

| Implied Treasury Spreads (Sep 2024) |                                           |              |                     |                |                 |
|-------------------------------------|-------------------------------------------|--------------|---------------------|----------------|-----------------|
| Spread Name                         | Futures Contract Legs                     | Price Ratio* | Leg Quantity Ratio* | External Name* | Bloomberg Code^ |
| TYT                                 | 2-Year T-Note vs. 3-Year T-Note ***       | 1.6000       | 8:5                 | TYT 08-05 U4   | TU3Y Comdty     |
| TFY                                 | 2-Year T-Note vs. 5-Year T-Note **        | 2.0000       | 1:1                 | TFY 01-01 U4   | TUFV Comdty     |
| TUF                                 | 2-Year T-Note vs. 5-Year T-Note **        | 2.4000       | 6:5                 | TUF 06-05 U4   |                 |
| TAF                                 | 2-Year T-Note vs. 5-Year T-Note **        | 3.0000       | 3:2                 | TAF 03-02 U4   |                 |
| TUT                                 | 2-Year T-Note vs. 10-Year T-Note **       | 4.0000       | 2:1                 | TUT 02-01 U4   | TUTY Comdty     |
| TUX                                 | 2-Year T-Note vs. Ultra 10-Year T-Note ** | 5.0000       | 5:2                 | TUX 05-02 U4   | TUUXY Comdty    |
| TUB                                 | 2-Year T-Note vs. T-Bond **               | 8.0000       | 4:1                 | TUB 04-01 U4   | TUUS Comdty     |
| TUL                                 | 2-Year T-Note vs. Ultra T-Bond **         | 12.0000      | 6:1                 | TUL 06-01 U4   | TUWN Comdty     |
| TTW                                 | 2-Year T-Note** vs. 20-Year T-Bond        | 2.0000       | 1:1                 | TTW 01-01 U4   | TUTWE Comdty    |
| TWW                                 | 2-Year T-Note** vs. 20-Year T-Bond        | 10.0000      | 5:1                 | TWW 05-01 U4   |                 |
| TOF                                 | 3-Year T-Note vs. 5-Year T-Note **        | 1.5000       | 3:4                 | TOF 03-04 U4   | 3YFV Comdty     |
| TUN                                 | 3-Year T-Note vs. 10-Year T-Note **       | 2.0000       | 1:1                 | TUN 01-01 U4   | 3YTY Comdty     |
| TYX                                 | 3-Year T-Note vs. Ultra 10-Year T-Note ** | 3.2000       | 8:5                 | TYX 08-05 U4   | 3YUXY Comdty    |
| TOB                                 | 3-Year T-Note vs. T-Bond **               | 5.0000       | 5:2                 | TOB 05-02 U4   | 3YUS Comdty     |
| TOU                                 | 3-Year T-Note vs. Ultra T-Bond **         | 7.0000       | 7:2                 | TOU 07-02 U4   | 3YWN Comdty     |
| TRW                                 | 3-Year T-Note** vs. 20-Year T-Bond        | 2.0000       | 1:1                 | TRW 01-01 U4   | 3YTWE Comdty    |
| THW                                 | 3-Year T-Note** vs. 20-Year T-Bond        | 6.0000       | 3:1                 | THW 03-01 U4   |                 |
| FIT                                 | 5-Year T-Note vs. 10-Year T-Note          | 2.0000       | 2:1                 | FIT 02-01 U4   |                 |
| FYN                                 | 5-Year T-Note vs. 10-Year T-Note          | 1.0000       | 1:1                 | FYN 01-01 U4   |                 |
| FYT                                 | 5-Year T-Note vs. 10-Year T-Note          | 1.5000       | 3:2                 | FYT 03-02 U4   |                 |
| FIX                                 | 5-Year T-Note vs. Ultra 10-Year T-Note    | 2.0000       | 2:1                 | FIX 02-01 U4   | FVUXY Comdty    |
| FOB                                 | 5-Year T-Note vs. T-Bond                  | 3.0000       | 3:1                 | FOB 03-01 U4   | FVUS Comdty     |
| FOL                                 | 5-Year T-Note vs. Ultra T-Bond            | 5.0000       | 5:1                 | FOL 05-01 U4   | FVWN Comdty     |
| FTW                                 | 5-Year T-Note vs. 20-Year T-Bond          | 1.0000       | 1:1                 | FTW 01-01 U4   | FVTWE Comdty    |
| FYW                                 | 5-Year T-Note vs. 20-Year T-Bond          | 4.0000       | 4:1                 | FYW 04-01 U4   |                 |
| NON                                 | 10-Year T-Note vs. Ultra 10-Year T-Note   | 1.0000       | 1:1                 | NON 01-01 U4   | TYUXY Comdty    |
| TEX                                 | 10-Year T-Note vs. Ultra 10-Year T-Note   | 1.4000       | 7:5                 | TEX 07-05 U4   |                 |
| TOX                                 | 10-Year T-Note vs. Ultra 10-Year T-Note   | 1.5000       | 3:2                 | TOX 03-02 U4   |                 |
| NBY                                 | 10-Year T-Note vs. T-Bond                 | 1.0000       | 1:1                 | NBY 01-01 U4   | TYUS Comdty     |
| NOB                                 | 10-Year T-Note vs. T-Bond                 | 2.0000       | 2:1                 | NOB 02-01 U4   |                 |
| NIB                                 | 10-Year T-Note vs. T-Bond                 | 3.0000       | 3:1                 | NIB 03-01 U4   |                 |
| NOL                                 | 10-Year T-Note vs. Ultra T-Bond           | 3.0000       | 3:1                 | NOL 03-01 U4   | TYWN Comdty     |
| TYW                                 | 10-Year T-Note vs. 20-Year T-Bond         | 1.0000       | 1:1                 | TYW 01-01 U4   | TYTWE Comdty    |
| TOW                                 | 10-Year T-Note vs. 20-Year T-Bond         | 2.5000       | 5:2                 | TOW 05-02 U4   |                 |
| NCB                                 | Ultra 10-Year T-Note vs. T-Bond           | 1.5000       | 3:2                 | NCB 03-02 U4   | UXYUS Comdty    |
| NUB                                 | Ultra 10-Year T-Note vs. Ultra T-Bond     | 2.0000       | 2:1                 | NUB 02-01 U4   | UXYWN Comdty    |
| NYW                                 | Ultra 10-Year T-Note vs. 20-Year T-Bond   | 1.0000       | 1:1                 | NYW 01-01 U4   | UXYTWE Comdty   |
| NTW                                 | Ultra 10-Year T-Note vs. 20-Year T-Bond   | 2.0000       | 2:1                 | NTW 02-01 U4   |                 |

|      |                                                   |        |     |               |              |
|------|---------------------------------------------------|--------|-----|---------------|--------------|
| BOB  | T-Bond vs. Ultra T-Bond                           | 2.0000 | 2:1 | BOB 02-01 U4  |              |
| BUB  | T-Bond vs. Ultra T-Bond                           | 1.0000 | 1:1 | BUB 01-01 U4  |              |
| BIB  | T-Bond vs. Ultra T-Bond                           | 1.5000 | 3:2 | BIB 03-02 U4  |              |
| ZBW  | T-Bond vs. 20-Year T-Bond                         | 1.0000 | 1:1 | ZBW 01-01 U4  | USTWE Comdty |
| ZTW  | T-Bond vs. 20-Year T-Bond                         | 1.2500 | 5:4 | ZTW 05-04 U4  |              |
| TWU  | 20-Year T-Bond vs. Ultra T-Bond                   | 1.0000 | 1:1 | TWU 01-01 U4  | TWEWN Comdty |
| TWB  | 20-Year T-Bond vs. Ultra T-Bond                   | 1.2000 | 6:5 | TWB 06-05 U4  |              |
| MNUB | Micro Ultra 10-Year T-Note vs. Micro Ultra T-Bond | 2.0000 | 2:1 | MNUB 02-01 U4 |              |

\* Leg quantity and price ratios are subject to change. New ratios are highlighted, fixed ratios are gray.

\*\* Price ratios involving 2-Year & 3-Year T-Notes are doubled to account for larger notional size (\$200K) in the price changes.

\*\*\* However, the ratio of the TYT is not doubled because the contracts have the same notional size.

| Implied Treasury Spreads (Dec 2024) |                                           |              |                     |                |                 |
|-------------------------------------|-------------------------------------------|--------------|---------------------|----------------|-----------------|
| Spread Name                         | Futures Contract Legs                     | Price Ratio* | Leg Quantity Ratio* | External Name* | Bloomberg Code^ |
| TYT                                 | 2-Year T-Note vs. 3-Year T-Note ***       | 1.6000       | 8:5                 | TYT 08-05 Z4   | TU3Y Comdty     |
| TFY                                 | 2-Year T-Note vs. 5-Year T-Note **        | 2.0000       | 1:1                 | TFY 01-01 Z4   | TUFV Comdty     |
| TUF                                 | 2-Year T-Note vs. 5-Year T-Note **        | 2.5000       | 5:4                 | TUF 05-04 Z4   |                 |
| TAF                                 | 2-Year T-Note vs. 5-Year T-Note **        | 3.0000       | 3:2                 | TAF 03-02 Z4   |                 |
| TUT                                 | 2-Year T-Note vs. 10-Year T-Note **       | 4.0000       | 2:1                 | TUT 02-01 Z4   | TUTY Comdty     |
| TUX                                 | 2-Year T-Note vs. Ultra 10-Year T-Note ** | 6.0000       | 3:1                 | TUX 03-01 Z4   | TUUXY Comdty    |
| TUB                                 | 2-Year T-Note vs. T-Bond **               | 8.0000       | 4:1                 | TUB 04-01 Z4   | TUUS Comdty     |
| TUL                                 | 2-Year T-Note vs. Ultra T-Bond **         | 12.0000      | 6:1                 | TUL 06-01 Z4   | TUWN Comdty     |
| TTW                                 | 2-Year T-Note** vs. 20-Year T-Bond        | 2.0000       | 1:1                 | TTW 01-01 Z4   | TUTWE Comdty    |
| TWW                                 | 2-Year T-Note** vs. 20-Year T-Bond        | 10.0000      | 5:1                 | TWW 05-01 Z4   |                 |
| TOF                                 | 3-Year T-Note vs. 5-Year T-Note **        | 1.5000       | 3:4                 | TOF 03-04 Z4   | 3YFV Comdty     |
| TUN                                 | 3-Year T-Note vs. 10-Year T-Note **       | 2.4000       | 6:5                 | TUN 06-05 Z4   | 3YTY Comdty     |
| TYX                                 | 3-Year T-Note vs. Ultra 10-Year T-Note ** | 3.5000       | 7:4                 | TYX 07-04 Z4   | 3YUXY Comdty    |
| TOB                                 | 3-Year T-Note vs. T-Bond **               | 5.0000       | 5:2                 | TOB 05-02 Z4   | 3YUS Comdty     |
| TOU                                 | 3-Year T-Note vs. Ultra T-Bond **         | 8.0000       | 4:1                 | TOU 04-01 Z4   | 3YWN Comdty     |
| TRW                                 | 3-Year T-Note** vs. 20-Year T-Bond        | 2.0000       | 1:1                 | TRW 01-01 Z4   | 3YTWE Comdty    |
| THW                                 | 3-Year T-Note** vs. 20-Year T-Bond        | 6.0000       | 3:1                 | THW 03-01 Z4   |                 |
| FIT                                 | 5-Year T-Note vs. 10-Year T-Note          | 2.0000       | 2:1                 | FIT 02-01 Z4   |                 |
| FYN                                 | 5-Year T-Note vs. 10-Year T-Note          | 1.0000       | 1:1                 | FYN 01-01 Z4   |                 |
| FYT                                 | 5-Year T-Note vs. 10-Year T-Note          | 1.5000       | 3:2                 | FYT 03-02 Z4   |                 |
| FIX                                 | 5-Year T-Note vs. Ultra 10-Year T-Note    | 2.0000       | 2:1                 | FIX 02-01 Z4   | FVUXY Comdty    |
| FOB                                 | 5-Year T-Note vs. T-Bond                  | 3.0000       | 3:1                 | FOB 03-01 Z4   | FVUS Comdty     |
| FOL                                 | 5-Year T-Note vs. Ultra T-Bond            | 5.0000       | 5:1                 | FOL 05-01 Z4   | FVWN Comdty     |
| FTW                                 | 5-Year T-Note vs. 20-Year T-Bond          | 1.0000       | 1:1                 | FTW 01-01 Z4   | FVTWE Comdty    |
| FYW                                 | 5-Year T-Note vs. 20-Year T-Bond          | 4.0000       | 4:1                 | FYW 04-01 Z4   |                 |
| NON                                 | 10-Year T-Note vs. Ultra 10-Year T-Note   | 1.0000       | 1:1                 | NON 01-01 Z4   | TYUXY Comdty    |
| TEX                                 | 10-Year T-Note vs. Ultra 10-Year T-Note   | 1.4000       | 7:5                 | TEX 07-05 Z4   |                 |
| TOX                                 | 10-Year T-Note vs. Ultra 10-Year T-Note   | 1.5000       | 3:2                 | TOX 03-02 Z4   |                 |
| NBY                                 | 10-Year T-Note vs. T-Bond                 | 1.0000       | 1:1                 | NBY 01-01 Z4   | TYUS Comdty     |
| NOB                                 | 10-Year T-Note vs. T-Bond                 | 2.0000       | 2:1                 | NOB 02-01 Z4   |                 |
| NIB                                 | 10-Year T-Note vs. T-Bond                 | 3.0000       | 3:1                 | NIB 03-01 Z4   |                 |
| NOL                                 | 10-Year T-Note vs. Ultra T-Bond           | 3.5000       | 7:2                 | NOL 07-02 Z4   | TYWN Comdty     |
| TYW                                 | 10-Year T-Note vs. 20-Year T-Bond         | 1.0000       | 1:1                 | TYW 01-01 Z4   | TYTWE Comdty    |
| TOW                                 | 10-Year T-Note vs. 20-Year T-Bond         | 2.5000       | 5:2                 | TOW 05-02 Z4   |                 |
| NCB                                 | Ultra 10-Year T-Note vs. T-Bond           | 1.5000       | 3:2                 | NCB 03-02 Z4   | UXYUS Comdty    |
| NUB                                 | Ultra 10-Year T-Note vs. Ultra T-Bond     | 2.5000       | 5:2                 | NUB 05-02 Z4   | UXYWN Comdty    |
| NYW                                 | Ultra 10-Year T-Note vs. 20-Year T-Bond   | 1.0000       | 1:1                 | NYW 01-01 Z4   | UXYTWE Comdty   |
| NTW                                 | Ultra 10-Year T-Note vs. 20-Year T-Bond   | 1.7500       | 7:4                 | NTW 07-04 Z4   |                 |

|      |                                                   |        |     |               |              |
|------|---------------------------------------------------|--------|-----|---------------|--------------|
| BOB  | T-Bond vs. Ultra T-Bond                           | 2.0000 | 2:1 | BOB 02-01 Z4  |              |
| BUB  | T-Bond vs. Ultra T-Bond                           | 1.0000 | 1:1 | BUB 01-01 Z4  |              |
| BIB  | T-Bond vs. Ultra T-Bond                           | 1.5000 | 3:2 | BIB 03-02 Z4  |              |
| ZBW  | T-Bond vs. 20-Year T-Bond                         | 1.0000 | 1:1 | ZBW 01-01 Z4  | USTWE Comdty |
| ZTW  | T-Bond vs. 20-Year T-Bond                         | 1.2000 | 6:5 | ZTW 06-05 Z4  |              |
| TWU  | 20-Year T-Bond vs. Ultra T-Bond                   | 1.0000 | 1:1 | TWU 01-01 Z4  | TWEWN Comdty |
| TWB  | 20-Year T-Bond vs. Ultra T-Bond                   | 1.4000 | 7:5 | TWB 07-05 Z4  |              |
| MNUB | Micro Ultra 10-Year T-Note vs. Micro Ultra T-Bond | 2.5000 | 5:2 | MNUB 05-02 Z4 |              |

\* Leg quantity and price ratios are subject to change. New ratios are highlighted, fixed ratios are gray.

\*\* Price ratios involving 2-Year & 3-Year T-Notes are doubled to account for larger notional size (\$200K) in the price changes.

\*\*\* However, the ratio of the TYT is not doubled because the contracts have the same notional size.

| Implied Eris Spreads (Sep 2024)                                                                           |                                           |              |                     |                |                 |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------|---------------------|----------------|-----------------|
| Spread Name                                                                                               | Futures Contract Legs                     | Price Ratio* | Leg Quantity Ratio* | External Name* | Bloomberg Code^ |
| EAT                                                                                                       | 1-Year vs. 2-Year Eris SOFR Swap Futures  | 1.0000       | 1:1                 | EAT 01-01 U24  | YIAYIT Comdty   |
| EIC                                                                                                       | 1-Year vs. 3-Year Eris SOFR Swap Futures  | 1.0000       | 1:1                 | EIC 01-01 U24  | YIAYIC Comdty   |
| ETC                                                                                                       | 2-Year vs. 3-Year Eris SOFR Swap Futures  | 1.0000       | 1:1                 | ETC 01-01 U24  | YITYIC Comdty   |
| ETW                                                                                                       | 2-Year vs. 5-Year Eris SOFR Swap Futures  | 2.5000       | 5:2                 | ETW 05-02 U24  | YITYIW Comdty   |
| EID                                                                                                       | 3-Year vs. 4-Year Eris SOFR Swap Futures  | 1.0000       | 1:1                 | EID 01-01 U24  | YICYID Comdty   |
| ECW                                                                                                       | 3-Year vs. 5-Year Eris SOFR Swap Futures  | 1.6667       | 5:3                 | ECW 05-03 U24  | YICYIW Comdty   |
| EDW                                                                                                       | 4-Year vs. 5-Year Eris SOFR Swap Futures  | 1.0000       | 1:1                 | EDW 01-01 U24  | YIDYIW Comdty   |
| EIB                                                                                                       | 5-Year vs. 7-Year Eris SOFR Swap Futures  | 1.5000       | 3:2                 | EIB 03-02 U24  | YIWIYB Comdty   |
| EIY                                                                                                       | 5-Year vs. 10-Year Eris SOFR Swap Futures | 2.0000       | 2:1                 | EIY 02-01 U24  | YIWIYI Comdty   |
| EBY                                                                                                       | 7-Year vs. 10-Year Eris SOFR Swap Futures | 1.5000       | 3:2                 | EBY 03-02 U24  | YIBYIW Comdty   |
| * Leg quantity and price ratios are subject to change. New ratios are highlighted, fixed ratios are gray. |                                           |              |                     |                |                 |
| ^ Active contract code.                                                                                   |                                           |              |                     |                |                 |
| All spreads based on \$100k contract values                                                               |                                           |              |                     |                |                 |

| Implied Eris Spreads (Dec 2024)                                                                           |                                           |              |                     |                |                 |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------|---------------------|----------------|-----------------|
| Spread Name                                                                                               | Futures Contract Legs                     | Price Ratio* | Leg Quantity Ratio* | External Name* | Bloomberg Code^ |
| EAT                                                                                                       | 1-Year vs. 2-Year Eris SOFR Swap Futures  | 1.0000       | 1:1                 | EAT 01-01 Z24  | YIAYIT Comdty   |
| EIC                                                                                                       | 1-Year vs. 3-Year Eris SOFR Swap Futures  | 1.0000       | 1:1                 | EIC 01-01 Z24  | YIAYIC Comdty   |
| ETC                                                                                                       | 2-Year vs. 3-Year Eris SOFR Swap Futures  | 1.0000       | 1:1                 | ETC 01-01 Z24  | YITYIC Comdty   |
| ETW                                                                                                       | 2-Year vs. 5-Year Eris SOFR Swap Futures  | 2.5000       | 5:2                 | ETW 05-02 Z24  | YITYIW Comdty   |
| EID                                                                                                       | 3-Year vs. 4-Year Eris SOFR Swap Futures  | 1.0000       | 1:1                 | EID 01-01 Z24  | YICYID Comdty   |
| ECW                                                                                                       | 3-Year vs. 5-Year Eris SOFR Swap Futures  | 1.6667       | 5:3                 | ECW 05-03 Z24  | YICYIW Comdty   |
| EDW                                                                                                       | 4-Year vs. 5-Year Eris SOFR Swap Futures  | 1.0000       | 1:1                 | EDW 01-01 Z24  | YIDYIW Comdty   |
| EIB                                                                                                       | 5-Year vs. 7-Year Eris SOFR Swap Futures  | 1.5000       | 3:2                 | EIB 03-02 Z24  | YIWIYB Comdty   |
| EIY                                                                                                       | 5-Year vs. 10-Year Eris SOFR Swap Futures | 2.0000       | 2:1                 | EIY 02-01 Z24  | YIWIYI Comdty   |
| EBY                                                                                                       | 7-Year vs. 10-Year Eris SOFR Swap Futures | 1.5000       | 3:2                 | EBY 03-02 Z24  | YIBYIW Comdty   |
| * Leg quantity and price ratios are subject to change. New ratios are highlighted, fixed ratios are gray. |                                           |              |                     |                |                 |
| ^ Active contract code.                                                                                   |                                           |              |                     |                |                 |
| All spreads based on \$100k contract values                                                               |                                           |              |                     |                |                 |

| Implied Eris/Treasury Spreads (Sep 2024)                                                                  |                                                                 |              |                     |                  |                 |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------|---------------------|------------------|-----------------|
| Spread Name                                                                                               | Futures Contract Legs                                           | Price Ratio* | Leg Quantity Ratio* | External Name*   | Bloomberg Code^ |
| ETU                                                                                                       | 2-Year Eris SOFR Swap Futures vs. 2-Year T-Note Futures         | 1.0000       | 2:1                 | ETU 02-01 U24-U4 | YITTU Comdty    |
| ETU                                                                                                       | 2-Year Eris SOFR Swap Futures vs. 2-Year T-Note Futures         | 1.0000       | 2:1                 | ETU 02-01 U24-Z4 |                 |
| ETU                                                                                                       | 2-Year Eris SOFR Swap Futures vs. 2-Year T-Note Futures         | 1.0000       | 2:1                 | ETU 02-01 Z24-U4 |                 |
| EWV                                                                                                       | 5-Year Eris SOFR Swap Futures vs. 5-Year T-Note Futures         | 1.0000       | 1:1                 | EWV 01-01 U24-U4 | YIWFV Comdty    |
| EWV                                                                                                       | 5-Year Eris SOFR Swap Futures vs. 5-Year T-Note Futures         | 1.0000       | 1:1                 | EWV 01-01 U24-Z4 |                 |
| EWV                                                                                                       | 5-Year Eris SOFR Swap Futures vs. 5-Year T-Note Futures         | 1.0000       | 1:1                 | EWV 01-01 Z24-U4 |                 |
| EBN                                                                                                       | 7-Year Eris SOFR Swap Futures vs. 10-Year T-Note Futures        | 1.0000       | 1:1                 | EBN 01-01 U24-U4 | YIBTY Comdty    |
| EBN                                                                                                       | 7-Year Eris SOFR Swap Futures vs. 10-Year T-Note Futures        | 1.0000       | 1:1                 | EBN 01-01 U24-Z4 |                 |
| EBN                                                                                                       | 7-Year Eris SOFR Swap Futures vs. 10-Year T-Note Futures        | 1.0000       | 1:1                 | EBN 01-01 Z24-U4 |                 |
| EYT                                                                                                       | 10-Year Eris SOFR Swap Futures vs. Ultra 10-Year T-Note Futures | 1.0000       | 1:1                 | EYT 01-01 U24-U4 | YIYUXT Comdty   |
| EYT                                                                                                       | 10-Year Eris SOFR Swap Futures vs. Ultra 10-Year T-Note Futures | 1.0000       | 1:1                 | EYT 01-01 U24-Z4 |                 |
| EYT                                                                                                       | 10-Year Eris SOFR Swap Futures vs. Ultra 10-Year T-Note Futures | 1.0000       | 1:1                 | EYT 01-01 Z24-U4 |                 |
| * Leg quantity and price ratios are subject to change. New ratios are highlighted, fixed ratios are gray. |                                                                 |              |                     |                  |                 |
| ^ Active contract code.                                                                                   |                                                                 |              |                     |                  |                 |
| All spreads based on \$100k contract values                                                               |                                                                 |              |                     |                  |                 |

| Implied Eris/Treasury Spreads (Dec 2024)                                                                  |                                                                 |              |                     |                  |                 |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------|---------------------|------------------|-----------------|
| Spread Name                                                                                               | Futures Contract Legs                                           | Price Ratio* | Leg Quantity Ratio* | External Name*   | Bloomberg Code^ |
| ETU                                                                                                       | 2-Year Eris SOFR Swap Futures vs. 2-Year T-Note Futures         | 1.0000       | 2:1                 | ETU 02-01 Z24-Z4 | YITTU Comdty    |
| ETU                                                                                                       | 2-Year Eris SOFR Swap Futures vs. 2-Year T-Note Futures         | 1.0000       | 2:1                 | ETU 02-01 Z24-H5 |                 |
| ETU                                                                                                       | 2-Year Eris SOFR Swap Futures vs. 2-Year T-Note Futures         | 1.0000       | 2:1                 | ETU 02-01 H25-Z4 |                 |
| EWV                                                                                                       | 5-Year Eris SOFR Swap Futures vs. 5-Year T-Note Futures         | 1.0000       | 1:1                 | EWV 01-01 Z24-Z4 | YIWFV Comdty    |
| EWV                                                                                                       | 5-Year Eris SOFR Swap Futures vs. 5-Year T-Note Futures         | 1.0000       | 1:1                 | EWV 01-01 Z24-H5 |                 |
| EWV                                                                                                       | 5-Year Eris SOFR Swap Futures vs. 5-Year T-Note Futures         | 1.0000       | 1:1                 | EWV 01-01 H25-Z4 |                 |
| EBN                                                                                                       | 7-Year Eris SOFR Swap Futures vs. 10-Year T-Note Futures        | 1.0000       | 1:1                 | EBN 01-01 Z24-Z4 | YIBTY Comdty    |
| EBN                                                                                                       | 7-Year Eris SOFR Swap Futures vs. 10-Year T-Note Futures        | 1.0000       | 1:1                 | EBN 01-01 Z24-H5 |                 |
| EBN                                                                                                       | 7-Year Eris SOFR Swap Futures vs. 10-Year T-Note Futures        | 1.0000       | 1:1                 | EBN 01-01 H25-Z4 |                 |
| EYT                                                                                                       | 10-Year Eris SOFR Swap Futures vs. Ultra 10-Year T-Note Futures | 1.0000       | 1:1                 | EYT 01-01 Z24-Z4 | YIYUXT Comdty   |
| EYT                                                                                                       | 10-Year Eris SOFR Swap Futures vs. Ultra 10-Year T-Note Futures | 1.0000       | 1:1                 | EYT 01-01 Z24-H5 |                 |
| EYT                                                                                                       | 10-Year Eris SOFR Swap Futures vs. Ultra 10-Year T-Note Futures | 1.0000       | 1:1                 | EYT 01-01 H25-Z4 |                 |
| * Leg quantity and price ratios are subject to change. New ratios are highlighted, fixed ratios are gray. |                                                                 |              |                     |                  |                 |
| ^ Active contract code.                                                                                   |                                                                 |              |                     |                  |                 |
| All spreads based on \$100k contract values                                                               |                                                                 |              |                     |                  |                 |

| TBA/Treasury Spreads (September 2024)                                              |                                                   |              |                     |                 |                 |
|------------------------------------------------------------------------------------|---------------------------------------------------|--------------|---------------------|-----------------|-----------------|
| Spread Name                                                                        | Futures Contract Legs                             | Price Ratio* | Leg Quantity Ratio* | External Name*  | Bloomberg Code^ |
| UPN                                                                                | 30-Year UMBS TBA - 2.0% Coupon vs. 10-Year T-Note | 0.8750       | 7:8                 | UPN 07-08 U4-U4 | JYATY Comdty    |
| UQN                                                                                | 30-Year UMBS TBA - 2.5% Coupon vs. 10-Year T-Note | 0.9000       | 9:10                | UQN 09-10 U4-U4 | JYBTY Comdty    |
| URN                                                                                | 30-Year UMBS TBA - 3.0% Coupon vs. 10-Year T-Note | 0.9000       | 9:10                | URN 09-10 U4-U4 | JYCTY Comdty    |
| UTN                                                                                | 30-Year UMBS TBA - 3.5% Coupon vs. 10-Year T-Note | 0.9000       | 9:10                | UTN 09-10 U4-U4 | JYDTY Comdty    |
| UUN                                                                                | 30-Year UMBS TBA - 4.0% Coupon vs. 10-Year T-Note | 1.1250       | 9:8                 | UUN 09-08 U4-U4 | JYETY Comdty    |
| NTU                                                                                | 30-Year UMBS TBA - 4.5% Coupon vs. 10-Year T-Note | 1.2500       | 5:4                 | NTU 05-04 U4-U4 | JYITY Comdty    |
| THN                                                                                | 30-Year UMBS TBA - 5.0% Coupon vs. 10-Year T-Note | 1.5000       | 3:2                 | THN 03-02 U4-U4 | JYPTY Comdty    |
| UVN                                                                                | 30-Year UMBS TBA - 5.5% Coupon vs. 10-Year T-Note | 2.0000       | 2:1                 | UVN 02-01 U4-U4 | JYTTY Comdty    |
| UWN                                                                                | 30-Year UMBS TBA - 6.0% Coupon vs. 10-Year T-Note | 2.2500       | 9:4                 | UWN 09-04 U4-U4 | JYWTY Comdty    |
| UYN                                                                                | 30-Year UMBS TBA - 6.5% Coupon vs. 10-Year T-Note | 3.0000       | 3:1                 | UYN 03-01 U4-U4 | JYLYT Comdty    |
| UPT                                                                                | 30-Year UMBS TBA - 2.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UPT 01-01 U4-U4 |                 |
| UQY                                                                                | 30-Year UMBS TBA - 2.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UQY 01-01 U4-U4 |                 |
| URY                                                                                | 30-Year UMBS TBA - 3.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | URY 01-01 U4-U4 |                 |
| UTY                                                                                | 30-Year UMBS TBA - 3.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UTY 01-01 U4-U4 |                 |
| UUY                                                                                | 30-Year UMBS TBA - 4.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UUY 01-01 U4-U4 |                 |
| YTU                                                                                | 30-Year UMBS TBA - 4.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | YTU 01-01 U4-U4 |                 |
| THY                                                                                | 30-Year UMBS TBA - 5.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | THY 01-01 U4-U4 |                 |
| UVY                                                                                | 30-Year UMBS TBA - 5.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UVY 01-01 U4-U4 |                 |
| UWY                                                                                | 30-Year UMBS TBA - 6.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UWY 01-01 U4-U4 |                 |
| UYU                                                                                | 30-Year UMBS TBA - 6.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UYU 01-01 U4-U4 |                 |
| UPF                                                                                | 30-Year UMBS TBA - 2.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UPF 01-01 U4-U4 |                 |
| UQF                                                                                | 30-Year UMBS TBA - 2.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UQF 01-01 U4-U4 |                 |
| URF                                                                                | 30-Year UMBS TBA - 3.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | URF 01-01 U4-U4 |                 |
| UTV                                                                                | 30-Year UMBS TBA - 3.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UTV 01-01 U4-U4 |                 |
| UUF                                                                                | 30-Year UMBS TBA - 4.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UUF 01-01 U4-U4 |                 |
| VTU                                                                                | 30-Year UMBS TBA - 4.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | VTU 01-01 U4-U4 |                 |
| THF                                                                                | 30-Year UMBS TBA - 5.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | THF 01-01 U4-U4 |                 |
| UVF                                                                                | 30-Year UMBS TBA - 5.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UVF 01-01 U4-U4 |                 |
| UWV                                                                                | 30-Year UMBS TBA - 6.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UWV 01-01 U4-U4 |                 |
| UYF                                                                                | 30-Year UMBS TBA - 6.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UYF 01-01 U4-U4 |                 |
| * Leg quantity and price ratios are subject to change. New ratios are highlighted. |                                                   |              |                     |                 |                 |
| ^ Active contract code.                                                            |                                                   |              |                     |                 |                 |

| TBA/Treasury Spreads (October 2024)                                                |                                                   |              |                     |                 |                 |
|------------------------------------------------------------------------------------|---------------------------------------------------|--------------|---------------------|-----------------|-----------------|
| Spread Name                                                                        | Futures Contract Legs                             | Price Ratio* | Leg Quantity Ratio* | External Name*  | Bloomberg Code^ |
| UPN                                                                                | 30-Year UMBS TBA - 2.0% Coupon vs. 10-Year T-Note | 0.9000       | 9:10                | UPN 09-10 V4-Z4 | JYATY Comdty    |
| UQN                                                                                | 30-Year UMBS TBA - 2.5% Coupon vs. 10-Year T-Note | 0.9000       | 9:10                | UQN 09-10 V4-Z4 | JYBTY Comdty    |
| URN                                                                                | 30-Year UMBS TBA - 3.0% Coupon vs. 10-Year T-Note | 0.9000       | 9:10                | URN 09-10 V4-Z4 | JYCTY Comdty    |
| UTN                                                                                | 30-Year UMBS TBA - 3.5% Coupon vs. 10-Year T-Note | 0.9000       | 9:10                | UTN 09-10 V4-Z4 | JYDTY Comdty    |
| UUN                                                                                | 30-Year UMBS TBA - 4.0% Coupon vs. 10-Year T-Note | 1.1250       | 9:8                 | UUN 09-08 V4-Z4 | JYETY Comdty    |
| NTU                                                                                | 30-Year UMBS TBA - 4.5% Coupon vs. 10-Year T-Note | 1.2500       | 5:4                 | NTU 05-04 V4-Z4 | JYITY Comdty    |
| THN                                                                                | 30-Year UMBS TBA - 5.0% Coupon vs. 10-Year T-Note | 1.5000       | 3:2                 | THN 03-02 V4-Z4 | JYPTY Comdty    |
| UVN                                                                                | 30-Year UMBS TBA - 5.5% Coupon vs. 10-Year T-Note | 2.0000       | 2:1                 | UVN 02-01 V4-Z4 | JYTTY Comdty    |
| UWN                                                                                | 30-Year UMBS TBA - 6.0% Coupon vs. 10-Year T-Note | 2.5000       | 5:2                 | UWN 05-02 V4-Z4 | JYWTY Comdty    |
| UYN                                                                                | 30-Year UMBS TBA - 6.5% Coupon vs. 10-Year T-Note | 3.0000       | 3:1                 | UYN 03-01 V4-Z4 | JYLYT Comdty    |
| UPT                                                                                | 30-Year UMBS TBA - 2.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UPT 01-01 V4-Z4 |                 |
| UQY                                                                                | 30-Year UMBS TBA - 2.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UQY 01-01 V4-Z4 |                 |
| URY                                                                                | 30-Year UMBS TBA - 3.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | URY 01-01 V4-Z4 |                 |
| UTY                                                                                | 30-Year UMBS TBA - 3.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UTY 01-01 V4-Z4 |                 |
| UUY                                                                                | 30-Year UMBS TBA - 4.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UUY 01-01 V4-Z4 |                 |
| YTU                                                                                | 30-Year UMBS TBA - 4.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | YTU 01-01 V4-Z4 |                 |
| THY                                                                                | 30-Year UMBS TBA - 5.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | THY 01-01 V4-Z4 |                 |
| UVY                                                                                | 30-Year UMBS TBA - 5.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UVY 01-01 V4-Z4 |                 |
| UWY                                                                                | 30-Year UMBS TBA - 6.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UWY 01-01 V4-Z4 |                 |
| UYY                                                                                | 30-Year UMBS TBA - 6.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UYY 01-01 V4-Z4 |                 |
| UPF                                                                                | 30-Year UMBS TBA - 2.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UPF 01-01 V4-Z4 |                 |
| UQF                                                                                | 30-Year UMBS TBA - 2.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UQF 01-01 V4-Z4 |                 |
| URF                                                                                | 30-Year UMBS TBA - 3.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | URF 01-01 V4-Z4 |                 |
| UTV                                                                                | 30-Year UMBS TBA - 3.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UTV 01-01 V4-Z4 |                 |
| UUF                                                                                | 30-Year UMBS TBA - 4.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UUF 01-01 V4-Z4 |                 |
| VTU                                                                                | 30-Year UMBS TBA - 4.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | VTU 01-01 V4-Z4 |                 |
| THF                                                                                | 30-Year UMBS TBA - 5.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | THF 01-01 V4-Z4 |                 |
| UVF                                                                                | 30-Year UMBS TBA - 5.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UVF 01-01 V4-Z4 |                 |
| UWV                                                                                | 30-Year UMBS TBA - 6.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UWV 01-01 V4-Z4 |                 |
| UYF                                                                                | 30-Year UMBS TBA - 6.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UYF 01-01 V4-Z4 |                 |
| * Leg quantity and price ratios are subject to change. New ratios are highlighted. |                                                   |              |                     |                 |                 |
| ^ Active contract code.                                                            |                                                   |              |                     |                 |                 |

| TBA/Treasury Spreads (November 2024)                                               |                                                   |              |                     |                 |                 |
|------------------------------------------------------------------------------------|---------------------------------------------------|--------------|---------------------|-----------------|-----------------|
| Spread Name                                                                        | Futures Contract Legs                             | Price Ratio* | Leg Quantity Ratio* | External Name*  | Bloomberg Code^ |
| UPN                                                                                | 30-Year UMBS TBA - 2.0% Coupon vs. 10-Year T-Note | 0.9000       | 9:10                | UPN 09-10 X4-Z4 | JYATY Comdty    |
| UQN                                                                                | 30-Year UMBS TBA - 2.5% Coupon vs. 10-Year T-Note | 0.9000       | 9:10                | UQN 09-10 X4-Z4 | JYBTY Comdty    |
| URN                                                                                | 30-Year UMBS TBA - 3.0% Coupon vs. 10-Year T-Note | 0.9000       | 9:10                | URN 09-10 X4-Z4 | JYCTY Comdty    |
| UTN                                                                                | 30-Year UMBS TBA - 3.5% Coupon vs. 10-Year T-Note | 1.1250       | 9:8                 | UTN 09-08 X4-Z4 | JYDTY Comdty    |
| UUN                                                                                | 30-Year UMBS TBA - 4.0% Coupon vs. 10-Year T-Note | 1.2500       | 5:4                 | UUN 05-04 X4-Z4 | JYETY Comdty    |
| NTU                                                                                | 30-Year UMBS TBA - 4.5% Coupon vs. 10-Year T-Note | 1.5000       | 3:2                 | NTU 03-02 X4-Z4 | JYITY Comdty    |
| THN                                                                                | 30-Year UMBS TBA - 5.0% Coupon vs. 10-Year T-Note | 2.0000       | 2:1                 | THN 02-01 X4-Z4 | JYPTY Comdty    |
| UVN                                                                                | 30-Year UMBS TBA - 5.5% Coupon vs. 10-Year T-Note | 2.5000       | 5:2                 | UVN 05-02 X4-Z4 | JYTTY Comdty    |
| UWN                                                                                | 30-Year UMBS TBA - 6.0% Coupon vs. 10-Year T-Note | 3.0000       | 3:1                 | UWN 03-01 X4-Z4 | JYWTY Comdty    |
| UYN                                                                                | 30-Year UMBS TBA - 6.5% Coupon vs. 10-Year T-Note | 4.0000       | 4:1                 | UYN 04-01 X4-Z4 | JYLYT Comdty    |
| UPT                                                                                | 30-Year UMBS TBA - 2.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UPT 01-01 X4-Z4 |                 |
| UQY                                                                                | 30-Year UMBS TBA - 2.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UQY 01-01 X4-Z4 |                 |
| URY                                                                                | 30-Year UMBS TBA - 3.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | URY 01-01 X4-Z4 |                 |
| UTY                                                                                | 30-Year UMBS TBA - 3.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UTY 01-01 X4-Z4 |                 |
| UUY                                                                                | 30-Year UMBS TBA - 4.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UUY 01-01 X4-Z4 |                 |
| YTU                                                                                | 30-Year UMBS TBA - 4.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | YTU 01-01 X4-Z4 |                 |
| THY                                                                                | 30-Year UMBS TBA - 5.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | THY 01-01 X4-Z4 |                 |
| UVY                                                                                | 30-Year UMBS TBA - 5.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UVY 01-01 X4-Z4 |                 |
| UWY                                                                                | 30-Year UMBS TBA - 6.0% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UWY 01-01 X4-Z4 |                 |
| UYU                                                                                | 30-Year UMBS TBA - 6.5% Coupon vs. 10-Year T-Note | 1.0000       | 1:1                 | UYU 01-01 X4-Z4 |                 |
| UPF                                                                                | 30-Year UMBS TBA - 2.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UPF 01-01 X4-Z4 |                 |
| UQF                                                                                | 30-Year UMBS TBA - 2.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UQF 01-01 X4-Z4 |                 |
| URF                                                                                | 30-Year UMBS TBA - 3.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | URF 01-01 X4-Z4 |                 |
| UTV                                                                                | 30-Year UMBS TBA - 3.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UTV 01-01 X4-Z4 |                 |
| UUF                                                                                | 30-Year UMBS TBA - 4.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UUF 01-01 X4-Z4 |                 |
| VTU                                                                                | 30-Year UMBS TBA - 4.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | VTU 01-01 X4-Z4 |                 |
| THF                                                                                | 30-Year UMBS TBA - 5.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | THF 01-01 X4-Z4 |                 |
| UVF                                                                                | 30-Year UMBS TBA - 5.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UVF 01-01 X4-Z4 |                 |
| UWV                                                                                | 30-Year UMBS TBA - 6.0% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UWV 01-01 X4-Z4 |                 |
| UYF                                                                                | 30-Year UMBS TBA - 6.5% Coupon vs. 5-Year T-Note  | 1.0000       | 1:1                 | UYF 01-01 X4-Z4 |                 |
| * Leg quantity and price ratios are subject to change. New ratios are highlighted. |                                                   |              |                     |                 |                 |
| ^ Active contract code.                                                            |                                                   |              |                     |                 |                 |