

## Converting the Interest Rate Swap Futures Notional Coupon From 6 Percent to 4 Percent

### Frequently Asked Questions

On the encouragement of its market participants, CME Group will reduce the notional coupons for its suite of Interest Rate Swap futures – 5-Year, 7-Year, 10-Year, and 30-Year -- from 6 percent to 4 percent.

#### Q. When?

The coupon change will take effect on Monday, June 15, 2009 beginning with Swap futures for expiration in December 2009.

#### Q. Why?

The coupon change will bring the Swap futures notional coupon into closer proximity to market rates for par plain-vanilla interest rate swaps. Accordingly, Swap futures price levels, price dynamics, and yield-to-price relationships will correspond more closely to cash market magnitudes within a broad neighborhood around par. Specifically, a Swap futures contract priced on the basis of a 4 percent notional coupon instead of a 6 percent notional coupon will exhibit:

- a lower price level
- a smaller DV01 (i.e., a smaller dollar value of price change in response to a 1 basis point change in the underlying reference swap rate)
- less yield-to-price convexity

This is explained further in the questions that follow.

#### Q. What will happen to Swap futures prices?

With the contract notional coupon at 4 percent instead of 6 percent, for any given value of the contract underlying swap rate, *contract prices will be lower.*

To see this, suppose that market rates for IMM-dated forward-starting par swaps are 3 percent at all swap tenors. Exhibit 1 shows how price levels would compare for futures contracts with the current 6 percent notional coupon versus the new 4 percent notional coupon.

#### Exhibit 1

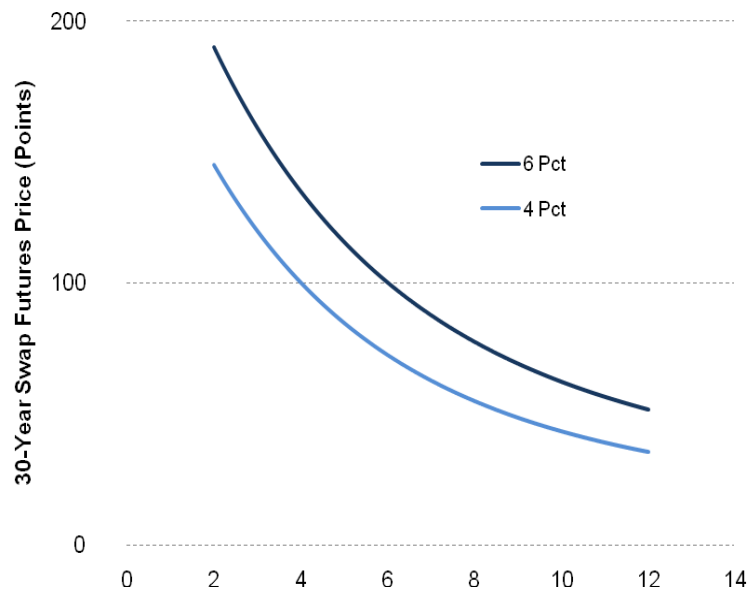
##### Swap Futures Prices at 3 Percent Market Rates: 6 Percent Coupon vs 4 Percent Coupon (Points and 32nds)

Contract	6 Percent	4 Percent
30-Year	159-025	119-22
10-Year	125-24	108-185
7-Year	118-26	106-085
5-Year	113-265	104-195

For 5-Year Swap futures, the price would be lower by more than 9 points. For 30-Year Swap futures, the reduction in contract price would be nearly 40 points. Important to note is that in each case, the change in the notional coupon pulls the contract price closer to par (where par is always on the basis of 100 price points).

Exhibit 2 shows, for 30-Year Swap futures, how the coupon change will exert its impact on contract prices across a range of forward-starting par 30-year swap rates.

**Exhibit 2**  
**30-Year Swap Futures Prices at Various Forward-Starting**  
**Par 30-Year Swap Rates: 6 Percent Coupon vs 4 Percent Coupon**



**Q. What will happen to contract DV01s?**

The interest rate responsiveness of Swap futures prices, measured in terms of contract DV01s, **will become smaller.**

As with Exhibit 1, Exhibit 3 illustrates this for a hypothetical world in which market rates for IMM-dated forward-starting par swaps are 3 percent at all terms to maturity.

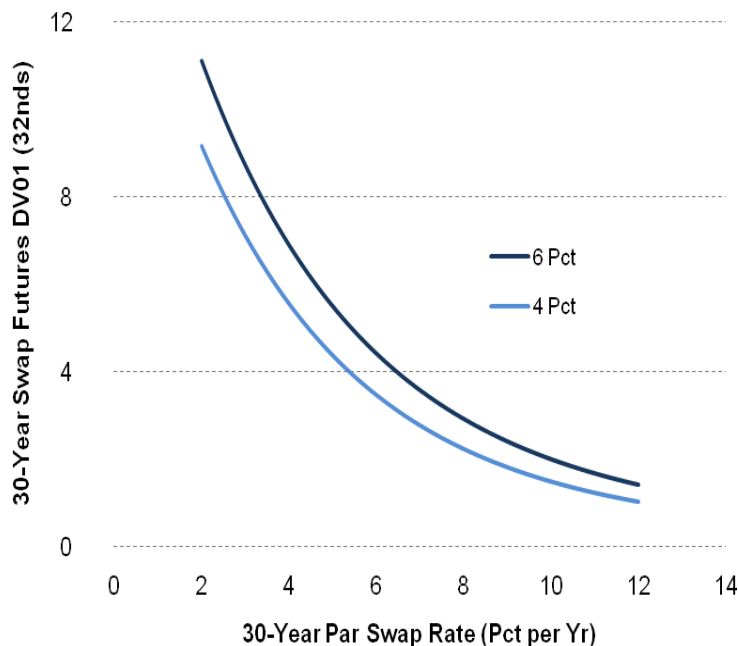
**Exhibit 3**  
**Swap Futures DV01s at 3 Percent Market Rates:**  
**6 Pct Coupon vs 4 Pct Coupon (32nds per Basis Point)**

Contract	6 Percent	4 Percent
30-Year	8.73	7.11
10-Year	3.15	2.88
7-Year	2.22	2.08
5-Year	1.59	1.52

For 5-Year Swap futures, the reduction in DV01 would be slight: 7 hundredths of a 32<sup>nd</sup>, or a bit less than 4.5 percent. Unsurprisingly, for 30-Year Swap futures the DV01 reduction is more substantial: just over 1.6/32<sup>nds</sup>, or a bit more than 18.5 percent. The crucial generalization to draw is that in all instances the magnitude of price sensitivity to interest rate changes becomes smaller for Swap futures contracts that are calibrated to the new 4 percent coupon.

Exhibit 4 depicts how contract DV01s for 30-Year Swap futures will change in response to the reduction in the contract notional coupon.

**Exhibit 4**  
**30-Year Swap Futures DV01s at Various Forward-Starting**  
**Par 30-Year Swap Rates: 6 Percent Coupon vs 4 Percent Coupon**



**Q. What will the coupon change do to Swap futures calendar spreads generally?**

Reducing the notional coupon from 6 percent to 4 percent should cause calendar spreads to become slightly narrower. Exhibit 5 illustrates this by re-running the Mar09-Jun09 futures roll for a hypothetical family of Swap futures with 4 percent notional coupons.

**Exhibit 5**

**Swap Futures Calendar Spreads during the Mar09-Jun09 Roll  
(Medians of Daily Settlement Price Spreads During Last 10 Trading Days of Mar09 Contracts)**

Contract	Implied Forward Starting Par Swap Rates -- Jun09 minus Mar09 (Bps)	6 Percent: Swap Futures Price Drop -- Mar09 minus Jun09 (32nds)	4 Percent: Swap Futures Price Drop -- Mar09 minus Jun09 (32nds)
30-Year	2.75	22.5	18.25
10-Year	6.7	20.75	19
7-Year	9.4	21	19.5
5-Year	11.6	18.75	18.25

As the first column indicates, during the last two weeks of trading in the expiring March 2009 contracts, the forward-starting par swap rates implied by June 2009 contract prices were routinely higher than the forward-starting par swap rates implied by March 2009 contract prices. These calendar (yield) spreads ranged from 2.75 bps for 30-Year Swap futures to 11.6 bps for 5-Year Swap futures.

As the second column indicates, the resultant price drops between expiring March 2009 contracts and June 2009 contracts ranged from 18.75/32<sup>nds</sup> for 5-Years to 22.5/32<sup>nds</sup> for 30-Years. Of course, these are price spreads for contracts that are all calibrated to the current 6 percent notional coupon.

The third column shows how the price drops might have looked for a hypothetical family of Swap futures calibrated to a 4 percent notional coupon. As asserted earlier, all calendar (price) spreads would have been narrower. To give some notion of the magnitudes involved, in this episode Mar09-Jun09 calendar spreads would have been narrower by amounts ranging from around half a 32<sup>nd</sup> for the 5-Year to 4.25/32<sup>nds</sup> for the 30-Year.

**Q. Okay. But what about Sep09-Dec09 calendar spreads?**

Because it will straddle the migration from 6 percent notional coupons to 4 percent notional coupons, the Sep90-Dec09 quarterly roll is likely to feature calendar spreads that are uniquely wide. The price differentials in Exhibit 1 above give some idea of the likely magnitudes.

**Q. How will the change affect hedge ratios?**

The flip side of smaller contract DV01s is higher hedge ratios. The less price volatility a contract exhibits, the greater the number of contracts needed to hedge a position and vice versa. As the comparison of DV01s in Exhibit 3 suggests, for any given yield exposure hedged with 5-Year, 7-Year, or 10-Year Swap futures, the requisite hedge position is apt to be larger by 5 to 10 percent. For a yield exposure hedged with 30-Year Swap futures, the user is likely to have to scale up the hedge position by 15 to 20 percent.

**Q. In terms of nuts and bolts, exactly what will change?**

Exhibit 6 compares the determination of final settlement prices for expiring Swap futures with the current 6 percent notional coupon versus the proposed 4 percent notional coupon.

**Exhibit 6 -- Swap Futures Final Settlement Prices: 6 Pct Coupon vs 4 Pct Coupon (Price Points)**

<b>Contract</b>	<b>Current 6 Pct</b>	<b>Proposed 4 Pct</b>
5-year	$100 * [ 6/r_5 + (1 - 6/r_5)*(1 + r_5/200)^{-10} ]$	$100 * [ 4/r_5 + (1 - 4/r_5)*(1 + r_5/200)^{-10} ]$
7-year	$100 * [ 6/r_7 + (1 - 6/r_7)*(1 + r_7/200)^{-14} ]$	$100 * [ 4/r_7 + (1 - 4/r_7)*(1 + r_7/200)^{-14} ]$
10-year	$100 * [ 6/r_{10} + (1 - 6/r_{10})*(1 + r_{10}/200)^{-20} ]$	$100 * [ 4/r_{10} + (1 - 4/r_{10})*(1 + r_{10}/200)^{-20} ]$
30-year	$100 * [ 6/r_{30} + (1 - 6/r_{30})*(1 + r_{30}/200)^{-60} ]$	$100 * [ 4/r_{30} + (1 - 4/r_{30})*(1 + r_{30}/200)^{-60} ]$

$r_5$ ,  $r_7$ ,  $r_{10}$ , and  $r_{30}$  represent, respectively, ISDA Benchmark Rates for 5-year, 7-year, 10-year, and 30-year US dollar interest rate swaps on an expiring contract's last day of trading, expressed in percent terms. ISDA® is a registered trademark, and ISDAFIXsm is a registered service mark, of the International Swaps and Derivatives Association, Inc. ISDA Benchmark mid-market par swap rates are collected at 11:00 a.m. New York time by Reuters Limited and ICAP plc and are published on Reuters page ISDAFIX1. Source: Reuters Limited.

For more information on the Interest Rate Swap futures conversion to a 4 percent notional coupon rate, please contact:

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