CME Group

INTEREST RATES

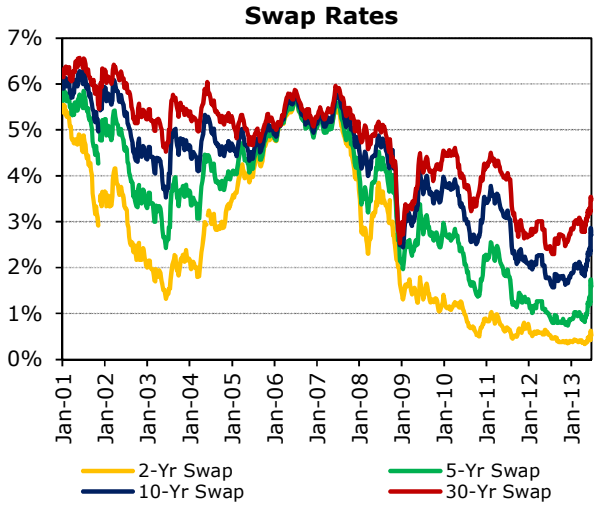
Creating Forward-Starting Swaps with DSFs

JULY 23, 2013

John W. Labuszewski
Managing Director
Research & Product Development
312-466-7469
jlab@cmegroup.com

CME Group introduced its Deliverable Swap Futures (DSFs) contracts to an outstanding reception in late 2012. These products are futures contracts, offered on the Chicago Board of Trade (CBOT), that call for the delivery of an over-the-counter (OTC) interest rate swap (IRS) instrument that is cleared and carried on the books of the Chicago Mercantile Exchange (CME) Clearing House.

In the relatively short time in which they have been made available, DSFs have been broadly embraced by financial institutions as an innovative new method of creating risk exposures that parallel that of OTC IRS instruments. DSFs offer significant capital efficiencies to the extent that they are eligible for cross-margining offsets vs. other CME Group interest rate products; and, offer reduced margin requirements relative to cleared IRS instruments.



But it is their functionality and application that is paramount to their success. This article discusses how combinations of Deliverable Swap Futures may be deployed effectively to create forward-starting swap exposures

DSF Primer

As a preamble, let us review the salient features of Deliverable Swap Futures.[1] DSFs are futures contracts that call for the delivery of IRS instruments.[2] The deliverable IRS instruments are standardized or plain-vanilla swaps that are cleared and carried through the facilities of the CME Clearing House.

Separate DSFs are available that call for the delivery of a 2-, 5-, 10- or 30-year term IRS instrument with a notional value of $100,000. Contracts are listed for delivery on the Monday preceding the 3rd Wednesday of the contract months of March, June, September and December.

The buyer or long of a DSF becomes the fixed rate receiver (floating rate payer) of the swap upon delivery. Thus, the long DSF position will benefit from falling rates (rising prices).

Reference Convention

DSF Position	Delivered Swap Position
Buyer (Long)	Fixed Rate Receiver (or Floating Rate Payer)
Seller (Short)	Fixed Rate Payer (or Floating Rate Receiver)

The seller or short of a DSF becomes the fixed rate payer (floating rate receiver) upon delivery of the swap. Thus, the short DSF position will benefit from rising rates (falling prices).

The floating rate associated with the delivered swap is based on the ICE Benchmark Administration Limited (ICE) 3-month LIBOR fixing, or the same rate that is used to settle CME Eurodollar futures contracts. Each contract calls for the delivery of a swap with a specified fixed rate or coupon that is established by the Exchange generally to approximate market rates at the time of listing, *e.g.,* 0.5%, 1.0%, 1.5%, 2.0%, etc.

These products are quoted as 100% of par plus non-par value (NPV) of the deliverable swap instrument in percent of par. NPV may be assessed as the

[1] For a more detailed discussion of the contract terms and conditions of DSFs and a broad review of their applications, please see "Understanding Deliverable Swap Futures" which may be found at http://www.cmegroup.com/trading/interest-rates/understanding-dsf.html

[2] To participate in a physical delivery, a futures position holder must be an Eligible Contract Participant (ECP) as defined in the Commodity Exchange Act and CME Rule 90005.C., and must be registered with CME by a CME IRS Clearing Member as an IRS Participant per CME Rules 90005.A. and 90005.B.

present value of the future stream of fixed rate payments less the present value of the floating rate payments. The NPV of a swap may be positive or negative depending upon the relationship of prevailing swap (fixed) rates and the fixed rate or coupon associated with the DSF.

Rates > DSF Coupon ➔ NPV is negative (-) & DSF Quote < Par

Rates < DSF Coupon ➔ NPV is positive (+) & DSF Quote > Par

Thus, DSFs may be quoted above 100% of par, *e.g.,* 101%, 102%, 103%, etc., if prevailing rates are greater than the DSF coupon rate. Or, DSFs may be quoted below par, *e.g.,* 99%, 98%, 97%, etc., if prevailing rates are less than the DSF coupon rate.

Building a Forward Swap

Combinations of 2-, 5-, 10- and 30-year DSF futures may be traded effectively to create positions in forward-starting swaps of different tenors. A forward starting swap may be thought of as an interest rate swap that is entered into at a specified future date. *E.g.,* one may wish to enter into a 5-year swap 5 years from the current date. [3]

As a general rule, if one BUYS the shorter-tenure DSF and SELLS the longer-tenure DSF, the trader becomes the fixed rate payer (or floating rate receiver). Using the reference conventions as described above, we would say that the trader has sold or is short the forward-starting swap.

BUY S-T & SELL L-T DSF = SHORT forward-starting swap (fixed rate payer or floating rate receiver)

SELL S-T & BUY L-T DSF = LONG forward-starting swap (fixed rate receiver or floating rate payer)

If one SELLS the shorter-tenure DSF and BUYS the longer-tenure DSF, the trader will become the fixed rate receiver (floating rate payer) and is said to have bought or is long the forward starting swap.
To understand, consider what happens if one were to buy one 5-year DSF and sell one 10-year DSF with the same coupon. Upon delivery, the trader becomes the fixed rate receiver of a 5-year swap; and, the fixed rate payer of a 10-year swap.

During the first 5 years of this transaction, the floating rate and the fixed rate payments are identical but opposite for the two swap instruments. Thus, the fixed and floating rate payments on both swaps offset each other perfectly

But after the first 5 years, the 5-year swap expires, leaving the trader as the fixed rate payer of 10-year swap whose term has dwindled down to 5 years. *I.e.,* the trader becomes the fixed rate payer (floating rate receiver) of swap with 5 years remaining until expiration. Thus, the trader has effectively sold a 5-year swap on a five-year forward starting basis.

If the trader had sold one 5-year DSF and bought one 10-year DSF with the same coupon, the opposite occurs. After the first 5 years, the 5-year swap expires, leaving the trader as the fixed rate receiver of a 10-year swap with a remaining term of 5 years. *I.e.,* the trader is the fixed rate receiver (floating rate payer) of a swap with 5 years to maturity. Or, we can say that the trader has effectively bought a 5-year swap on a five-year forward starting basis.

Because CME offers DSFs that call for the delivery of 2-, 5-, 10- and 30-year swaps, it is theoretically possible to create a variety of forward starting swaps. The various combinations that may be engineered are described in the table below.

Creating Forward-Starting Swaps

	5-Yr DSF	10-Yr DSF	30-Yr DSF
2-Year DSF	3-Year Swap 2 Years Forward	8-Year Swap 2 Years Forward	28-Year Swap 2 Years Forward
5-Year DSF		5-Year Swap 5 Years Forward	25-Year Swap 5 Years Forward
10-Year DSF			20-Year Swap 10 Years Forward

[3] Of course, DSFs are a form of forward-starting swaps in the sense that they call for the future delivery of an IRS instrument. But DSFs are only listed for delivery going out a couple of quarters in advance. The strategy described herein allows one to create much longer-term forwards.

E.g., the combination of a 5- and 10-year DSF can be used to create a 5-year swap on a five-year forward starting basis.

E.g., the combination of a 2- and 5-year DSF can be used to create a 3-year swap on a two-year forward starting basis.

E.g., the combination of a 10- and 30-year DSF can be used to create a 20-year swap on a ten-year forward starting basis.

Coupon Considerations

This strategy works best if the coupons associated with both DSFs that comprise the original transaction match identically. If this condition is met, then the cash flows on the long and short swaps during the forward period of the transaction are perfectly offset and the position becomes a "clean" forward starting swap.

E.g., assume you buy one 5- and sell one 10-year DSF, both with coupons of 1%, and go through the delivery process. For the subsequent five years, the semi-annual fixed coupon payments on the two positions equals $500 (=0.01% x $100,000 face value) and offset precisely. Likewise, the quarterly floating rate payments tied to the 3-month LIBOR rate and based on $100,000 face value also match and offset precisely.

But if the coupons of the two DSFs are not equivalent, then there will be cash flow mismatches during the forward starting period. For example, for the December 2013 delivery, coupons are available at ½% for 2-year DSFs; 1-½% for 5-year DSFs; 2-½% for 10-year DSFs; and, 3-¼% for 30-year DSFs.

One may attempt to weight the trade by putting on a position using unequal numbers of contracts in order to equalize the fixed rate payments during the forward starting period.

E.g., one might match five 1-½% coupon 5-year DSFs with three 2-½% coupon 10-year DSFs. This equalizes the fixed payments but leaves the floating rate payments unbalanced.

It is also possible to supplement the transaction with a cleared swap position during the forward starting period that is acquired through channels apart from the DSF delivery mechanism in order to address this issue.

Yield Curve Play

Finally, we add that the combination of long and short DSF positions based on varying tenor swaps may be traded as a form of yield curve play.

E.g., if one believed that the forward swap curve would steepen, one might buy short-term and sell long-term DSFs, *i.e.,* "buy the yield curve."

E.g., if one believed that the forward swap curve would flatten or invert, one might sell short-term and buy long-term DSFs, *i.e.,* "sell the yield curve."

In order to utilize DSFs in this fashion, it is obligatory to weight the transaction by reference to the relative basis point values (BPVs) associated with each leg of the spread. But that is another discussion.

Conclusion

DSF contracts represent a powerful and versatile new trading and risk-management vehicle. The product may be deployed in a variety of practical applications including use as a substitute for actual IRS market exposures; a hedge vs. current or anticipated IRS holdings; a hedge or spread vs. cash Treasury securities or Treasury futures. Or, they may be used to create longer-term forward-starting interest rate swap positions as described herein.

To learn more about this contract, please visit our website at www.cmegroup.com/dsf.

Deliverable Swap Futures (DSF) Specifications

Trading Unit	A $100,000 notional face value Interest Rate Swap (IRS), cleared by CME Clearing House, with tenors of 2-, 5-, 10- or 30-years, exchanging semiannual fixed interest payments at a rate per annum equal to Contract Fixed Rate for quarterly floating interest rate payments based on 3-month London interbank offered rate.	
Delivery Months	March, June, September or December	
Contract Fixed Rate	Established by Exchange at integer multiples of 25 basis points with 30/360 day count fraction	
Quote Convention	Prices quoted in % of par: 100 points + non-par value (NPV) of IRS where NPV is present value of IRS fixed-rate payments minus present value of IRS floating-rate payments as of Delivery Day	
Minimum Price Increment	*2-Year*	1/4th of 1/32nd of 1% of $100,000 ($7.8125)
	5- and 10-Year	½ of 1/32nd of 1% of $100,000 ($15.625)
	30-Year	1/32nd of 1% of $100,000 ($31.25)
Last Trading Day	Trading in expiring futures terminates at 2 pm (CT) on 2nd London business day before 3rd Wednesday of futures Delivery Month	
Delivery Day	3rd Wednesday of Delivery Month	
Delivery Standard	*Reference Conventions*	Fixed Rate Payer is "short" and "makes" delivery Floating Rate Payer is "long" and "takes" delivery
	Reference Tenors	2-, 5-, 10- and 30-Year IRS Instruments
	Notional Amount	$100,000 (USD) per futures contract
	IRS Effective Date	3rd Wednesday of Delivery Month
	Termination Date	Anniversary of IRS Effective Date at futures Reference Tenor
	Fixed Pay Dates	Semiannually from IRS Effective Date on 30/360 day count
	Fixed Rate	Established by Exchange at integer multiples of 25 basis points
	Floating Pay Dates	Quarterly from IRS Effective Date on Actual/360 day count
	Floating Rate Reference	ICE 3-Month USD LIBOR with no spread or compounding
Delivery Method	Physical delivery of IRS per Delivery Standard with Clearing Acceptance Date and Clearing Effective Date = 1st Business Day preceding 3rd Wednesday of Delivery Month Invoice Price = IRS Initial Payment Amount, per Final Settlement Price (P) If 100 < P, then IRS Floating Rate Payer pays, and IRS Fixed Rate Payer receives, $1,000 x (P – 100) per contract, rounded to nearest penny If P ≤ 100, then IRS Fixed Rate Payer pays, and IRS Floating Rate Payer receives, $1,000 x (100 – P) per contract, rounded to nearest penny	
Delivery Eligibility	Limited to Eligible Contract Participants (ECPs) per Section 1a(18) of the Commodity Exchange Act and registered with CME by CME IRS Clearing Member as IRS Participant.	
Trading Hours and Venue	*CME Globex*	5:00 pm to 4:00 pm, Sun-Fri
	Open Outcry	7:20 am to 2:00 pm, Mon-Fri

Copyright 2013 CME Group All Rights Reserved. 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 examples in this brochure are hypothetical situations, used for explanation purposes only, and should not be considered investment advice or the results of actual market experience.

Swaps trading is not suitable for all investors, involves the risk of loss and should only be undertaken by investors who are ECPs within the meaning of Section 1(a)18 of the Commodity Exchange Act. Swaps 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 swaps 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.

CME Group is a trademark of CME Group Inc. The Globe logo, E-mini, Globex, CME and Chicago Mercantile Exchange are trademarks of Chicago Mercantile Exchange Inc. Chicago Board of Trade is a trademark of the Board of Trade of the City of Chicago, Inc. NYMEX is a trademark of the New York Mercantile Exchange, Inc.

The information within this document has been compiled by CME Group for general purposes only and has not taken into account the specific situations of any recipients of the information. CME Group assumes no responsibility for any errors or omissions. All matters pertaining to rules and specifications herein are made subject to and are superseded by official CME, CBOT and NYMEX rules. Current CME/CBOT/NYMEX rules should be consulted in all cases before taking any action.