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January 7, 2010

Institutional Financial Futures

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The newest kid on the block: The 'Ultra' U.S. Treasury bond futures.

Insurers, pension plans, mutual funds, hedge funds and other participants in the long end of the U.S. Treasury yield curve will have an additional tool at their disposal when the CME Group's Ultra U.S. Treasury bond futures contract is launched on January 11, 2010. With a DV01 estimated to be more than 50 percent greater than that of the 'Classic' bond futures, duration bogeys previously unattainable to futures users will lie within reach.

The Ultra differs from the existing Classic bond contract by accepting only bonds with 25 years remaining to maturity for delivery.

In response to increased demand from Treasury market participants for a bond futures contract that behaved more like a 30-year than a 15-year bond, the CME Group announced last September that it would begin trading an 'Ultra' U.S. Treasury bond futures in early 2010. The sole difference between the new Ultra bond futures and the Classic bond contract is the window of maturities acceptable for delivery: Only the longer maturity bonds eligible for delivery into the Classic bond contract are also eligible for delivery into the Ultra. The Ultra bond futures will accept 25-year and longer bonds compared with the 15-year minimum for the existing long bond futures. A list of U.S. Treasury bonds eligible for delivery into the March and June 2010 Classic and Ultra bond futures is provided in **table 1**. Note that roughly 2/3 of the notional amount of bonds outstanding deliverable into the Classic contract are represented by the Ultra. Summary contract specifications can be found in **appendix 1**.

Table 1. U.S. Treasury bonds deliverable in March and June 2010 Classic and Ultra contracts.

No.	Deliv. [1]	Coupon	Maturity	Conversion factor March	Conversion factor June	Amount [2] Issued	Amount Outst'g	Held by Fed	Net Available	CUSIP
1	C	6.875	Aug '25	1.0865	1.0858	12.6	11.2	2.0	9.2	912810EV
2	C	6.000	Feb '26	0.9999	1.0000	12.9	12.8	2.0	10.9	912810EW
3	C	6.750	Aug '26	1.0770	1.0765	10.9	8.8	3.1	5.7	912810EX
4	C	6.500	Nov '26	1.0519	1.0513	11.5	10.9	3.8	7.1	912810EY
5	C	6.625	Feb '27	1.0653	1.0649	10.5	9.5	3.3	6.2	912810EZ
6	C	6.375	Aug '27	1.0398	1.0396	10.7	9.2	3.2	6.0	912810FA
7	C	6.125	Nov '27	1.0134	1.0132	22.5	22.0	5.8	16.2	912810FB
8	C	5.500	Aug '28	0.9449	0.9454	11.8	11.8	2.6	9.2	912810FE
9	C	5.250	Nov '28	0.9169	0.9174	10.9	10.9	1.7	9.3	912810FF
10	C	5.250	Feb '29	0.9162	0.9169	11.4	11.4	2.2	9.2	912810FG
11	C	6.125	Aug '29	1.0140	1.0141	11.2	11.2	2.9	8.3	912810FJ
12	C	6.250	May '30	1.0289	1.0286	17.0	17.0	2.8	14.2	912810FM
13	C	5.375	Feb '31	0.9263	0.9268	16.4	16.4	2.4	14.0	912810FP
14	C & U	4.500	Feb '36	0.8045	0.8054	26.4	26.4	2.6	23.8	912810FT
15	C & U	4.750	Feb '37	0.8344	0.8352	16.6	16.6	2.9	13.7	912810PT
16	C & U	5.000	May '37	0.8671	0.8675	21.4	21.4	7.5	13.9	912810PU
17	C & U	4.375	Feb '38	0.7816	0.7825	22.5	22.5	7.8	14.7	912810PW
18	C & U	4.500	May '38	0.7978	0.7984	25.5	25.5	5.7	19.8	912810PX
19	C & U	3.500	Feb '39	0.6594	0.6606	25.9	25.9	1.8	24.1	912810QA
20	C & U	4.250	May '39	0.7609	0.7616	38.8	38.8	5.4	33.4	912810QB
21	C & U	4.500	Aug '39	0.7943	0.7950	41.4	41.4	3.5	37.9	912810QC
22	C & U	4.375	Nov '39	0.7765	0.7771	31.0	31.0	2.1	28.9	912810QD
				Total notional amount deliverable, Classic bond, $bln					335.7	
				Total notional amount deliverable, Ultra bond, $bln					210.3	

[1]. Delliverable in C, classic, exisiting bond contract; and U, 'ultra' bond contract. [2] Notional amounts, $bln.
Source: Bloomberg, L.P., Federal Reserve.

Suggestions from Lisa Finstrom and efforts on our delivery option calculator by Matthew Horton are gratefully acknowledged.

The Ultra's current higher duration CTD's will mean higher futures prices and contract DV01's.

At current relatively low yields the two contracts will have different cheapest-to-deliver bonds and will price accordingly. The existing Classic bond contract currently prices based on the characteristics of a short maturity, lower duration cheapest-to-deliver bond (the 6.875% of Aug. 2025). The Ultra's cheapest-to-deliver bond will initially be one of the longer maturity issues in the 2036 to 2037 maturity range. If the March 2010 Ultra bond futures was available for trading today, its price would be nearly 6 points above the existing March bond futures as is shown in **figure 1** which is a chart of expected prices of Classic and Ultra bond futures at yields from 3.87% to 6.34%. When the chart was drawn the on-the-run long bond yielded 4.64% and the March Classic bond was trading at 115-07. The calculated Ultra bond futures price was 121-01. Estimated U.S. Treasury duration-weighted intermarket hedge ratios, calculated in early January 2010, can be found in **table 2**.

Table 2. Estimated intermarket futures hedge ratios, March 2010 expirations.

Contract	Hedge ratios
Ultra bond	100
Classic, existing bond	155
10-year note	269
5-year note	387
3-year note	290
2-year note	455

Approximate. For indication only. Ratios will change with market conditions.

The Ultra's duration under current market conditions will be on the order of 15.3 [DV01 ~ $185], compared with the Classic's duration of around 11.0 [DV01 ~ $119]. Contract DV01's as a function of yield are displayed in **figure 2** along with the DV01 of the Ultra-Classic price spread. Note that the Classic's so-called negative convexity – an effect of switches in the cheapest-to-deliver bonds as yields change – is much more pronounced than the Ultra's. At very high yields, the two contracts will share the same cheapest-to-deliver bond and their DV01's will be the same.

Figure 1. Price and price spread versus yield. Classic and Ultra U.S. Treasury bond futures.

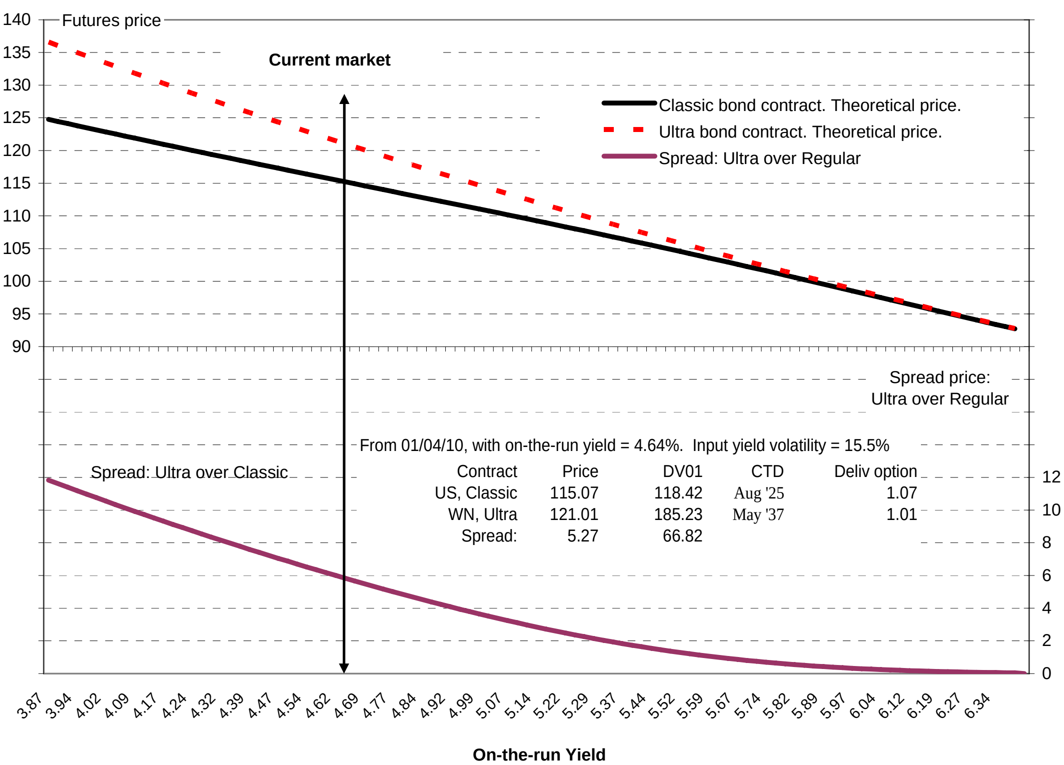
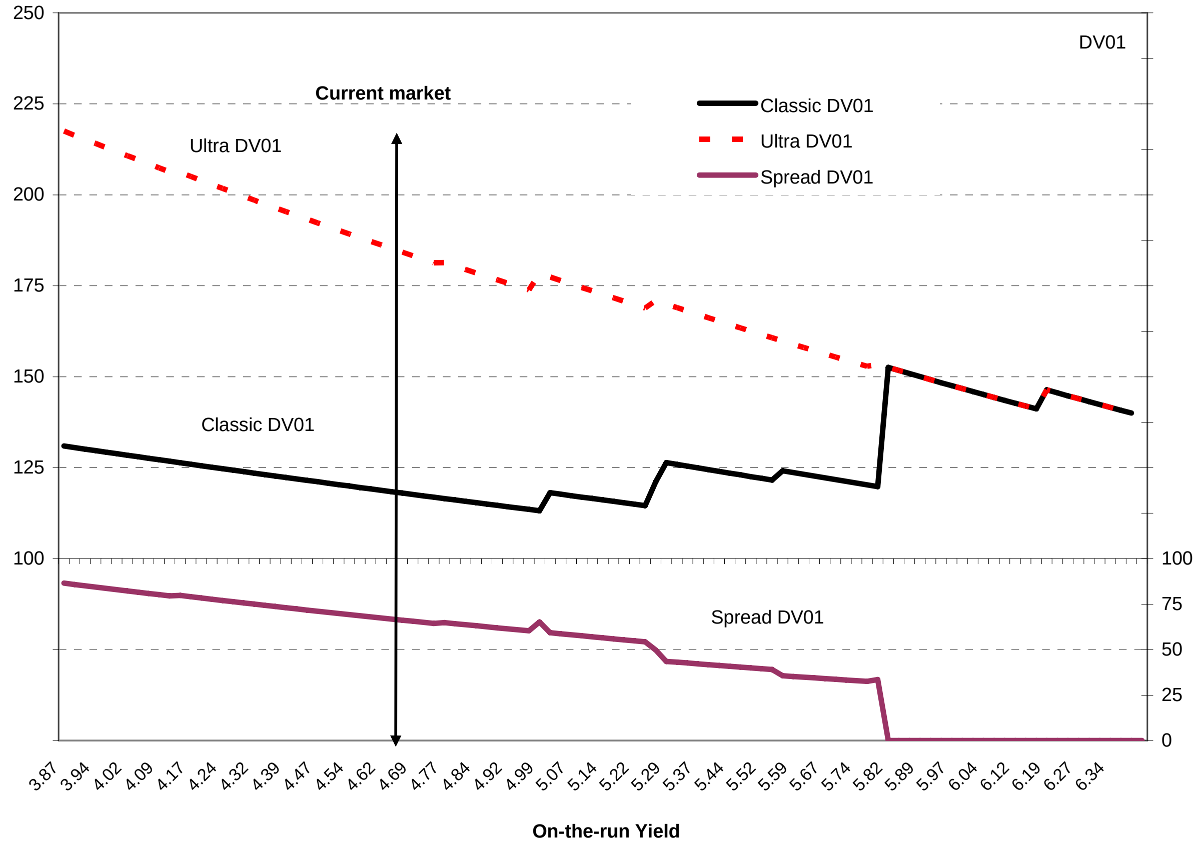


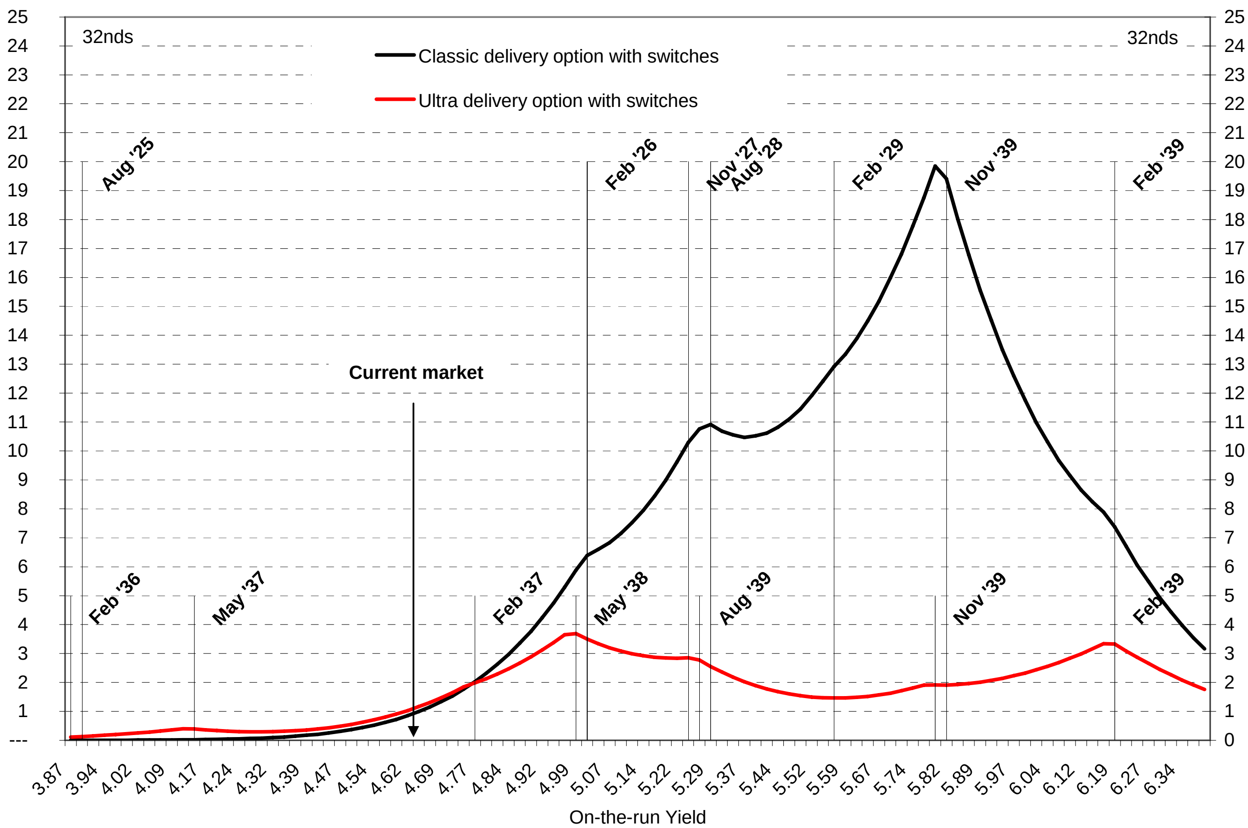
Figure 2. Classic and Ultra U.S.Treasury bond futures DV01's with spread DV01.



With the current sets of deliverables, the size of the Classic bond contract's delivery option will be larger than the Ultra's. CTD's are expected to differ for the two contracts until yields approach 6%.

As yields increase the two contracts' prices will converge as the sets of cheapest-to-deliver bonds overlap (**figures 1 and 2**). At intermediate yields, however, the much higher switching costs of maintaining an equivalent portfolio for the Classic bond contract as its ctd's pass from the 2029 to the 2039 maturities compared with those for the Ultra's 2036/2037-to-2039 transit lead to significantly higher delivery options. This is shown graphically in **figure 3** which shows the calculated size of the delivery options for the two contracts as well as the approximate levels at which cheapest-to-deliver bonds switch.[2]

Figure 3. Estimated delivery options. Classic and Ultra U.S. Treasury bond futures.



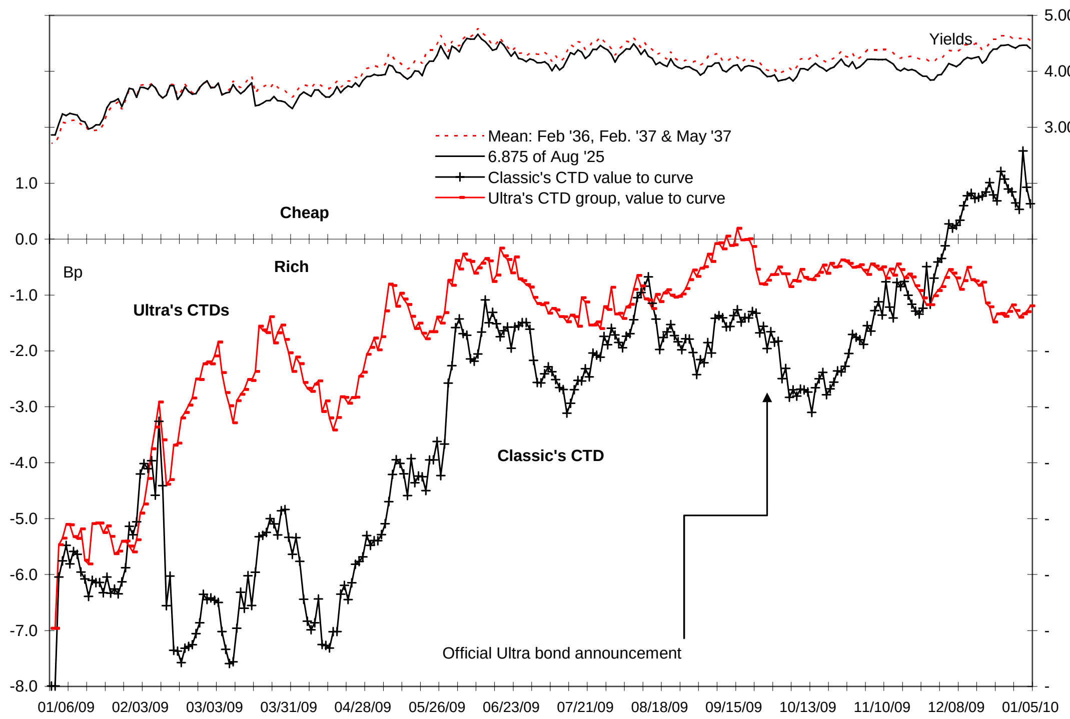
At current yields, delivery options of Classic and Ultra March 2010 contracts are roughly equal (and are about 1 one tick each). With increasing yields, however, the value of the Classic's delivery option will increase to much higher levels than that of the Ultra (and the Classic's futures price will be relatively depressed compared with that of the Ultra). The environment should create interesting opportunities for basis trades.

[2] Cheapest-to-deliver issue switch points are identified by labels and should be read from lower to higher yields. Yields along the deliverable curve were assumed to change in parallel. Delivery options were calculated with an invariant yield volatility of 15.5%

As the Ultra's launch has approached, the Classic bond contract's cheapest-to-deliver issue has cheapened somewhat on the curve.

With the approach of the Ultra bond's launch, the Classic's cheapest-to-deliver bond, the 6-7/8 of Aug. '25 has cheapened on the curve as is shown in **figure 4.**[3] Since the official announcement in late September, the Classic's CTD cheapening has occurred while the Ultra's three-bond CTD candidate group has richened.[4] The red line in the lower portion of **figure 4** represents the average residual of the Ultra's three close-CTD's with respect to their expected values on the yield curve.

Figure 4. Classic and Ultra cheapest-to-deliver bonds. Actual over model yields.



Prospects for the Ultra's success are good.

Sponsorship for a new contract is nearly always an open question prior to its launch. While there is little question that the Ultra will be a much better fit for the asset-liability mix of many fixed income managers – insurers are an often cited group -- it is likely that it will take time for some important users to commit to the product, and in so doing bring critical liquidity. Of further interest is the fate of the existing, Classic bond contract. The exchange has indicated that it is prepared to continue with an unmodified 15-yr to 30-yr product as long as its characteristics remain distinct from those of the Ultra. At (much) higher yields, when the two contracts trade with the same underlying cheapest-to-deliver bond, the potential for a division of trading interest in the products will emerge – a situation that the exchange acknowledges it would like to avoid.

The exchange will face its first decision on the fate of the existing bond contract in late March 2010 with the listing of the December 2010 contracts. For the moment, the exchange says that it intends to keep the existing contract in its stable, although there is some expectation in the market that the Classic bond contract will be modified to accept a 15-year to 24-year 9-month basket of deliverables.

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[3] Fair value curves were constructed from a polynomial least square-fit curve of yields of issues maturing from 2023 through 2039 as a function of their modified durations.

[4] At current yields, the 4-1/2s of Feb. '36, 4-3/4s of Feb. '37 and 5s of May '37 are very close to being the Ultra's cheapest-to-deliver bond.

Appendix 1. The 'Ultra' Treasury Bond. Selected contract details.

Underlying Instrument	U.S. Treasury bonds having face value of $100,000 or multiples thereof.
Deliverable Grade	U.S. Treasury bonds having remaining term to maturity of not less than 25 years from the first day of the futures contract delivery month. The invoice price equals the futures settlement price times a conversion factor, plus accrued interest. The conversion factor is the price of the delivered note ($1 par value) to yield 6 percent.
Price Basis Points	($1,000 per contract) and 32nds of one point ($31.25 per contract). For example, 91-16 equals 91-16/32, 91-17 equals 91-17/32, and 91-18 equals 91-18/32.
Minimum Increment	One 32nd of one point ($31.25 per contract), except for intermonth spreads for which the minimum price increment is one quarter of one thirty-second of one point ($7.8125 per contract)
Contract Months	Three consecutive in the March, June, September and December quarterly cycle
Last Trading Day	The seventh business day before the last business day of the delivery month. Trading in an expiring contract ceases at 12:01 p.m. on the last trading day.
Last Delivery Day	Last business day of the delivery month
Delivery Method	Federal Reserve book-entry wire-transfer system
Trading Hours	Open Outcry: 7:20 a.m. – 2:00 p.m. Central Time (CT) Monday – Friday CME Globex: 5:30 p.m. – 4:00 p.m. CT, Sunday – Friday
Ticker Symbol	WN (Bloomberg)
Position Accountability /Limits	Position accountability of 10,000 futures contracts will be implemented prior to a contract's last ten trading days. Position limits of 20,000 futures contracts will be implemented during an expiring contract's last ten trading days.
Position Limits	1,500 futures contracts
Block Minimum	Regular Trading Hours (RTH) (7:00 a.m. – 4:00 p.m. CT): 3,000 contracts European Trading Hours (ETH) (12:00 a.m. – 7:00 a.m. CT): 1,500 contracts Asian Trading Hours (ATH) (4:00 p.m. – 12:00 a.m. CT): 750 contracts
	Intra-commodity calendar spreads are prohibited. Inter-commodity spreads are permitted provided that the quantity of each leg of the spread meets the larger of the threshold requirements for the underlying futures during RTH, ETH, or ATH.
All-or-None Minimum	2,000 contracts on an outright basis. 2,000 contracts per leg for inter- and intra-market spreads
Trade MatchingAlgorithm	FIFO for outright orders. Pro-Rata with TOP orders for calendar spreads. ICS functionality will be available with implied price functionality.

Source: CME Group.

Disclosure Appendix

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