

INTEREST RATE PRODUCTS

# Long-Term “Ultra” Treasury Bond Futures and the 30-Year Swap Spread

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Market practitioners can create cost-efficient and manageable synthetic exposure to 30-year Swap spreads by combining new Ultra T-Bond futures with 30-Year U.S. Interest Rate Swap futures.

## Changes in the 30-Year Swap Spread ...

Among many impacts, the financial crisis of 2008 brought a seismic shift in the 30-year Treasury-to-Swap spread. Liquidity drained out of the government bond market, leaving fixed-income investors with few avenues for gaining or shedding long-dated yield exposure. The Ultra T-Bond futures offer a new tool to manage this exposure. Many investors became active as fixed-rate receivers in over-the-counter (OTC) 30-year interest rate swaps. The scale of their demand appears to have outstripped the capacity of the swap market’s fixed-rate payers to meet it – enough to have caused risky 30-year swap rates to drop well below risk-free 30-year Treasury yields. The consequence, as Exhibit 1 shows, is that 30-year Swap spreads flipped abruptly from pre-crisis values between 30 and 60 basis points to deeply inverted negative values.

**Exhibit 1 – The 30-Year Swap Spread**  
30-Year U.S. Interest Swap Rate Minus 30-Year U.S. Treasury Yield (Basis Points)



Source: Federal Reserve Board of Governors

## ... May bring New Opportunities for Spread Traders

As long-dated Swap spreads gradually normalize, the new Ultra T-Bond futures contract may aid market practitioners in making the adjustment, by providing them with a convenient method to create simple and cost-efficient synthetic Swap spread exposure.

The 30-Year Treasury-over-Swap – or “TOS” – futures spread will be familiar to anyone who uses futures inter-market spreads either for risk offset or for relative value trading.

Suppose you expect the spread between 30-year Treasury yields and 30-year par swap rates to widen. You could acquire this exposure by buying the 30-Year TOS, i.e., by buying Ultra T-Bond futures and selling 30-Year Swap futures. Conversely, if you look for 30-year Swap spreads to narrow, you could sell the 30-Year TOS by selling Ultra T-Bond futures and buying 30-Year Swap futures.

In either case, the legs of the TOS spread should be weighted so that the position’s profit/loss will remain zero if there is zero change in the spread between 30-year Treasury yields and 30-year par swap rates. To a very close approximation, this objective will be met if the TOS spread is structured so that, for each leg, the dollar value of a one basis point change in market yields (DV01) is equal in size, and opposite in sign, to the DV01 of the opposite leg.

## Example: The DV01-Weighted 30-Year TOS Spread

Suppose it is April 28, 2009, and the hypothetical June 2009 Ultra T-Bond futures are priced at 134 and 19/32nds, with a DV01 of \$215.99 per contract. June 2009 30-Year Swap futures are priced at 145 and 15/32nds, with a DV01 of \$240.74 per contract.

With yields on cash 30-year Treasury bonds around 3.97 percent and 30-year par swap rates at 3.45 percent, the Swap spread is inverted by 52 basis points, or equal to -52. If you anticipate the Swap spread to widen – or, in this context, to become less negative – you could purchase the 30-Year TOS spread by buying Ultra T-Bond futures and selling 30-Year Swap futures.

The appropriate hedge ratio – the number of 30-Year Swap futures to sell per Ultra T-Bond futures bought – would be determined by the ratio of the Ultra T-Bond futures DV01 to the 30-Year Swap futures DV01. In this case, the result is approximately 0.90 Swap futures per Ultra T-Bond futures contract, equal to \$215.99 divided by \$240.74. Thus, if you anchor your TOS spread with the purchase of 100 Ultra T-Bond futures, then you would sell 90 30-Year Swap futures.

## Results

Having bought the 30-Year TOS on April 28 – that is, having bought 100 Ultra T-Bond futures and sold 90 30-Year Swap futures – assume that you sell it on May 28.

Over the intervening month, long-term market yields have skyrocketed. Long-term Treasury bond yields are 57 basis points higher, at 4.54 percent, and 30-year par swap rates have risen by 93 basis points to 4.38 percent. The Swap spread has now become less negative and is inverted by a mere 16 basis points versus 52 basis points a month earlier.

Exhibit 2 summarizes results for the 30-Year TOS spread position:

- Ultra T-Bond futures prices have fallen more than 11 contract price points, incurring cumulative variation margin payments of \$11,125 per contract, or \$1,112,500 for a 100-contract long position.
- However, 30-Year Swap futures prices have plummeted yet further, nearly 18 price points. The 90-contract short position has earned cumulative variation margin collects exceeding \$1.6 million.

The net profit/loss on the TOS spread is approximately \$494,844.

**Exhibit 2:**  
30-Year TOS Spread Profit/Loss

	April 28 Price	May 28 Price	Price Change (32nds)	(dp) Price Change (\$ per contract)	(q) Number of Contracts Long (+) or Short (-)	Profit/Loss = dp x q (\$)
<b>Ultra T-Bond</b>	134-19	123-15	-356	-11,125.00	+100	-1,112,500.00
<b>30-Year Swap</b>	145-15	127-19+	-571.5	-17,859.375	-90	1,607,343.75
<b>Net Profit/Loss</b>						<b>\$494,843.75</b>

Source: CME Group. 30-Year Swap futures prices are drawn from the June 2009 delivery month, for which the contract pricing mechanism was based on a 6 percent notional coupon. All Swap futures delivery months from December 2009 onward utilize a revised contract pricing mechanism based on a 4 percent notional coupon.

## Monitoring the TOS Spread: The Impact of CTD Changes

Unlike 30-Year Swap futures which expire by cash settlement, Ultra T-Bond futures call for physical delivery of contract-grade Treasury bonds. As with any of the physical-delivery Treasury futures, the Ultra T-Bond futures price tends to track the price dynamics of the Treasury security that is “cheapest to deliver” (CTD) – the deliverable-grade Treasury bond that is expected to be most economical for short position holders to use in fulfilling delivery at futures expiration.

This means that the price sensitivity of Ultra T-Bond futures to long-term Treasury yield dynamics may shift for any of several reasons, for example, (a) if the identity of the CTD issue changes due to a move in the general level of long-term Treasury yields, or (b) if the identity of the CTD issue changes due to a shift in the slope of the Treasury yield curve between 25 years and 30 years to maturity, or (c) if there is a pronounced change in the degree of correlation between price dynamics of the on-the-run 30-year Treasury bond and price dynamics of the CTD issue for the Ultra T-Bond futures.

The bottom line is that a change in the Ultra T-Bond futures CTD issue, for any of these reasons, may exert an impact upon the performance of the 30-Year TOS spread. Astute relative value spread traders always keep a weather eye on these technicalities.

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## Benefits of Synthetic Exposure with Futures

The 30-Year TOS futures spread may provide many important benefits to users that alternatives do not – for example, spreads between long-dated over-the-counter fixed-receiver interest rate swaps and short positions in cash Treasury bonds.

### Capital efficiency

The TOS futures spread requires only modest amounts of performance bond to be reserved against the risk of adverse market moves. For illustration, assume that initial margins are \$3,500 per contract for Ultra T-Bond futures and \$5,500 per contract for 30-Year Swap futures. Assume moreover that a 1:1 contract spread is entitled to a margin credit of 80 percent. Then in the previous example, the spread trader would post initial performance bond just under \$200,000, an amount a little more than one percent of the \$19 million gross notional value of the spread position.

By comparison, a spread trader who creates a 30-year Swap spread position with OTC interest rate swaps and cash Treasury bonds may have to contend with several potential sources of capital inefficiency. These can include ad hoc bilateral collateralization arrangements and/or posting of counterparty credit surcharges with the derivatives dealer who takes the other side of the 30-year swap and, on the Treasury leg of the trade, the vagaries of term repo financing for government bonds. For authoritative and up-to-date information on margin requirements, please visit: [www.cmegroup.com/margins](http://www.cmegroup.com/margins).

### CME Clearing guarantee

CME Clearing protects the financial integrity of CME Group markets. By serving as the counterparty to every transaction, CME Clearing becomes the buyer to every seller and the seller to every buyer, virtually eliminating credit risk for each market participant. In its more than 100-year history, there has never been a failure of a clearing member firm resulting in a loss of customer funds. The CME Clearing guarantee applies to both legs of the 30-Year TOS spread, mitigating the counterparty credit risk associated with OTC swaps.

### Low operational cost

Using the 30-Year TOS futures spread effectively removes the need for entering into time-consuming ISDA Master Agreements, for establishing and maintaining bilateral collateralization agreements, for posting counterparty credit surcharges, or for entering into auxiliary OTC credit default swaps to insure against counterparty failure.

### Transparency

Ultra T-Bond futures and 30-Year Swap futures are both transparently traded in a regulated market. Both are margined with reference to a transparently determined daily mark-to-market.

### Position scalability

For many market participants, the transactional costs of entering, liquidating, or adjusting a 30-Year TOS futures spread are apt to be low relative to various cash-market and/or over-the-counter alternatives.

### Flexibility of exposure for fiduciaries

Investment managers are often prohibited from making short sales of assets, such as cash Treasury bonds. For many, however, the same plans may permit holding of short open interest in exchange-listed futures contracts, such as Ultra T-Bond futures. In addition, investment managers holding open market positions in Ultra T-Bond futures may not be subject to the inherent risks of delivery failure in the financing markets as they could be if they held similar positions in cash Treasury bonds instead.

## Implied Intercommodity Treasury and Swap Spreads and the 30-Year TOS

The 30-Year TOS spread is one of the many Intercommodity Treasury and Swap spreads listed on the CME Globex electronic platform. These implied, pre-defined spreads facilitate the execution of Treasury curve and Treasury/Swap spread strategies, allowing you to execute them as one trade, without slippage or execution risk. The spread ratios are pre-defined at values that are expected to remain stable absent substantial changes in the marketplace. On the CME Globex platform, the implied 30-year TOS futures spread is referred to as the “UOS” (Ultra T-Bond vs. 30-Year Interest Rate Swap futures).

CME Group has created an Intercommodity Spread Curve Tracker (ICS Curve Tracker) which helps you track the levels of each spread. The ICS Curve Tracker displays the difference in the weighted prices of the two legs of the spread, rather than the net change. This provides a continuous time series, allowing you to track Treasury and Swap spreads over time, make decisions about when to put trades on and take them off, and have a better idea of the profit and loss status of your positions. For more information about Intercommodity Treasury and Swap Spreads, including current spread ratios and the ICS Curve Tracker, please visit [www.cmegroup.com/ics](http://www.cmegroup.com/ics).

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To learn more about Ultra T-Bond futures, visit [www.cmegroup.com/ultra](http://www.cmegroup.com/ultra).



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IR271/400/0110