

HFR Blockchain Indices

Defined Formulaic Methodology

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Introduction

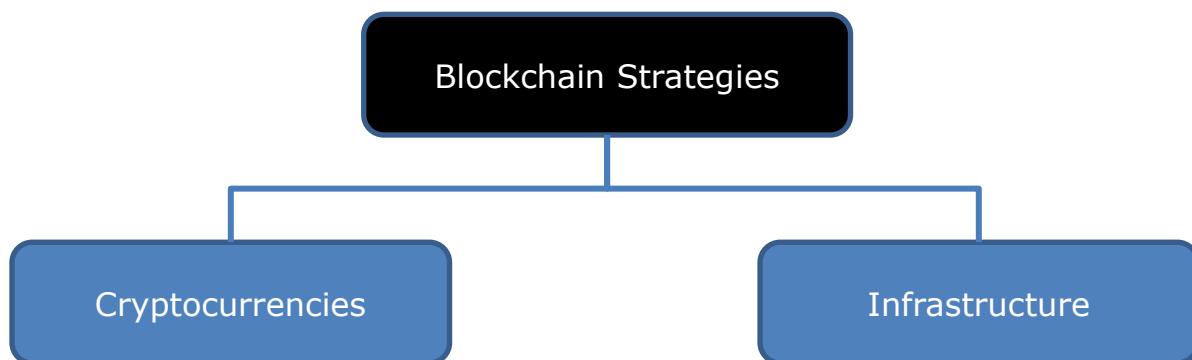
HFR, Inc. (HFR) is a research firm specializing in the collection, aggregation, and analysis of alternative investment information. HFR produces the HFR Hedge Fund Database, one of the industry's most widely used commercial databases of hedge fund performance, as well as a variety of other research products for the alternative investment industry, including the HFR Industry Report.

The HFR Hedge Fund Database is currently comprised of over 6000 alternative investment products worldwide. Information on the hedge fund universe of established and emerging managers is collected directly from the fund managers and/or their respective offshore administrators, while other pertinent information is culled from offering memoranda, onsite visits, and due diligence interviews. HFR requests that the client fund managers report performance by the 15th of each month. It also directly integrates the fund managers with the HFR Hedge Fund Database by providing them with their own website for updating their fund profile. In this manner HFR ensures current and accurate fund data that flows seamlessly from fund managers.

HFR Blockchain Indices

The HFR Blockchain Indices are a series of benchmarks designed to reflect the performance of fund managers investing in blockchain digital currency and distributed ledger technologies.

The Blockchain strategy is subdivided into two substrategies: Cryptocurrency and Infrastructure technology. Fund managers focusing in Cryptocurrency utilize a variety of trading strategies to profit from exposure to bitcoin, ethereum and other digital currencies. Managers focusing in Infrastructure invest in companies developing blockchain and other distributed ledger technologies which are fundamentally disintermediating payments, banking, market trading structure, IOT, healthcare, remittances, supply chains, digital identity and more.



In order to be considered for inclusion in the HFR Blockchain Indices, a fund manager must submit fund performance to HFR Database. Funds are eligible for inclusion in the HFR Blockchain Indices the month after their addition to HFR Database. For instance, a fund that is added to HFR Database in June is eligible for inclusion in the indices upon reporting their July performance. Additionally, all HFR Blockchain Indices constituents are required to report monthly, net of all fees performance and assets under management in U.S. dollars.

Methodology

HFR Blockchain Indices are fund-weighted (equal-weighted) indices. Unlike asset-weighting, the equal-weighting of indices presents a more general picture of performance. Any bias towards the larger funds potentially created by alternative weightings is greatly reduced, especially for strategies that encompass a small number of funds.

The HFR Blockchain Indices are designed to be utilized by fund managers as a benchmark for their own funds. The HFR Blockchain Indices include funds managing cryptoassets, cryptocurrencies (e.g. bitcoin, ethereum, etc.), decentralized application tokens and protocol tokens, block-chain based assets, and other cryptofinance and digital assets (collectively, 'Digital Assets') strategies. HFR Blockchain Indices are rebalanced on an annual basis. Due to mutual agreements with the fund managers listed in the HFR Database, we are not at liberty to disclose the particular funds behind any index to non-database subscribers.

Eligibility Criteria

Funds included in the HFR Blockchain Indices must:

- Report monthly returns
- Report Net of All Fees Returns

The following formula is used to define the representative Hedge Fund Strategy Universe ("Strategy Universe") derived from the Global Hedge Fund Universe contained in the HFR Hedge Fund Database. The Global Hedge Fund Universe is expressed as:

$$HFU = \bigcup HFS$$

where *HFS* is the set of funds classified as blockchain strategies in the HFR Hedge Fund Database.

The funds comprising the HFS are filtered using the following formula to create the Strategy Universe:

$$\delta(freq - 12) \cdot \delta(fees) \neq 0$$

where $\delta(x)$ is the delta function defined as

$$\delta(x) = \begin{cases} 1 & x = 0 \\ 0 & x \neq 0 \end{cases}$$

and

- *freq* is the reporting frequency (12=monthly, 4=quarterly)
- *fees* is the returns net of all fees (0=yes, 1=no)

In cases where a manager lists multiple funds with the same or similar investment profile, HFR chooses only the most representative fund for HFR Blockchain Indices inclusion. HFR reserves the right to remove a fund from an index if it deems it not to be representative of its strategy.

Index NAV Calculation

HFR Blockchain Indices (the “Index” and collectively, “Indices”) are total return indices and are published by HFR at www.HFR.com and on Bloomberg. HFR Blockchain Indices are rebalanced on an annual basis. Computation of the Index *NAV* uses actual performance of constituent funds as reported to HFR, Inc. Performance reflects constituent fund management fees, incentive fees, dividends and other distributions.

The Index *NAV* is 1000 at inception where “*t*=0”. The *NAV* changes are driven by the Index performance, which is defined as the percentage change in the value of the Index from a previous date “*t*-1” to current date “*t*”.

At rebalance time “*t*”, constituents are equal weighted so the *NAV* of the HFR Blockchain Index is defined as

$$NAV_{t_0} = NAV_{t_0-1} \times (1 + ROR_{t_0})$$

where ROR_{t_0} is the percentage change in the total value of the Index from “*t*₀-1” to “*t*₀” computed as:

$$ROR_{t_0} = \frac{1}{n} \sum_{i=1}^n ROR_{t_0}^i$$

where $ROR_{t_0}^i$ is the rate of return of constituent *i* at time “*t*₀” and *n* is the number of constituents in the Index.

The NAV of the HFR Blockchain Index at any other times “ t ” is computed as

$$NAV_t = NAV_{t-1} \times (1 + ROR_t)$$

where ROR_t is the percentage change in the total value of the Index from “ $t-1$ ” to “ t ” as follows:

$$ROR_t = \sum_{i=1}^n w_t^i \times ROR_t^i - F$$

where ROR_t^i is the total return of constituent i at time “ t ”, and F corresponds to an index adjustment of 6 bps/month for HFR Blockchain Indices. n is the number of constituents in the Index and w_t^i is the weight of constituent i at the beginning of month “ t ” computed as

$$w_t^i = \frac{(1 + R_{t-1}^i)}{\sum_{j=1}^n (1 + R_{t-1}^j)}$$

where R_{t-1}^i is the cumulative total return of constituent i between the rebalance date “ t_0 ” and time “ $t-1$ ”:

$$1 + R_{t-1}^i = \prod_{t'=t_0}^{t-1} (1 + ROR_{t'}^i).$$

If a constituent k ceases to be a constituent of the Index at given time t' before the rebalance date, its weight is then equally distributed to the remaining constituents in the Index; the new constituent weights are given by

$$w_t^i = w_{t'}^i + \frac{1}{n-1} \cdot w_{t'}^k, \quad \text{with } i \neq k.$$

HFR Blockchain Indices are calculated grouping qualifying funds according to one or more classification criteria. The HFR Blockchain Index includes all qualifying single manager funds and excludes fund of funds. The HFR Cryptocurrency Index corresponds to the subset of manager funds that focus on cryptocurrencies.

Indices Notes:

- Funds are eligible for inclusion in the HFR Blockchain Indices the year after their addition to HFR Database. For instance, a fund that is added to HFR Database in June is eligible for inclusion in the indices upon reporting their January performance.
- The HFR Blockchain Indices are updated three times a month: Flash Update (5th business day of the month), Mid Update (15th of the month), and End Update (third to last business day of the month)
- The index value for a given month will become final on the last business day of the month of its initial publication, after which it will not be subject to change.
- If a fund liquidates/closes, that fund's performance will be included in the HFR Blockchain Indices as of that fund's last reported performance update.

Index Disruption Event

“Index Disruption Event” means:

where, in the determination of HFR, Inc., it is not possible or it is not reasonably practicable for it to determine the price or value of a constituent; or

(2) a value for a constituent is not announced or is otherwise unavailable when such announcement or availability would normally be scheduled; or

(3) the occurrence of an event or circumstance (including, without limitation, a major market disruption, a systems failure, natural or man-made disaster, act of God, armed conflict, act of terrorism, riot or labor disruption or any similar intervening circumstance) that Hedge Fund Research Inc. determines affects the Index.

(4) the occurrence of other event or circumstance (including, without limitation, a personnel loss, a significant client(s) redemption, an audit holdback, a side pocket implemented, redemptions suspended / Gate activated, reduced liquidity of liquidating constituent, money laundering charges, Cyber security breach / Client info leaked or stolen, Fraud, breach of any law, regulation or rule, Market specific short bans or suspensions, Major reputation hurting story or any similar intervening circumstance) that Hedge Fund Research Inc. determines affects the Index.

If, in the determination of HFR, Inc., any of the foregoing is material.

Upon the occurrence of an Index Disruption Event on any day on which the official closing level of the Index is scheduled to be published, HFR, Inc. (i) shall not calculate and publish the Index Level and/or (ii) if relevant, may make such adjustments to the provisions of the Index to account for such Index Disruption Event as it determines appropriate, including, without limitation, delaying the application of any procedures or requirements of the Index.

Strategy Descriptions

Funds managing Blockchain strategies broadly fall into two sub-strategies:

- **Cryptocurrency:**

Investment Managers trade in cryptocurrency directly. The primary purpose of the strategy is to trade cryptocurrency, seeking profits by investing in or shorting bitcoin or other digital currencies. The overall investment thesis is to provide returns through an actively managed portfolio of cryptocurrency assets. Managers may use a variety of trading strategies that can be discretionary techniques or employ a variety of automated bitcoin trading algorithms to analyze the market, and then adjust their portfolios as necessary. These trading strategies include, but are not limited to, arbitrage, event-driven and momentum.

- **Infrastructure:**

Managers invest in blockchain, other digital assets technology and other investments related to emerging blockchain protocols. Infrastructure strategy aims to offer access to the most promising, cutting-edge, blockchain companies in the digital asset space. Managers focus on how blockchain technologies have begun to, and will continue to, fundamentally change payments, banking, market trading structure, Internet of Things (IoT), healthcare, remittances, supply chains, digital identity and more. In addition, key themes include cloud storage, decentralized computing, digital investment platforms and on-chain fund tokens, blockchain infrastructure protocols and promising innovations involving token interconnectivity and transaction scalability.

Appendix.

HFR Blockchain Indices Update Schedule

The HFR Risk Parity Indices are updated three times after month end. The Flash Estimate (5th US business day of the month), Mid Estimate (15th of the month - or nearest US business day afterwards), and Final Update (3rd to last US business day of the month).

Specific update schedule can be found in HFR's website:

<https://www.hfr.com/hfr-blockchain-indices-performance-update-schedule>

Accompanying Notes

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Addendum – Changes to the Methodology

Date	Revision	Process
5/18/2020	An index adjustment term has been added to the index performance calculation. Beginning June 2020, HFR will adjust the performance of the HFR Blockchain Indices by 2bps per month.	No performance has been affected.
6/30/2021	Starting the performance month of July 2021 the index adjustment term will change to 6 bps per month.	No historical performance has been affected.
6/30/2021	Beginning with July 2021 performance, the period of finalization of the index value has been changed to the third to last US business day of the month it is initially published.	No constituent or historical performance changes were made
11/15/2021	Beginning in January 2022, the rebalance frequency of the index has changed to annual rebalance.	No constituent or historical performance changes were made