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# CME Group

## A Closer Look at CME Group Interest Rates

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# CME Group Interest Rate Futures

January 2022

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## CME Group Interest Rates

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# Short Term Interest Rates Contracts

**Eurodollar Futures and Options**

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**SOFR Futures and Options**

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**Fed Funds Futures and Options**

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BSBY Futures

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TIIE Futures

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SONIA Futures

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Swap Futures

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## CME Group Interest Rates

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Long Term  
Interest  
Rates  
Contracts

**Treasury Futures and Options**

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2 Yr, 3 Yr, 5 Yr, 10 Yr, Ultra 10 Yr, Bond (30 Yr), Ultra Bond (30 Yr)

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\*No Options on 3 Year

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**Micro Treasury Yield Futures**

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2 Yr, 5 Yr, 10 Yr, 30 Yr Micro Treasury Yield Futures

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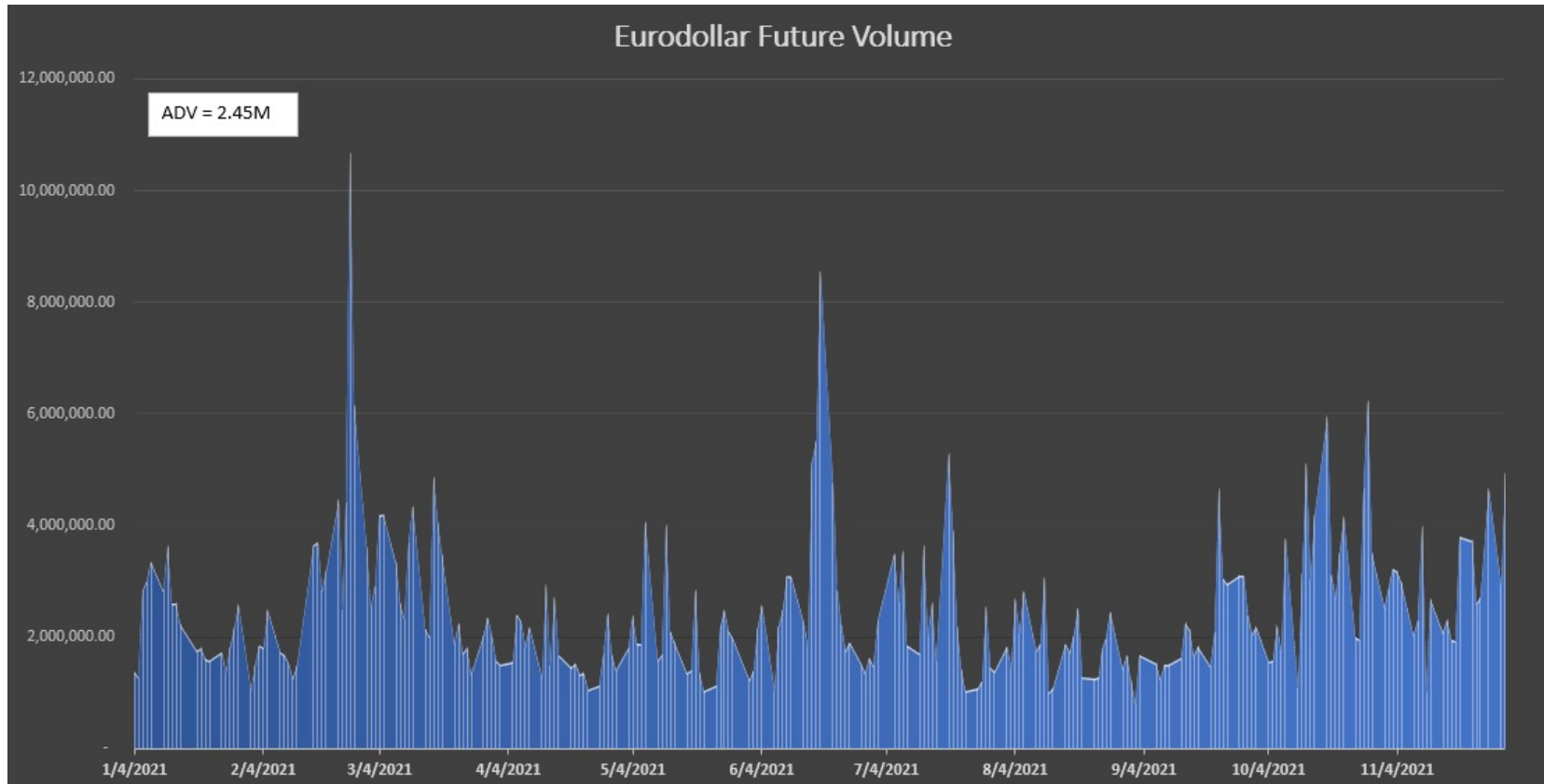
# Eurodollars

*Any United States dollar (“U.S. dollar”) held outside the U.S. banking system.*

- The price of Eurodollar futures is based on the London Interbank Offer Rate (LIBOR) – *the interest rate that banks borrow and lend funds to one another*
- Eurodollar futures are based on 3-month LIBOR and are listed 10 years into the future
- Pricing Convention: 100-Yield
  - *Current March 2021 Price = 99.69 Bid @ 99.695 Offer\**
- Eurodollar Futures “grew up” with the Interest Rate Swap market
  - Most vanilla Interest Rate swaps have been based on LIBOR
    - Swap Dealers facilitate finance professionals to “swap” fixed interest rate obligations for floating interest rate obligations
  - Major Customers: Swap Dealers, Hedge Funds, Proprietary Traders, Banks

\*CME Direct 12/14 @ 1:15 PM

# Eurodollars



Source: CME Group data



# Eurodollar Example

CC	Product	Description	Status	+	Qty	Bid	Ofr	Qty
<b>Eurodollar Future</b>								
GE	Eurodollar Future	Mar22/Sep22/Mar23	Open	+	117	-4.5	-3.5	731
GE	Eurodollar Future	Mar22	Open	+	7,242	99.685	99.690	24,618
GE	Eurodollar Future	Sep22	Open	+	473	99.260	99.265	10,618
GE	Eurodollar Future	Mar23	Open	+	2,155	98.790	98.795	2,597

<b>Buy 1 Mar 22 / Sep 22/ Mar 23 Butterfly</b>			
	Trade at Initiation	Trade at Exit	P&L
Buy 1 Mar 22	99.6875	99.7875	0.1
Sell 2 Sep 22	99.2575	99.3075	-0.1
Buy 1 Mar 23	98.7925	98.8225	0.03
			0.03
	Trade at Initiation	Trade at Exit	P&L
Buy Mar 22/ Sell Sep 22	0.43	0.48	0.05
Sell Sep 22/ Buy Mar 23	-0.465	-0.485	-0.02
			0.03

<b>Hypothetical Price Changes</b>	
22-Mar	+0.1
22-Sep	+0.05
23-Mar	+0.03

A long Butterfly position becomes profitable when the nearby spreads steepens relative to the deferred spread

# Eurodollar Example

More than half of all Eurodollar Futures executed from Jan-Nov, 2021 were done as a combo

	CC	Product	Description	Status	+	Qty	Bid	Ofr	Qty
Outright									
Calendar Spread									
Futures - Bundle									
ED Packs(Strips)									
<b>Futures Butterfly</b>									
Double Fly									
Eurodollar Pack Spread									
<b>Eurodollar Future</b>									
	GE	Eurodollar Future	Mar22/Sep22/Mar23	Open	+	117	-4.5	-3.5	731
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Eurodollar Futures Butterfly Spread is similar to an Options Butterfly Spread (+1, -2, +1)

- Buying (selling) one calendar spread against selling (buying) a deferred spread
  - Buy 1 March 22, Sell 2 Sep 22, Buy 1 March 23
  - Equal to Buying 1 Mar 22/Sep 22 and Selling 1 Sep 22/Mar 23

# US Treasury Futures

*The market for US Treasury securities is by many measures the largest, most active debt market in the world*

## “Standard” Treasury Futures

- 2,3,5,10, “Ultra” 10, 30, “Ultra 30” Tenors
- \$100,000 Notional Value (2 and 3 Year are \$200,000)
- Deliverable
- Quoted in terms of Price
- Based on the “Cheapest to Deliver”

## Micro Treasury Yield Futures

- 2,5,10 and 30 Year Micro Treasury Yield contracts
- Static \$10 per Basis Point
- Cash Settled
- Quoted in Yield
- Based on the “On the Run”

# US Treasury Futures

CC	Product	Description	Status	+	Qty	Bid	Ofr	Qty
Micro 10-Year Yield	Instrument							
2YY	Micro 2-Year Yield Future	Dec21	Open	+	101	0.702	0.706	206
5YY	Micro 5-Year Yield Future	Dec21	Open	+	204	1.263	1.267	52
10Y	Micro 10-Year Yield Future	Dec21	Open	+	403	1.448	1.450	254
30Y	Micro 30-Year Yield Future	Dec21	Open	+	153	1.830	1.835	153
ZT	2-Year U.S. Treasury Note Future	Mar22	Open	+	2,815	109'032	109'033	80
ZF	5-Year U.S. Treasury Note Future	Mar22	Open	+	46	120'290	120'292	1,019
ZN	10-Year U.S. Treasury Note Future	Mar22	Open	+	2,136	130'195	130'200	923
ZB	U.S. Treasury Bond Future	Mar22	Open	+	171	162'08	162'09	456

## Cheapest to Deliver Vs On the Run Example

### 10-Year Treasury Futures (CTD)

- 3 1/8 11/15/2028
- 6 Years, 11 Months until maturity

### 10-Year Micro Treasury Yield Futures (OTR)

- 1 3/8 11/15/2031
- 9 Years, 11 Months until maturity

# Treasury Case study #1: price movement

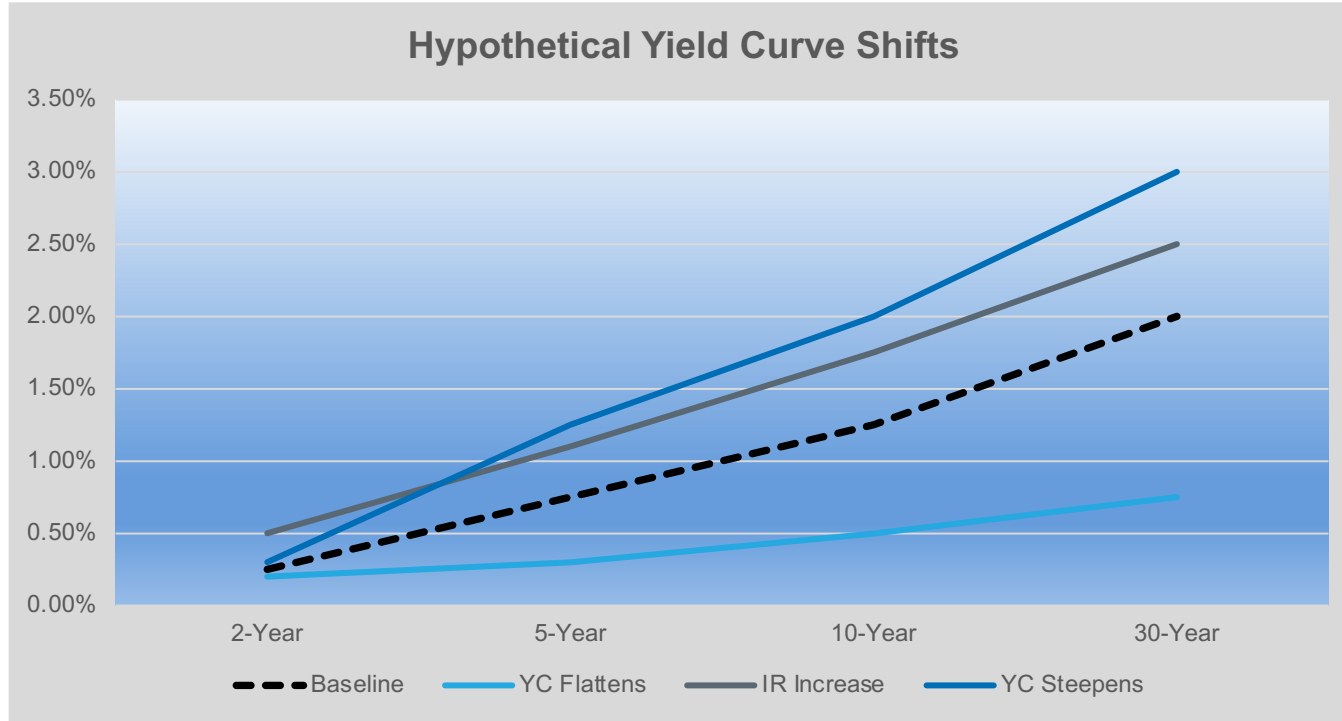
A trader expects sharply higher inflation news which she believes will move US Treasury 10-Year note (CT10) yields higher. In front of the indicator's release, she buys Micro Treasury Yield 10-Year note (10Y) futures at a level of 1.350 – anticipating the yield level to rise post announcement.

The number is released and is higher, as she expected. CT10 yield rises to 1.452% and she sells her position at that level.

## How did our trader do?

Trade Example	
<i>Trade</i>	<i>Price</i>
Buy 1 10Y	1.350
Sell 1 10Y	1.452
Profit (BPS)	10.2
\$10/Basis Point	\$ 102.00

# Spreading the Yield Curve



## Treasury Case study #2: yield curve trades (spreads)

A trader anticipates the slope of the yield curve to steepen. Selling a short maturity and buying a longer maturity Micro Treasury Yield futures contract may facilitate that market view.

Since all Micro Treasury Yield futures contracts have the same contract size of \$10.00 DV01, the spread ratio is simply 1:1. Our trader selects selling one Two-Year (2YY) contract and buying one Ten-Year (10Y) contract.

Trade date: sells one 2YY at 0.221 and buys one 10Y at 1.342 = 1.121 difference. 1.121 represents the yield difference (slope) between 2s and 10s. This long curve spreads reflects the trader's curve steepening bias.

## Treasury Case study #2: yield curve trades (spreads)

Trade Example		
<b>Trade Entry</b>	<b>Price</b>	
Sell 1 2YY	0.221	
Buy 1 10Y	1.342	
Differential	1.121	
<b>Trade Exit</b>	<b>Price</b>	
Buy 1 2YY	0.230	
Sell 1 10Y	1.527	
Differential	1.297	
Profit (BPS)	17.600	
<b>\$10/Basis Point</b>	<b>\$ 176.00</b>	
SUMMARY		
P&L 2YY	-0.009	\$ (9.00)
P&L 10Y	0.185	\$ 185.00
Total P&L		\$ 176.00



## Fed Funds Futures

Futures based on the arithmetic average of the Effective Fed Funds Rate during the contract month

**FOMC Target FF Rate:** Range within which the Fed targets the overnight lending rate between banks and other depository institutions

**Fed Effective Rate:** Actual rate at which banks and depository institutions loan money to each other overnight

<https://www.cmegroup.com/education/articles-and-reports/using-fed-fund-futures-to-trade-the-fomc-decisions.html>

## “TED” Spread

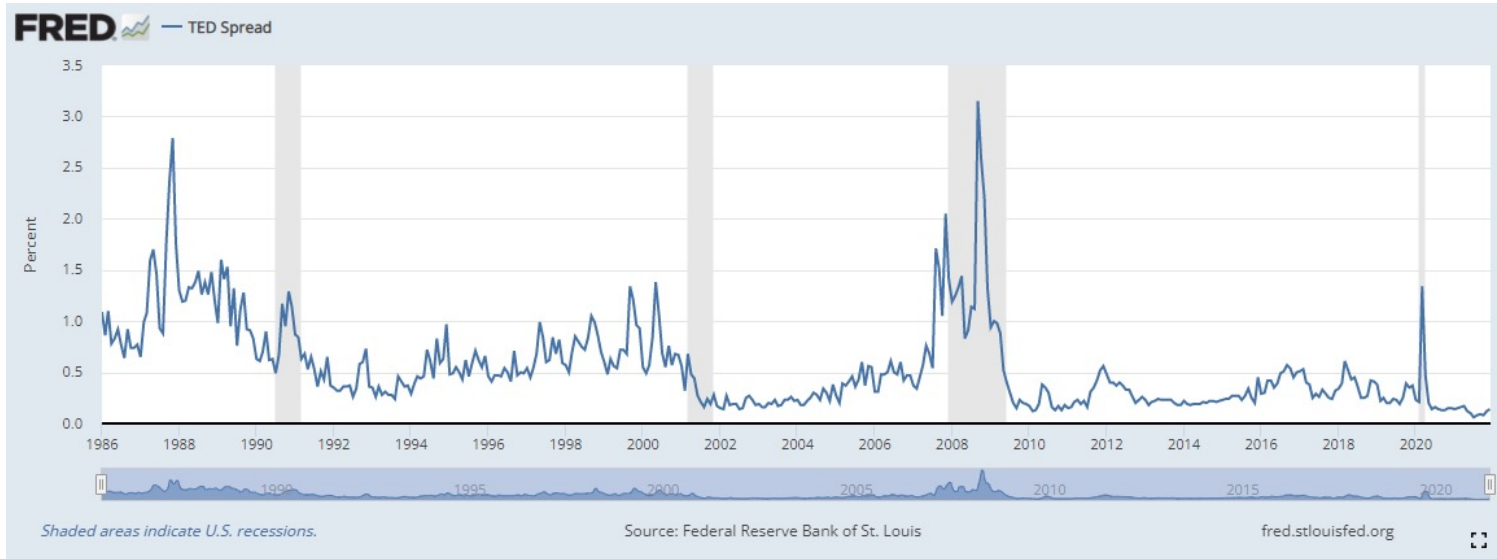
- US Treasuries Rates are generally considered the “Risk-Free” interest rate
- LIBOR (Eurodollars) act as a proxy for a AAA-rated credit

Therefore, there generally exists a credit premium in LIBOR versus Treasury rates

The Treasury vs Eurodollar (“TED”) spread is a popular way for market participants to hedge or assume a position on this credit premium. Rather than trading two (or more) points on the yield curve, this trade represents a view on the difference between the risk-free rate and a highly rated credit.

Generally, this difference widens during times of economic distress

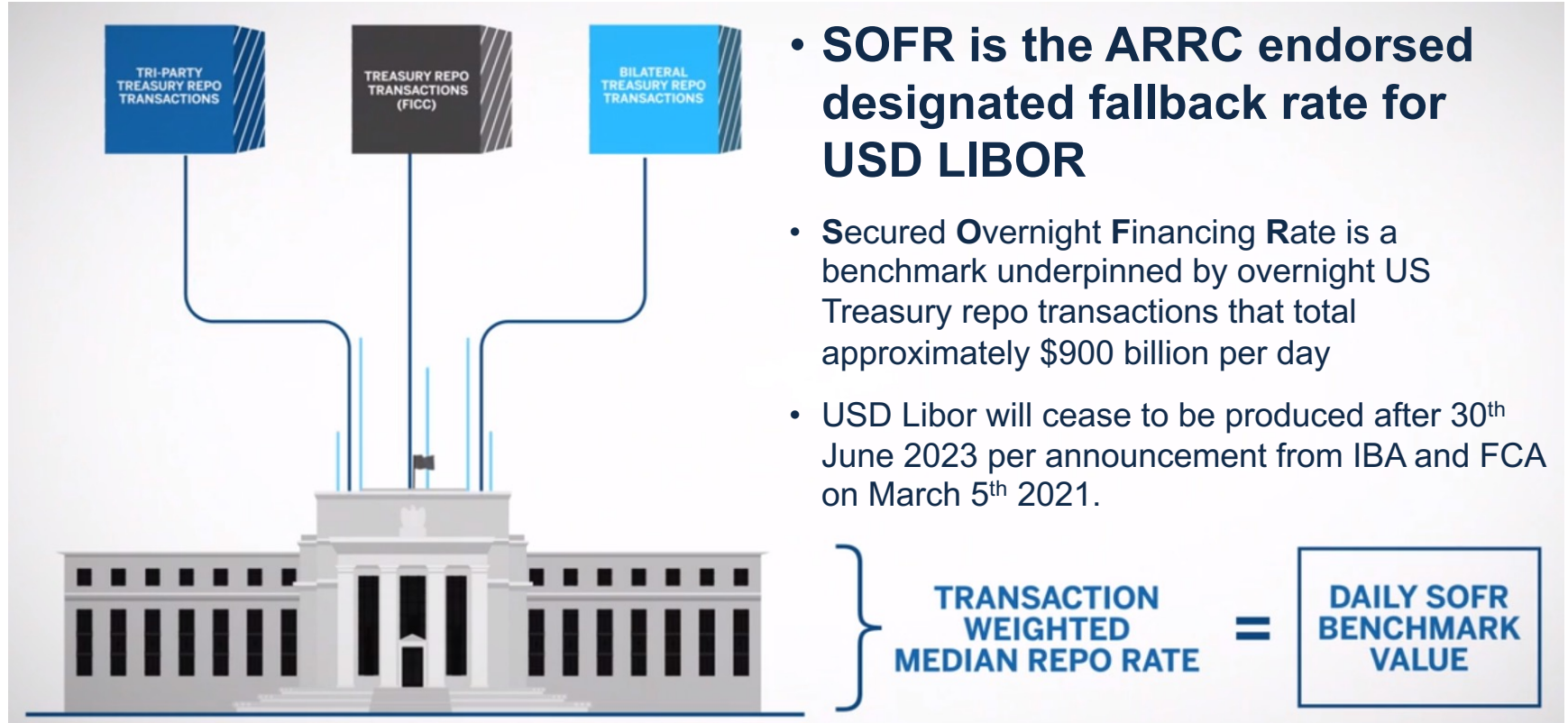
# “TED” Spread



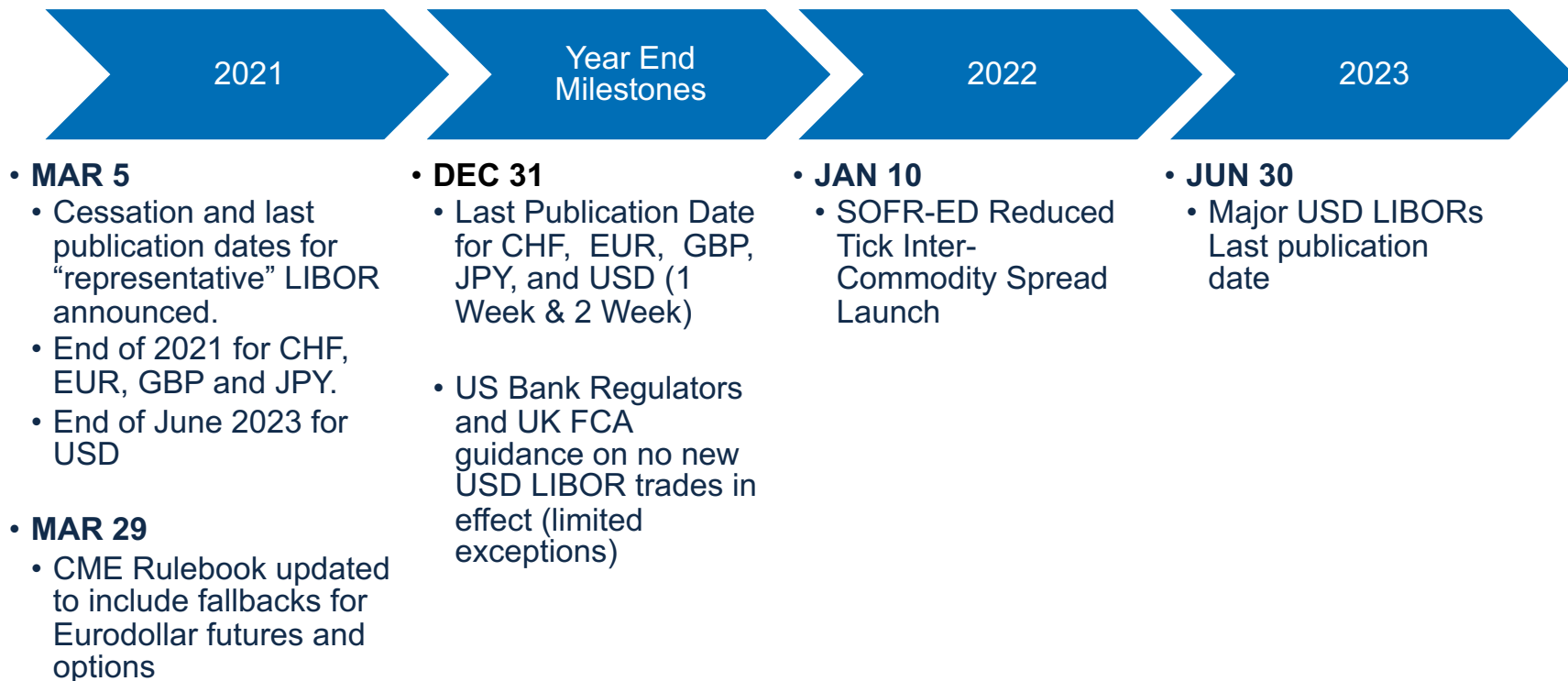
## 3 Month Libor vs 3 Month T-Bill

Source: Federal Reserve Bank of St. Louis, TED Spread [TEDRATE], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/TEDRATE>, December 15, 2021

# What is SOFR?

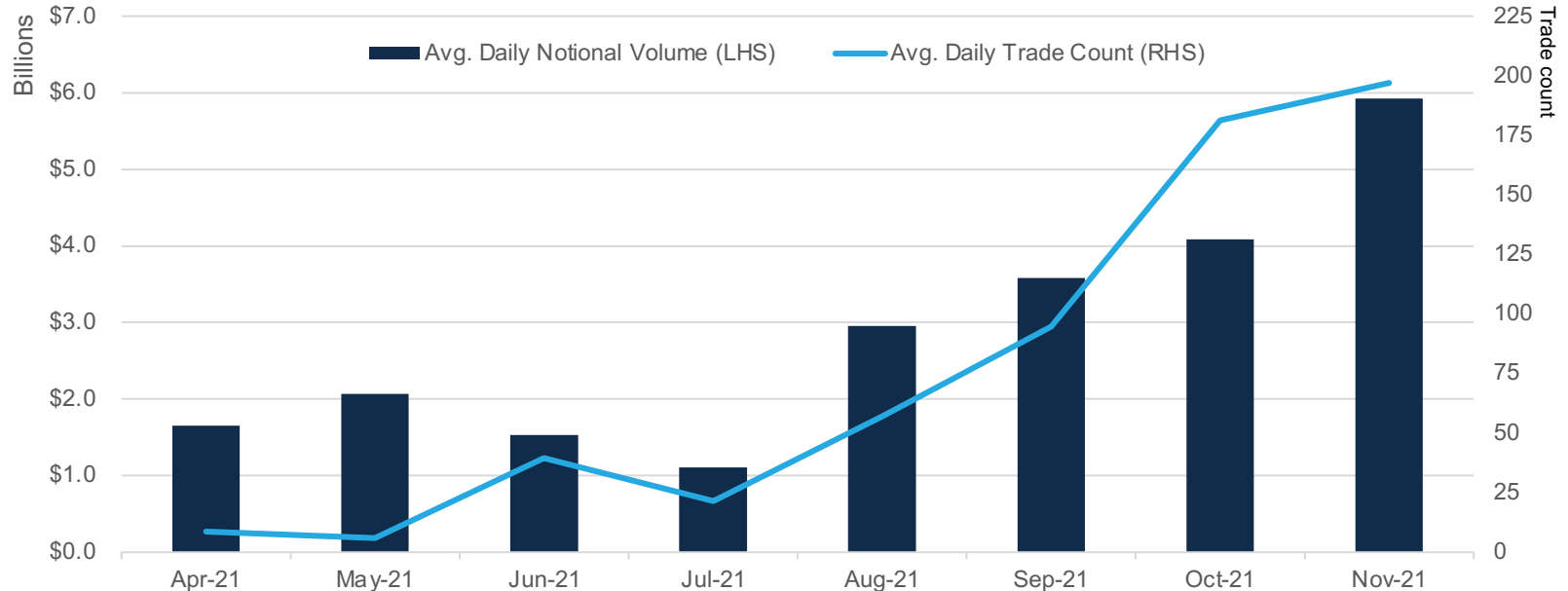


# SOFR 2021 & Beyond



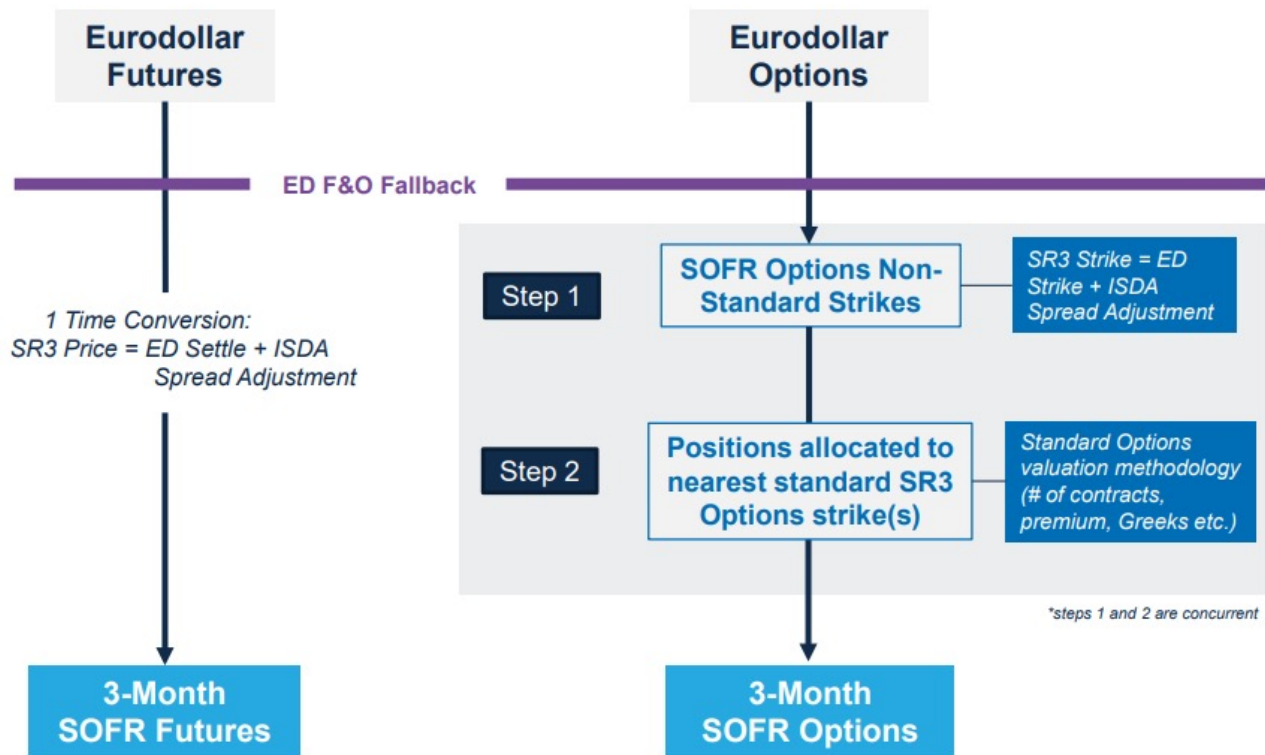
# SOFR Ecosystem: Cleared OTC Swap Activity

- SOFR Average Daily Trade Count (ADTC) of 197 in November was 32% of total USD ADTC
- \$124B in SOFR swaps cleared in November, representing a 45% increase vs. October
- Record activity for fourth straight month



Source: CME Group data

# Fallback Flow Chart – Eurodollar Futures and Options

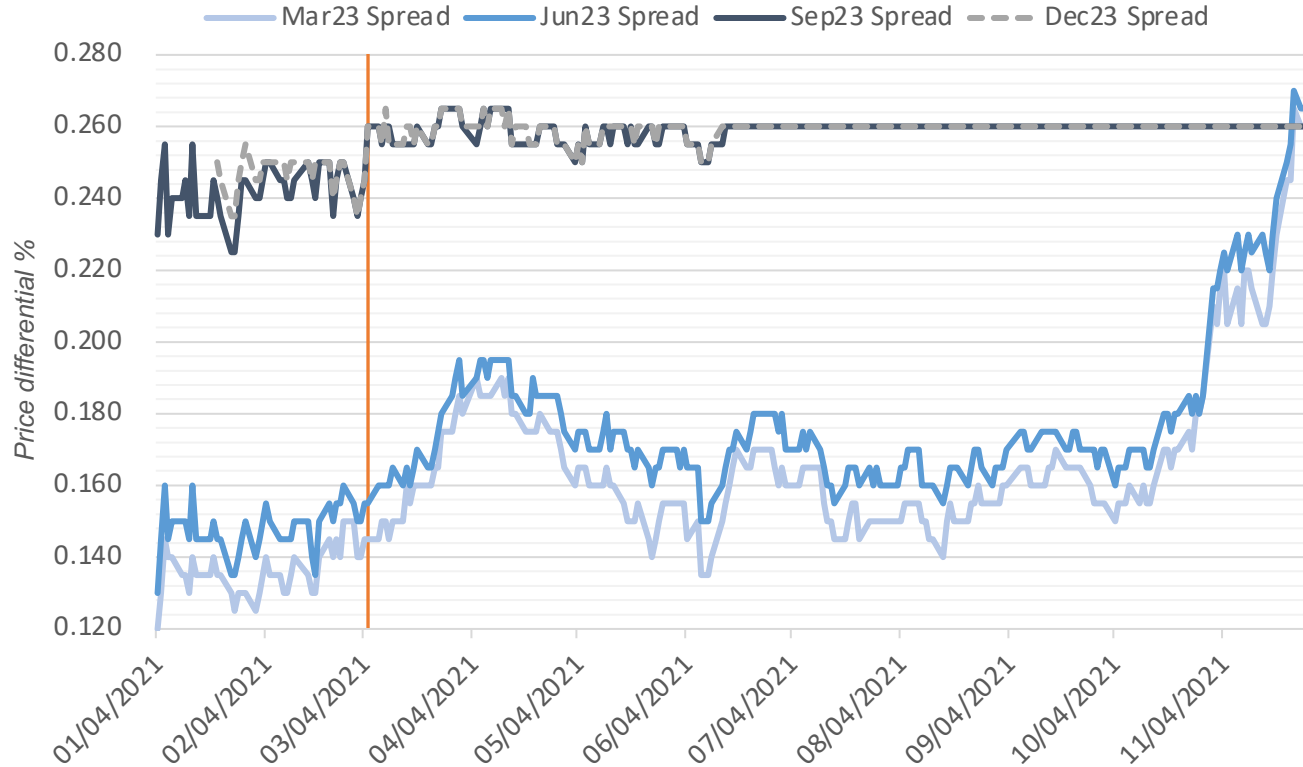


Source: CME Group <https://www.cmegroup.com/education/files/webinar-fallbacks-for-eurodollars.pdf>

# Mechanical link between SOFR and Eurodollar futures established

ISDA spread embedded in CME fallback protocol

SR3-ED Spread



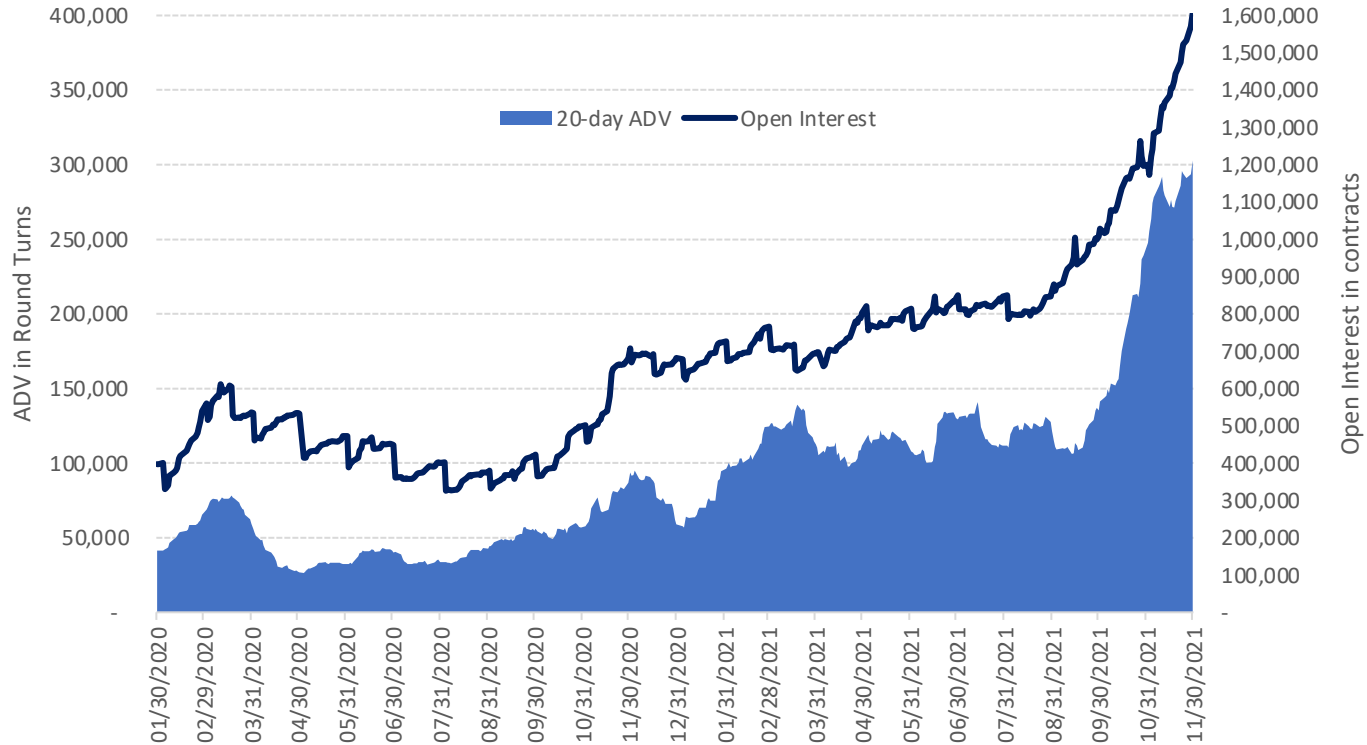
Source: CME Group



# SOFR Futures Record Activity

Q4 SOFR ADV is 271k (up 2.2x in just 8 weeks and +292% vs. 4Q 2020)

Open Interest higher than 1.6 Million as of 11/30



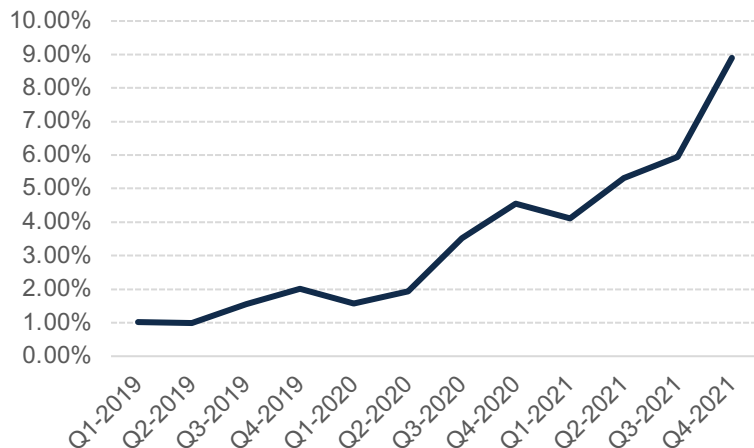
Source: CME Group

# Growth in SOFR Futures Participation and SOFR-Linked Activity

## SOFR/ED ADV

2019	2020	3Q-2021	4Q-2021
1.3%	2.5%	5.6%	8.9%

SOFR Futures ADV as % of Eurodollar Futures ADV

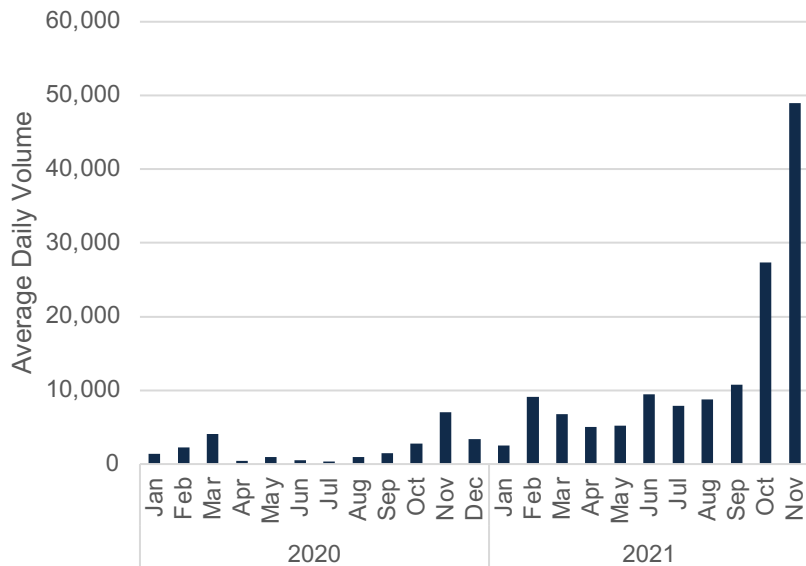


- **SOFR-Linked Eurodollars include SEP23 and beyond contracts**
  - SOFR-Linked ADV of 1.6M YTD up 326% YoY
  - SOFR-Linked OI of 18.1M represents 36% of STIR OI
- SOFR participants represent 93% of ED Futures activity YTD
- 700+ Global Participants
- **LOIH:** Record 225 at 23<sup>rd</sup> Nov. 2021, vs. 160 in January

Source: CME Group

## SOFR-ED Inter-Commodity Spread Activity Surges

### SR3-ED Inter-Commodity Spreads



Source: CME Group

## Reduced-Tick SOFR vs. Eurodollar Inter-Commodity Spread (ICS)

- Launching on January 10<sup>th</sup>, 2022, for contracts beginning with Sep 2023\*
- Reduce friction by switching Eurodollars into SOFR at ISDA fallback spread
- 1/10<sup>th</sup> basis point increments
- Substantial margin offsets as high as 85%

\*Subject to regulatory review

## Where We Are in SOFR Options?

- SOFR Options replicate all expiries and strikes of Eurodollar Options
- Market-validated clear fallback links in CME Rulebook
- Eurodollar Options Very Strong at Q4 ADV of 1.42M is up 156% YoY
- Options on SOFR linked Futures: ADV of 486k YTD (+562% YoY), OI of 11.2M (+218% YoY)
- In Q1 2022, we will introduce a new exchange recognized user defined spread (UDS) that will allow trades between ED & SOFR options at a reduced premium increment. Current functionality allows these ICS at standard tick increments.