ICE U.S. TREASURY BOND INDEX SERIES ™ METHODOLOGY

June 13, 2019

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Introduction

Index Sponsor & Administrator

ICE Data Indices, LLC ("IDI") is the Index Sponsor and the Index Administrator.

IDI is responsible for the day-to-day management of the Indices, including retaining primary responsibility for all aspects of the index determination process, including implementing appropriate governance and oversight, as required under the International Organization of Securities Commission's Principles for Financial Benchmarks (the IOSCO Principles). The Governance Committee is responsible for helping to ensure IDI's overall compliance with the IOSCO Principles, by performing the Oversight Function which includes overseeing the development, design, issuance and operation of the indices, as well as reviewing the control framework. IDI is also responsible for decisions regarding the interpretation of these rules and the Governance Committee is responsible for reviewing all rule book modifications and index constituent changes with respect to the Index to ensure that they are made objectively, without bias, and in accordance with applicable law and regulation and IDI's policies and procedures. Consequently, all IDI's and the Governance Committee discussions and decisions are confidential until released to the public.

ICE U.S Treasury Series

The ICE U.S. Treasury Index Series was developed as a broad representation of the U.S. Treasury market and includes a number of indices and sub-Indices ranging from one month to thirty years. All ICE U.S. Treasury Indices are market value weighted and designed to measure the performance of the U.S. dollar-denominated, fixed rate U.S. Treasury market. The ICE U.S. Treasury Core Bond Index (and its sub-indices) and the ICE U.S. Treasury Short Bond Index have an inception dates of December 31, 2015. The ICE U.S. Treasury Inflation Linked Bond Index has an inception date of June 30, 2016. Index history is available back to December 31, 2004 for select Indices; all other Indices have history available back to December 31, 2005.

As of February 16, 2018 the ICE U.S. Treasury Index Series consists of:

- ICE U.S Treasury Core Bond Index
- ICE U.S Treasury 1 – 3 Year Bond Index1*
- ICE U.S. Treasury 3 –7 Year Bond Index*
- ICE U.S. Treasury 7 – 10 Year Bond Index*
- ICE U.S. Treasury 10 – 20 Year Bond Index
- ICE U.S. Treasury 20+ Year Bond Index*
- ICE U.S. Treasury 25+ Year Bond Index
- ICE U.S. Treasury 25+ Year Bond Index (4 PM)
- ICE U.S. Treasury Short Bond Index
- ICE U.S. Treasury Inflation Linked Bond Index
- ICE U.S. Treasury 0-5 Year Inflation Linked Bond Index

IDI is solely responsible for creating the methodologies underlying this Series and for Index governance. Changes to any of the Series are made exclusively by IDI.

* Index History available back to December 31, 2004

ICE U.S. Treasury Core Bond Index Selection Criteria

The ICE U.S. Treasury Core Bond Index tracks the performance of USD-denominated notes and bonds issued by the U.S. Treasury. The basis of the Eligible Bond universe are those for which content is available daily including evaluations and reference data through ICE Data Pricing & Reference Data, LLC ("PRD").

Maturity

Each security must have a minimum remaining term to final maturity of at least one year as of the Rebalance Date. The index is further segmented into the following maturity sub-indices:

- Less than 3 years
- Greater than or equal to 3 years and less than 7 years
- Greater than or equal to 7 years and less than 10 years
- Greater than or equal to 10 years and less than 20 years
- Greater than or equal to 20 years
- Greater than or equal to 25 years

Treasury securities that have an announced call are removed from the Index at the end of the month prior to the month in which the call will take place.

Size

Each security is required to have a minimum Amount Outstanding of U.S. dollars 300 million. Amount Outstanding is defined as the par amount outstanding of each Treasury, inclusive of any announced auctions or re-openings, less the par amount of said Treasury held in the Federal Reserve System Open Market Account (SOMA) or bought at issuance by the Federal Reserve. New issuance bought at auction by the Federal Reserve is not included in the Eligible Bond universe (Index). Secondary market purchases or sales by the Federal Reserve that occur in the current month are reflected at the next rebalancing.

Coupon

Fixed Rate only, excluding zero coupon rates.

Currency

Bond principal and interest denominated in U. S. dollars.

Bond Type

Inflation linked securities; Treasury Bills, Strips, Cash Management Bills, and any government agency debt issued with or without a government guarantee are excluded from the index.

ICE U.S. Treasury Short Bond Index Selection Criteria

The ICE U.S. Treasury Short Bond Index tracks the performance of USD-denominated bills, notes and bonds issued by the U.S. Treasury. The basis of the Eligible Bond universe are those for which content is available daily including evaluations and reference data through PRD.

Maturity

Each security in the index must have a remaining term to final maturity equal to or greater than one month, and less than one year. Treasury securities that have an announced call are removed from the Index at the end of the month prior to the month in which the call will take place.

Size

Each security is required to have a minimum Amount Outstanding of U.S. dollars 300 million. Amount Outstanding is defined as the par amount outstanding of each Treasury, inclusive of any announced auctions or re-openings, less the par amount of said Treasury held in the Federal Reserve System Open Market Account (SOMA) or bought at issuance by the Federal Reserve. New issuance bought at auction by the Federal Reserve is not included in the Eligible Bond universe (Index). Secondary market purchases or sales by the Federal Reserve that occur in the current month are reflected at the next rebalancing.

Coupon

Fixed Rate only.

Currency

Bond principal and interest denominated in U. S. dollars.

Bond Type

Inflation linked securities, Cash Management Bills, Strips and any government agency debt issued with or without a government guarantee is excluded from the index.

U.S. Treasury Inflation Linked Bond Index Selection Criteria

The ICE U.S. Treasury Inflation Linked Bond Index tracks the performance of USD-denominated inflation-linked notes and bonds issued by the U.S. Treasury. The basis of the Eligible Bond universe are those for which content is available daily including evaluations and reference data through PRD.

Maturity

Each security must have a minimum remaining term to final maturity of at least one year as of the Rebalance Date. Treasury securities that have an announced call are removed from the Index at the end of the month prior to the month in which the call will take place.

Size

Each security is required to have a minimum Amount Outstanding of U.S. dollars 300 million. Amount Outstanding is defined as the par amount outstanding of each Treasury, inclusive of any announced auctions or re-openings, less the par amount of said Treasury held in the Federal Reserve System Open Market Account (SOMA) or bought at issuance by the Federal Reserve. New issuance bought at auction by the Federal Reserve is not included in the Eligible Bond universe (Index). Secondary market purchases or sales by the Federal Reserve that occur in the current month are reflected at the next rebalancing.

Coupon

Fixed Rate only, excluding zero coupon rates.

Currency

Bond principal and interest denominated in U. S. dollars.

Bond Type

The index only includes securities with interest and principal payments tied to inflation. Treasury Bills, Cash Management Bills, and any government agency debt issued with or without a government guarantee are excluded from the index.

U.S. Treasury 0-5 Year Inflation Linked Bond Index Selection Criteria

The ICE U.S. Treasury 0-5 Year Inflation Linked Bond Index tracks the performance of USD-denominated inflation-linked notes and bonds issued by the U.S. Treasury. The basis of the Eligible Bond universe are those for which content is available daily including evaluations and reference data through PRD.

Maturity

Each security must have a minimum remaining term to final maturity less than 5 years as of the Rebalance Date. Treasury securities that have an announced call are removed from the Index at the end of the month prior to the month in which the call will take place.

Size

Each security is required to have a minimum Amount Outstanding of U.S. dollars 300 million. Amount Outstanding is defined as the par amount outstanding of each Treasury, inclusive of any announced auctions or re-openings, less the par amount of said Treasury held in the Federal Reserve System Open Market Account (SOMA) or bought at issuance by the Federal Reserve. New issuance bought at auction by the Federal Reserve is not included in the Eligible Bond universe (Index). Secondary market purchases or sales by the Federal Reserve that occur in the current month are reflected at the next rebalancing.

Coupon

Fixed Rate only, excluding zero coupon rates.

Currency

Bond principal and interest denominated in U. S. dollars.

Bond Type

The index only includes securities with interest and principal payments tied to inflation. Treasury Bills, Cash Management Bills, and any government agency debt issued with or without a government guarantee are excluded from the index.

Index Calculations

Returns and risk measures such as yield duration are first calculated at the Constituent level and then aggregated to the Index level using their market weights.

Constituent Returns:

Let amounts P_0, A_0, PAR_0, C_0 , MV_0 and P_1 A_1, PAR_1, C_1 , MV_1 denote the price, accrued interest, par amount, cumulative coupon payments and market values at date T_0 and date T_1, respectively. Let C denote the coupon payments during the period (excluding any coupon payment on date T_0 but including any coupon payment on date T_1). Then coupon payments during the period: $C = C_1 - C_0$

The market values at time T_0 and T_1, are: $MV_0 = PAR_0 \times (P_0 + A_0)$ and $MV_1 = PAR_1 \times (P_1 + A_1)$

The price return R_1^{price} , coupon return R_1^{coupon} and factor return R_1^{Factor} (whenever applicable) are defined as follows.

- Price Return: Return due to price appreciation over the return period.

$$R_1^{price} = \frac{P_1 - P_0}{(P_0 + A_0)}$$

- Coupon Return: Return due to coupon accrual during the period.

$$R_1^{coupon} = \frac{(A_1 - A_0) + C}{(P_0 + A_0)}$$

- Factor Return: Return due to inflation during the return period. This is applicable to the US inflation linked securities (TIPS).

$$R_1^{Factor} = \frac{[100 - (P_1 + A_1)]\left(1 - {f_1}/{f_0}\right)}{(P_0 + A_0)}$$

  Where f_0 and f_1 are inflation ratios for dates T_0 and T_1, respectively.

- Total return: The sum of the price return and the coupon return, except for Inflation linked securities for which it also includes factor return.

$$Total\ Return_1 = Price\ Return_1 + Coupon\ Return_1 + Factor\ Return_1$$

Index Level Returns

Index returns are calculated by aggregating the Constituent level returns using market weights. To calculate Index return for the period from dates T_0 and T_1, market value weights at date T_0 are used. The total market value of the

Index at time T_0 is $\sum_n MV_0^n$ plus any intra-month cash from coupon payment or principal repayment and the weight for constituent security

$$w_0^i = {MV_0^i}\Big/{(Cash + \sum_n MV_0^n)}.$$

Cumulative Index Price Return

$$Cumulative\ Price\ Return_{t-1} + (1 + \frac{Cumulative\ TR_{t-1}}{100}) \times Daily\ Price\ Return_t$$

$Cumulative\ Price\ Return_{t-1} = Cumulative\ index\ price\ return\ at\ time\ t-1$
$Cumulative\ Total\ Return_{t-1} = Cumulative\ index\ total\ return\ at\ time\ t-1$
$Daily\ Price\ Return_t = Daily\ index\ price\ return\ at\ time\ t$

Cumulative Index Coupon Return

$$Cumulative\ Coupon\ Return_{t-1} + (1 + \frac{Cumulative\ TR_{t-1}}{100}) \times Daily\ Coupon\ Return_t$$

$Cumulative\ Coupon\ Return_{t-1} = Cumulative\ index\ coupon\ return\ at\ time\ t-1$
$Cumulative\ TR_{t-1} = Cumulative\ index\ total\ return\ at\ time\ t-1$
$Daily\ Coupon\ Return_t = Daily\ index\ coupon\ return\ at\ time\ t$

Cumulative Index Factor Return

$$Cumulative\ Factor\ Return_{t-1} + (1 + \frac{Cumulative\ TR_{t-1}}{100}) \times Daily\ Factor\ Return_t$$

$Cumulative\ Factor\ Return_{t-1} = Cumulative\ index\ factor\ return\ at\ time\ t-1$
$Cumulative\ TR_{t-1} = Cumulative\ index\ total\ return\ at\ time\ t-1$
$Daily\ Factor\ Return_t = Daily\ index\ factor\ return\ at\ time\ t$

Cumulative Index Total Return

$$Price\ Return_t +\ Coupon\ Return_t +\ Factor\ Return_t$$

$Price\ Return_t = Cumulative\ index\ price\ return\ at\ time\ t$
$Coupon\ Return_t = Cumulative\ index\ coupon\ return\ at\ time\ t$
$Factor\ Return_t = Cumulative\ index\ factor\ return\ at\ time\ t$

Index Level Analytic and Summary Measure Calculations:

Constituent level analytic measures such as yield, duration, convexity, and option adjusted spread are market weighted to the Index Level.

$$Index\ Level\ Analytics = \sum Constituent\ Weight_C \times\ Constituent\ Analytics_C$$

where Constituent Weight is defined as:

$$Constituent\ Weight_C = \frac{Constituent\ Market\ Value_C}{Subtotal\ of\ Constituent\ Market\ Value_C}$$

and the Subtotal of the Constituent Market Value is calculated as:

$$Subtotal\ of\ Constituent\ Market\ Value = Intramonth\ Cash + \sum Constituent\ Market\ Value_C$$

However, Weighted Average Coupon of the Index is par weighted as follows:

$$Average\ Coupon = \sum \frac{Constituent\ Par\ Amount_C \times Constituent\ Coupon_C}{Subtotal\ of\ Constituent\ Par\ Amount_C}$$

Where the Subtotal of the Constituent Par Amount is calculated as:

$$Subtotal\ of\ Constituent\ Par\ Amount = Intramonth\ Cash + \sum Constituent\ Par\ Amount_C$$

Notice the weighting for analytic and summary measures are as of the same evaluation date as the measure itself, as opposed to Index return calculation which uses market weights from the beginning of the period.

Accuracy

Index levels will be provided to four decimal places.

Market Weight

The indices in the ICE US Treasury Index Series are market value weighted.

Index Maintenance

The ICE U.S. Treasury Index Series including specific maturity sub-indices are rebalanced monthly. Securities are required to meet the Index inclusion rules highlighted in the previous section to be considered for inclusion at the beginning of any given month. This includes the availability of evaluated pricing and reference data through PRD.

Rebalancing

The ICE Treasury Index Series is rebalanced at each month end. The new index for the next month is available three days prior to month end and is intended to reflect the constituent changes from the prior rebalancing date based on index eligibility.

Reinvestment of Cash Flows

Cash that has accrued intra-month from interest and principal payments by the Index earns no reinvestment return during the month. Accumulated cash (from coupon and principal payments) are removed from the Index at month-end, which implies that it is reinvested pro rata across the entire Index.

New Issues

Qualifying securities issued on or before the month-end rebalancing date may qualify for inclusion. When issued Treasuries are included in the pro forma Index with a price of $100 until replaced with an evaluated price as soon as available after auction day.

Index Policies

Timing and Pricing Source

With the exception of the ICE U.S. Treasury 25+ Year Bond Index (4 PM), which is based on pricing as of 4:00 pm ET, Index levels are calculated using 3:00 p.m. ET evaluations from PRD. These evaluations are based upon methodologies designed to reflect the market upon which the Index is based.

PRD's bid-side evaluations are market-based measurements that are processed through a rules based pricing application and represent our good faith determination as to what the holder would receive in an orderly transaction (for an institutional round lot position typically 1MM or greater current value USD or local currency equivalent) under current market conditions. The rules based logic utilizes valuation techniques that may vary by asset class and per methodology, maximize the use of relevant observable data including quoted prices for similar assets, benchmark yield curves and market corroborated inputs. For example, , our pricing applications are coded to review trades and bids to determine that the lot size is representative of an institutional round lot, though smaller or retail sized lots may be considered, especially if this is the only or primary trading information available.

PRD's evaluators meet regularly to discuss market movements and other macro-economic information. PRD evaluates U.S. Treasury securities by obtaining feeds continuously from a number of live data sources including active market makers and inter-dealer brokers (IDB). Sources are reviewed on the basis of their historical accuracy for individual issues and maturity ranges. As new information is received it is compared against the previous evaluation as part of the daily process.

To provide additional transparency into its procedures, controls and governing processes, PRD adopted a Code of Conduct which enables Benchmark Administrators ("Administrators") like IDI to exercise effective oversight of the Benchmark setting process in conformance with the IOSCO Principles. For further information, this Code is included here:
https://www.theice.com/publicdocs/data/Financial_Benchmarks_Code_of_Conduct_of_IDPRD_LLC_Global_Evaluated_Pricing_Services.pdf

IDI also maintains a verification process designed to identify price tolerance breaks for further investigation.

Calendar

Indexes follow the US bond market holiday schedule (SIFMA). Index levels are calculated daily at the end of each Business Day. Where the bond market closes early per the SIFMA schedule, Index levels may be calculated at a time in accordance with the recommended close. However, evaluated pricing from PRD must be available to calculate the Indices.

Exceptional market conditions and corrections

IDI retains the right to delay the publication of the index level. Furthermore, IDI retains the right to suspend the publication of the level of the index if it believes that circumstances prevent the proper calculation of the index.

If evaluated prices are not available, the index will not be recalculated unless IDI decides otherwise.

Reasonable efforts are made to ensure the correctness and validity of data used in index calculations. Where errors have occurred in the determination or calculation of an index, the decision to make a restatement will be assessed on a case by case basis. Such decision will take account of the significance; impact; age; and scale of the error.

In the event that there is a market-wide event resulting in evaluated prices not being available, IDI will determine its approach on a case by case basis, taking into account information and notifications provided by PRD. Market-wide events include, but are not limited to, the following:

- Technological Problems / Failures
- Natural Disaster or Other BCP-Related Event

IDI will communicate any issues with publication of the indices during the day through the regular client communication channels; in addition, IDI may also contact clients directly; post a notice on the IDI website; send a message via the market data portal, or use other such forms of communication.

Expert Judgment

In cases which are not expressly covered in these rules, operational adjustments may take place along the lines of the aim of the Index. Operational adjustments may also take place if, in the opinion of the Index Administrator, it is desirable to do so to maintain the integrity of the index.

Any such modifications described under this section or exercise of Expert Judgment will be based upon IDI's Index Design Principles, which detail the core design principles adhered to by the Administrator in establishing an Index determination specific to that Index. Any exercise of Expert Judgment will be overseen by the Governance Committee. The IDI Index Design Principles are available on request.

Index Reviews

IDI shall undertake regular reviews of the Index, the methodology and the market which it represents to ensure it continues to meet the index objective, in accordance with IDI's policies and procedures. Should material changes to the Index be required or proposed, this will be communicated to Stakeholders and Subscribers in accordance with IDI's Consultation Policy, where possible.

Consultations

IDI may from time to time consult with Stakeholders and Subscribers on proposed material changes that affect the Index in accordance with IDI's consultation process. Such proposals shall be published to Stakeholders and Subscribers and all feedback received will be considered by the Index Administrator. Any resulting changes to the Index will be announced prior to it being implemented.

Restatements

IDI reserves the right to restate index levels based on its discretion. Index subscribers are notified prior to a restatement of data. Restatements are typically communicated on the same day but may be longer depending on the volume of restatements required and other conditions.

Index Dissemination

Index levels will be made available at ICE's website: https://www.theice.com/marketdata/reports/210. FTP services are also available via subscription.

Index Governance

The ICE Data Indices, LLC Index Governance Committee (the Governance Committee) is responsible for governance and oversight of the Indices. The Governance Committee provides oversight to IDI which has daily responsibilities for the development, issuance and operation of the Indices.

The Governance Committee will approve any necessary changes in the Index Methodology. IDI is then responsible for implementing the changes and notifying Subscribers.

Where a change is material, IDI will consult with Stakeholders and Subscribers in accordance with the IDI Consultation Process. For other changes, advance notice will be provided, where possible, to allow Stakeholders and Subscribers appropriate preparation to implement the change.

An advisory process is in place to alert Subscribers to the Administrator's response to market stress or disruption.

Definitions

Administrator

An organization or legal person that controls the creation and operation of the Benchmark Administration process, whether or not it owns the intellectual property relating to the Benchmark. In particular, it has responsibility for all stages of the Benchmark Administration process, including:

a) The calculation of the Benchmark;
b) Determining and applying the Benchmark Methodology; and
c) Disseminating the Benchmark.

Amount Outstanding

The par amount outstanding of each Treasury, inclusive of any announced auctions or re-openings, less the par amount of said Treasury held in the Federal Reserve SOMA account or bought at issuance by the Federal Reserve.

Business Day

Those days on which SIFMA® declares the U.S. fixed income markets open.

Constituent

A security included in the Index.

Eligible Bond

Bond that meets all Index eligibility criteria but is not already in the Index.

Expert Judgment

Refers to the exercise of discretion by an Administrator or Submitter with respect to the use of data in determining a Benchmark. Expert Judgment includes extrapolating values from prior or related transactions, adjusting values for factors that might influence the quality of data such as market events or impairment of a buyer or seller's credit quality, or weighting firm bids or offers greater than a particular concluded transaction.

Index

The ICE U.S. Treasury Bond Index, including the U.S Treasury Index Series detailed in this document.

Rebalance Date

The last business day of the month.

Subscriber

A person or entity that purchases Benchmark determination services from an Administrator.

Disclaimer

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The various businesses of Intercontinental Exchange, Inc. provide a wide range of products and services to a diverse group of clients and, as such, Intercontinental Exchange, Inc. faces potential conflicts of interest in the ordinary course of its business. Intercontinental Exchange, Inc. may be acting in a number of capacities in connection with Investable Products or other transactions entered into in relation to ICE indices. Intercontinental Exchange, Inc., acting in such capacities in connection with such transactions, shall have only the duties and responsibilities expressly agreed to by it in its relevant capacity and shall not, by virtue of its acting in any other capacity, be deemed to have other duties or responsibilities or be deemed to hold a standard of care other than as expressly provided with respect to each such capacity. ICE Indices has established policies and procedures designed to identify and address conflicts of interest.

In addition, Intercontinental Exchange, Inc. provides a wide range of services to, or relating to, many organizations, including issuers of securities, investment advisers, broker-dealers, investment banks, other financial institutions and financial intermediaries, and accordingly may receive fees or other economic benefits from those organizations, including organizations whose securities may form part of any index or other evaluation ICE Indices carries out.

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