THC MARKET BULLETIN

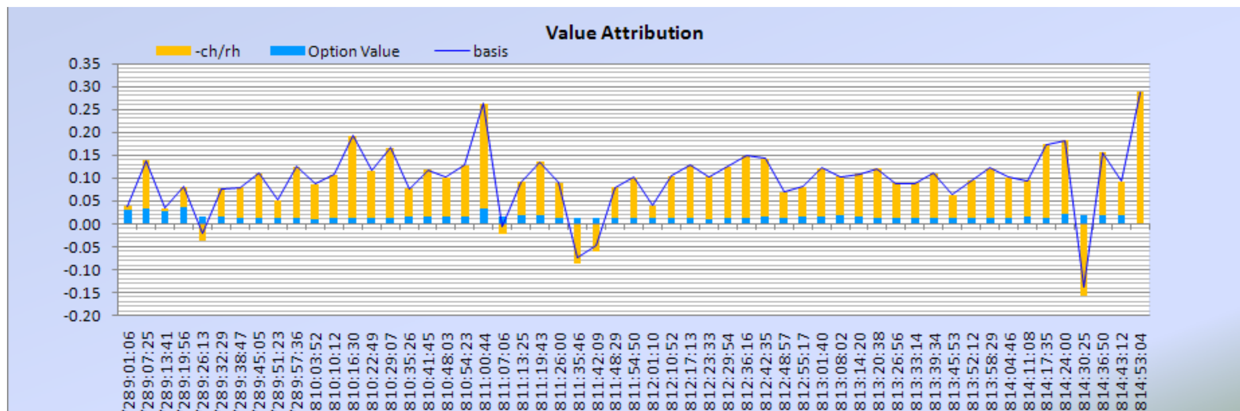
May 5, 2010 THC Financial Engineering www.thomasho.com

Bulletin 31 Delivery Option

5-4-2010

The delivery option affects the value and risk sensitivity of a Treasury futures contract and is of much concern to traders. The short position in a futures contact maintains the option of delivering the cheapest Treasury bond among the deliverable basket of bonds; thus the option price is embedded in the futures price. For this reason, when we compare a futures price with its corresponding forward price, the net basis (the implied forward price net of the futures price) must include the delivery option value.

Net basis value attribution is a useful tool to analyze the delivery option. The figure below compares the net basis value (blue line) attribution with the delivery option (blue bars) and the cheapness (yellow) of the June Ultra contract for the trading day 4/28/2010 at 5 minute intervals. For example, at 9:07, the net basis is $0.14 on a $100 notional with $0.04 attributed to the option value and $0.10 to the cheapness.



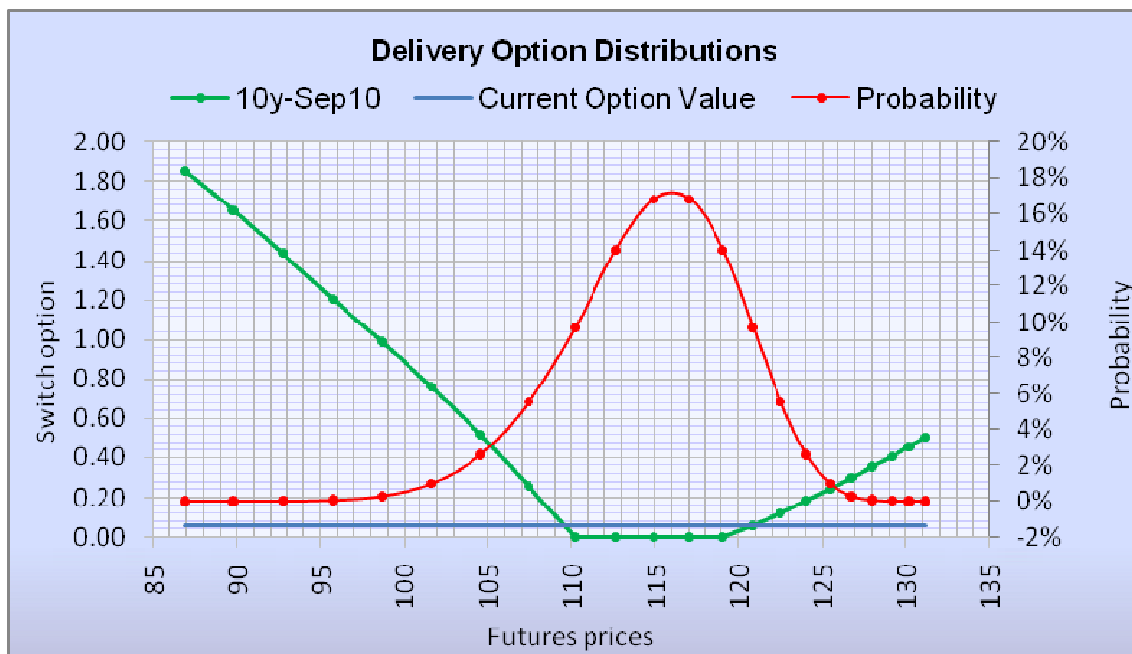
Using the THC futures model to discover deeper insights into the delivery option, consider the figure below. The THC model provides (1) the risk neutral probability distribution of the futures prices on the expiration date (red line), (2) the formula value of the delivery option (green line) defined as the drop in the price of the deliverable bond relative to the cheapest-to-delivery (CTD) on the expiration date, (3) the current delivery option price (the blue line).

THC Financial Engineering http://www.thomasho.com 55 Liberty Street, 4B, New York, NY 10005-1003
support@thomasho.com

Disclaimer: This article is distributed for informational purposes only. Forecasts, estimates, and certain information contained herein are based upon proprietary research and should not be considered as investment advice or a recommendation of any particular security, strategy or investment product. THC copyright ©

THC Financial Engineering http://www.thomasho.com 55 Liberty Street, 4B New York, NY 10005-1003 USA 212-732-2878

The results show that when the futures price rises, the switch in the CTD would lead to a drop in the bond price relative to the initial CTD, thus resulting in a positive delivery option value. The results show that the option investment would breakeven and offer returns at prices of 109.5 or 121.0. The breakeven points are indicated by the intersections of the blue and green lines.



This analysis provides traders a clear view of the nature of the delivery option. Depending on the contract, the delivery option may have positive payoffs during rising and falling regimes. If the delivery options are not priced by the market (when the net basis has negligible value, for example) traders can short the futures and hedge the interest rate risks using on-the-run Treasury securities matching the key rate DV01, resulting in holding a "free option"

THC Financial Engineering http://www.thomasho.com 55 Liberty Street, 4B, New York, NY 10005-1003
support@thomasho.com

Disclaimer: This article is distributed for informational purposes only. Forecasts, estimates, and certain information contained herein are based upon proprietary research and should not be considered as investment advice or a recommendation of any particular security, strategy or investment product. THC copyright ©