Benchmark Administration™

Tradeweb ICE U.S. Treasury Closing Prices - Consultation on Methodology Enhancements

July 23, 2021

Contents

Executive Summary

The Tradeweb ICE U.S. Treasury Closing Prices (U.S. Treasury Closing Prices) are designed to represent the market mid-prices for U.S. Treasury Securities at or around market close on U.S. business days.

ICE Benchmark Administration (IBA), a leading administrator of systemically important benchmarks, administers the U.S. Treasury Closing Prices.

Tradeweb Markets LLC (Tradeweb) is a leading global operator of electronic marketplaces. Tradeweb's marketplaces facilitate trading across a range of asset classes, including rates, credit, equities and money markets. The U.S. Treasury Closing Prices are based on data from Tradeweb's institutional platform, the first web-based electronic trading platform for U.S. Treasuries. Tradeweb is the Calculation, Publication and Licensing Agent for the U.S. Treasury Closing Prices benchmark.

Following a review of the methodology, possible enhancements to the benchmark methodology have been identified:

- Utilizing top of book prices from Dealerweb Inc.'s (Dealerweb) Treasury platform as Level 1 data for calculating a closing price for Treasury notes and bonds; and

- Increasing the number of randomized snapshot intervals and shortening the data collection window to 10 seconds.

A questionnaire requesting specific feedback on these proposals is attached. More general feedback by email or letter is also welcome.

Respondents are requested to provide feedback to IBA at IBA@theice.com **on or before Friday August 13, 2021.**

After the feedback period has closed, IBA will publish a feedback statement summarizing responses. IBA will also publish completed questionnaires except where a respondent requests confidentiality.

Subject to the feedback received, any changes to the methodology would likely be implemented with effect from Monday August 23, 2021.

About the Tradeweb ICE U.S. Treasury Closing Prices

The Tradeweb ICE U.S. Treasury Prices (the U.S. Treasury Closing Prices) have been designed to represent the mid-market price for U.S. Treasury Securities at or around 15:00 ET and 16:00 ET on days when the U.S. Treasury Securities market is open for trading in the United States.

ICE Benchmark Administration (IBA) is the benchmark administrator responsible for the U.S. Treasury Closing Prices and provides the governance, oversight, surveillance and regulatory compliance. IBA has outsourced certain roles to Tradeweb Markets LLC (Tradeweb): the collection and verification of input data; the calculation and pre-publication verification of the U.S. Closing Treasury Prices; publication of the benchmark; and licensing.

The U.S. Treasury Closing Prices are calculated and published daily by Tradeweb on more than 900 U.S. Treasury securities using live prices available on Tradeweb's global institutional platform for trading U.S. Treasury Securities and other fixed income asset types.

The U.S. Treasury Closing Prices are designed to be used by banks, dealers, issuers, funds, investment managers and other participants in the markets and geographies relevant to U.S. Treasury Securities, in order to value financial assets and instruments, including investment portfolios, indices and contracts and/or to use the U.S. Treasury Closing Prices as an independent benchmark in such assets and instruments.

The benchmark methodology includes:

- The use of multiple random snapshots of firm quotes taken during a short window before the calculation at or around market close;
- The exclusion of dealer mid-prices that are more than one standard deviation from the mean;
- The removal of random dealer quotes in order to protect the benchmark against the possibility of predicting the impact that a particular quote (or quotes) may have on the benchmark calculation;
- The calculation of average prices across Dealers' client-specific quote tiers; and
- The handling of certain special cases where the published price is not derived using bid and offer quotes from the Tradeweb Platform (Special Cases). For example, U.S. Treasury Securities that are close to maturity are priced at par or illiquid STRIPs are priced using a zero-coupon curve.

The U.S. Treasury Closing Prices are comprised of 11 types of U.S. Treasury Securities such as U.S. Treasury Notes/Bonds; U.S. Treasury Inflation Protected Notes/Bonds; U.S. Treasury Bills; and U.S. Treasury Principal Strips.

The calculation steps are as follows (except for the Special Cases):

1. During a short collection window, multiple random market snapshots are taken for each U.S. Treasury Security and a Dealer Mid-Price (DMP) is calculated for each dealer in each snapshot;
2. Outlier DMPs and a set of randomly selected DMPs are removed from the calculation;
3. The arithmetic mean of the remaining DMPs is calculated for each snapshot;

4. The price for each U.S Treasury Security is calculated as the arithmetic mean of the snapshots; and

5. A verification process determines whether the price in step 4 is published, or an alternative using snapshots from an earlier collection window.

Full details are published in the Calculation Methodology.

In addition, IBA publishes general formulae for derived prices for the U.S. Treasury Closing Prices.

The U.S. Treasury Closing Prices are published daily shortly after 15.00 ET and 16.00 ET. The benchmark publication days follow the U.S. SIFMA holiday schedule, with closure on U.S. holidays and early closing the day before certain U.S. holidays (Early Closing Days).

Further information about IBA and the U.S. Treasury Closing Prices can be found at:
https://www.theice.com/iba

Further information about Tradeweb can be found at:
https://www.tradeweb.com

Clients wishing to access, use or redistribute the U.S. Treasury Closing Prices should contact Tradeweb at:
referenceprices@tradeweb.com

Collection Window

As stated earlier, multiple randomized market snapshots are taken for each U.S. Treasury Security during a short collection window, and the Dealer Mid-Price (DMP) is calculated for each dealer in each snapshot.

The use of multiple random market snapshots is designed to give the benchmark robustness and reliability by protecting against attempted manipulation and temporary aberrations in the underlying market. Outlier exclusions also protect against unrepresentative dealer quotes within a market snapshot influencing the benchmark. In addition, to protect against the market predicting the impact that a particular quote (or quotes) may have on the benchmark calculation, a number of dealer mid-prices are randomly eliminated from the calculation.

From extensive review of data, the following has been observed:

- Fast-moving markets near the close may create price movements, which market participants still consider to be accurate price levels;
- During active markets around the close, sharp changes in a dealer's streaming price may occur; price averaging during the thirty second window may diverge the resultant price away from active market levels near the close; and
- Additional sources of data would help produce a closing price that more accurately captures activity in the Treasury market.

To address the above, it is expected that a shortened collection window would more accurately capture price movements near the close and that more snapshot intervals would provide further protection for the benchmark, including enhanced protection from temporary aberrations in the underlying market.

Accordingly, it is proposed to shorten the data collection window to 10 seconds to align better with the prevailing market practices and to increase the number of randomized snapshot interval to improve the attractiveness of U.S. Treasury Closing Prices to the market.

Step 5 of the calculation of the U.S. Treasury Closing Prices is a verification process to determine whether an alternative, earlier collection window should be used for a U.S. Treasury Security. If all of the verification checks are failed (or there are no dealers providing quotes for the relevant U.S. Treasury Security in that collection window), the U.S. Treasury Closing Price is re-calculated using a collection window commencing five minutes earlier than the standard collection window. If all of the verification checks are again failed (or again there are no dealers providing quotes for the relevant U.S. Treasury Security in that earlier collection window), a collection window commencing 10 minutes earlier than the standard one is used. If the verification checks are again failed or no dealers provide quotes, the Insufficient Data Policy would apply.

The duration of the alternative collection windows in Step 5 of the calculation process would also be reduced in line with the initial collection window.

Inclusion of Dealerweb Pricing

Dealerweb Inc. (Dealerweb) is a subsidiary of Tradeweb that operates an alternative trading system (ATS) offered to dealers, market makers and principal trading firms. Dealerweb offers trading in U.S. Treasury Securities via a central limit order-book (CLOB) and a direct streaming protocol. Liquidity Providers use the direct streaming protocol to provide competitive two-way prices to pre-set counterparties. Quotes are firm executable levels and the top of book represents the best bid and offer from the Dealerweb platform.

Dealerweb provides additional functionality by aggregating direct streams onto a single screen, allowing market participants to evaluate available prices and route orders across direct stream and the CLOB.

Since there is a liquid market for trading U.S. Treasury Securities on Dealerweb, the bid-offer spread for the top of book is tight[1]. The spread of the 30 Year tenor is generally ½ of 1/32nd percentage point of par. For shorter tenors (such as 2 Year and 3 Year), the spread can be as tight as 1/16th of 1/32nd percentage point of par.

Using firm executable quotes from Dealerweb's U.S. Treasury Securities platform would expand the calculation waterfall and incorporate additional observations for calculating a closing price. Those observations will be used to calculate the on-the-run Treasury Security prices which will form the basis from which off-the-run Treasury Security prices will be calculated.

Accordingly, it is proposed to utilize top of book prices from Dealerweb's U.S. Treasury Securities platform as Level 1 data for calculating a closing price for U.S. Treasury Security Notes and Bonds.

[1] The Covid-19 pandemic caused a period of extreme volatility in the U.S. Treasury market in the spring of 2020. Many of Dealerweb's market makers had to reduce risk which widened the bid-offer spreads.

Feedback Request

A questionnaire requesting specific feedback from market participants is attached. More general feedback by email or letter is also welcome.

The specific questions are:

Q1 Do you agree with the market observations described on page 6? Yes/No If No, please explain.

Q2 Do you agree that a shortened collection window will more accurately capture price movements near the close and provide further protection for the benchmark? Yes/No If No, please explain.

Q3 Do you agree with an increased number of shorter randomized snapshots? Yes/No If No, please explain.

Q4 Do you agree with the proposed use of top of book prices from Dealerweb's U.S. Treasury Security platform as Level 1 data for calculating a closing price for U.S. Treasury Security Notes and Bonds? Yes/No If No, please explain.

Q5 Please add any additional comments you may have about the Tradeweb ICE U.S. Treasury Closing Prices.

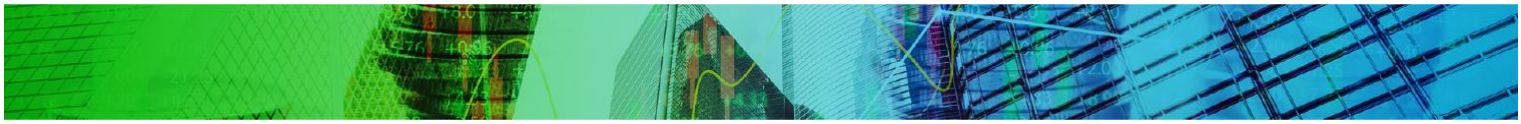
Q6 Do you agree to this completed questionnaire being published by IBA? Yes / No

Q7 Do you agree to being contacted by IBA and /or Tradeweb about your response? Yes / No If Yes, please provide contact details.

Please provide feedback to IBA at IBA@theice.com **on or before Friday August 13, 2021.**

After the feedback period has closed, IBA will publish a feedback statement summarizing responses. IBA will also publish completed questionnaires except where a respondent requests confidentiality.

Subject to the feedback received, Tradeweb would be likely to implement the changes with effect from Monday, August 23, 2021.



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The approach set out in this document is subject to change in response to feedback from market participants and other stakeholders and IBA's further development work.

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Safe Harbor Statement under the Private Securities Litigation Reform Act of 1995 -- Statements in this press release regarding ICE's business that are not historical facts are "forward-looking statements" that involve risks and uncertainties. For a discussion of additional risks and uncertainties, which could cause actual results to differ from those contained in the forward-looking statements, see ICE's Securities and Exchange Commission (SEC) filings, including, but not limited to, the risk factors in ICE's Annual Report on Form 10-K for the year ended December 31, 2020, as filed with the SEC on February 4, 2021.

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Questionnaire - Tradeweb ICE U.S. Treasury Closing Prices

IBA is consulting on shortening the data collection window and utilizing Dealerweb pricing at Level 1 of the waterfall methodology.

Respondents are requested to provide feedback to IBA at IBA@theice.com **by 17:00 London time on Friday August 13, 2021**. Please attach additional pages if required for your responses.

This questionnaire requests specific feedback from market participants but more general feedback by email or letter is also welcome.

Contact Information

Name	
Position	
Organisation (if any)	

For Yes/No questions below, please circle your answer or delete the answer that does not apply.

Q1	**Do you agree with the market observations described on page 6?**	Yes / No If No, please explain.
Q2	**Do you agree that a shortened collection window will more accurately capture price movements near the close and provide further protection for the benchmark?**	Yes / No If No, please explain.

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Please email your completed questionnaire to IBA@theice.com by 17:00 London time on Friday August 13, 2021.

Or post it, to arrive by then, to:

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