U.S. Treasury Futures Inter-Commodity Spreads

February 2024

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 = -1.8333/32nd (this implied price would be rounded to the nearest allowable tick, i.e., -2/32nd bid and -1.75/32nd ask)

Calculating P&L

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

Margining

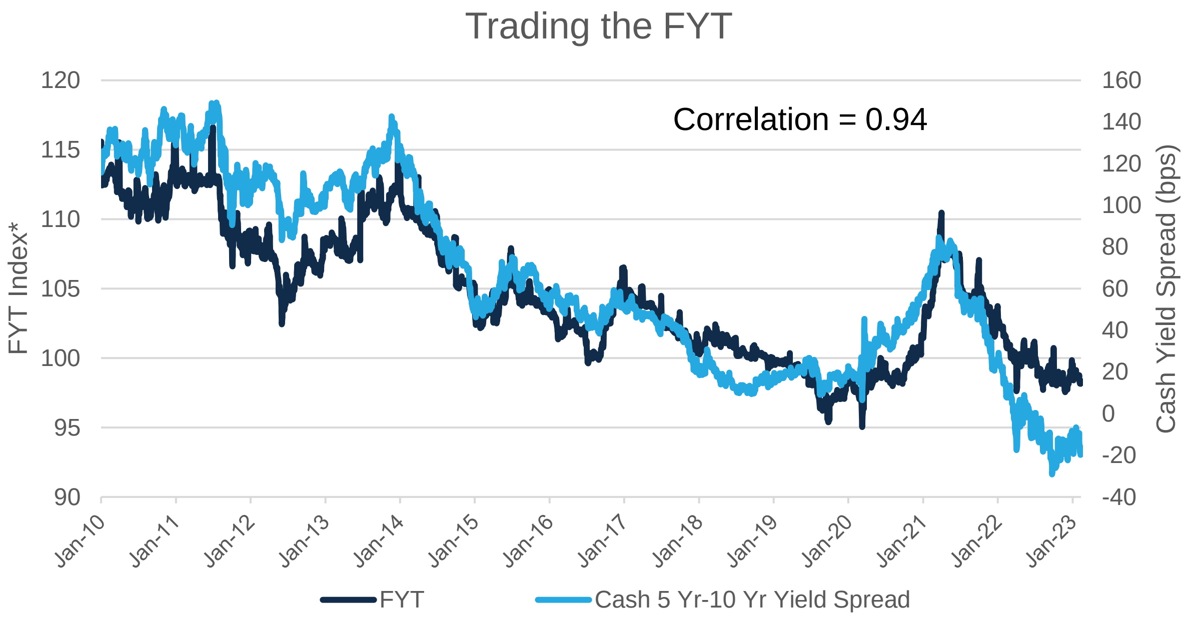
- Margin offsets between ICS legs reduce total initial margin requirements for an ICS
- Given the following margin requirements (note that margin requirements and offsets are subject to change):

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 × 3 + $2,475 × 2) × (1 – 65%) = $3,696

Alternative to Cash Treasury RV Trading

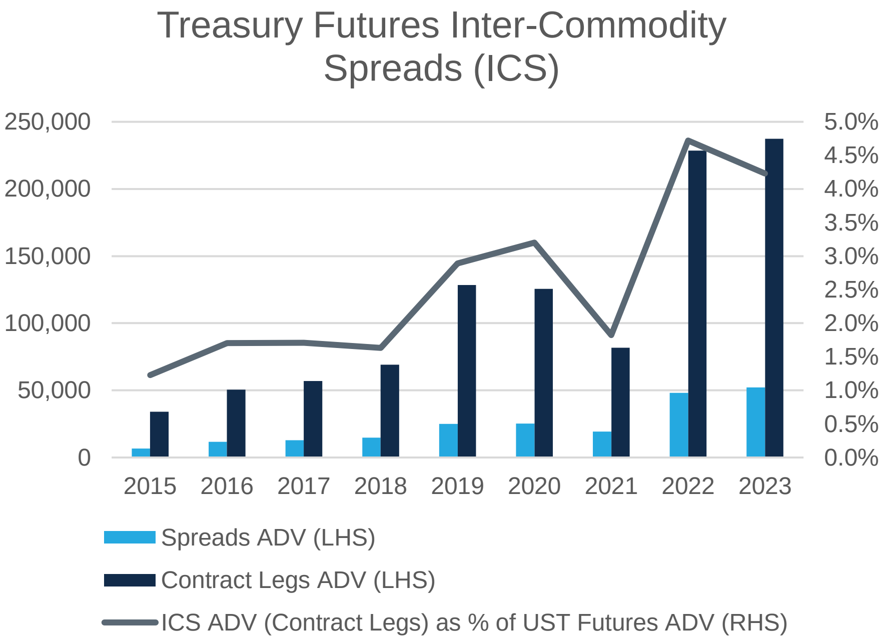
Treasury ICS prices are highly correlated with the Treasury yield spread, providing an alternative way of trading the yield curve



*FYT Index = 3 × FV Price – 2 × 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



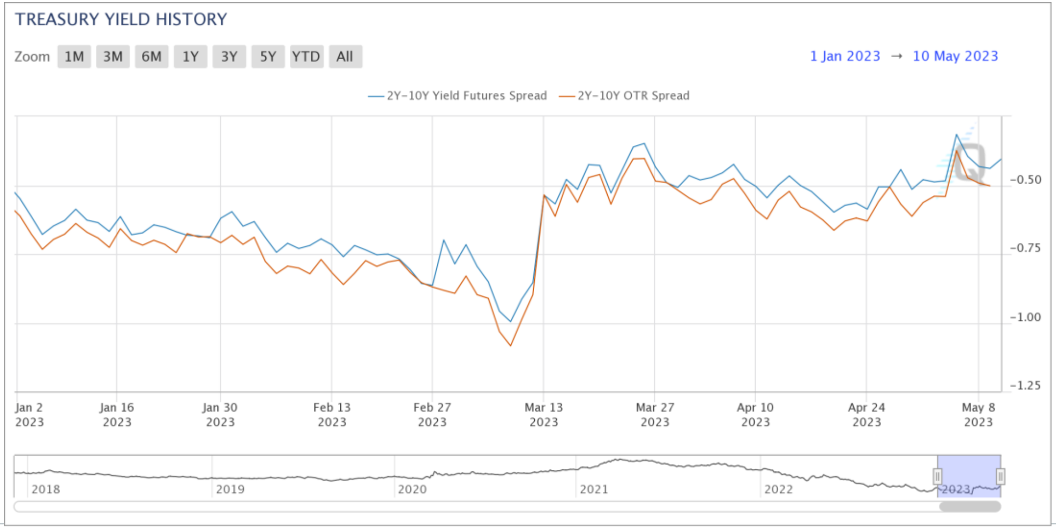
Top 5 ICS by 2023 ADV (Contract Legs)

Pair	ICS	2023-H1 ADV (Spreads)	2023-H1 ADV (Contract Legs)
5Y/10Y	FIT/FYT	125,625	26,133
2Y/5Y	TUF/TFY	51,533	9,752
Ultra10Y/30Y	NCB	13,992	2,798
10Y/Ultra10Y	TEX	13,103	3,788
10Y/30Y	NOB	12,445	4,148

Yield Futures ICS

Simple, DV01-matched yield curve trading

- 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 Interest Rate Products team (InterestRates@cmegroup.com)

Disclaimer

Neither futures trading nor swaps trading are suitable for all investors, and each involves the risk of loss. Swaps trading should only be undertaken by investors who are Eligible Contract Participants (ECPs) within the meaning of Section 1a(18) of the Commodity Exchange Act. Futures and swaps each are leveraged investments and, because only a percentage of a contract's value is required to trade, it is possible to lose more than the amount of money deposited for either a futures or swaps position. Therefore, traders should only use funds that they can afford to lose without affecting their lifestyles and only a portion of those funds should be devoted to any one trade because traders cannot expect to profit on every trade.

CME Group, the Globe Logo, CME, Globex, E-Mini, CME Direct, CME DataMine and Chicago Mercantile Exchange are trademarks of Chicago Mercantile Exchange Inc. CBOT is a trademark of the Board of Trade of the City of Chicago, Inc. NYMEX is a trademark of New York Mercantile Exchange, Inc. COMEX is a trademark of Commodity Exchange, Inc. All other trademarks are the property of their respective owners.

The information within this communication has been compiled by CME Group for general purposes only. CME Group assumes no responsibility for any errors or omissions. Additionally, all examples in this communication are hypothetical situations, used for explanation purposes only, and should not be considered investment advice or the results of actual market experience. All matters pertaining to rules and specifications herein are made subject to and superseded by official CME, CBOT, NYMEX and COMEX rules. Current rules should be consulted in all cases concerning contract specifications.