



INDEX GUIDE

MVIS® GLOBAL BOND INDEXES

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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 MVIS[®] Bond Index family (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.

MVIS[®] is a registered trademark of Van Eck Associates Corporation and therefore protected globally against unlawful usage. The use of MVIS[®] Indexes in connection with any financial products or for benchmarking purposes requires a license. Please contact MarketVector Indexes GmbH for more details.

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 transparency 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 4.3 applies.

2 GENERAL DEFINITIONS

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

All Indexes are rebalanced monthly (the "Monthly Rebalance Date").

The reviews for all indexes are 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.

Indexes are 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 indexes.

2.4 Dissemination

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

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

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 Indexes

The following sections define all relevant index parameters, this includes

- Universe: eligible securities,
- Review: selection and weightings,
- Dissemination: times, currencies and identifiers.

3 INDEXES

3.1 MVIS[®] Moody's Analytics US BBB Corporate Bond Index

The MVIS[®] Moody's Analytics US BBB Corporate Bond Index is designed to track the performance of US dollar-denominated BBB rated 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 BBB Corporate Bond Index using a rules-based methodology that involves the following steps:

1. All bonds from the index universe are grouped into 10 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 10-1000 years.
2. For each bond, an average value of a daily-updated factor called Alpha Factor ("AF") developed by Moody's Analytics is calculated. This factor measures the excess spread of a bond. A 5-day window as of the Cutoff Date is used to calculate the average value of this factor.
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:

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

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.
 - $Pr(DowngradeNotches \geq notchmin(CurrentRating_{i,t}))$: 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 90% 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 90th 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 BBB rated corporate debt publicly issued in the US domestic market. Qualifying securities must have a BBB 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.

3 INDEXES

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. Bonds that are upgraded above BBB rating are removed from the index at the end of the month in which they are upgraded.

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 5% 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 5% 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 BBB 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	DE000A2QHZG9	BMFKGM2	A2QHZG	MVBI	.MVBI

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

3 INDEXES

The MVIS® Moody's Analytics US BBB Corporate Bond Index is calculated by ICE Data Services, LLC or its affiliates.

3.2 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 10 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 10-1000 years.
2. For each bond, an average value of a daily-updated factor called Alpha Factor ("AF") developed by Moody's Analytics is calculated. This factor measures the excess spread of a bond. A 5-day window as of the Cutoff Date is used to calculate the average value of this factor.
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:

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

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.
 - $Pr(DowngradeNotches \geq notchmin(CurrentRating_{i,t}))$: 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

3 INDEXES

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

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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 Investment Grade Corporate Bond Index is calculated by ICE Data Services, LLC or its affiliates.

3.3 MVIS® US Investment Grade Floating Rate Index

The MVIS® US Investment Grade Floating Rate Index is designed to track the performance of US investment grade floating rate notes with an amount outstanding of greater than or equal to 500 million USD.

Instrument Types

The index is composed of USD denominated floating rate notes, issued by corporate entities or similar commercial entities that are public reporting companies in the United States, with at least one investment grade rating. The Index Owner may include new types of floating rate instruments that satisfy the eligibility criteria but, as of the date of this publication, have not yet been created or brought to market in the index. Investment grade floating rate notes must be issued by issuers that are formed as corporations, limited liability companies and similar types of entities that are engaged in a financial or commercial enterprise. Notes issued by governments, sovereigns, quasi-sovereigns, not-for-profit entities and government backed entities are not eligible.

For purposes of selecting securities, the Index Owner does not distinguish between affiliated and non-affiliated holders. Accordingly, securities would be deemed to be outstanding even if held entirely by affiliates of the issuer. Securities included in the index may not be reportable via FINRA's Trade Reporting and Compliance Engine® (TRACE®). Eligible notes may, but are not required to be, listed on a US securities exchange.

Securities must provide for payment in the regular course of business of interest or dividends for inclusion although interest or dividends must be paid at floating rates. Instruments that provide for the ability to defer payment of dividends or coupons are eligible, even if the deferral right is pre-established.

Securities must be USD denominated. Issuers may be either US based or foreign. Issuers or their guarantors must be public reporting companies under Sections 13 or 15(d) of the Securities Exchange Act of 1934. Securities may be publicly registered, exempt from registration under Section 3(a)(2) of the Securities Act of 1933 (the "Act"), distributed to persons who are qualified institutional buyers under Rule 144A of the Act or issued only on a private placement basis.

Securities must be rated "investment grade" or above by one of two rating agencies. "Investment grade" means a rating of Baa3/BBB- or above, as applicable, by these agencies. To be eligible, Securities may not be rated "below investment grade" by one of the two. "Below investment grade" means Ba1/BB+ or below, as applicable, by these agencies.

Repackaged securities linked to a security, a basket of securities or an index, swaps, ETFs, preferred securities, convertible securities, bearer bonds, sukuk bonds, fixed to floating rate bonds, dual currency bonds and asset-backed or other structured securities are not eligible.

Securities included in the index must have a minimum of 6 months remaining to maturity.

Weighting Methodology

The index uses a modified market cap weighting methodology that groups securities into 3 maturity buckets (longest one-third, middle one-third and shortest one-third by maturity). It targets a weight of 66%, 22% and 12% for the longest one-third, middle one-third, and shortest one-third maturity bucket, respectively. Each bucket has equal number of securities. In case the number of securities in the index is not divisible by three: if the remainder is one, it will be given to longest one-third bucket. If the remainder is two, the remainder is evenly distributed between longest one-third and middle one-third buckets. The weight of any single constituent is capped at 2%. If constituents exceed the maximum weight, then the weight will be reduced to the maximum weight and the excess weight shall be redistributed proportionally across all other index constituents. This process is repeated until no securities have weights exceeding the respective maximum weight.

3 INDEXES

1. Calculate the original weight for each of n constituents (C_i)

$$Weight\ C_i = \frac{(3 : 00pm\ Bid\ C_i + Accrued\ Interest\ C_i) * Amount\ Outstanding\ C_i}{\sum_{i=1}^n [(3 : 00pm\ Bid\ C_i + Accrued\ Interest\ C_i) * Amount\ Outstanding\ C_i]}$$

2. Scale the Original Weight

- Sort constituents (C_i) by Maturity Date
- Group them into three buckets (longest third, middle third and shortest third)
- Assign the Target Weight of the bucket as follows:
 - Weight of longest maturity bucket = 66%
 - Weight of middle maturity bucket = 22%
 - Weight of shortest maturity bucket = 12%
- Calculate *Scale1* for each bucket:

$$Scale1 = \frac{Target\ Weight}{\sum_{i=1}^n (Original\ Weight\ in\ each\ bucket)}$$

3. Calculate New Weight

*New Weight = Original Weight * Scale1 of the corresponding bucket.*

4. The weight of any constituent floating rate note may not account for more than 2% of the value of the index.
 - Constituents exceeding 2% weightings in the index are capped at 2% and remaining weight is redistributed proportionately across the remaining constituents that represent less than 2% of the index. The redistribution is repeated accordingly until no class of notes included in the index has a weighting in excess of 2%.
 - Note: The asset diversification rules and 2% weight limit described above applies only to individual floating rate notes. More than one floating rate note of a single issuer or guarantor may be eligible for inclusion in the index, and different floating rate notes issued by the same issuer or guaranteed by the same guarantor will not be aggregated in order to calculate the 2% weight limit. As a result, an issuer or guarantor may represent more than 2% of the index.

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 Investment Grade Floating Rate 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	US57062N1046	B9FKZS0	A1RRU1	MVFLTR	.MVFLTR

The index was launched on 10 February 2011 with a base index value of 1000.00 as of 10 February 2011.

The MVIS® US Investment Grade Floating Rate Index is calculated by Solactive AG.

4 ONGOING MAINTENANCE

4 Ongoing Maintenance

“Event Driven Rebalancing” will only occur following an event which changes the principal amount outstanding (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 - MVFLTR

- For Full Tender, Early Redemption or Full Call, the bond will be treated as cash in all calculations. For the avoidance of doubt a tender must be mandatory, the pure offer to tender a bond will not lead to an adaption of the index.
- A Partial Tender or Partial Redemption will be considered by treating the redemption amount as cash that will be reinvested into the index on the effective redemption date. The bond will still be included in the index. but with a smaller amount outstanding (i.e. a smaller weight) regardless of whether the remaining amount outstanding satisfies the amount outstanding requirements. This bond will then be reviewed for eligibility at the next monthly review.
- Partial Redemptions or Partial Calls that are not scheduled partial redemptions will not be considered in the index until the next rebalancing, taking into account a smaller amount outstanding.
- Distressed Debt Exchange Offers: in case more than 90% of the Amount Outstanding is exchanged in a Distressed Debt Exchange with the new bond having different characteristics (maturity, coupon or Amount Outstanding) or trading at a substantially different price, the old bond will be redeemed at the latest available price with the proceeds held as "Paid Cash" and reinvested into the index on the following rebalancing day.
- If a bond is identified as trading flat, i.e. the issuer is not able to meet his interest rates payment obligations, then accrued interest 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

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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 Special Events - MVCI, MVBI

- 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.

4.3 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 an index or must be considered material for any other reason also need to be approved by the Independent Oversight Function ("IOF")

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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 relevant 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.

4.4 Discretion regarding the Use of Input Data

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 an index.

In case input data are or appear to be qualitatively inferior or different sources provide different data, or a situation is not covered by the index rules, MarketVector Indexes may use or change the data at its own discretion according to the following discretion policy after a plausibility check. This may include

- Liquidity and size data,
- Country, sector, issuer and type classification,
- Event information,
- Coupons and other secondary data.

Any changes to input data that MarketVector Indexes intends to apply because of missing data, different data from different sources or other information concluding the inappropriateness or incorrectness of data must subject to reasonable discretion. The decision on any change must be required, appropriate, commensurable and in line with the respective 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 cases 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 ONGOING MAINTENANCE

4.5 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 an 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 an 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.

5 CALCULATION

5 Calculation

5.1 Index Formula - MVFLTR

The index is calculated as

$$Index_t = Index_R * \frac{MV_t + Cash_t}{BV_R}$$

with

- $Index_t$ = Index Value at time (t),
- MV_t = Market value of bonds at time (t),
- $Cash_t$ = Cash amount at time (t),
- BV_t = Base value at time (t),
- R = previous rebalancing date.

For the market value, the base value and the cash amount, the following relationships hold:

$$BV_t = \sum_{i=1}^n (p_{i,R} + AI_{i,R} + CAP_{i,R} + CP_{i,R}^{adj}) / 100 * SF_{i,R} * A_{i,R} * CF_{i,R} * FX_{i,R},$$

$$MV_t = \sum_{i=1}^n (p_{i,t} + AI_{i,t} + CAP_{i,t} + CP_{i,t}^{adj}) / 100 * SF_{i,t} * A_{i,t} * CF_{i,R} * FX_{i,t},$$

$$Cash_t = CC_t + CS_t + CE_t.$$

with

- $p_{i,t}$ = 4pm EST price of bond (i) at time (t) (bid for MVFLTR),
- $AI_{i,t}$ = Accrued Interest of bond (i) at time (t),
- $CAP_{i,t}$ = Capitalization of coupons of bond (i) at time (t),
- $CP_{i,t}^{adj}$ = Negative accruals (ex-coupon period) of bond (i) at time (t),
- $SF_{i,t}$ = Sink Factor 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),
- $FX_{i,t}$ = Exchange rate of bond (i) at time (t),
- CC_t = Aggregated, weighted coupon payments at time (t), set to 0 at each rebalancing date,
- CS_t = Aggregated, weighted sinking payments at time (t), set to 0 at each rebalancing date,
- CE_t = Aggregated, weighted extraordinary payments (special event) at time (t), set to 0 at each rebalancing date,
- n = Number of securities in index.

5 CALCULATION

For the cash amount, the following relationships hold:

$$CC_t = CC_{t-1} + \sum_{i=1}^n \frac{Coupon_{i,t}}{100} * SF_{i,t-1} * A_{i,t} * CF_{i,R} * FX_{i,t},$$

$$CS_t = CS_{t-1} + \sum_{i=1}^n \frac{SP_{i,t}}{100} * A_{i,t} * CF_{i,R} * FX_{i,t},$$

$$CE_t = \begin{cases} CE_{t-1} + \sum_{i=1}^n \frac{EP_{i,t} + AI_{i,t} + CAP_{i,t} + CP_{i,t}^{adj}}{100} * SF_{i,t-1} * A_{i,t} * CF_{i,R} * FX_{i,t}, & \text{if } EP_{i,t} \neq 0 \\ CE_{t-1}, & \text{if } EP_{i,t} = 0 \end{cases}$$

with

$Coupon_{i,t}$ = Coupon rate of bond (i) at time (t),

$SP_{i,t}$ = Sinking payment of rate bond (i) at time (t),

$EP_{i,t}$ = Extraordinary payment of bond (i) at time (t), where EP can be any payment derived from a corporate action.

5.2 Index Formula - MVCI, MVBI

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.

5 CALCULATION

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).

5 CALCULATION

5.3 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.

5.4 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 an 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 an 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.

6 APPENDIX

6 Appendix

6.1 Names and Tickers

Long Name	Short Name	Symbol
MVIS [®] Moody's Analytics US BBB Corporate Bond Index (TR)	MV MA US BBB Corp. Bond Idx (TR)	MVBI
MVIS [®] Moody's Analytics US Investment Grade Corporate Bond Index (TR)	MV MA US Inv. Grade Corp. Bond Idx (TR)	MVCI
MVIS [®] US Investment Grade Floating Rate Index (TR)	MV US Inv. Grade Fl. Rate Idx (TR)	MVFLTR

6.2 Launch Dates and Base Values

Name	Launch Date	Base Value	Base Date
MVIS [®] Moody's Analytics US BBB Corporate Bond Index (TR)	19 November 2020	1000.00	31 March 2007
MVIS [®] Moody's Analytics US Investment Grade Corporate Bond Index (TR)	19 November 2020	1000.00	31 March 2007
MVIS [®] US Investment Grade Floating Rate Index (TR)	10 February 2011	1000.00	10 February 2011

6 APPENDIX

6.3 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
2 July 2018	2.3	MVEMAG/MVRCOV: Addition of distressed debt exchange offers
12 September 2018	2.4	Inclusion of additional chapters to comply with BMR
30 November 2018	2.5	MVEMAG: Inclusion of government sukuk bonds
1 May 2019	2.6	Removal of MVRCOV, MVRCDE and MVRCDI
19 November 2020	2.7	Addition of MVBI and MVCI, inclusion of BIGUBND
31 April 2021	2.8	MVFLTR: Change of index calculation agent, inclusion of notes with options, change in number of rating agencies required for index qualification, full redemptions reflected intra-month
20 May 2021	2.9	MVFLTR: Clarification in weighting methodology
2 August 2021	3.0	30 days announcement period for Index Guide changes
29 October 2021	3.1	Removal of MVEMAG und sub-indexes
21 February 2022	3.2	MVBI and MVCI: Changes in calculation methodology
31 May 2022	3.3	Removal of BIGUBND

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