MarketVector™ Indexes

INDEX GUIDE

MARKETVECTOR™ GOLD CRYPTO LEADER INDEX

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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 calculating and maintaining the MarketVector™ Digital Assets 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.
MarketVector™ is a registered trademark of Van Eck Associates Corporation and therefore protected against unlawful usage. The use of MarketVector™ Indexes in connection with any financial products or for benchmarking purposes requires a license. Please contact MarketVector Indexes GmbH for more details.

1.1 About HK Imperia AG

The HK Imperia AG, founded in Switzerland in 2025, is the issuer of the HK Imperia Gold Crypto ETP.

1.2 About MarketVector Indexes GmbH

MarketVector Indexes GmbH (the "Index Administrator") develops, monitors and markets the MarketVector™ Indexes, a focused selection of pure-play and investable indexes designed to underlie financial products. MarketVector™ is a registered trademark of Van Eck Associates Corporation and therefore protected globally against unlawful usage. MarketVector Indexes has selected an index calculation agent to calculate the index.

1.3 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.

1.4 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 Review Schedule

The index is rebalanced monthly (The Monthly Rebalance Date).

The reviews is based on the opening data on the fourth but last business day in that month ("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 trading day of the next month at 23:00 CET/CEST ("Announcement date").

The index is rebalanced after closing of the last trading day in each month ("Implementation date").

2.2 Pricing Source

For each component price in the MarketVector™ Indexes, the respective CCIX by CCData (https://ccdata.io) is used. CCIX is a weighted average of the latest available trading price at each exchange covered. Exchanges can be added/removed by decision of CCData.

For clarification, respective CCIX means

- Exchange selection might vary dependent on the respective index rules (see respective constraints per index).
- Exchanges may be excluded if they are not licensed to be added to an index.
- Exchanges are not immediately added/removed, but only on a monthly basis or if required following quality reviews from CCData.
- Values are not backadjusted.

3 Indexes

The following sections define relevant index parameters, including currencies and identifiers.

3.1 MarketVector™ Gold Crypto Leader

The MarketVector™ Gold Crypto Leader Index is designed to track performance of the largest and most liquid digital assets combined in a portfolio with an asset-backed token that represents the price of one fine troy ounce of London Gold Delivery gold bar. It also includes a cash component to keep overall volatility of the portfolio around a given degree of variation.

The index universe of the indexes consists of MarketVector™ Crypto Leaders VWAP Close Index (MVLEADV), PAX Gold (PAXG) ("Combined Portfolio") and a cash component.

In the backtest of this index, the following specific conditions were factored in:

- The gold price per ounce was used before 30 October 2019.
- The cash component is assumed to have a fixed daily return of 0.01% (1 bps) starting from 31 December 2014 until the index launch date.
- MarketVector™ Digital Assets 10 Index (MVDA10) was used before 31 December 2018.
- The index close was only calculated between Monday to Friday until 30 October 2019.

Review procedure: The steps below define how to final weights of the "Combined portfolio" (including sub weights for MVLEADV and PAXG) and cash components are determined.

- Construction of the "Combined portfolio": There are several sub-steps considered in construction of the combined portfolio.
  - On any given date, the natural weight of the each component is the value of the component divided by the sum of the values of both components. For PAXG, the value is PAXG price and for MVLEADV, the value is the MVLEADV index value on any given date.
  - At each monthly cutoff date, the target weight for PAXG is set 75% and the target weight for MVLEADV is set 25% within the "Combined portfolio". The weight factor (*"wf"*) for each component is then calculated by dividing the target weight by the natural weight of each component as of the monthly cutoff date.
  - The *wf* calculated as of the monthly cutoff date for each component is applied on the monthly implementation date.
- Calculation of the index values of the "Combined portfolio": The index values of the combined portfolio is calculated in daily basis starting from 31 December 2014. For the index formula, please refer to Section 5.1.
- Volatility calculation: The volatility calculation is explained below in detail.
  - The cash component is assumed to have a fixed daily return following the Swiss National Bank (SNB) policy rate. Any changes in the policy rate will be reflected at the corresponding review implementation.
  - Exponentially weighted moving average (EWMA) measure and daily returns are used for the volatility calculation.

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The variance is calculated as follows:

for $t > T_0$

$$Variance_{T,t} = \lambda_T \cdot Variance_{T_{t-1}} + (1 - \lambda_T) \cdot [ln(\frac{Value_i}{Value_{i-1}})]^2$$

for $t = T_0$

$$Variance_{T,T_0} = \sum_{i=k+1}^{T_0} \frac{\alpha_{T,k,i}}{TimeFactor_T} \cdot [ln(\frac{Value_i}{Value_{i-1}})]^2$$

where,

$$\alpha_{T,t} = (1 - \lambda_T) \cdot \lambda_T^t$$

and

$$TimeFactor_T = \sum_{i=k+1}^{T_0} \alpha_{T,k,i}$$

T = Term control variable. $T = S$ for short-term volatility, $T = L$ for long-term volatility
λ_T = Decay factor used for the respective term
T_0 = The start date of the "Combined portfolio" index
k = The N^{th} trading day prior to T_0
α_{T_t} = Weight of date t in the volatility calculation for respective term.

The realized volatility is calculated as follows:

$$Realized\ Volatility = \sqrt{n \cdot Variance_{T_t}}$$

where,

* $n = 252$ until 30 October 2019
* $n = \sum_{i=1}^{112}(252 + i)$ between 01 November 2019 and 20 February 2020
* $n = 365$ starting from 21 February 2020

– The realized volatility is calculated based on a short-term measure and a long-term measure. The λ used for long-term measure (λ_T) is 0.97 and the λ used for short-term measure (λ_S) is 0.94.

– The realized volatility is calculated for the cash component and the "Combined portfolio" based on the short-term measure and the long-term measure.

- Weighting: The method below is used in computing the weights of "Combined portfolio" and the cash component within the index.

– The weights (W_n) that are associated with the quadratic equation below are the final component weights:

$$\sigma^2_{Target} = W^2 \cdot \sigma^2_P + (1 - W)^2 \cdot \sigma^2_C + 2 \cdot W^2 \cdot (1 - W)^2 \cdot \rho \cdot \sigma_P \cdot \sigma_C$$

where,

W = Weight of the "Combined portfolio".
$(1 - W)$ = Weight of the cash component.
σ_P = Volatility of "Combined portfolio".
σ_C = Volatility of cash component.
ρ = Correlation between the "Combined portfolio" and cash component
σ_{Target} = The target volatility

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– The quadratic equation above has two solutions, shown by W_1 and W_2:

$$W_1 = \frac{-b + \sqrt{b^2 - 4a \cdot c}}{2a}$$
$$W_2 = \frac{-b - \sqrt{b^2 - 4a \cdot c}}{2a}$$

where,

$$a = \sigma_A^2 + \sigma_B^2 - 2 \cdot \rho \cdot \sigma_A \cdot \sigma_B$$
$$b = 2 \cdot \rho \cdot \sigma_A \cdot \sigma_B - 2 \cdot \sigma_B^2$$
$$c = \sigma_B^2 - \sigma_{\text{Target}}^2$$

– In detecting the final weights, the following approach is applied:
  * The target annual volatility (σ_{Target}) is set 12%.
  * The above quadratic equation is solved at the given target annual volatility for both the short-term volatility measure and the long-term volatility measure.
  * If the solution falls between the range of -1 to 1, the maximum of the two solutions (W_1 and W_2) is used for each volatility measure.
  * If the solution exceeds the range of -1 to 1, the respective volatility measure defaults to using 1 as the solution.
  * The lower of the two solutions from short-term volatility measure and long-term volatility measure is assigned as the final target weight for the "Combined portfolio" (W).
  * The target weight for the cash portion will then be $1 - W$.

– This approach is applied for both short-term volatility measure and long-term volatility measure and in detecting the final weights, both weights derived by volatility measures are taken into account.

- At each monthly cutoff date, the target weights for "Combined portfolio" and cash component are calculated following the method above. The target weight for PAXG within "Combined portfolio" is calculated by multiplying the target weight for "Combined portfolio" with 75% and the target weight for MVLEADV within "Combined portfolio" is calculated by multiplying the target weight for "Combined portfolio" with 25%.
- The weight factor (*"wf"*) for each component is then calculated by dividing the target weight by the natural weight of each component as of the monthly cutoff date.
- The *wf* calculated as of the monthly cutoff date for each component is applied on the monthly implementation date.

In case of a hard fork, the forked asset is not considered for the index. Only in case it is significant enough to replace the old line in terms of market capitalization and acceptance, the Index Owner may decide for a different treatment.

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The index is calculated daily between 00:00 and 24:00 (CET/CEST) and the index values are disseminated to data vendors every 15 seconds. The index is disseminated in EUR and the closing value is calculated at 17:00:00 CET/CEST with fixed 17:00:00 CET/CEST exchange rates.

Adjustments to constituents will be announced four business days prior to the first business day of the next month at 23:00 CET/CEST. The Index is rebalanced at 17:00:00 CET/CEST of the last trading day in each month.

The MarketVector™ Gold Crypto Leader Index has the following identifiers:

Index Type	ISIN	SEDOL	WKN	Bloomberg	Reuters
Price Return Index	DE000SL0KCT9	BP0VP13	SL0KCT	MVGCI	.MVGCI

The index was launched on 12 December 2023 with a base index value of 100 as of 31 December 2015.

4 Ongoing Maintenance

4.1 Changes to Pricing (CCIX)

In case an exchange is added to CCIX or removed from it, the index divisor will not be adjusted.

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 an 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's 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's 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 an 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,
- Event information,
- Other secondary data.

Regarding extraordinary events, this may include:

- Trading stops,
- Regulatory actions (depending on the applicable jurisdiction),
- Hacks,
- Detection of fraud,

- Changes in custodian coverage,
- Etc.

Any changes 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 analyzed 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 in similar cases for the future an update of the index rules can be taken into consideration if applicable. Regarding the use of data, 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 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:

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- 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

5.1 Index Formula

The Indexes are calculated using the Laspeyres' formula:

$$Index\ Value = \frac{\sum_{i=1}^{n} p_i * wf_i * fx_i}{D} = \frac{M}{D}.$$

Where (for all tokens (i) in the Index):

p_i = price,
wf_i = weight factor (if applicable, otherwise set to 1),
fx_i = exchange rate (pricing currency to index currency),
M = market capitalization of the index,
D = divisor.

5.2 Input Data

The following rounding procedures are used for the index calculation:

- Rounding to 3 decimal places:
  - index values,
- Rounding to 6 decimal places:
  - divisors (D),
- Rounding to 18 decimal places:
  - prices (p_i),
  - exchange rates (fx_i),
  - weight factors (wf_i).

5.3 Divisor Adjustments

Index maintenance - reflecting changes in amount outstanding, events, addition or deletion of tokens to the Index - should not change the level of the index. This is accomplished with an adjustment to the divisor. Any change to the tokens in the index that alters the total market value of the index while holding token prices constant will require a divisor adjustment.

$$Divisor_{new} = Divisor_{old} * \frac{\sum_{i=1}^{n} p_i * wf_i * fx_i \pm \Delta MC}{\sum_{i=1}^{n} p_i * wf_i * fx_i}.$$

ΔMC = Difference between closing and adjusted closing market capitalization of the index.

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.
The following list of errors does not affect the indexes, as data are not considered in the calculation process:

- Bad data such as non-numerical price, volume or timestamp,
- Late/delayed transactions,
- Non-reporting exchanges.

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 to 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

6.1 Names and Tickers

Long Name	Short Name	Symbol
MarketVector™ Gold Crypto Leader	MV Gold Cryp Lead	MVGCI

6.2 Launch Dates and Base Values

Name	Launch Date	Base Value	Base Date
MarketVector™ Gold Crypto Leader	12 December 2023	1.00	31 December 2015

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
01 May 2025	1.01	Change in the decimal precision of the index value

7 Disclaimer

It is not possible to invest directly in an index. Exposure to an asset class represented by an index is available through investable instruments or products based on that index. MarketVector Indexes™ does not sponsor, endorse, sell, promote or manage any investment fund or other investment vehicle that is offered by third parties and that seeks to provide an investment return based on the performance of any MarketVector™ Index ('Financial Product'). MarketVector Indexes™ makes no assurance that investment products based on any MarketVector™ Index will accurately track index performance or provide positive investment returns. MarketVector Indexes™ is not an investment advisor, and it makes no representation regarding the advisability of investing in any Financial Product. A decision to invest in any Financial Product should not be made in reliance on any of the statements set forth in this document.

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