agent.

- If MarketVector Indexes identifies any conduct that may involve manipulation or attempted manipulation of the index by calculation/dissemination agent it will report this to BaFin.

- Where possible and economically reasonable MarketVector Indexes will try use another calculation and/or dissemination agent.

5 Appendix

5.1 Changes to the Index Guide

This table contains all changes to the Index Guide after 1 January 2018, when the European Benchmark Regulation became effective.

Date	IG Version	Change
19 November 2020	-	Addition of MVCI
2 August 2021	-	30 days announcement period for Index Guide changes
21 February 2022	-	MVCI: Changes in calculation methodology
31 August 2022	-	Dissemination time for MVCI changed to 4pm EST Discretion in case of events
25 October 2022	-	Updates in methodology for MVCI: Changes in AF computation, update in number of buckets to 12, If DP is missing for a bond, zero used instead
27 May 2024	1.00	Initial publication of the individual index guide and discontinuation of the MarketVector™ Bond Index Guide

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