

U.S. Treasury Futures Inter-Commodity Spreads

Treasury Futures Inter-Commodity Spreads (ICS) on Globex

Implied, pre-defined spreads on Treasury futures

Treasury futures ICS Examples	
FYT	5-Yr vs. 10-Yr
BOB	T-Bond vs. Ultra Bond
TEX	10-Yr vs. Ultra 10
TUF	2-Yr vs. 5-Yr
NCB	Ultra 10 vs. T-Bond

Key Benefits:

- ✓ **Eliminates price slippage.** Provides easier and more efficient execution
- ✓ **Increases matching opportunities.** Implied functionality provides automated arbitrage between outright and spread order books, enhancing market liquidity and efficiency.
- ✓ **Provides arbitrage opportunities.** Match engine may be able to leg spread orders at prices better than the spread order price.
- ✓ **Automatic margin offsets.** Provides simple capital efficiency.

Treasury Futures ICS Mechanics and Pricing

- Buying the spread (a “steepener”) involves buying the front (shorter tenor) leg and selling the back (longer tenor) leg
- Spreads trade in pre-defined ratios:
 - Quantity ratios are calculated based on the DV01s of the respective cheapest-to-deliver securities
 - Price ratios equal the front leg quantity divided by the back leg quantity (except for 2-Yr Treasury futures ICS where the price ratio is then doubled to account for the \$200,000 notional size)
 - Price and quantity ratios are published [here](#)
 - Price and quantity ratios are expected to remain unchanged absent substantial changes in the marketplace.
- ICS minimum tick is equal to the minimum tick of the front leg
- Each leg has the same expiry:
 - E.g., FYT 03-02 M3 involves Jun 2023 5-Yr T-Note futures (ZFM3) vs. Jun 2023 10-Yr T-Note futures (ZNM3)
- Pricing convention is “net change on day”:

$$\text{ICS price} = \text{Net change in front leg price} - \frac{\text{Net change in back leg price}}{\text{Price ratio}}$$

ICS Globex Specifications

Listing and trading

- Deferred month spreads will be listed midway through the month prior to a contract expiration month:
 - E.g., Sept ICS will be listed mid-May, joining the existing Jun spreads
- ICS are eligible to trade until expiration day of whichever leg expires first.

Order type specifications

- Good Till Cancelled (GTC) and Good Till Date (GTD) order qualifiers not supported
- IV spread type.

Matching

- Defined spread orders will take precedence over implied orders at a given price
- Implied outrights created by ICS are filled according to a [pre-defined priority](#).

Market data

- Generally, only first generation implied “in” market data is disseminated
- However, implied “out” market data is disseminated for spreads with 1:1 quantity ratios.

ICS Matching

- If available, incoming ICS orders match with existing ICS orders at the same or better price:
 - Leg prices are allocated such that the net change in the front leg matches the net change in the spread and the back leg price matches the previous day settle.
- If a match isn't available in the ICS book, Globex will look to the constituent leg prices to see if there is a match:
 - In cases where Globex “legs” the order, the order will be executed at the most advantageous differential possible, which may be better than the price on the incoming order
 - While ICS orders and prices use “standard” (.25, .50, .75, 1.0) tick increments, ICS orders are frequently matched at narrower bid/ask spreads.

Example

- FYT 03-02 M3 has a 3:2 quantity ratio and a 1.5 price ratio
- FVM3 trades at 109'195 / 109'197 (last settle of 110'032) and TYM3 trades at 114'290 / 114'295 (last settle of 115'175)
 - FYT bid = $(109'195 - 110'032) - (114'295 - 115'175)/1.5 = -2.4167$ ticks
 - FYT ask = $(109'197 - 110'032) - (114'290 - 115'175)/1.5 = -1.8333$ ticks
- Absent resting ICS bids at -2.5 or offers at -1.75, an aggressor would be filled at -2.4167 for a sell order and -1.8333 for a buy order.

ICS Pricing Example

Calculating the ICS price

	Last Settle	Current Price	Net Change	Leg Quantity
FVM3	110'032	109'197	-0'155	600
TYM3	115'175	114'290	+0'205	400

- ICS price = $-0'155 - 0'205/1.5 = -1.8333/32^{\text{nd}}$ (this implied price would be rounded to the nearest allowable tick, i.e., -1.75/32nd bid and -2/32nd ask)

Calculating P&L

	ICS Price	x	\$ Value of 1/32 nd	x	# Front Leg Contracts	=	P&L
If the trade takes place at the bid	-1.75/32 nd	x	\$31.25	x	600	=	-\$32,812.50
If the trade takes place at the ask	-2/32 nd	x	\$31.25	x	600	=	-\$37,500

Margining

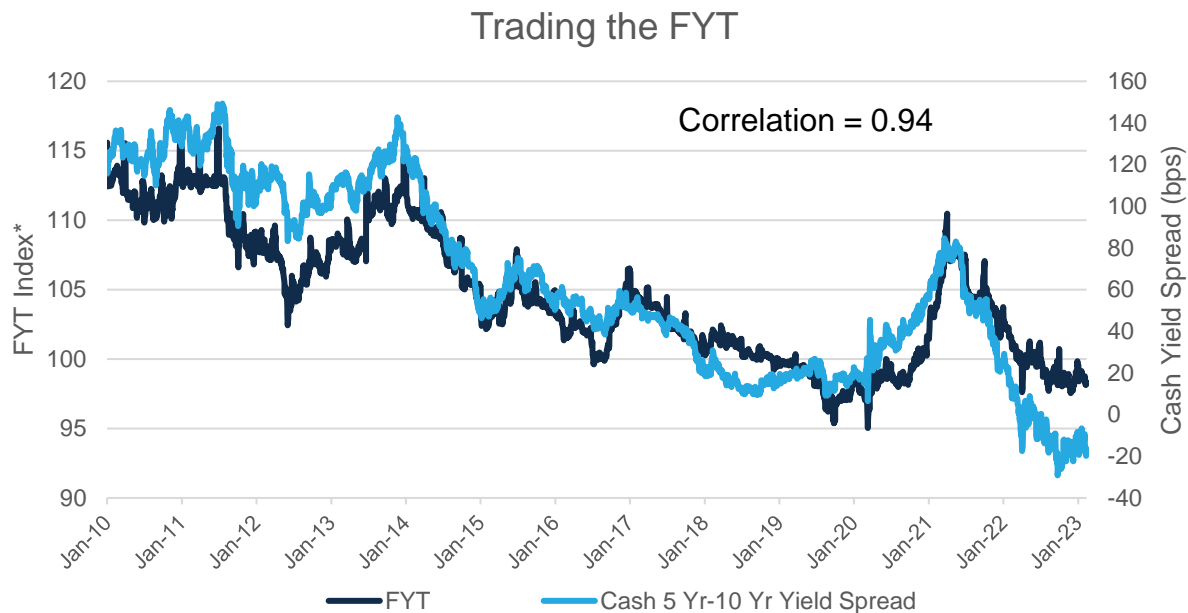
- Margin offsets between ICS legs reduce total initial margin requirements for an ICS
- Given the following margin requirements (note that margin requirements are subject to change):

Leg	IM/contract	Number of contracts in leg	Offset
TY	\$2,475	2	65%
FV	\$1,870	3	65%

- To calculate the total initial margin requirement:
 1. For both legs, multiply IM/contract by the number of contracts in each leg
 2. Take the smaller of the two values from Step 1 and multiply by the offset percentage
 3. Take the higher of the two values from Step 1 and subtract the value from Step 2
- Total initial margin requirement = $\$1,870 \times 3 - \$2,475 \times 2 \times 65\% = \$2,392.50$

Alternative to Cash Treasury RV Trading

Treasury ICS prices are highly correlated with the Treasury yield spread, providing an alternative way of trading the yield curve



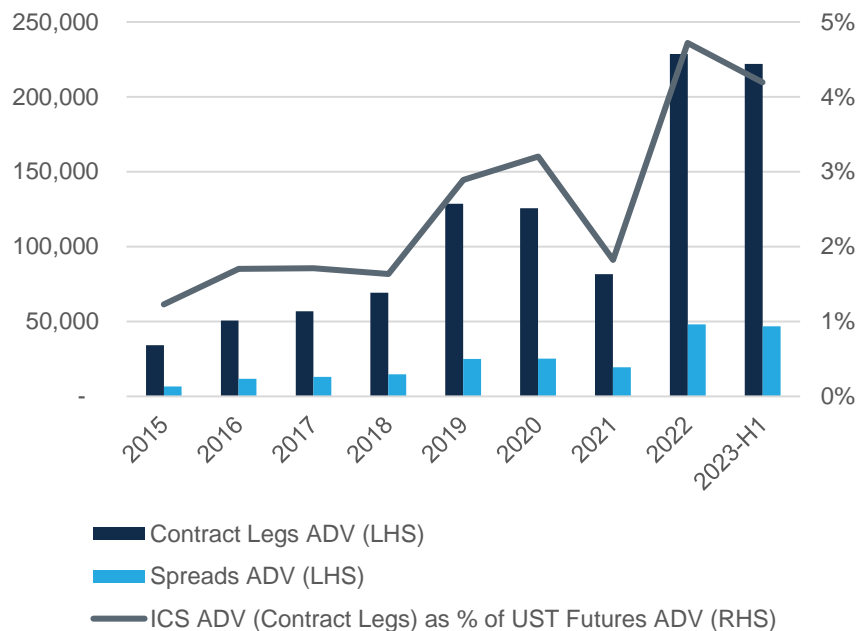
*FYT Index = $3 \times \text{FV Price} - 2 \times \text{TY Price}$

**FYT ratio has been 3:2 except for Jun and Sep 2015 expiries whose ratio was 5:3

Treasury Futures ICS Volume

ICS volume has grown significantly in recent years, both in volume terms and as a percentage of Treasury futures volume

Treasury Futures ICS Volume



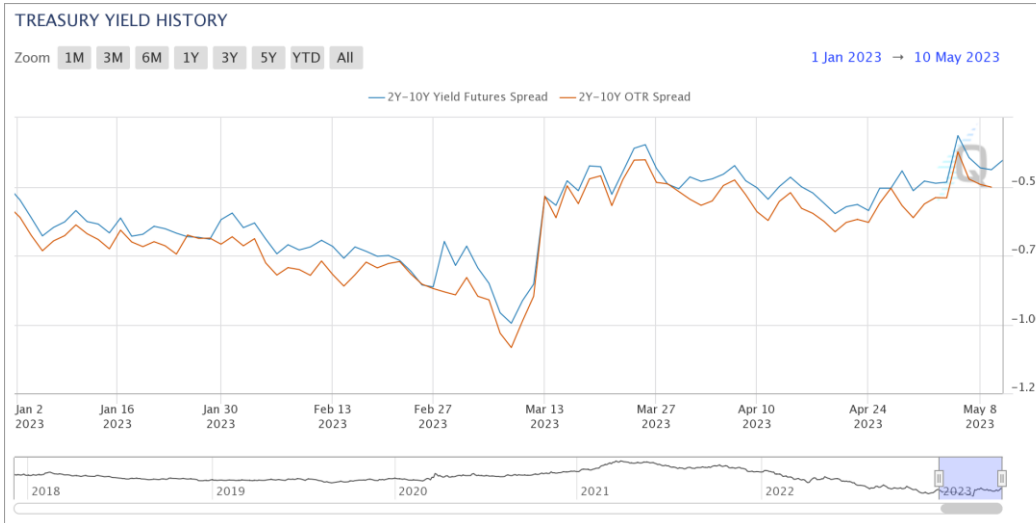
Top 5 ICS by 2023-H1 ADV (Spreads)

ICS	2023-H1 ADV (Spreads)	2023-H1 ADV (Contract Legs)
FYT	25,395	126,975
TEX	4,663	13,989
TUF	3,869	36,638
NOB	2,786	8,358
NCB	2,545	12,723

Micro Treasury Yield Futures ICS

Simple, DV01-matched yield curve trading

- Micro Treasury Yield futures are yield-quoted futures on the BrokerTec US Treasury benchmarks (on-the-runs)
- 2, 5, 10, and 30-year tenors available, with ICS available between all tenor-pairs
- Fixed \$10 DV01 allow traders to trade the yield curve while fully hedged against parallel shifts
- Closely tracks changes in the on-the-run spread (see our [CurveWatch](#) tool)



For More Information

- Visit <http://www.cmegroup.com/ics>
- Contact the Long-Term Interest Rate Products team (InterestRates@cmegroup.com)

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