

# CME Interest Rate Portfolio Margining

Unparalleled Capital Efficiencies for Futures, Options, & Cleared Swap Portfolios

Q1 2023

# Capital Efficiencies

## Why clients care:

- Higher volatility environment has generally increased initial margin levels
- Higher rate environment has increased the cost of funding initial margin requirements
- Increase in volatility and rates has resulted in a corresponding surplus of net option value for many participants
- Implementation of UMR Phase 6 has increased the need for collateral
- A potential clearing mandate for Treasury Securities would further increase the need for collateral

## What CME Group currently provides:

- Portfolio Margining between Cleared Swaps and Listed Interest Rate Futures and Options
- Record average daily savings of \$7.0B achieved in 2022; October 2022 savings averaged a record \$8.8B
- SOFR and Treasury Options added to the program in December 2022; Eris SOFR Swap Futures added in February 2023
- [CCP Basis and Invoice Swap Spread Paper](#) – discusses the evolution of the CCP basis and advantages of clearing invoice swap spreads at CME Group using portfolio margining
- [Cross CCP Optimization Paper](#) – outlines how levered funds and potentially banks could efficiently put on overlay trades to reduce margin levels at a firm level

## Coming soon:

- Enhanced Cross Margin program between CME and FICC:
  - Allows house accounts of dual CME & FICC members to efficiently hold offsetting Treasury Securities and CME Interest Rate futures
  - Pending regulatory approval

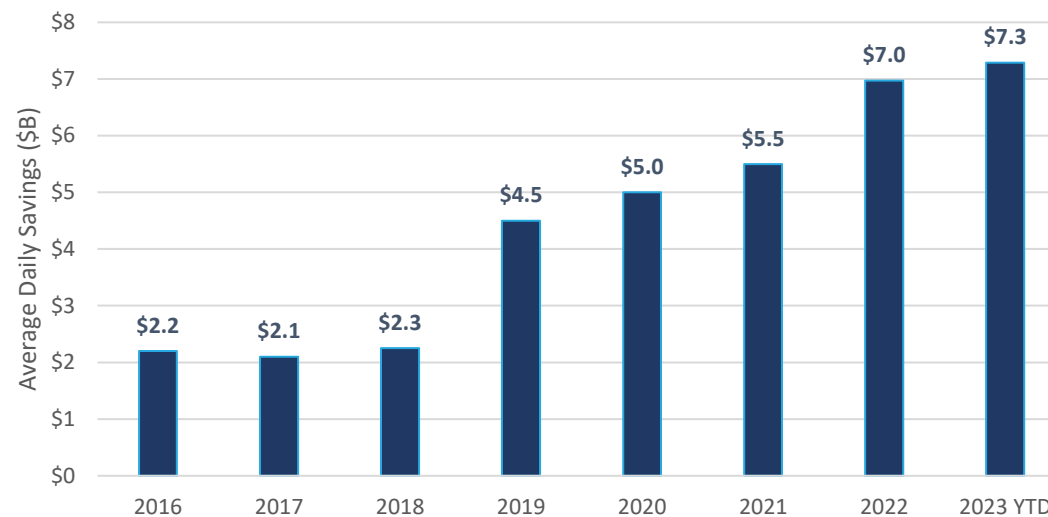
# Portfolio Margining IRS with CME Group Futures and Options

Record margin efficiencies for a capital constrained world

## Portfolio margining eligible products:

- 24 IRS Currencies
- SOFR Futures and Options
- Treasury Futures and Options
- Fed Funds Futures
- Eris SOFR Swap Futures

### Average Daily Portfolio Margining Savings (\$B)



- Through Q1, average daily savings in 2023 have outpaced the record savings achieved in 2022
- SOFR Futures now contributing approximately 25% of the program's overall savings
- Recently added SOFR and Treasury Options contributed over 15% of the overall savings in March 2023
- 14 clearing members actively participating in program, along with over 500 active customer accounts
- Accounts leveraging the portfolio margining offering realize over 40% average savings on IM, with the highest account savings at 100% due to excess net option value offsetting OTC risk

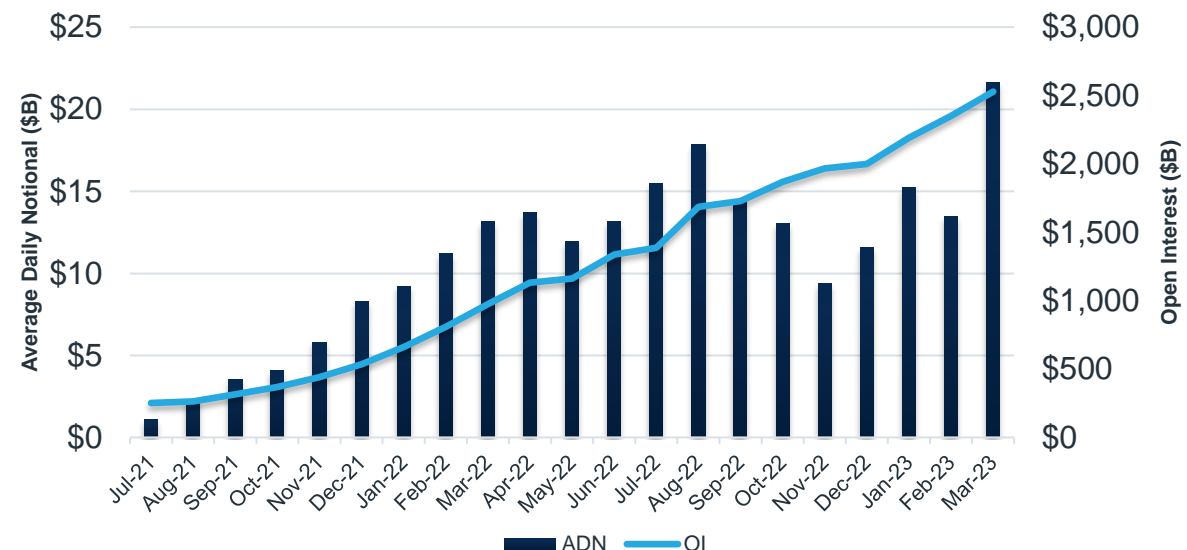
**Upcoming portfolio margining pipeline:** CME/FICC Optimization

# U.S. Dollar Swap Clearing at CME

## CME Group highlights

- 950+ unique accounts have cleared USD swaps at CME
- 400+ participants clearing over \$6.3T notional in SOFR swaps

## CME Cleared SOFR Swaps



*\*Average daily notional excludes activity related to index conversions and multilateral compression*

## Why clients are choosing CME Group...

- ✓ Industry-leading Portfolio Margining solution with our Interest Rate Futures and Options franchise, generating a record \$7.0 billion in average daily margin savings during 2022
- ✓ Over 96% margin savings for Convexity Bias Strategies and 80% savings on invoice spread strategies cleared at CME
- ✓ SOFR Swaps, discounted using SOFR, supported out to 51 years
- ✓ Additionally, CME supports the clearing of USD swaps indexed to LIBOR, BSBY, and Fed Funds (EFFR)

# Invoice Swaps and Convexity Bias Strategies

## Invoice Spreads are trades between Swaps and Treasury Futures

- ✓ Invoice spreads are packaged trades involving a CBOT Treasury future and a matching interest rate swap
- ✓ Terms of the swap are designed to match the attributes of the future, including a duration-neutral notional value, effective date matching the last delivery date of the future, and maturity date matching the cheapest-to-deliver security
- ✓ This swap spread alternative is highly active and averages approximately 100,000 contracts per day in 2022

**Receive Fixed (Long): Sept 2021 5-Year CBOT Treasury Future**

**Pay Fixed: 5-Year Invoice Swap, effective 5-Oct-2022, maturity 30-April-2027**

## Convexity Bias are trades between single period SOFR Swaps and SOFR Futures

- ✓ Convexity bias appears in STIR instruments because of the payoff differences in the futures market versus the OTC swap market

**Receive Fixed (long): 1,000 SR3 Sept 2022 Futures**

**Pay Fixed: \$100M 3-Month SOFR Swap effective 21-Sept-2022**

# Invoice Swap Spread Efficiencies

CBOT Treasury Futures vs. Interest Rate Swaps

## Average Daily Volume of 100k in 2022

Portfolio Margining unlocks significant efficiencies for Invoice Swap Spreads

Margin requirements for futures and swaps can create significant cost implications for capital consumption and total cost of trading

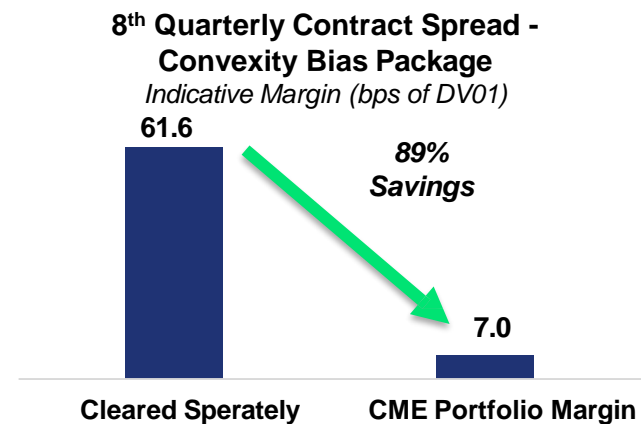
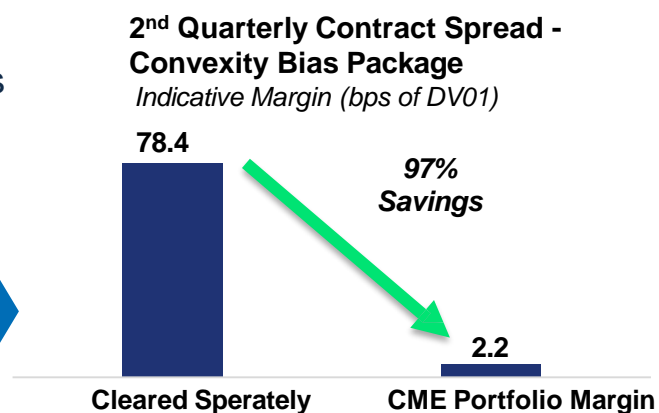
Clearing both legs of invoice spread trades together can generate incremental margin savings of 85% or more - further optimizing capital and cost of trading

Invoice Spread Strategy	Margin if Cleared Separately	CME Portfolio Margin	Margin Savings	Savings Percentage
2YR (TU) Treasury vs IRS	65.4	13.6	51.8	79%
5YR (FV) Treasury vs IRS	60.2	11.0	49.2	82%
10YR (TY) Treasury vs IRS	61.8	13.1	48.7	79%
Ultra 10YR (UXY) Treasury vs IRS	65.5	10.8	54.7	84%
Treasury Bond (US) vs IRS	69.3	15.8	53.5	77%
Ultra Treasury (WN) vs IRS	72.0	11.3	61.7	85%

# SOFR Convexity Bias Trading Analysis

Portfolio margining IRS with listed SOFR futures results in indicative margin savings of 89% to 98%\*

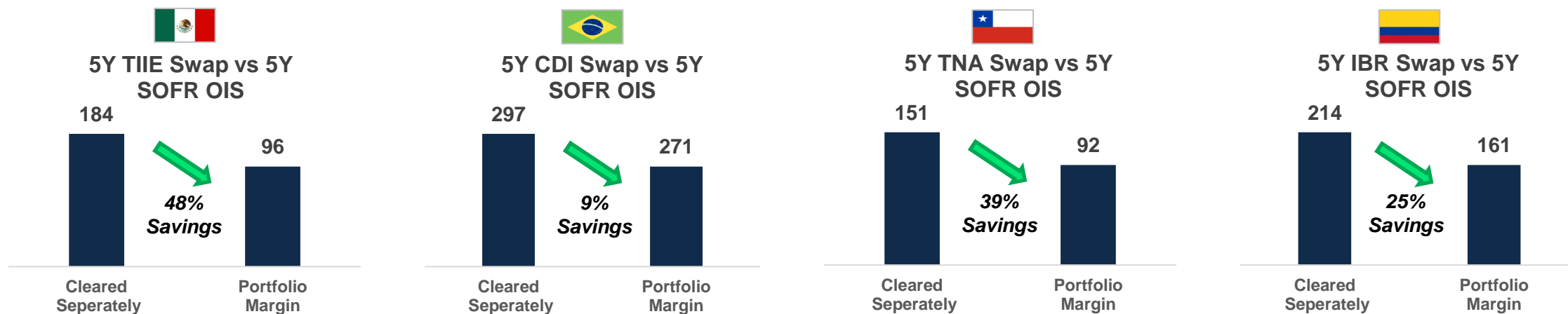
Examples of SOFR Convexity Bias strategies with \$1K DV01 in each strategy



	Quarterly Contract Spread	Swap Margin w/o PM	Swap Margin w/ PM	Margin Savings
Swap vs SR3	2nd Quarterly Contract Spread	78.4	2.2	97%
	3rd Quarterly Contract Spread	73.3	1.2	98%
	5th Quarterly Contract Spread	69.4	1.6	98%
	6th Quarterly Contract Spread	71.6	1.2	98%
	7th Quarterly Contract Spread	66.7	3.1	95%
	8th Quarterly Contract Spread	61.6	7.0	89%

# Portfolio Margining of Latin American Swaps vs USD Swaps

Indicative margin savings as percent of notional (in bps of DV01)

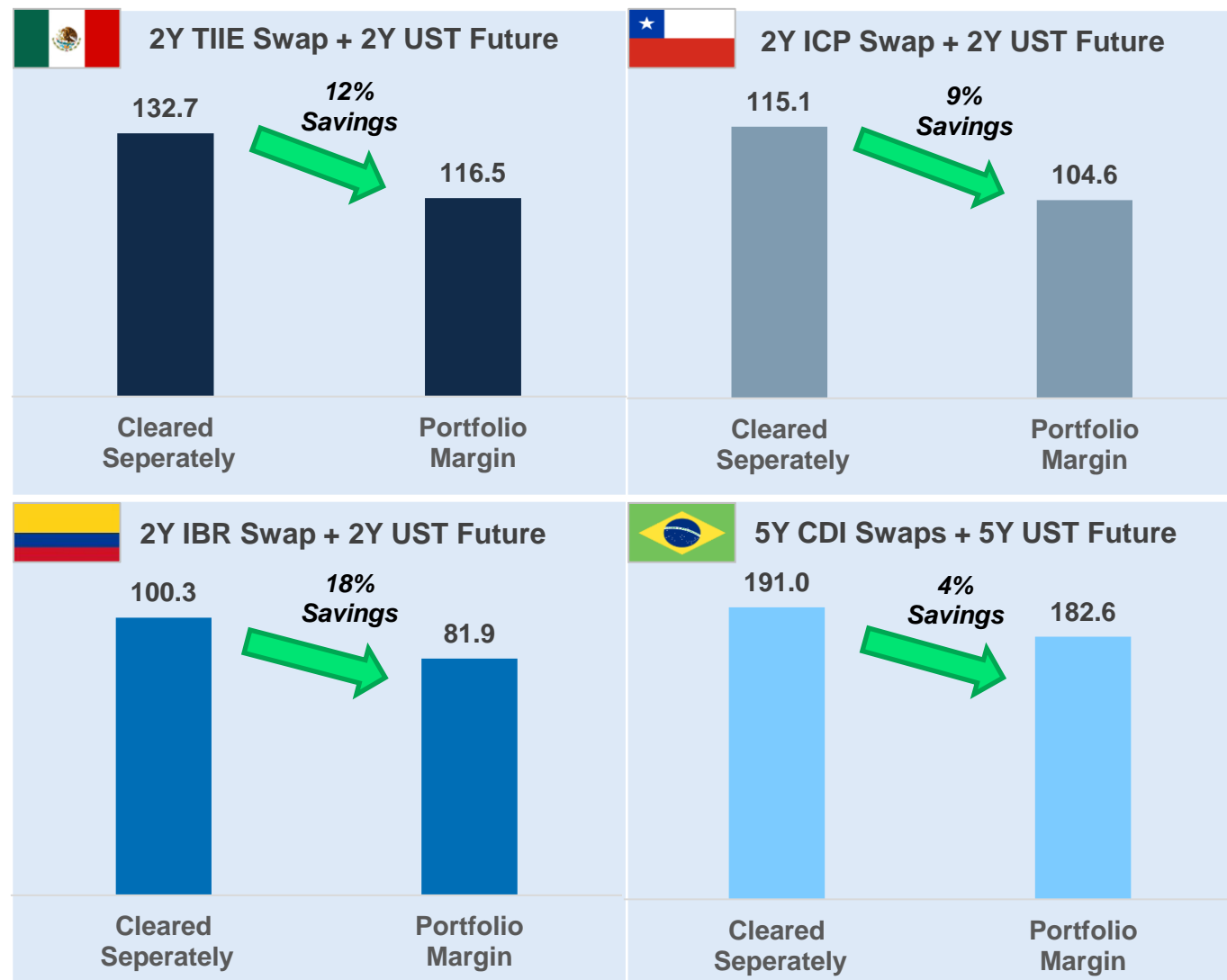


LatAm Swaps vs. SOFR OIS	Margin if cleared separately	Margin if cleared with Portfolio Margining	Margin savings	Margin savings (%)
5Y TIIE Swap vs. 5Y SOFR OIS	184	96	88	48%
5Y CDI Swap vs. 5Y SOFR OIS	297	271	26	9%
5Y TNA Swap vs. 5Y SOFR OIS	151	92	59	39%
5Y IBR Swap vs. 5Y SOFR OIS	214	161	53	25%



# Portfolio Margining of Latin American Swaps vs U.S. Treasury Futures

Indicative margin savings as percent of notional (in bps of DV01)



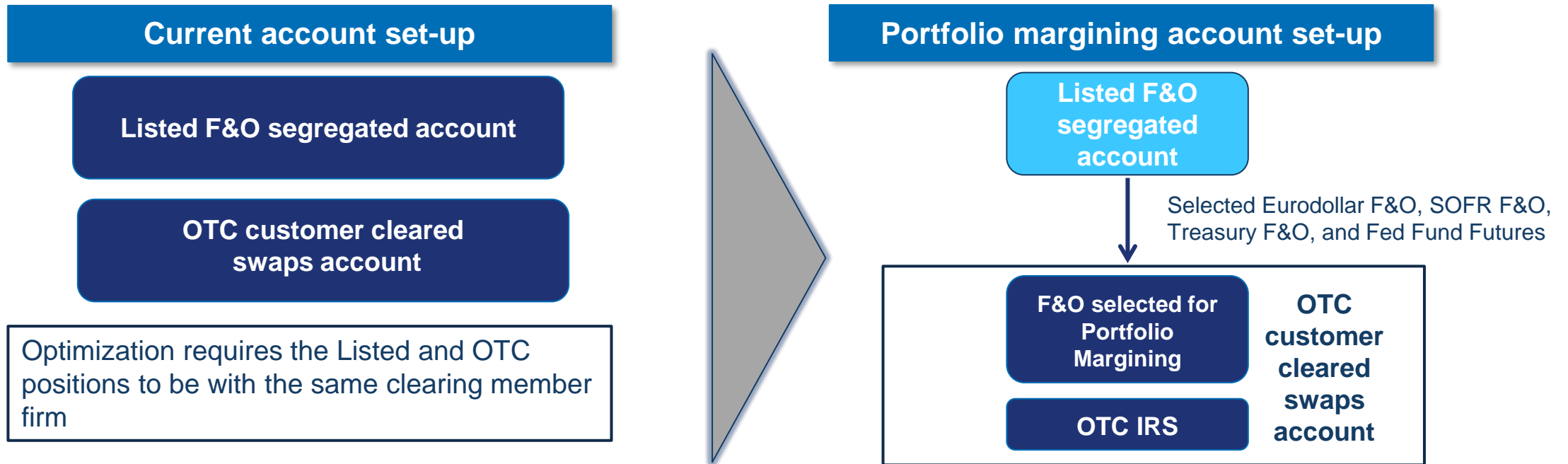
## Capturing margin efficiencies at CME

- ✓ Portfolio Margining solution optimizes exposures across Interest Rate Futures and cleared swaps
- ✓ Offsets across our 24 cleared IRS currencies readily available when setup for swap clearing at CME
- ✓ CME CORE margin tool enables complex 'what-if' analysis between IRS, OTC FX SIMM, Listed F&O products via web GUI and API

# Portfolio Margining – Operational Highlights

## CME Margin Optimizer

- Ultimate objective of CME optimization is to minimize the portfolio risk and reduce margins for participants by suggesting transfer of F&O position from Base waterfall to IRS cross-margining program
- Specifies the ideal allocation of eligible Interest Rate products to move from a Futures segregated account to a sequestered OTC cleared account
- Clearing Members use the Optimizer to facilitate portfolio margining for both clients and house accounts
- The tool automates the selection of futures to move and creates a transfer message which is sent to CME to update CME books and records



# Portfolio Margining Tools

## Additional features

### CME CORE

- **CME CORE: Clearing Online Risk Engine**
- Ideal business user solution for Portfolio Margin analysis
- Allows firms to calculate margin for their portfolios
  - Portfolios can be added manually, via csv upload, or via real-time cleared portfolio access
- CME CORE's Optimizer Tool calculates the portfolio margin savings between OTC IRS and Interest Rate Futures
- Reports breakdown recommended position transfers

- **Enhanced margin optimization:**  
Optimize portfolios using IRS trades or Delta Ladders and Futures
- **Streamline margin calculations:**  
Upload and margin any combination of IRS trades, IRS Delta Ladder and Futures

Margin Contribution Breakdown		Optimization Breakdown	
Account:	Account	Initial Portfolio Margin IM Requirement:	1,130,427.46
Initial Base Margin Requirement:	496,172.63	Initial Futures & Options Residual	1,050,000.00
Concentration Margin Requirement:	0.00	Total Margin:	2,180,427.46
Total Portfolio IM Requirement:	496,172.63	Optimized Portfolio Margin IM	496,172.63
Total Number of IRS Trades:	1	Optimized Futures & Options Residual	592,200.00
Total Number of Futures Positions:	3	Optimized Portfolio Total Margin:	1,088,372.63
		Portfolio Margin Savings:	1,092,054.82
		Portfolio Margin Savings Percentage:	50.084%

# Clearing Online Risk Engine (“CORE”) Risk Tool

CME CORE Capabilities
<b>CME PRODUCTS SUPPORTED</b>
Futures and Options <i>Agriculture, Energy, Equity Index, FX, Interest Rates, Metals</i>
Interest Rate Swaps
FX Non-Deliverable Forwards, Cash-Settled Forwards and Options
<b>FUNCTIONALITY</b>
Optimizer for Portfolio Margining
Indicative Margin Analysis
Hypothetical Portfolio/Trade Editing
Portfolio/Trade History (out to 30 days)
Incremental Margin
Estimator/Delta Ladders

- Ideal business user solution for Portfolio Margin Analysis
- Portfolios can be added manually, via csv upload, or via real-time cleared portfolio access
- Margin Matrix feature provides indicative standalone margins for OTC cleared products
- Downloadable reports
- Enhanced Analytics includes:
  - Real-Time Positions – anytime access to CME OTC cleared portfolios, providing a simple way to calculate margin requirements and perform “what if” analysis
  - Real-Time Margin Dashboard – Anticipate overnight funding costs via actively updated margin requirements across accounts

<https://www.cmegroup.com/clearing/margin-services.html>

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