



INDEX GUIDE

21SHARES CRYPTO INDEXES

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CONTENTS

Contents

1	Introduction	2
1.1	Objective of the Indexes	2
1.2	About 21Shares	2
1.3	About MarketVector Indexes GmbH	2
1.4	Approval of Index Methodologies	2
1.5	Review of this Index Guide	3
2	General Definitions	4
2.1	Review Schedule	4
2.2	Pricing Source	4
3	21Shares Crypto Basket Index	5
3.1	Index Universe	5
3.2	2050 circulating supply	5
3.3	Eligible Index Universe	5
3.4	Index Selection	6
3.5	Weighting Scheme	6
3.6	Index Dissemination and Identifiers	6
4	21Shares Bitcoin Suisse Crypto Index	7
4.1	Index Universe/Selection	7
4.2	Weighting Scheme	7
4.3	Index Dissemination and Identifiers	7
5	Ongoing Maintenance	8
5.1	Changes in Amount Outstanding	8
5.2	Changes due to Forks	8
5.3	Changes to Pricing (CCIX)	8
5.4	Trade Suspensions and Market Distortions	9
5.5	Index Corrections	9
5.6	Review of Index Concept	9
5.7	Changes to the Index Guide	9
5.8	Discretion regarding the Use of Input Data and Extraordinary Events	10
5.9	Input Data and Contributor Selection	11
6	Calculation	12
6.1	Index Formula	12
6.2	Input Data	12
6.3	Divisor Adjustments	12
6.4	Data Correction and Disruptions	13
7	Appendix	14
7.1	Changes to the Index Guide	14
8	Disclaimer	15

1 INTRODUCTION

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 21Shares Crypto Basket Index ("HODL5") and the 21Shares Bitcoin Suisse Crypto Index ("ABBA").

1.1 Objective of the Indexes

The aim of the indexes is to track the financial performance of the top and most liquid crypto-assets as well as provide a professional benchmark for the broader crypto asset class.

Due to the fact that the crypto market is relatively new, the health of the indexes will be evaluated on an ongoing basis every quarter by the 21Shares Index Committee.

1.2 About 21Shares

Jura Pentium AG is the parent company of 21Shares AG, a company that makes investing in crypto assets as easy as buying a stock.

Jura Pentium AG (the "Index Owner") makes no warranties or representations as to the accuracy and/or completeness of the Index 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 Jura Pentium AG. The Index Owner has selected an index administrator (MarketVector Indexes GmbH) to maintain the indexes.

The use of the indexes in connection with any financial products or for benchmarking purposes requires a license. Please contact Jura Pentium AG for more details.

1.3 About MarketVector Indexes GmbH

MVIS® 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 indexes.

1.4 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 Administrator'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.

1 INTRODUCTION

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 Administrator for final approval.

1.5 Review of this Index Guide

According to Art. 13 No. 1 (b) of the Benchmark Regulation, the Index Administrator 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 Administrator. If changes to this Index Guide are considered necessary, the process described in Section 5.7 applies.

2 GENERAL DEFINITIONS

2 General Definitions

2.1 Review Schedule

The indexes are rebalanced monthly (the “Monthly Rebalance Date”).

The reviews for the indexes are based on the opening data (adjusted for reviewed amount outstanding) on the fourth from the last business day in that month. 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 at 23:00 CET/CEST.

The indexes are rebalanced at 17:00:00 CET/CEST of the last trading day in each month. “Trading days” are published in the 21Shares Trading Calendar.

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.

USD/CHF exchange rates are provided real-time by open exchange rates.

3 21SHARES CRYPTO BASKET INDEX

3 21Shares Crypto Basket Index

3.1 Index Universe

The index universe includes all crypto currencies traded on the exchanges covered by the CCIX pricing provided by CC Data Limited ("CCData").

The index universe of the MarketVector™ index family includes all crypto currencies (excl. security tokens and financial instruments) covered by CCData in their CCData's Aggregated Index ('CCIX'). A detailed list of these crypto currencies is available on request.

3.2 2050 circulating supply

The 21Shares Research Team first establishes the methodology to project circulating supply for each blockchain by reviewing its official documentation and engaging the related foundation (if applicable) to fully define both the equation and any underlying variables that drive the network's monetary policy. The projection is then calculated on a monthly basis by applying the following steps:

- Apply any variables expected to affect the future issuance and burn of tokens
- Use this output to project the circulating supply in 2050 using a 90-day moving average

3.3 Eligible Index Universe

The index does not include crypto assets that:

- are tied to a fiat currency or a commodity such as gold or diamonds.
- are ongoing ICOs,
- have been newly created in the last twelve months, other than forks of existing assets (see further details on our fork policy),
- are designed to be anonymous or private,
- do not trade with all eligible counterparties,
- trade less than thirty-three percent of three-month circulating supply,
- trade < \$25M of daily volume over past thirty days,
- have market cap below \$1 billion over past thirty days,
- are not accepted as underlying assets by the Switzerland legal and regulatory bodies,
- are not accepted by the Swiss Stock Exchange (SIX) as an underlying as defined in the 21Shares Crypto ETP prospectus,
- are without a reliable multi-signature hardware wallet solution,
- do not trade against a common fiat currency, i.e. USD or EUR,
- do not publish transparently (english website).

3 21SHARES CRYPTO BASKET INDEX

3.4 Index Selection

1. The assets and tokens fulfilling the universe criteria above are ranked by their forecasted 2050 market capitalization in descending order.
2. The top 3 digital assets qualify for selection.
3. The remaining 2 components are selected from the highest ranked remaining index components ranked between 4 and 7.
4. If the number of selected components is still below 5, then the highest ranked digital assets are selected until the number of components equals 5.

3.5 Weighting Scheme

The index uses cap-factors to guarantee diversification and avoid over-/underweighting. Index weightings are reviewed on a monthly basis, based on the forecasted 2050 market capitalization (as defined above). The cap ensures diversification by assigning weights to components which cannot exceed 50% but still ensures higher weights for larger components. All components are ranked by their market capitalization. The maximum weight for any component is 50%. If a constituent exceeds the maximum weight, the weight will be reduced to the maximum weight and the excess weight shall be redistributed proportionally across all other index components. This process is repeated until no component has a weight exceeding the respective maximum weight.

Afterwards, a floor is applied to small components. The minimum weight for any component is 3%. If a constituent deceeds the minimum weight, the weight will be raised to the minimum weight and the additional weight shall be removed proportionally from all other index components after the cap has been applied. This process is repeated until no components have weights deceeding the minimum weight.

To determine the weighting factors, an average of the closing prices of the last 10 previous trading days prior to the rebalance date is used.

3.6 Index Dissemination and Identifiers

The index is calculated with the constituent prices converted to USD, on a daily basis between 00:00 and 24:00 (CET/CEST). Dissemination is in USD. Real-time index values are calculated with the latest available CCIX prices each 15 seconds. The closing value is calculated at 17:00:00 CET/CEST with fixed 17:00 CET/CEST exchange rates.

The 21Shares Crypto Basket Index has the following identifiers:

Index Type	ISIN	SEDOL	WKN	Bloomberg	Reuters
Price Return Index	DE000SLA6E78	BGMJ4K4	SLA6E7	HODL5	.HODL5

The index was launched on 6 September 2018 with a base index value of 100.00 as of 31 December 2016.

4 21SHARES BITCOIN SUISSE CRYPTO INDEX

4 21Shares Bitcoin Suisse Crypto Index

4.1 Index Universe/Selection

The index universe and composition includes Bitcoin and Ethereum.

4.2 Weighting Scheme

Index weightings are reviewed on a monthly basis, based on the current market capitalization of each coin.

The index is market capitalization weighted, no cap or floor is being applied.

4.3 Index Dissemination and Identifiers

The index is calculated with the constituent prices converted to USD and afterwards to CHF, on a daily basis between 00:00 and 24:00 (CET/CEST). Dissemination is in CHF. Real-time index values are calculated with the latest available CCIX prices each 15 seconds. The closing value is calculated at 17:00:00 CET/CEST with fixed 17:00 CET/CEST exchange rates.

The 21Shares Bitcoin Suisse Crypto Index has the following identifiers:

Index Type	ISIN	SEDOL	WKN	Bloomberg	Reuters
Price Return Index	DE000SLA9PH7	BGXFLD3	SLA9PH	ABBA	.ABBA

The index was launched on 26 September 2019 with a base index value of 100.00 as of 31 December 2016.

5 ONGOING MAINTENANCE

5 Ongoing Maintenance

5.1 Changes in Amount Outstanding

Changes in the amount outstanding will not be adjusted during the month, but with the next monthly review.

5.2 Changes due to Forks

A hard fork occurs when a blockchain protocol is radically changed, such that it becomes incompatible with older versions. In effect, participants taking part in transactions on the old blockchain must upgrade to the new one in order to continue validating transactions. However, participants that do not upgrade may continue to support and validate transactions on the older blockchain protocol separately. The result of this is that a blockchain splits into two - hence the name 'hard fork'. If there are nodes permanently supporting the new chain, then the two chains will co-exist. Users that once held digital assets on an older blockchain before the protocol change at a pre-specified blockchain length will now also hold an amount of new coins on the altered blockchain. This new asset has essentially been derived from an older token as well as its associated blockchain's transaction history.

If a forked asset will be included in the 21Shares Crypto Indexes, an announcement will be made on the Sponsor website indicating that the fork meets the established criteria. Unless such an announcement is made informing the market of participation, the newly forked asset should be considered ineligible. Given the nature of forks and the frequency of forks of the Index Universe, neither MarketVector Indexes nor the Sponsor expect to assess every fork event. Only fork events deemed material will be considered for evaluation, which include the following criteria:

- Have a reliable wallet solution with a qualified custodian
- Sufficient liquidity in the asset on the day of the fork
- Forked assets must be forked from a current component

The assessment of whether to include a forked asset or not is based on a specific point-in-time set of criteria prior to the fork day. The newly forked asset may meet the eligibility criteria at a later date. This change in status does not constitute a reversal of the previous assessment.

Supported forks will be held as part of the index

- for HODL5: until the following rebalance. Prior to the rebalance, the index may contain more than the predefined number of elements. At the time of rebalancing, the full eligibility criteria (3.3), index selection criteria (3.4) and weighting scheme (3.5) will be applied. This may result in the removal of the asset from the index allocation.

New forks or derivations may be added to the index after they reached the eligibility criteria described above, except the criterion they have to exist for 12 months.

- for ABBA: for 10 business days. Prior to the removal, the index may contain more than the predefined number of elements.

This rule also applies to soft forks which result in 2 different assets.

5.3 Changes to Pricing (CCIX)

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

5 ONGOING MAINTENANCE

5.4 Trade Suspensions and Market Distortions

There are certain circumstances which might require extraordinary adjustments to the indexes. These circumstances include, but are not limited to:

- Longer or recurring outages of an exchange
- Misconduct of an exchange or with a crypto asset or token has been noticed
- Sharp decline in trading volumes of certain crypto assets or tokens, certain exchanges or even larger areas of the crypto market in general
- Implementation of investment restrictions for international investors in certain countries or for certain exchanges
- A crypto asset or token does not trade any more permanently or for an extended period of time

For all events that result in a deletion from the indexes, the deleted component will be replaced with the highest ranked non-component at the latest review. The replacement will be added with the same weight as the deleted component; the index divisor will not be adjusted.

5.5 Index Corrections

- Index corrections distinguish between calculation errors and incorrect input data.
- Calculation errors detected within a trading day are corrected immediately. Intraday tick data are not corrected retrospectively.
- Calculation errors that are older or based on erroneous input data are corrected if technically possible and economically viable. If significant differences exist, index values can also be corrected retrospectively.

5.6 Review of Index Concept

Due to a very dynamic market of crypto assets and tokens the index methodology, parameters and thresholds will be reviewed at least once a year. Market participants feedback is being considered in the process whether or not to make amendments to the methodology and the data sourcing process. Any changes will be communicated by 21Shares and MarketVector Indexes with a 30-day lead time to enable customers to adjust their processes.

5.7 Changes to the Index Guide

Any changes to the Index Guide will be reviewed and approved by the index owner and MarketVector Indexes' 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.

5 ONGOING MAINTENANCE

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.

5.8 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,
- Hacks,
- Detection of fraud,
- Changes in custodian coverage,
- Other events.

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 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 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

5 ONGOING MAINTENANCE

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.

5.9 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.

6 CALCULATION

6 Calculation

6.1 Index Formula

The underlying index is calculated using the Laspeyres' formula:

$$\text{Underlying Index} = \frac{\sum_{i=1}^n p_i * q_i * cf_i * fx_i}{D} = \frac{M}{D}.$$

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

- p_i = price,
- q_i = amount outstanding,
- cf_i = weighting cap/floor factor (if applicable, otherwise set to 1),
- fx_i = exchange rate (to index currency),
- M = market capitalization of the index,
- D = divisor.

6.2 Input Data

The following rounding procedures are used for the index calculation:

- Rounding to 2 decimal places:
 - index values,
- Rounding to 6 decimal places:
 - divisors (D),
- Rounding to 18 decimal places:
 - prices (p_i),
 - exchange rates (fx_i),
 - weighting cap/floor factors (cf_i).

6.3 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.

$$\text{Divisor}_{open} = \text{Divisor}_{close} * \frac{\sum_{i=1}^n p_i * q_i * cf_i * fx_i \pm \Delta MC}{\sum_{i=1}^n p_i * q_i * cf_i * fx_i}.$$

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

The HODL5 index is calculated by deducting an annual fee of 2.5% from the underlying index performance. This is done by applying a divisor increase for the closing value:

6 CALCULATION

$$Divisor_{close} = Divisor_{open} * \frac{1}{1 - \frac{2.5\%}{365}}$$

6.4 Data Correction and Disruptions

MarketVector Indexes will usually receive information about errors or disruption from calculation agent, index owner, 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.

7 APPENDIX

7 Appendix

7.1 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
12 September 2018	1.1	Inclusion of additional chapters to comply with BMR
8 October 2018	1.2	Inclusion criteria, fork methodology, additional explanations
23 January 2019	1.3	Clarification of eligibility rules, adjustment of rebalancing days for trading calendar
26 September 2019	1.4	Inclusion of ABBA
30 April 2020	1.5	HODL5 renamed to 21Shares Crypto Basket Index
6 May 2020	1.6	ABBA renamed to 21Shares Bitcoin Suisse Crypto Index
11 August 2020	1.7	Clarification of CCIX pricing
31 April 2021	1.8	Discretion in case of extraordinary events
2 August 2021	1.9	30 days announcement period for Index Guide changes
01 November 2023	1.10	Update on 2050y circulating supply research

8 Disclaimer

MarketVector Indexes™ has contracted with CC Data Limited to maintain and calculate the Index. CC Data Limited uses its best efforts to ensure that the Index is calculated correctly subject to the accuracy of any data that has been provided to it by third parties. Irrespective of its obligations towards MarketVector Indexes GmbH, CC Data Limited has no obligation to point out errors in the Index to third parties. In particular, MarketVector Indexes™ is not responsible for the Licensee and/or for Licensee's legality or suitability and/or for Licensee's business offerings. Offerings by Licensee are not sponsored, endorsed, sold, or promoted by MarketVector Indexes™, Van Eck Associates Corporation as its parent company or its affiliates (collectively, "VanEck"), and MarketVector Indexes™ and VanEck make no representation regarding the advisability of investing in Licensee and/or in Licensee's business offerings. MARKETVECTOR INDEXES™, VanEck AND ITS AFFILIATES MAKE NO WARRANTIES AND BEAR NO LIABILITY WITH RESPECT TO LICENSEE.