

# Bloomberg Analytics for CME Swap Clearing

- CME-Specific USD Valuation Curve
- CME Cleared Swaptions Initial Margin Calculations

# CME-Specific USD Valuation Curve

# CME Specific USD Curve in Bloomberg

- ✓ CME developed it's own USD curve in June 2015 to provide transparency to the marketplace
- ✓ Users have the ability to change to a CME USD curve on the Swap Manager Page (SWPM) for one time calculations
- ✓ Users can change the default USD curve to the CME curve through the Swap Curve Builder Page (ICVS)
- ✓ After setting the default USD curve to CME, Swap Manager (SWPM), Swap Curve Builder (ICVS) and Invoice Spread Analysis (IVSP) page will have the USD CME curve populated

# Swap Manager (SWPM)

From the Swap Manager page, you have the ability to change to a CME curve valuation

1. Select the + sign next to Market
2. By selecting the dropdown Fwd, you will have the ability to select USD CME Swap Curve
3. Re-calculate to update the output after the USD CME Swap Curve is selected

**GRAB**

91) Actions | 92) Products | 93) Views | 94) Info | 95) Settings | Swap Manager

10) Solver (Premium) | 31) Load | 32) Save | 35) Trade | 38) CCP | 43) Send to EMIR

3) Main | 4) Details | 9) Curves | 6) Cashflow | 7) Resets | 9) Scenario | 10) Risk | 11) CVA | 12) Matrix

Deal: Fixed Float Swap | Counterparty: SWAP CNTRPARTY | Ticker: / SWAP | Properties

Swap

Leg 1: Fixed	Receive	Leg 2: Float	Pay
Notional	10MM	Notional	10MM
Currency	USD	Currency	USD
Effective	0D 04/28/2016	Effective	0D 04/28/2016
Maturity	10Y 04/28/2026	Maturity	10Y 04/28/2026
Coupon	1.796335 %	Index	3M US0003M
Pay Freq	SemiAnnual	Spread	0.000 bp
Day Count	30I/360	Leverage	1.00000
Calc Basis	Money Mkt	Latest Index	0.63385
		Reset Freq	Quarterly
		Pay Freq	Quarterly
		Day Count	ACT/360

Market: USD (30/360, S/)

Dscnt: 23 | B | USD (30/360, S/)

Fwd: 23 | B | USD (30/360, S/)

Leg 1: NPV: 10,000,000.00 | Leg 2: NPV: -10,000,000.00

Valuation Results

Par Cpn	1.796335	Premium	0.00000
Principal	0.00	BP Value	0.00000
Accrued	0.00		
NPV	0.00		

Calculators

PV01	9,244.95
DV01	9,245.12
Gamma (1bp)	9.77

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000  
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# Swap Curve Builder (ICVS)

From the ICVS page, after selecting line 59 (US Dollar Curve number 23), you have the ability to change to a CME curve valuation as the default

1. Select the dropdown next to Name and select USD CME Swap Curve
2. Select the dropdown next to Actions and select Set as Default
3. Re-calculate to update the output after the USD CME Swap Curve is selected

The screenshot shows the Swap Curve Builder (ICVS) interface. The top navigation bar includes '91) Actions', '92) Modes', and 'Settings'. A dropdown menu is open under 'Settings', showing 'Name USD (30/360, S/A vs. 3M L) - Default'. A second dropdown menu is open under 'Actions', showing 'Set as Default'. A third dropdown menu is open under 'Name', showing 'USD (30/360, S/A vs. 3M LIBOR)'. The main area displays a table of Cash Rates, a table of Swap Rates, and a Zero Rates Chart. The Zero Rates Chart shows a curve starting at approximately 0.38% for 0/N and rising to about 1.79% for 10 YR. The chart is labeled 'Zero Rates Bid'.

Term	Bid	Ask
0/N	0.38120	0.38120
T/N	0.46000	0.55000
1 WK	0.39940	0.39940
1 MO	0.43695	0.43695
2 MO	0.52300	0.52300
3 MO	0.63385	0.63385
6 MO	0.91040	0.91040
12 MO	1.23885	1.23885

Term	Bid	Ask
1 YR	0.81110	0.81490
2 YR	0.97395	0.97655
3 YR	1.10948	1.11252
4 YR	1.23445	1.23755
5 YR	1.35042	1.35358
6 YR	1.45998	1.46302
7 YR	1.55945	1.56255
8 YR	1.64743	1.65057
9 YR	1.72497	1.72803
10 YR	1.79578	1.79915

Short End: ACT/360 Middle: ACT/360 Long End: 30I/360 S/A

Zero Rates Chart: Bid

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# Swap Manager and Swap Curve Builder Defaults

After setting the default curve to USD CME Swap Curve, when opening the Swap Manager (SWPM) and Swap Curve Builder (ICVS) page, USD CME Swap Curve will be populated

GRAB

91) Actions 92) Products 93) Views 94) Info 95) Settings Swap Manager

10 Solver (Premiur... 31) Load 32) Save 35) Trade 38) CCP 43) Send to EMIR

3 Main 4 Details 9 Curves 7 Resets 9 Scenario 10 Risk 10 CVA 12 Matrix

Deal Fixed Float Swap Counterparty SWAP CNTRPARTY Ticker / SWAP Properties

Swap

Leg 1:Fixed Receive Leg 2:Float Pay

Notional 10MM Notional 10MM

Currency USD Currency USD

Effective 0D 04/28/2016 Effective 0D 04/28/2016

Maturity 10Y 04/28/2026 Maturity 10Y 04/28/2026

Coupon 1.819456 % Index 3M US0003M

Pay Freq SemiAnnual Spread 0.000 bp

Day Count 301/360 Leverage 1.00000

Calc Basis Money Mkt Latest Index 0.63385

Reset Freq Quarterly

Pay Freq Quarterly

Day Count ACT/360

Market

Dscnt 23 B USD CME Swap C

Fwd 23 B USD CME Swap C

Leg 1: NPV 10,000,000.00 Leg 2: NPV -10,000,000.00

Valuation Results

Par Cpn	1.819456	Premium	0.00000	PV01	9,237.87
Principal	0.00	BP Value	0.00000	DV01	9,238.05
Accrued	0.00			Gamma (1bp)	9.83
NPV	0.00				

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GRAB

Default Curve Set

91) Actions 92) Modes 93) Settings Swap Curve Builder

USD 23 - USD (30/360, S/A vs. 3M LIBOR) Name USD CME Swap Curve Default Privilege Global 04/26/16

20 Curve Construction 21) Curve Analysis

Shift +0.00 bp 99 Legend

Cash Rates PCS CMPN Contiguous Futures

Term	Bid	Ask	Contract	Price	Cvx Adj	Rate
D/N	0.38120	0.38120	1 JUN 16+3	99.3000	-0.00036	0.69963
T/N	0.46000	0.55000	2 SEP 16+3	99.1800	-0.00148	0.81852
1 WK	0.39940	0.39940	3 DEC 16+3	99.0800	-0.00295	0.91705
1 MO	0.43695	0.43695	4 MAR 17+3	99.0100	-0.00507	0.98493
2 MO	0.52300	0.52300	5 JUN 17+3	98.9350	-0.00763	1.05737
3 MO	0.63385	0.63385	6 SEP 17+3	98.8650	-0.01062	1.12439
6 MO	0.91040	0.91040	7 DEC 17+3	98.7850	-0.01405	1.20094
12 MO	1.23885	1.23885				

Market Rate Volatility 0.903%

Short End ACT/360 Middle ACT/360 Long End 301/360 S/A

\*Instruments with Spread

Zero Rates Chart Bid

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# Invoice Spread Analysis Default

After setting the default curve to USD CME Swap Curve, when opening the Invoice Spread Analysis (IVSP) page, the swap rates populated will reflect the USD CME Swap Curve even though it doesn't say this in the Forward Interest Rate Swap section

GRAB

United States 97) Settings 98) Feedback Invoice Spread Analysis

Ticker	Eff Date	Future Px	CTD Security	Fwd Yld	Swp Rate	Inv Sprd	Low	6M Range	High
1) TUM6	07/06/2016	109-14 <sup>3</sup> / <sub>4</sub>	T 1 03/15/18	.7131	.8402	12.7105	.2		12.8
2) FVM6	07/06/2016	121-12+	T 1 <sup>3</sup> / <sub>8</sub> 08/31/20	1.1374	1.0997	-3.7727	-13.7		-1.3
3) TYM6	06/30/2016	130-26+	T 2 <sup>3</sup> / <sub>8</sub> 12/31/22	1.4988	1.3481	-15.0679	-22.6		-9.5
4) UXYM6	06/30/2016	141-14	T 2 <sup>3</sup> / <sub>4</sub> 11/15/25	1.7622	1.5956	-16.6663	-21.7		-10.9
5) USM6	06/30/2016	165-19	T 4 <sup>1</sup> / <sub>2</sub> 02/15/36	2.1604	2.0412	-11.9264	-24.7		-6.1
6) WNM6	06/30/2016	173-15	T 3 <sup>3</sup> / <sub>4</sub> 08/15/41	2.4984	2.1212	-37.7185	-46.1		-25.1

June Contracts     September Contracts

Future Contract - TYM6 Comdty

# Contract: 82    Price: 130-26+

CTD Security: T 2<sup>3</sup>/<sub>8</sub> 12/22    Delivery: 06/30/16

DV01:  Fwd: 6511    Fwd Yield: 1.4988

Spot: 6657

9) Forward Interest Rate Swap (SWPM)

Notional: 10 MM    Swap Rate: 1.3481

Effective: 06/30/16    Maturity: 12/31/22

Fixed DV01: 6502

Fwd Curve:  S23: USD Swaps (30/360,S/A)

S42: USD OIS Swaps

Disc Curve: S23: USD Swaps (30/360,S/A)

Invoice Spread: -15.0679

Historical Spread

Invoice Spread Analysis -36.3437

Australia 61 2 9777 8600    Brazil 5511 2395 9000    Europe 44 20 7330 7500    Germany 49 69 9204 1210    Hong Kong 852 2977 6000  
 Japan 81 3 3201 8900    Singapore 65 6212 1000    U.S. 1 212 318 2000    Copyright 2016 Bloomberg Finance L.P.  
 SN 637379 H141-2792-0 09-May-16 15:34:59 EDT GMT-4:00

# CME Cleared Swaptions Initial Margin Calculations



# Swap Manager: Option Valuation(SWPM-OV)

From the SWPM-OV page, you have the ability to calculate margins for CME USD swaptions.

1. Select the dropdown Delivery, and select Cleared (Physical)
2. Underlying swap economics can be viewed by selecting the “+” next to underlying
3. To save, press the #32 SAVE TAB
4. Select the dropdown #38 CCP and select CME CORE

The screenshot shows the Swap Manager Option Valuation interface. The interface is divided into several sections: Deal, Valuation Settings, Valuation Results, and Calculators. The Deal section contains fields for Style, Position, Type, Expiration, Swap Start, Swap End, and Underlying. The Valuation Settings section contains fields for Curve Date, Valuation, Model, Volatility Type, and CSA Coll Coy. The Valuation Results section displays a table of metrics including ATM Strike, Yield Value (bp), NPV Without Fee, NPV, Implied Vol (bp), Underlying Prem, Forward Prem, and Premium. The Calculators section displays a table of metrics including DV01, Gamma (1bp), Vega (1bp), and Theta (1-day). The interface also includes a menu bar at the top with options like Actions, Products, Views, Info, Settings, and Swap Manager. The Deal section has a dropdown menu for Delivery, which is highlighted with a blue box and a callout '1'. The Valuation Settings section has a dropdown menu for CCP, which is highlighted with a blue box and a callout '4'. The Valuation Results section has a dropdown menu for Underlying, which is highlighted with a blue box and a callout '2'. The menu bar has a button for Save, which is highlighted with a blue box and a callout '3'.

Deal	Swaption	Counterparty	IRS CNTRPARTY	Ticker	IRS	Properties
Option	European	Notional	10MM			
Style	Long Receiver	Currency	USD			
Type	1Y X 5Y	Strike	1.542706			
Expiration	06/01/2017	Delivery	Cleared (Physical)			
Swap Start	06/05/2017	Fee(Pay)	0.00			
Swap End	06/05/2022	Fee Date	06/01/2017			
Underlying	2	Premium Paid At Expiry	<input checked="" type="checkbox"/>			

Valuation Results			Calculators		
ATM Strike	1.542706	Implied Vol (bp)	80.14	DV01	2,625.62
Yield Value (bp)	31.946	Underlying Prem	0.00000	Gamma (1bp)	28.82
NPV Without Fee	155,511.61	Forward Prem	1.56485	Vega (1bp)	1,940.47
NPV	155,511.61	Premium	1.55512	Theta (1-day)	-232.59

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SN 235908 6599-4287-0 01-Jun-16 10:19:01 CDT GMT-5:00

# CME CORE Margin Calculator

Once CME CORE is selected as a CCP, the below screen will show the CME initial margin amount in USD.

The screenshot displays the CME CORE Margin Calculator window. The main display area shows the following details:

- Display Currency:** USD
- Type:** OV
- Notional:** 10,000,000
- Effective:** 06/05/2017
- Maturity:** 06/05/2022
- Mkt Date:** 06/01/2016
- Deal Ccy:** USD
- CME IM:** 81,573.95 USD

A note below the calculator states: "The margin is calculated by CME Group. The service is online from Sunday at 6pm through Saturday at 1am EST and is subject to daily maintenance."

The bottom section of the interface shows Valuation Results:

ATM Strike	1.540393	Implied Vol (bp)	80.14	DV01	2,623.74
Yield Value (bp)	31.913	Underlying Prem	-0.00319	Gamma (1bp)	28.82
NPV Without Fee	155,346.00	Forward Prem	1.56319	Vega (1bp)	1,940.40
NPV	155,346.00	Premium	1.55346	Theta (1-day)	-232.59

At the bottom of the screen, there is a footer with contact information for various regions and a copyright notice: "Copyright 2016 Bloomberg Finance L.P. SN 235908 6599-4287-0 01-Jun-16 10:26:27 CDT GMT-5:00".

# CME CORE Margin Calculator

Users have the option to display initial margin in different currencies by selecting the Display Currency dropdown. The USD and selected currency will be displayed as well as the FX rate used.

GRAB

91) Actions | 92) Products | 93) Views | 94) Info | 95) Settings | Swap Manager

10) Solver (Premiur... | 31) Load | 32) Save | 35) Trade | 38) CCP | 43) Send to EMIR

3) Main | 4) Details | 5) Curves | 6) Cashflow | 7) Resets | 9) Scenario | 10) Risk | 11) CVA | 12) Matrix

Deal | Swaption | Counterparty | IRS CNTRPARTY | Ticker / IRS | 20) Properties

Option | Valuation Settings

CME CORE Margin Calculator

Display Currency: GBP

Type	OV	Receive	Fixed
Notional	10,000,000	Pay	Float
Effective	06/05/2017		
Maturity	06/05/2022		
Mkt Date	06/01/2016		
Deal Ccy	USD		

CME IM	81,305.35	USD
BBG FX Rate	1.448226	
BBG Equiv IM	56,141.34	GBP

The margin is calculated by CME Group. The service is online from Sunday at 6pm through Saturday at 1am EST and is subject to daily maintenance.

CME Group | CME CORE Margin Calculator | Close

Valuation Results

ATM Strike	1.536217	Implied Vol (bp)	80.11	DV01	2,626.81
Yield Value (bp)	31.959	Underlying Prem	0.00259	Gamma (1bp)	28.78
NPV Without Fee	155,568.82	Forward Prem	1.56541	Vega (1bp)	1,940.42
NPV	155,568.82	Premium	1.55569	Theta (1-day)	-232.01

Australia 61 2 9777 8600 | Brazil 5511 2395 9000 | Europe 44 20 7330 7500 | Germany 49 69 9204 1210 | Hong Kong 852 2977 6000  
 Japan 81 3 3201 8900 | Singapore 65 6212 1000 | U.S. 1 212 318 2000 | Copyright 2016 Bloomberg Finance L.P.  
 SN 235908 6599-4287-0 01-Jun-16 10:29:17 CDT GMT-5:00

# Swaptions Margin Efficiencies

- Calculating margins for multi-trade swaptions portfolios and Portfolio Margining of swaptions and swaps can be performed directly through CME CORE: [www.cmegroup.com/core](http://www.cmegroup.com/core)
- Margin offsets of up to 91% are possible when swaptions are margined with cleared interest rate swaps.
  - Swaptions are also available for Portfolio Margining with CME Eurodollar, Treasury, and Deliverable Swap Futures.
- Swaption margin matrix available in CME CORE that displays indicative margin results for select swaption tenors and the swaps that were used as a delta hedge.

CORE Margin Calculator

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New swaptions simple upload template and updated supported products list now available in the Download Center.

Portfolio Summary | My Cleared Trades | Add | Remove | Remove All | View | Export Summary | Templates

Saved On	Name	Description	Account	Firm	Margin Type	#Trades	NPV	Margin Result
06-01-2016	Portfolio Aggregate Aggregate	Swap + Swaption Combined 1M10Y	Aggregate	Aggrega...	IRS	2	\$ 877,544	\$ 244,248
06-01-2016	Portfolio 4567 TEST	Swap 1M10Y	TEST	4567	IRS	1	\$ -10,416	\$ 1,581,701
06-01-2016	Portfolio 1234 TEST	Swaption 1M10Y	TEST	1234	IRS	1	\$ 887,960	\$ 854,266

Page 1 of 1

Created On: June 1, 2016 | Name: Portfolio Aggregat... (IRS) | Firm: Aggregate | Account: Aggregate | # Trades: 2 | Margin: \$ 244,240

IRS & Swaptions | Futures & Options | Delta Ladder

Firm ID	Account ID	Cleared Trade ID	Cleared	Product Type	Currency	Effective Date	Maturity Date	Direction	Notional	NotionalType	FutureValueNotional	Netting ID	Client ID	Blending ID	Leg1 Type	Leg1 ccy	Leg1 Start
1	Aggrega...	Aggregate	NO	VANILLA	USD	07-06-2016	07-06-2026	RECEIVE	44000000	BULLET					FIXED	USD	NONE
2	Aggrega...	Aggregate	NO	VANILLA_SWAPTION	USD	07-06-2016	07-06-2026	PAY	100000000	BULLET					FIXED	USD	NONE

# Swaptions Margin Efficiencies in MARS

To perform Margin assessment at portfolio level enter MARS CCP

1. Select the trades to perform portfolio margin analysis
2. Select the #9 Calculate Margins
3. Assess impact of margin offsetting deals

The screenshot shows the MARS interface with the following data:

What-If	Position	CostPx	Delta	MktPx	Face	Amount	Principal	Accrued	Interest	MktVal	Port	Ccy	P&
[-] Portfolio Totals													
	CME					145,011,088				.00			785,529.16
	BLOOMBERG LP					145,011,088				.00			785,529.16
	/SWAP 1.72 07/05					45,011,088	531,042.01			.00			531,042.11
	Receive Fixed					45,011,088	1,948,291.49			.00			
	Pay Float					45,011,088	-1,417,249.49			.00			
	/IRS 1.72 07/05					100,000,000	254,486.87			.00			254,487.15

Below the table, the 'Calculate Margins' button is highlighted with a blue box and the number 2. The resulting margin values are shown in the table below:

Security	Market Value	Initial Margin	Incremental IM
CME	789,488.03	389,711.84	
BLOOMBERG LP	789,488.03	389,711.84	--

**Portfolio offset IM = 390K (compared to individual IM values of 1,827K plus 280K)**

CME CORE Margin Calculator

Type: IRS  
 Notional: 45,011,088.299531  
 Effective: 07/05/2016  
 Maturity: 07/05/2026  
 Mkt Date: 06/06/2016  
 Deal Ccy: USD

Display Currency: USD

Rec Pay: Fixed  
 CME IM: 1,827,318.26 USD

The margin is calculated by CME Group. The service is online from Sunday at 6pm through Saturday at 1am EST and is subject to daily maintenance.

CME Group CME CORE Margin Calculator

Close

CME CORE Margin Calculator

Type: OV  
 Notional: 100,000,000  
 Effective: 07/05/2016  
 Maturity: 07/05/2026  
 Mkt Date: 06/06/2016  
 Deal Ccy: USD

Display Currency: USD

Rec Pay: Float  
 CME IM: 280,379.83 USD

The margin is calculated by CME Group. The service is online from Sunday at 6pm through Saturday at 1am EST and is subject to daily maintenance.

CME Group CME CORE Margin Calculator

Close

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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. All references to options refer to options on futures.

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