CME Group

Swap Rate Curve Strategies with Deliverable Interest Rate Swap Futures

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I. Introduction

2-Year, 5-Year, 10-Year, and 30-Year Deliverable Interest Rate Swap futures (Deliverable Swap Futures, or "DSFs") provide capital-efficient tools for market participants to implement their views on the level and shape of the interest rate swap curve.

Deliverable Swap Futures are U.S. Dollar-denominated quarterly contracts expiring on IMM dates for key benchmark interest rate swap tenors. At expiration, all open positions will deliver into CME Group Cleared Interest Rate Swaps. They provide a complementary standardized product that provides interest rate swap exposure and include the advantages offered by futures contracts including pricing transparency, the automatic netting of positions, and margin savings achieved through risk offsets versus other futures and options cleared through CME Clearing.

For a comprehensive explanation of Deliverable Interest Rate Swap futures, please visit www.cmegroup.com/dsf.

Capital efficiencies

DSF futures offer futures-style margining, which equates to margins that are approximately 50% lower than cleared Interest Rate Swaps. Performance bond margin offsets are available for DSF futures spread positions, requiring substantially less initial margin for opposing positions. Margin offsets are also available when combining DSF futures with opposing positions in other CME Group Interest Rate products.

Level, Slope, and Shape Applications

Using Deliverable Swap futures to hedge or to speculate on the level, or slope, or curvature of the term structure of swap rates is relatively straightforward.

Level

If you expect forward-starting swap rate levels to rise (or fall) at a particular key maturity point -- 2-year, 5-year, 10-year, or 30-year -- simply sell (or buy) the corresponding DSF contract in the desired amount.

Slope

If you anticipate the swap rate curve to steepen (or flatten) between any particular pair of key maturity points, then buy (or sell) the appropriate DSF curve spread. Exhibit 1 shows the swap rate curve strategies that DSFs enable. The following section spells out how to tailor spread ratios for these strategies.

Exhibit 1: Swap Rate Curve Trades with Deliverable Swap Futures

Swap Rate Curve Spread	Curve Steepener with DSF Futures	Curve Flattener with DSF Futures
2-Yr - 5-Yr	Buy 2-Yr DSF + Sell 5-Yr DSF	Sell 2-Yr DSF + Buy 5-Yr DSF
2-Yr - 10-Yr	Buy 2-Yr DSF + Sell 10-Yr DSF	Sell 2-Yr DSF + Buy 10-Yr DSF
2-Yr - 30-Yr	Buy 2-Yr DSF + Sell 30-Yr DSF	Sell 2-Yr DSF + Buy 30-Yr DSF
5-Yr - 10-Yr	Buy 5-Yr DSF + Sell 10-Yr DSF	Sell 5-Yr DSF + Buy 10-Yr DSF
5-Yr - 30-Yr	Buy 5-Yr DSF + Sell 30-Yr DSF	Sell 5-Yr DSF + Buy 30-Yr DSF
10-Yr - 30-Yr	Buy 10-Yr DSF + Sell 30-Yr DSF	Sell 10-Yr DSF + Buy 30-Yr DSF

Shape

Finally, various DSF curve spreads may be combined to construct butterfly spread positions with which contract users can take views on the curvature of the term structure of swap rates.

Swap Rate Curve Spread Ratios

The goal of any swap rate curve trade is to capitalize upon changes in spreads among the swap rates embedded in the curve trade position. For small to moderate shifts in swap rate spread relationships, a familiar, manageable, and suitable approach is to set the balance the legs of the curve trade position so that the dollar value of a one basis point change in the rate (the DV01) for one leg of the spread is equal in magnitude and opposite in sign to the DV01 for the other leg.[1] A DV01-weighted spread ratio will capitalize on differences in basis point movements between tenors.

A convenience for subscribers of the Bloomberg Professional® service is that Bloomberg SWPM page (navigated from DES page for DSFs) calculates DV01s and forward-starting swap rates based on the coupon, effective date, and maturity date of the DSF underlying interest rate swap.

[1] Another possible approach to constructing spread ratios might be to augment the DV01s with corresponding swap rate-betas, to account for systematic differences in swap rate volatility at different key maturity points along the swap rate curve. However, incorporating swap rate-beta adjustments tends to make most sense in connection with strategic hedge positions or when structuring one-way long or short positions, in order to equalize differences in basis point movements.

Trading the Swap Rate Slope: Flatteners and Steepeners

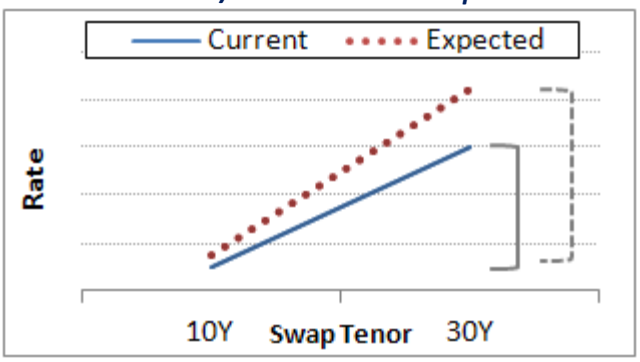
Consider the spread between the 10-year and 30-year swap rates. If you expect the curve to steepen (spread widens), you would buy the 10-Year/30-Year DSF futures spread by buying 10-Year DSF and selling a DV01-equivalent number of 30-Year DSF contracts. Conversely, if you are bracing for the swap rate curve to flatten (spread narrows), you would sell the 10-Year/30-Year DSF futures spread by selling 10-Year DSFs and buying 30-Year DSFs.

Either way, the swap rate spread exposure embedded in the DSF futures spread will bear a close and reasonably direct relationship to the swap rate spread of the underlying, forward-starting interest rate swaps.

Example 1: Steepener

Suppose it is November 15, 2012, and you anticipate the swap rate curve to steepen in response to the outcome upcoming economic indicators (Exhibit 3). **The spread between the implied forward-starting swap rates for nearby 10-Year and 30-Year DSF futures is 78 bps** (Exhibit 2). With your steepening view in mind, you decide to buy the 10-Year/30-Year DSF futures spread.

Exhibit 2: 10-Year/30-Year Curve Steepener



Expecting the 10s-30s spread to steepen; you buy the spread by buying 10-Year DSF futures and selling 30-Year DSF futures

Exhibit 3 summarizes futures market conditions on November 15. At prevailing nearby contract price levels, the appropriate spread ratio for DV01-neutrality is 2.613 10-Year DSF futures per each 30-Year DSF futures contract (equal to ($259.73 per bp per 30-Yr DSF) / ($99.41 per bp per 10-Yr DSF)). Accordingly, you decide to buy 2,613 10-Year DSF futures and sell 1,000 30-Year DSF futures.

Exhibit 3: 10-Year/30-Year Curve Steepener, Position Entry, November 15, 2012

Futures Contract	Price*	Implied Fwd Rate (Pct)	Contract DV01 ($ per bp)	Spread Ratio (Number of Contracts Long (+) or Short (-))	Position DV01 ($ per bp)
10-Year DSF	102 and 20.5/32nds	1.722%	$99.41	+2,613	$259,758
30-Year DSF	106 and 5/32nds	2.501%	$259.73	-1,000	-$259,730
Implied Forward-Starting Swap Rate Spread		**77.9 bps**			

* Theoretical futures prices based on forward-starting interest rate swap market rates

Almost two weeks later, on November 27, the spread between implied forward-starting swap rate for the nearby 10-Year and 30-Year DSF futures contracts has widened by 4 bps, to a spread level of 82 bps.

(Reassuring to observe is that the spread between 10-year and 30-year spot-starting interest rate swap rates has also widened comparably by 4 bps, to a spread of 88 bps.)

Exhibit 4 summarizes the performance of your 10-Year/30-Year DSF futures steepener spread position. A notable feature of the outcome, typical of a spread-trade, is that one leg produces a loss while the other leg produces a gain. The expectation is that the gain of the one leg will be greater than the loss of the other leg. In this example, the 10-Year DSF leg produced a loss of -$1,551,468.75 (as 10-Year rates rose by 6 bps) while the 30-Year DSF leg produced a gain of +2,625,000 (as 30-Year rates rose by 11 bps), which produced a total profit of +$1,073,531.25 for the spread position.

Exhibit 4: 10-Year/30-Year Curve Steepener: Profit/Loss, November 27, 2012

Futures Contract	Nov 15, Entry Price*	Nov 15, Implied Fwd Rate	Nov 27, Exit Price*	Nov 27, Implied Fwd Rate	Price Change Per Contract	Spread Ratio (Contracts)	Profit (+) / Loss (-) ($)
10-Year DSF	102-205	1.722%	102-015	1.785%	-19/32nds = -$593.75	+2,613	-$1,551,468
30-Year DSF	106-05	2.501%	103-17	2.607%	-84/32nds = +$2,625.00	-1,000	+$2,625,000
Implied Forward Starting Spread		**77.9 bps**		**82.2 bps**	**+4.3 bps**		**+$1,073,531**

* Theoretical futures prices based on forward-starting interest rate swap market rates

Profit/Loss:
Total profit on the spread is $1,073,531.25, comprising -$1,551,468.75 on the long position in 10-Year DSF futures and +$2,625,000 on the short position in 30-Year DSF futures.

II. Trading the Shape: Butterfly Trades

Trading the shape of the swap curve (and forward-starting swap curve) is also a strategy to which DSF futures are ideally suited. When constructing a butterfly trade, such as the *5-Year -- 10-Year – 30-Year DSF futures butterfly*, the DV01 spread ratio should typically be +1:-2:+1 -- that is, the sum of the DV01s of the 5-Year and 30-Year (the "wings") should be equal and opposite to the DV01 of the 10-Year (the "body").

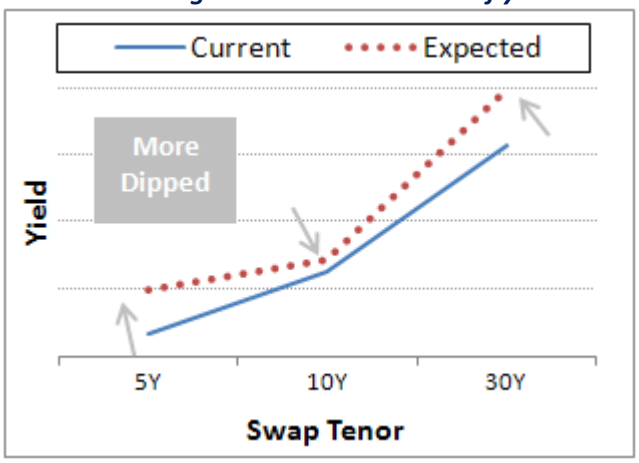
If you expect the 10-year swap rate to fall relative to 5-year and 30-year rates, you could capitalize on this view by selling the 5y-10y-30y DSF futures butterfly. That is, you would sell a DV01-weighted combination of 5-Year and 30-Year DSF futures (the "wings"), and buy appropriately DV01-weighted 10-Year DSF futures (the "body").

Conversely, if you expect the 10-year swap rate to rise relative to the 5-year and 30-year rates, you could buy the 5y-10y-30y DSF futures butterfly by buying a DV01-weighted combination of 5-Year and 30-Year DSF futures and sell appropriately DV01-weighted 10-Year DSF futures. (In effect, this long butterfly position is the same as combining a long 5-Year/10-Year DSF futures spread with a short 10-Year/30-Year DSF futures spread.)

Example 2: Butterfly
To illustrate, return to November 15, 2012. Suppose you expect the 10-year swap rate to outperform the 5-year and 30-year swap rates. Specifically, you anticipate that the forward-starting 10-year swap rate will either fall more than the 5-year and 30-year rates, or it will rise less than the 5-year and 30-year rates. Graphically speaking, you expect the swap curve to become more dipped (Exhibit 5).

The following 'short butterfly' example specifically illustrates the 10-year forward-starting swap rate rising less than the 5-year and 30-year rates.

Exhibit 5: Selling the 5-10-30 DSF Butterfly



A short butterfly that is properly balanced in DV01 terms combines short positions in a DV01-weighted 5-Year and 30-Year DSF positions (wings) with comparably scaled long position in a 2 * DV01-weighted 10-Year DSF futures position (body). To determine a precise butterfly weighting, ensure the "wings" of the butterfly are equivalent in DV01 terms to the "body", with each wing being ½ the DV01 of the body.

When establishing a DV01-neutral butterfly, first determine the amount of risk to transact in DV01 terms, ensuring the two wings are equivalent to each other and add up to the DV01 of the body. If choosing a $300,000 DV01 for the body, each wing will equate to $150,000 DV01. Given theoretical futures price levels and associated contract DV01s on November 15, the DV01-neutral short DSF butterfly futures spread comprises -(2,882) 5-Year DSF contracts, +3,031 10-Year DSF contracts, and –(580) 30-Year DSF contracts, see Exhibit 6.

Exhibit 6: Short 5y-10y-30y DSF Futures Butterfly, Position Entry, November 15, 2012

Futures Contract	Price	Implied Fwd Rate (Pct)	Contract DV01 ($ per bp)	Spread Ratio (Number of Contracts Long (+) or Short (-))	Position DV01 ($ per bp)
5-Year DSF	100 and 21/32nds	0.867%	52.27	-2,882	-$150,642
10-Year DSF	102 and 20.5/32nds	1.722%	99.41	+3,031	$301,312
30-Year DSF	106 and 5/32nds	2.501%	259.73	-580	-$150,643

Profit/Loss:

Exiting the short butterfly position on November 27, total profit on the spread is $128,125.00, comprising gains of $405,281.25 on the short position in 5-Year DSF futures and $1,522,500 on the short position in 30-Year DSF futures, tempered by a loss of -$1,799,656.25 on the long 10-Year DSF futures leg. See Exhibit 7.

Exhibit 7: Short 5y-10y-30y DSF Futures Butterfly: Profit/Loss, November 27, 2012

Futures Contract	Nov 15, Entry Price	Nov 15, Implied Fwd Rate (Pct)	Nov 27, Exit Price	Nov 27, Implied Fwd Rate (Pct)	Price Change Per Contract	Spread Ratio (Contracts)	Profit (+) / Loss (-) ($)
5-Year DSF	100-21	0.867%	100-165	0.894%	-4.5/32nds = -$140.63	-2,882	+$405,281
10-Year DSF	102-205	1.722%	102-015	1.785%	-19/32nds = -$593.75	+3,031	-$1,799,656
30-Year DSF	106-05	2.501%	103-17	2.607%	-84/32nds = -$2,625.00	-580	+$1,522,500

III. Conclusion and Additional Resources

Position Management

Maintaining a swap curve strategy position in DSF futures for a period of over three calendar months will typically require position management due to potential expirations of nearby contracts. You would simply roll the positions from the nearest expiration months into the first deferred contracts. Also, if the price of one or more of your DSF futures legs moves substantially, the contract(s) will reflect a different DV01, potentially requiring the need to adjust your position if you wish to maintain DV01-neutrality. DSF futures offer flexible execution via CME Globex, Block trades, EFRPs, and open outcry floor trading.

Additional Resources

Deliverable Swap Futures Web Page	www.cmegroup.com/dsf
CME Group OTC Clearing Web Page	www.cmegroup.com/otc
CME Group Interest Rate Products Page	www.cmegroup.com/ir

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