

MAC Swap Future

A CME Deliverable Swap Future

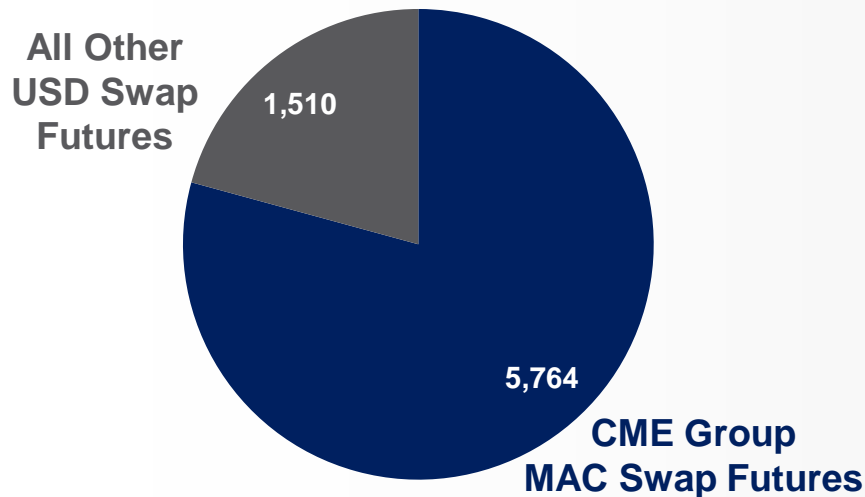
Offering futures efficiency, with delivery certainty into a MAC swap

MAC Swap Futures

Liquid & Efficient means of managing swap exposure through Central Limit Order Book

- With pre-defined standard terms, CME MAC Swap Futures are available in both USD and Euro
 - U.S. Dollar-denominated quarterly contracts expire on IMM dates for key benchmark maturities: 2, 5, 10, and 30 years with Euro-denominated available in 2, 5, and 10 year maturities
 - At expiration, all open positions deliver into CME Group Cleared Interest Rate Swaps

Daily Volume in USD Swap Futures
First Half of 2016



Highlights

- MAC Swap Futures average over **\$570 million notional value** transacted per day
- **Open Interest** is over 50,000 contracts, \$5 billion in notional
- Only swap futures in the CFTC's Large Open Interest Holder Report, currently with **43+ open interest holders in both the 5 and 10 year contracts**
- Positions are held by **all major client segments**, including asset managers, leveraged money, and dealers
- Clients frequently make use of the delivery mechanism for the contract, ensuring alignment with the underlying. Approximately **25% of open positions are taken into delivery each quarter.**
- **Automatic risk offsets** with Eurodollar & Treasury Futures and **portfolio margining benefits** with your OTC IRS

Margin-Efficient Swap Futures

Providing Capital Efficiencies Afforded to a Standardized Product

With greater focus on capital costs, MAC Swap Futures offer greater capital efficiencies in a capital constrained world:

- **Highly efficient exposure** to MAC Swaps
- **Automatic margin offsets** are available against Eurodollar & Treasury Futures – enabling capital savings and relative value strategies
- **Lower clearing fees** as listed futures are not typically subject to the additional funding cost frequently charged by Clearing Members for OTC Clearing
- Up to **85% in initial margin savings** when **portfolio margined against OTC Interest Rate Swaps**

Below are examples of USD MAC Swap Futures across tenors (5,10,30 years) in \$1 million DV01 in each strategy.

Portfolio margining IRS with USD MAC Swap Futures results in **indicative margin savings of 79%-85%**.

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

Flexible Execution

Liquidity via CLOB or Privately Negotiated Blocks

Centralized Order Book

- Trading is available via CME Globex, a broad network with thousands of participants
- 5 Market makers committed to providing continuous on-screen liquidity.
- Market participants are able to place bids and offers in an open and transparent marketplace, with no differentiation between customers and liquidity providers

Privately Negotiated (OTC)

- Trades can be privately negotiated off-exchange.
- Enables counterparties to leverage existing relationships via block trades.
 - Block trades must be reported with 15 minutes of execution.
 - Calendar spreads are eligible for blocks provided the sum of the legs meets the threshold.
 - CME charges same amount for Blocks as Globex
 - Listed futures are not subject to CFTC SEF requirements.
- We encourage clients to contact their existing swap liquidity providers for quotes on block trades.

Book Liquidity

Tenor	Average Bid-Ask Size	Average Bid-Ask Spread (basis points equivalent)
2 Year	\$70 million	0.9
5 Year	\$40 Million	0.6
10 Year	\$25 Million	0.5
30 Year	\$15 Million	0.5

Block Liquidity*

Tenor	Minimum Block Threshold	Indicative Bid-Ask Spread (basis points equivalent)
2 Year	\$300 Million	0.6
5 Year	\$150 Million	0.5
10 Year	\$100 Million	0.4
30 Year	\$50 Million	0.4

*Based on feedback from a subset of liquidity providers under normal market conditions.

Vendor Codes

Product Tenor	Bloomberg	TT (Trading Technologies)	Esignal	CQG	ThomsonReuters
2- Year	CTPA comdty	T1U	T1U	T1U	0#T1U
5- Year	CFPA comdty	F1U	F1U	F1U	0#F1U
7- Year	CHPA comdty	S1U	S1U	S1U	0#S1U
10- Year	CNPA comdty	N1U	N1U	N1U	0#N1U
20 Year	CIPA comdty	E1U	E1U	E1U	0#E1U
30- Year	CBPA comdty	B1U	B1U	B1U	0#B1U

Contract Specifications

MAC Swap Futures

Reference Tenors	<ul style="list-style-type: none"> 2, 5, 7, 10, 20, 30 Year
Delivery Months	<ul style="list-style-type: none"> March Quarterly Cycle (March, June, Sept, Dec)
Contract Fixed Rate	<ul style="list-style-type: none"> Set by the administrator of the "Market Agreed Coupon", as a rate per annum with 30/360 day count fraction, at an integer multiple of 25 basis points per annum
Price Basis	<ul style="list-style-type: none"> 100 points plus NPV of deliverable grade IRS
Contract Size	<ul style="list-style-type: none"> \$1,000 per point (\$100,000 per contract)
Last Trading Day	<ul style="list-style-type: none"> Second London business day before 3rd Wednesday of futures Delivery Month
Trading Hours	<ul style="list-style-type: none"> CME Globex: 5:00 PM to 4:00 PM, Sun- Fri Trading in expiring futures terminates at 2:00 pm CT on Last Trading Day

	<i>Reference Tenor</i>	<i>Minimum Price Increment Per contract</i>	<i>Approximate minimum price increment in basis points</i>	<i>Block Threshold*</i>	<i>CME Primary Ticker</i>	<i>CME Secondary Ticker</i>	<i>Bloomberg Ticker</i>
	30-Year	1/32 nd point (\$31.25)	1/8	500	B1U	B2U	CBPA
	20-Year	1/32 nd point (\$31.25)	1/5	500	E1U	E2U	CIPA
	10-Year	½ of 1/32 nd point (\$15.625)	1/6	1,000	N1U	N2U	CNPA
	7-Year	½ of 1/32 nd point (\$15.625)	1/4	1,250	S1U	S2U	CHPA
	5-Year	½ of 1/32 nd point (\$15.625)	1/3	1,500	F1U	F2U	CFPA
	2-Year	¼ of 1/32 nd point (\$7.8125)	2/5	3,000	T1U	T2U	CTPA
Matching Algorithms	<i>Outrights</i>			<i>Calendar Spreads</i>			
	FIFO (F)			Pro Rata (K)			

Delivery Details

Delivery Day*

- First CME Clearing Business Day before 3rd Wednesday of Delivery Month

Delivery Standard

- | | |
|-------------------------------|---|
| • Fixed Rate Payer | Short Futures position holder making delivery |
| • Floating Rate Payer | Long Futures position holder taking delivery |
| • IRS Effective Date | 3 rd Wednesday of Delivery Month |
| • Currency | USD |
| • Notional Amount | Futures Contract Size= \$1,000 per point (\$100,000 per contract) |
| • Business Day(s) | New York and London |
| • Business Day Convention | Modified Following |
| • Termination Date | Anniversary of IRS Effective Date at Futures Reference Tenor |
| • Fixed Rate Payment Dates | Semiannually, from IRS Effective Date |
| • Fixed Rate | Contract Fixed Rate |
| • Fixed Rate Day Count | 30/360 |
| • Floating Rate Payment Dates | Quarterly, from IRS Effective Date |
| • Floating Rate Option | USD-LIBOR-BBA |
| • Designated Maturity | 3 Month |
| • Spread | None |
| • Floating Rate Day Count | Actual/360 |
| • Compounding | None |

Delivery Method

- Physical delivery of IRS that meets Delivery Standard.
- Delivery Day, Clearing Acceptance Date, and Clearing Effective Date = 3rd Wednesday of Delivery Month
- Delivery invoice price =
IRS Initial Payment Amount, as determined by contract final settlement price, P:
- If $100 < P$, IRS Floating Rate Payer pays $\$1,000 \times (P - 100)$, rounded to nearest penny.
Else, IRS Fixed Rate Payer pays $\$1,000 \times (100 - P)$, rounded to nearest penny.

Delivery Eligibility

- To participate in physical delivery, a Futures position holder must be an Eligible Contract Participant (17 CFR1.3(m) and CME Rule 90005.C.) and must be registered with CME by a CME IRS Clearing Member as an IRS Participant (CME Rules 90005.A. and 90005.B.).

Pricing Conventions

- MAC Swap Futures are quoted in terms of net present value (NPV)
- 100 points represent the par value of \$100,000 – each full point equates to \$1,000
- The minimum tick size of the contract varies depending on the tenor
- $1/32^{\text{nd}}$ of a point represents \$31.25

Tenor	Ticker	Min Tick	Displayed Price	Meaning	Decimal	NPV
2Y	T1U	$\frac{1}{4}$ of $1/32^{\text{nd}}$	100'062	100 and $6.25/32^{\text{nd}}$	100.1953	\$100,195.30
7Y	S1U	$\frac{1}{2}$ of $1/32^{\text{nd}}$	101'055	101 and $5.5/32^{\text{nd}}$	100.1719	\$101,171.19
5Y	F1U	$\frac{1}{2}$ of $1/32^{\text{nd}}$	100'240	100 and $24.0/32^{\text{nd}}$	100.7500	\$100,750.00
10Y	N1U	$\frac{1}{2}$ of $1/32^{\text{nd}}$	102'115	102 and $11.5/32^{\text{nd}}$	102.3594	\$102,359.40
20Y	E1U	1 32^{nd}	99'30	99 and $30/32^{\text{nd}}$	99.9375	\$99,937.50
30Y	B1U	1 32^{nd}	103'08	103 and $8/32^{\text{nd}}$	103.2500	\$103,250.00

Pricing & Payment Details

Price & Payment

- The MAC Swap Futures pricing convention is similar to that of CBOT Treasury Note and Bond futures, with the futures price quoted in points with par equal to 100 points
 - Calculated as Δ in 32nds x \$31.25 x position
- Fixed Rate Payment date is semi-annual based on the effective date
- Floating Rate Payment date is quarterly based on the effective date

Price Alignment Interest

- As a futures contract, MAC Swap Futures will not receive PAI
- Upon delivery of the futures, the resulting Cleared OTC IRS contract will be subject to PAI

Daily Settlement

- Daily Settlement prices for MAC Swap Futures are set based on trading activity on CME Globex
- Cleared OTC IRS valuation is based off closing curves, which include OIS discounting
- Like many futures products, prices for MAC Swap Futures can diverge from those observed in the underlying swaps curve, dependent upon the conditions of price discovery in each venue

Final Settlement

- Final settlement prices are based on market activity on CME Globex
- It settles to a volume-weighted average price (VWAP) of trades on Globex between 1:59 and 2:00 pm CT

Notional Coupons

- Notional Coupons for new contract listings will be announced on or about the First Business Day of March, June, September and December. New, deferred contracts will be made available for trading on the last trading day of the front expiring contract
- Fixed rates for MAC Swap Futures contracts shall be determined by the exchange and published on our website
- In the cases when interest rates move dramatically, CME may list a second contract with a notional coupon rate that matches the new, current interest rate

Eligibility & Delivery

Trading Eligibility

- There are no special requirements that must be met for a futures account to trade MAC Swap Futures
- All CME Clearing Members can clear the futures contract, whether an IRS Clearing Member or not

Delivery*

- To take delivery, a Futures position holder must be an Eligible Contract Participant and must be registered with CME by a CME IRS Clearing Member as an IRS Participant
- CME will require firms to report delivery intent on each of the last 5 business day prior to expiration

Transfers

- The Last Trading Date for the future is the Monday before IMM Wednesday date. The actual time when the last trade on the future is allowed is 2:00 PM CT
- Transfers of futures position are allowed after the last trading time until 7:00 PM CT
- There is a transfer fee of 10 cents per side of Futures positions prior to delivery and the transfer of swap trades post-delivery is free

Matching at Delivery

- At the time of delivery, the total quantity of long positions will equal the total quantity of short positions, which equates to an equal number of PAY and REC Cleared Interest Rate Swaps after delivery
- When the entire delivery is complete Clearing House will be flat and respective PAY and REC swaps will be in the Cleared OTC IRS Accounts, with CME as the legal counterparty for each trade

*An IRS Clearing Member carrying an account that is required to make or accept delivery on an expiring futures contract shall guarantee and assume complete responsibility for the performance of all delivery requirements set forth in the Rules

Final Settlement Price

The contract's final settlement price:

Represents the amount of money a market participant would be willing to pay or require to receive in return for taking delivery of the underlying referenced interest rate swap contract

In the event prevailing swap rate are below the coupon rate reference by the futures contract:

- **Futures**
 - The final futures price will be above par
 - Total futures PNL will be the difference between the final futures price and the trade price
- **OTC**
 - Long futures position holder will receive fixed at the underlying rate referenced by the futures contract
 - Long futures position holder will pay a dollar sum equal to the amount of the final futures price minus par

In the event prevailing swap rate are above the coupon rate reference by the futures contract:

- **Futures**
 - The final futures price will be below par
 - Total futures PNL will be the difference between the final futures price and the trade price
- **OTC**
 - Long futures position holder will receive fixed at the underlying rate referenced by the futures contract
 - Long futures position holder will receive a dollar sum equal to the amount of the par minus the final futures price

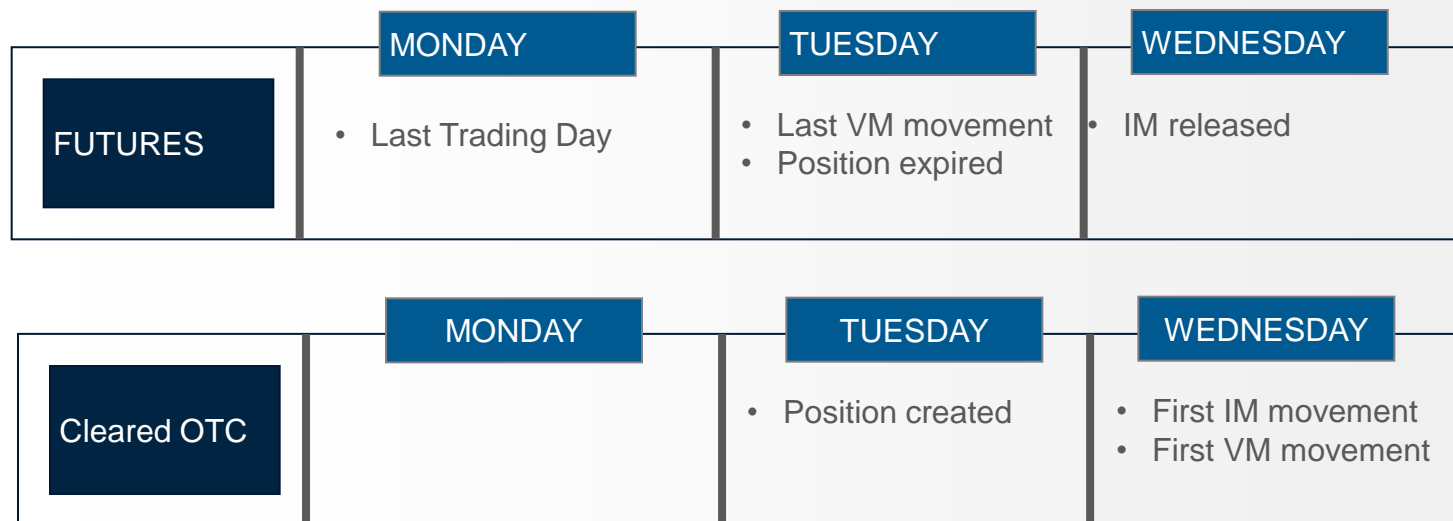
Deliver Explanation

Treasury Futures vs. MAC Swap Futures Comparison

	Treasury Note and Bond Futures	USD IRS Futures
Day 1: Intention Day	<p>By 6pm CT – Short clearing firm notifies CME Clearing that it intends to make delivery on an expiring contract.</p> <p>By 10 pm CT– CME Clearing matches short clearing firm to clearing firm(s) that will take delivery, then confirms to each party – long(s) and short – that the opposite party will make or take delivery.</p>	<p>2pm CT– Futures terminate trading. Open short (long) contract positions held through termination trading are required to make (take) delivery of underlying CME Cleared IRS. (In effect, notification of intent to make or take delivery is conveyed by one’s actions, specifically one’s position holdings.)</p>
Day 2: Notice Day	<p>By 2pm CT (3pm CT on Last Notice Day) – Short clearing firm making delivery notifies long clearing firm taking delivery of Treasury CUSIP to be delivered. Short clearing firm sends invoice to long clearing firm via CME Clearing.</p>	<p>By 6pm CT- IRS Clearing Members involved in delivery are notified by CME Clearing with cleared Confirms outlining the swap details along with upfront payment amounts,</p> <p>By 10pm CT - Cleared IRS initial margin and variation margin amounts, required on Delivery Day are communicated to firms.</p> <p>(Formally, this is CME Clearing Acceptance Date (CME 90002.B.) and CME Clearing Effective Date (CME 90002.E.) for swaps to be delivered or accepted for delivery.)</p>
Day 3: Delivery Day	<p>By 9:30am CT – Short and long clearing firms must resolve any invoice differences.</p> <p>By 10am CT – Short clearing firm instructs its bank to transfer CUSIPs, via Fed wire, to long clearing firm’s account.</p> <p>By 1pm CT – Monies change hands. Delivery vs. payment must be completed.</p>	<p>(This is Effective Date for the underlying CME Cleared IRS delivered or accepted for delivery.)</p> <p>By 8:30am CT – Monies change hands. Cleared IRS initial margins, upfront payments and variation margin are exchanged between CME and Clearing Member Firms</p>

Delivery Example

Variation and Initial Margin Movements



- **Monday:** Last trading day for the futures contract
- **Tuesday:** Futures position removed, Cleared OTC positions created
- **Wednesday:** The Futures initial margin is released, and the first initial margin and variation margin moves for the Cleared OTC interest rate swap

- Long Positions are converted into receive-fixed swaps
- Short Positions are converted into pay-fixed swaps

Cash Flows Example

Action	Details	Cash Flows
Contract Listing	<ul style="list-style-type: none"> CME sets the fixed coupon for the 10 Year Swap Future at 2.00% before the contract begins trading 	<ul style="list-style-type: none"> N/A
Trade Execution	<ul style="list-style-type: none"> Thursday, 2 days before the contract expires, Client buys 100 Swap Futures at 101-19 and the contract closes at 101-21 	<ul style="list-style-type: none"> Client receives positive VM of $(101-21 - 101-19) * 31.25 * 100 =$ \$6,250 for the Swap Futures
Daily Settlement	<ul style="list-style-type: none"> Friday, 1 day before the contract expires, contract closes at 102-01 	<ul style="list-style-type: none"> Client receives positive VM of $(102-01 - 101-21) * 31.25 * 100 =$ \$37,500 for the Swap Futures
Final Settlement	<ul style="list-style-type: none"> Monday, on the day of expiration, the Swap Future closes (expires) at 102-01 	<ul style="list-style-type: none"> No VM from the Swap Futures $(102-01 - 102-01) * 31.25 * 100 =$ \$0
Physical Delivery	<ul style="list-style-type: none"> On Tuesday, client is delivered a cleared IRS with the following details: <ul style="list-style-type: none"> Notional: \$10 million Direction: Client Receives Fixed Maturity: 10 years Fixed Rate: 2.00% Upfront payment: Client Pays \$203,125 DV01: \$9,672 	<ul style="list-style-type: none"> Cash flow calculated on Tuesday night EOD cycle is the net of (1) the upfront payment and (2) the net present value (NPV) of the delivered 2.00% coupon swap given prevailing market rates at Tuesday's OTC settlement When the Swap Future settles above par, longs pay/shorts receive an upfront payment equal to $(102-01 - 100) * 31.25 * 100 =$ \$203,125 The client is receiving 2.00%, which is 21 bp above the Tuesday IRS settlement rate of 1.79%. With a DV01 of \$9,672*, the NPV of the delivered swap is positive \$203,112. In this example, we assume rates were unchanged at 1.79% for both the Monday futures and Tuesday OTC settlements On Wednesday morning, the long position holder Pays the difference between the upfront payment (-\$203,125) and the NPV of the swap (\$203,112), or \$13.

Block Trading of MAC Swap Futures

Block Trading Rules

Minimum block trade volume thresholds for outright transactions are:

<p>Outrights:</p>	<ul style="list-style-type: none"> • 2-year MAC Swap Future 3,000+contracts • 5-year MAC Swap Future 1,500+ contracts • 7-year MAC Swap Future 1,250+ contracts • 10-year MAC Swap Future 1,000+ contracts • 20-year MAC Swap Future 500+ contracts • 30-year MAC Swap Future 500+ contracts
<p>Intra-Commodity Future Spreads (i.e. Calendar Spreads)</p>	<ul style="list-style-type: none"> • May be executed as block trades provided that the sum of the quantities of the legs meets the minimum block quantity threshold.
<p>Inter-Commodity Future Spreads (Treasuries vs. MACs, or MAC vs. Other MACs)</p>	<ul style="list-style-type: none"> • May be executed as block trades provided that each leg of the spread meets the minimum threshold requirement for the respective underlying products.
<p>Inter-Commodity Future Spreads (MACs. vs. MACs)</p>	<ul style="list-style-type: none"> • May be executed as a block trade provided that the sum of the legs meets the minimum block quantity threshold.
<p>Reporting</p>	<ul style="list-style-type: none"> • Block trades must be reported to the Exchange within fifteen minutes of the transaction.

Interest Rate Tools & Research Reports

MAC Analytics: Allows you to view the relationship between the MAC's price, rate, and risk to its respective corresponding OTC Spot and Forward Swap

- The implied rate provides an excellent approximation of the implied forward rate of the MAC contract
- *New! Real-Time Analytics Available in Excel*

CFTC Commitment of Traders: provides a comprehensive and highly configurable graphical representation of the CFTC's report on market open interest released each Friday afternoon based on positions held during the prior Tuesday.

Pace of the Roll: Each trading day during the roll periods, this tool provides graphs that will be updated to reflect the current progression of roll activity out of expiring contracts and into the deferred months

RapidRV: real-time analytics tool that enables a wide range of side-by-side pricing analysis and opportunity assessment between related fixed income products and markets.

Price Correlation Research: Highlights the strong correlation between MAC prices and corresponding par spot-starting OTC interest rate swap rates

Delivery Manual: This manual provides an overview of the physical delivery process for MACs, both US dollar-denominated (USD) and euro-denominated (EUR).

Greenwich Associates Total Cost Analysis: Discover how futures may be a more cost-efficient means to express views on interest rates compared to cleared swaps.

Block List Contacts

Below is a list of firms that have volunteered as contacts for clients interested in MAC block trades. Many other market makers are willing to engage in block transactions.

Firm	Contact Name	Email	Phone Number
Bank of America Merrill Lynch	Paul Scurfield	Paul.Scurfield@baml.com	646 855 8870
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Jefferies	Chris Bury Chris Koppenheffer	cbury@jefferies.com ckoppenheffer@jeffries.com	212 708 2728 212 284 2299
Morgan Stanley	Joe Anderson	joseph.d.anderson@morganstanley.com	212-761-3464
Nomura	Tim Doern	timothy.doern@nomura.com	212 667 1423
Societe Generale	Barry Cohen	barry.cohen@sgcib.com	212 278 5332
Nomura Singapore (8:30am-6pm Tokyo)	John Gorman	John.gorman@nomura.com	+65 7433 6613 +1 855 285 4975

For More Information

To learn more about MAC Swap Futures, visit www.cmegroup.com/dsf or contact a member of our product team:

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Futures trading is not suitable for all investors, and involves the risk of loss. Futures are a leveraged investment, 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 a futures 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 they cannot expect to profit on every trade.

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