cfbenchmarks
a PAYWARD company

CF Hybrid Equity Indices

Methodology Guide

Version:

1.0

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1 Version History

Version	Version Date	Changes to Previous
1.0	17 Sep 2026	

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2 Overview

The CF Hybrid Equity Indices (the "Indices") are designed to measure the US dollar price of an individual stock that is listed on a National Stock Exchange (NSE). The indices are designed to publish continuously when NSEs and Alternative Trading Systems (ATS) are operating and as such draw input data from a variety of sources - depending on the time of day. The indices will only be calculated and published during times when NSEs and ATSs are open for business.

During time periods where NSE's are matching orders under their operational hours (commonly referred to as "Core Hours", "Pre-Market" and "After Hours") then BBO data from in-scope National Stock Exchanges provides the input data for the indices.

During time periods when NSE's are not matching orders then BBO data from in-scope equity market Alternative Trading Systems (ATS) provides the input data.

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3 Definitions

Administrator: CF Benchmarks Ltd.

Calculation Agent: CF Benchmarks Ltd.

Calculation Time: Each second at which an Index is calculated.

API: Application programming interface.

Relevant Order Book: The most recent complete best bid and offer received for the underlying equity at or before the Calculation Time.

Retrieval Time: The time, as given by the server clock of the Calculation Agent, which the Relevant Order Book corresponds to. When obtained from a request/response API such as a REST API, this would be the time of the request made by the Calculation Agent through the API. When obtained from a real time feed such as a Websocket API, this would be the most recent time as of which the Calculation Agent has a valid Order Book from an unbroken connection.

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4 Inputs and Sessions

For each individual stock that has a CF Hybrid Equity Index in calculation there will be two input data sources. At any given time only one source will be used to calculate the CF Hybrid Equity Index. The selection of which data source is determined by the table in Section 4.3.

4.1 National Stock Exchange Best Bid-Offer

The National Stock Exchanges from which the Indices will draw BBO input data are NYSE BQT, MEMX and IEX. NYSE BQT covers NYSE, NYSE American, NYSE Arca, NYSE National and NYSE Texas.

The bid and offer must come from the same BBO record. The calculation does not combine separate records to create a new quote.

4.2 Blue Ocean ATS Mid Point

The Blue Ocean ATS provides overnight coverage.

The bid and offer must come from the same BBO record. The calculation does not combine separate records to create a new quote.

4.3 Input Data Source Selection

The index selects its input data source in accordance with the below table

Day	Time in New York	Input Data Source
Mondays Where National Stock Exchanges are Open For Business	00:00:00 to 03:59:59	Blue Ocean ATS Mid-Point
	04:00:00 to 20:00:00	NSE BBO
	20:00:00 to 23:59:59	Blue Ocean ATS Mid-Point
Tuesdays Where National Stock Exchanges are Open For Business	00:00:00 to 03:59:59	Blue Ocean ATS Mid-Point
	04:00:00 to 20:00:00	NSE BBO
	20:00:00 to 23:59:59	Blue Ocean ATS Mid-Point
Wednesdays Where National Stock Exchanges are Open For Business	00:00:00 to 03:59:59	Blue Ocean ATS Mid-Point
	04:00:00 to 20:00:00	NSE BBO
	20:00 to 23:59:59	Blue Ocean ATS Mid-Point
Thursdays Where National Stock Exchanges are Open For Business	00:00:00 to 03:59:59	Blue Ocean ATS Mid-Point
	04:00:00 to 20:00:00	NSE BBO

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	20:00:00 to 23:59:59	Blue Ocean ATS Mid-Point
Fridays Where National Stock Exchanges are Open For Business	00:00:00 to 03:59:59	Blue Ocean ATS Mid-Point
	04:00:00 to 20:00:00	NSE BBO
	20:00:00 to 23:59:59	No input Data Source Available - Index does not publish
Saturdays	00:00:00 to 23:59:59	No input Data Source Available - Index does not publish
Sundays where National Stock Exchanges are Open for Business the following day	00:00:00 to 19:59:59	No input Data Source Available - Index does not publish
	20:00:00 to 23:59:59	Blue Ocean ATS - Mid Point
Sundays where National Stock Exchanges are not Open for Business the following day	00:00:00 to 23:59:59	No input Data Source Available - Index does not publish
Weekdays where National Stock Exchanges are Open for Business, but not Open for Business the following day	00:00:00 to 03:59:59	Blue Ocean ATS Mid-Point
	04:00:00 to 19:59:59	NSE BBO
	20:00:00 to 23:59:59	No input Data Source Available - Index does not publish
Weekdays where National Stock Exchanges are Closed for Business	00:00:00 to 23:59:59	No input Data Source Available - Index does not publish

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5 Calculation

5.1 NSE BBO Midpoint

For bid price b and offer price a, the midpoint M and full spread percentage S are:

$M = (b + a) / 2$

$S = 100 \times (a - b) / M$

A BBO is valid when both prices are finite and positive and $b \leq a$. A locked quote is valid. Bid and offer sizes are not used.

During the period when the NSE BBO is utilised, the Index equals the valid BBO midpoint, subject to Section 6.1. An unchanged valid BBO does not expire solely because its timestamps are old.

5.2 Blue Ocean ATS Mid-Point

For bid price b and offer price a, the midpoint M and full spread percentage S are:

$M = (b + a) / 2$

$S = 100 \times (a - b) / M$

The Blue Ocean ATS Mid-Point is valid when both prices are finite and positive and $b \leq a$. A locked quote is valid. Bid and offer sizes are not used.

During the period when the Blue Ocean ATS Mid-Point is utilised, the Index equals the valid BBO midpoint, subject to Section 6.1. An unchanged valid BBO does not expire solely because its timestamps are old.

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6 Contingency Rules

6.1 Invalid NSE and Blue Ocean ATS Order Books

A crossed National Stock Exchange Best Bid-Offer order book or Blue Ocean ATS order book, or a missing, nonfinite or nonpositive order renders the order book invalid. The first invalid update starts one 30-second period. The last valid midpoint is retained while less than 30 seconds have elapsed.

Further invalid updates do not restart the period, including a change in the reason for invalidity. A valid update ends the invalid period and restores normal calculation. Updates between Calculation Times are included in this assessment.

At 30 seconds, the BBO-based value is unavailable unless a valid update has arrived. If no prior valid midpoint exists, no value is available.

6.2 Expert Judgement

The Administrator does not utilise Expert Judgement in the day-to-day calculation of the CF Hybrid Equity Indices. In extraordinary circumstances Expert Judgement may be exercised by the Administrator in accordance with its codified policies and processes which are available upon request.

6.3 Calculation Failure

If a CF Hybrid Equity Index cannot be calculated for a given Calculation Time, for instance because:

- the Retrieval Time of the Relevant Order Book is at least 30 seconds older than the Calculation Time, or
- The Relevant Order Book is flagged as erroneous
- any other reason or circumstance that prevents the orderly calculation of a CF Hybrid Equity Index,

then the CF Hybrid Equity Index for that Calculation Time is not published. The occurrence of any CF Hybrid Equity Index Calculation Failure is reported to CF management and persistent Calculation Failures will lead to a review of the methodology.

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7 CF Hybrid Equity Index Parameters

7.1 Index Parameters

Tickers	Company Name
TSLA	Tesla, Inc.
SPCX	Space Exploration Technologies Corp.
NVDA	NVIDIA Corporation
AVGO	Broadcom Inc.
MU	Micron Technology, Inc.
AAPL	Apple Inc.
MSFT	Microsoft Corporation
AMZN	Amazon.com, Inc.
GOOGL	Alphabet Inc. (Class A)
PLTR	Palantir Technologies Inc. (Class A)

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8 Methodology Review and Changes

This methodology is subject to internal review by the Administrator and the Oversight Function at least annually.

Any changes to this methodology are overseen by the Oversight Function, and in accordance with UK BMR Article 13.

All material changes to the methodology shall only be implemented after a consultation process with users and relevant stakeholders that shall be conducted according to the Administrator's policies and overseen by the Oversight Function.

Should the Administrator deem it necessary to cease providing any of the Indices it shall only do so after a consultation process with users and relevant stakeholders that shall be conducted according to the Administrator's policies and overseen by the Oversight Function.

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