

Portfolio Margining

Unparalleled Capital Efficiencies for Interest Rate Swap Portfolios

Portfolio Margining IRS and CME Group Futures

Unparalleled Margin Efficiencies for a Capital Constrained World

Background

- CME Group has administered a range of cross-margining programs for more than 20 years
- IRS Portfolio Margining for Clearing Members was launched in May 2012, and the solution became available to customers in November 2012

Broad Adoption From Market Participants

- **9 Clearing Members** are now live with IRS Portfolio Margining, and over **230 client clearing accounts** are benefitting from the solution
- Total Risk Reductions now account for over **\$3.9 billion in initial margin savings**

Scope of the Solution

- Achieve capital savings across a diverse portfolio of:
 - ✓ 18 cleared OTC IRS currencies
 - ✓ CBOT Treasury Futures, now including the Ultra Bond
 - ✓ CME Eurodollar Futures
 - ✓ USD Deliverable Swap Futures

<http://www.cmegroup.com/trading/interest-rates/cleared-otc/portfolio-margining-of-cleared-otc-irs-swaps-and-futures.html>

Invoice Spreads Margin Savings Analysis

Capital Efficiencies of Clearing IRS with CBOT Treasury Futures

- A growing number of Clients and Dealers are choosing Invoice Spreads as a capital efficient approach to transact Swap Spreads
- Invoice Spread daily volume now averages over \$6 billion notional per day, versus just \$1 billion per day in 2011 before CME launched interest rate swap clearing

*Below are examples of 5 invoice spread strategies with \$1 million DV01 in each strategy. Portfolio margining IRS with CBOT Treasury Futures results in **indicative margin savings of 54%-80%**.*

Invoice Spread Strategy	Margin if Cleared Separately	CME Portfolio Margin	Margin Savings	Savings Percentage
2YR (TU) Treasury vs IRS	33,210,422	15,131,357	18,079,065	54%
5YR (FV) Treasury vs IRS	46,791,849	9,233,353	37,558,496	80%
10YR (TY) Treasury vs IRS	47,230,122	13,312,933	33,917,189	72%
Treasury Bond (US) vs IRS	48,109,925	20,109,738	28,000,187	58%
Ultra Treasury (WN) vs IRS	49,705,884	17,079,356	32,626,528	66%

Eurodollar Convexity Bias Margin Savings Analysis

Capital Efficiencies of Clearing IRS with CME Eurodollar Futures

- Eurodollar Convexity Bias Strategies have grown in popularity as volatility has returned to the short end of the curve, and clients can capitalize on CME portfolio margining of IRS and Eurodollars
- Daily volume now averages \$15 billion notional per day, which is 8 times the volume in 2010 before CME launched interest rate swap clearing

*Below are examples of popular Eurodollar Convexity Bias strategies with \$1 million DV01 in each strategy. Portfolio margining IRS with CME Eurodollars results in **indicative margin savings of 68%-85%**.*

Eurodollar Convexity Bias Strategy	Margin if Cleared Separately	CME Portfolio Margin	Margin Savings	Savings Percentage
White (1st year) vs IRS	26,466,573	5,798,953	20,667,619	78%
Red (2nd year) vs IRS	52,702,654	12,460,808	40,241,846	76%
Green (3rd year) vs IRS	56,044,624	17,318,381	38,726,243	69%
Blue (4th year) vs IRS	68,526,232	12,187,905	56,338,327	82%
Gold (5th year) vs IRS	63,951,712	20,578,618	43,373,095	68%
Two Year vs IRS	37,384,899	5,848,951	31,535,948	84%
Three Year vs IRS	41,415,104	6,180,502	35,234,601	85%

Deliverable Swap Futures Margin Savings Analysis

Capital Efficiencies of Clearing IRS with US Dollar DSFs

- USD Deliverable Swap Futures launched in December 2012, with strong support from buy and sell side market participants and it's served as a valuable hedging tool for global swap dealers
- DSF Open Interest is over 123,000 contracts, representing \$12.3 billion in notional. Average daily volume has also increased to over 6,000 contracts in 2014, representing \$630 million in notional

*Below are examples of USD DSF across tenors (5, 10, 30 years) in \$1 million DV01 in each strategy. Portfolio margining IRS with USD DSF results in **indicative margin savings of 79%-85%**.*

USD DSF Strategy	Margin if Cleared Separately	CME Portfolio Margin	Margin Savings	Savings Percentage
5YR DSF vs 5YR IRS	49,138,068	9,918,624	39,219,444	80%
10YR DSF vs 10YR IRS	48,028,638	7,070,027	40,958,611	85%
30YR DSF vs 30YR IRS	52,165,783	10,893,739	41,272,044	79%

Portfolio Margining For Non-USD Portfolios

Capital Efficiencies Across all 18 IRS Currencies that CME clears

- CME Group utilizes a multi-currency historical VaR model to calculate margins for portfolios containing IRS and Futures
- The risk reductions and accompanying margin savings from portfolio margining are calculated on a net portfolio basis across all currencies

The below portfolio example containing IRS in EUR, GBP, and JPY, and an array of CME Group Interest Rate Futures results in **indicative margin savings of 55%**

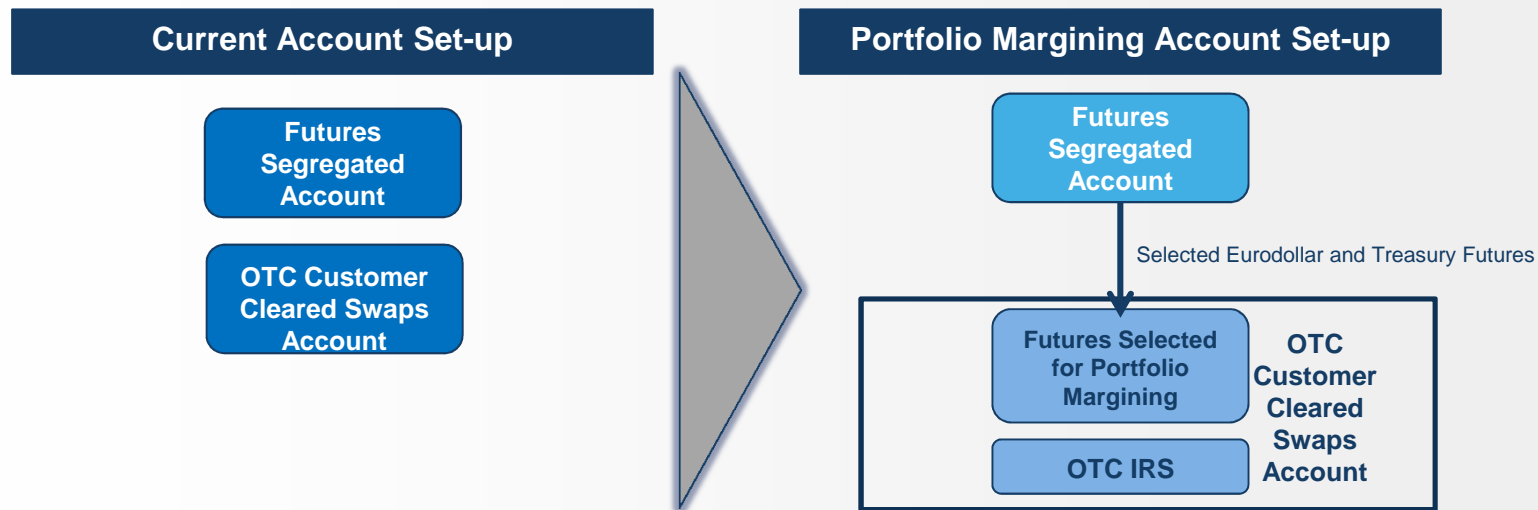
Non-USD Portfolio			
Product Type	Currency	Direction	Notional/Contracts
Fixed/Float	GBP	PAY	100,000,000
Fixed/Float	EUR	PAY	100,000,000
Fixed/Float	JPY	PAY	100,000,000
ED	USD	Short	648
2YR	USD	Long	89
5YR	USD	Long	524
10YR	USD	Long	419
30YR	USD	Long	438

BEFORE PORTFOLIO MARGINING	
Initial IRS Margin Requirement	5,438,355.34
Initial Futures Margin Requirement	2,163,807.00
Total Margin	7,602,162.34
AFTER PORTFOLIO MARGINING	
Portfolio Margin IM Requirement:	3,390,190.66
Portfolio Margin Savings:	4,211,971.68
Portfolio Margin Savings:	55%

Portfolio Margining – Operational Highlights

CME Margin Optimizer

- CME Margin Optimizer: specifies the ideal allocation of Eurodollar and Treasury Futures to move into the OTC Customer Cleared Swaps account to minimize the portfolio risk, and therefore, reduce margins
- Clearing Members can use this tool to facilitate Portfolio Margining for both their clients and their house accounts
- The tool automates the selection of futures to move and creates a transfer message that is produced and can be easily copied and sent to CME to make the change for the books and record at the Clearing House
- 5 inputs are required (4 by CME and 1 by the FCM that is utilizing the Optimizer)
 - CME: Delta Ladder, SPAN, Base Curve, Scaled Log Return Files
 - FCM: Futures Position File



Portfolio Margining Account Structure Detail

Setting-up accounts at FCM for position transfers



Example* of Account Structure for Portfolio Margining:

Original Set-Up: Client is long 100 Futures

Trading Account: Long 100 and all PNL (realized and unrealized) flows through this account

Portfolio Margining Set-Up: Long 100 Futures, with 80 futures moved over for Portfolio Margining

Trading Account: Remains long 100 and all PNL (realized and unrealized) remains unchanged

Portfolio Margining Account: Shows Sell of 80 contracts

Futures Master Account: Shows the Sum of the Trading Account and Portfolio Margining Account – Long 20 Contracts

IRS Account: Shows Long 80 contracts

Reconciliation

- Trading account remains unchanged
- Positions movements related to portfolio margining will occur at the current days settlement price between the Portfolio Margining account and the IRS account
 - These movements between accounts will not change the net PNL (realized or unrealized) or positions
 - They will reflect the movement of positions and PNL between the segregated and sequestered accounts
 - The Portfolio Margin account will be a mirror image (positions, realized and unrealized PNL) of the futures in the IRS account
 - The purpose of the Futures Master account is to aggregate the Trading account and Portfolio Margining account such that futures open interest remains unchanged

*Example ignores the collateral account for simplicity

Portfolio Margining Tools

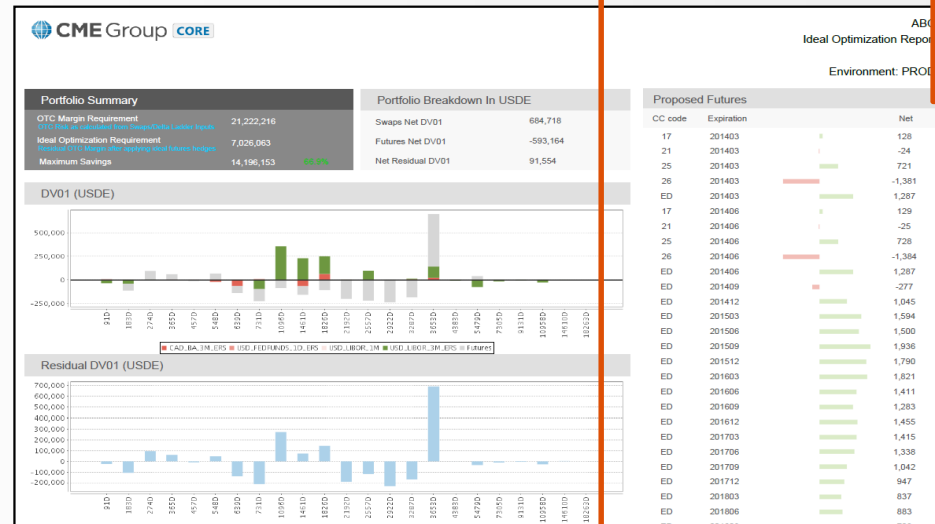
Additional Features

CME CORE

- **CORE: Clearing Online Risk Engine**
- Ideal business user solution for Portfolio Margin Savings analysis
- Allows firms to calculate their margin for their portfolios
 - Can upload exact portfolio via a portfolio upload or enter trades manually
- Once run, CME CORE calculates the portfolio margin savings between OTC IRS and Interest Rate Futures
- Reports breakdown position transfers in PDF and CSV file format

New Features!

- **Enhanced Margin Optimization:** Optimize portfolios using IRS trades in addition to Delta Ladders and Futures
- **Ideal Optimization Analysis:** Run new reports detailing which futures best hedge your OTC risk
- **Streamline Margin Calculations:** Upload and margin any combination of IRS trades, IRS delta ladder and futures



Margin Optimization Report

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