

Yield Curve Spread Trades: Opportunities & Applications



ANDREW P. SHOOK, CEO & FOUNDER, CURVETRADES LLC

June 2013

ABSTRACT

Yield curve spread trades provide a wide variety of market participants the opportunity to generate returns and effectively hedge portfolios. Yield curve spread trades are often de-correlated to the absolute direction of interest rates. We review yield curve spread trade mechanics and execution using cash bonds and futures contracts.

INTRODUCTION

Yield Curve Spread Trades, a.k.a curve trades¹, provide market participants return generating and hedging opportunities. Curve trades occur in the most liquid interest rate markets including U.S. Treasuries, futures, other government bonds, swaps and euro-dollars. Due to the operational simplicity and deep market liquidity, many market participants prefer to execute curve trades in the futures markets.

Large institutions and professionals have traded the yield curve spread for decades. In our opinion, the lack of intuitive, easy to use tools has hindered broader adoption of yield curve spread trading. CurveTrades believes that the yield curve spread sector offers a largely untapped asset class with global opportunities.

Just as mutual funds enabled wide access to diversified equity portfolios and REIT's brought easy access to commercial real estate portfolios, we believe that tools

making yield curve spread trades intuitive and easy to understand will catalyze wide adoption. Yield curve spread trades enjoy predictable risk profiles and attractive correlation characteristics relative to other major asset classes. An additional benefit to executing a yield curve spread using CME Group futures is the margin offsets available for certain yield curve spread pairs.

Curve trades bring value and insight to:

- Core Fixed Income Managers
- Hedge Funds
- Foreign Exchange
- Equity Managers
- Risk Management
- Asset / Liability Management
- Banks and Insurance Companies
- Pension Plan Managers
- Research Analysts and Economists
- CTA's / Managed Futures

Awareness of the yield curve's impact on equity markets, the economy and monetary policy is growing. Here we included selected examples of the yield curve in recent news.

"The Yield Curve as a Leading Indicator", The Federal Reserve Bank of New York's dedicated web page to the yield curve.

"Fed Expands Operation Twist by \$267 Billion Through 2012", Bloomberg 6/20/2012.

"Institutional investors are reaching out for new risk management tools to address shortcomings in estimating risks that left them more exposed to losses in the financial market crisis than they expected." Pension & Investments, 5/13/2013

¹ The CME Group refers to yield curve spread trades as "Inter-Commodity Spreads."

YIELD CURVE SPREAD TRADES DEFINED²:

A yield curve spread is the yield differential between two different maturities of a bond issuer i.e. 10 yr U.S. Treasury yield – 5 yr U.S. Treasury yield. The later maturity leg of the trade is referred to as the back leg and the trade leg maturing earlier is called the front leg.

Two primary yield curve spread strategies are the “flattener” and the “steepener.”

YIELD CURVE SPREAD STRATEGY	ACTION	FRONT LEG	BACK LEG
Flattener	SELL Spread	SHORT	LONG
Steepener	BUY Spread	LONG	SHORT

The risk measure for yield curve spread trades is DV01 (dollar value of a basis point). As the back leg DV01 is greater than the front leg DV01, one must calculate a hedge ratio to result in a DV01 neutral position. The CME Group offers a simplified execution via fixed ratio yield curve spread trades using unique ticker symbols. A partial listing of the ticker symbols follows:

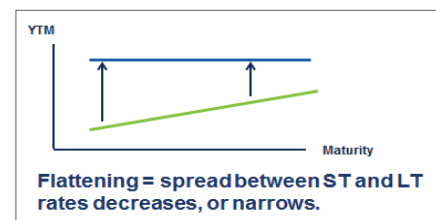
SPREAD NAME	FRONT LEG	BACK LEG	CME FIXED RATIO JUNE 2013
TUF	2 YR (ZT)	5 YR (ZF)	1:1
TUT	2 YR (ZT)	10 YR (ZN)	2:1
TUB	2 YR (ZT)	BOND (ZB)	4:1
TUL	2 YR (ZT)	ULTRA BOND	6:1
FYT	5 YR (ZF)	10 YR (ZN)	3:2
FOB	5 YR (ZF)	BOND (ZB)	3:1
FOL	5 YR (ZF)	ULTRA BOND (UB)	3:1
NOB	10 YR (ZN)	BOND (ZB)	2:1
NOL	10 YR (ZN)	ULTRA BOND (UB)	3:1
BOB	BOND (ZB)	ULTRA BOND (UB)	3:2

Source: CME Group

Yield Curve Spread Flattener

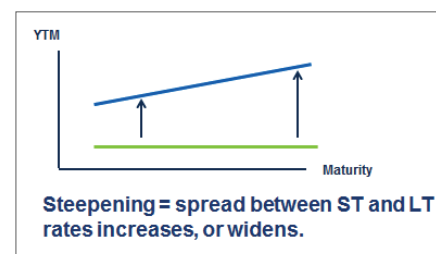
The flattener makes money when the yield differential decreases, or narrows.

Sell the spread to put on a flattener (SHORT front leg vs LONG back leg).



Yield Curve Spread Steepener

The steepener makes money when the yield differential increases or widens. Buy the spread to execute a steepener (LONG front leg vs SHORT back leg).



² The CME Group's paper "Yield Curve Shifts Create Trading Opportunities" is another excellent resource on the subject. Available by going to: www.cmegroup.com/trading/interest-rates/yield-curve-shifts-create-trading-opportunities-strategy-paper.html

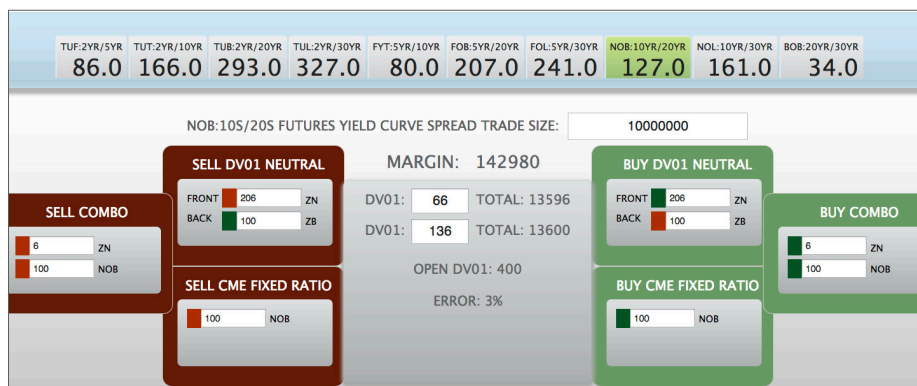
Not only do the CME Group fixed ratio spreads simplify execution risk, they eliminate legging risk. While the simplicity and legging risk mitigation is attractive, there are some potential pitfalls.

- Tail risk (open DV01 risk) depending on trade size
- Tail risk (open DV01 risk) can be difficult to quickly quantify
- Not all FCM's / trading platforms support the CME Group yield curve spread tickers.

The following figure compares a \$10 million notional NOB spread execution via a fixed ratio, DV01 neutral and a best of both worlds "combo" approach. The "combo" approach leverages the inherent advantages of the fixed ratio spread order and adds a small order to one trade leg to make the trade DV01 neutral, thus eliminating the open DV01 risk. The small additional order should have minimal execution risk.

"Net Change" Market Quotation Standard:

The CME Group quotes the yield curve spread market on a "net change" basis. Although some consider it less than completely intuitive, there is solid logic stemming from the history of "net change" market quotes for inter-commodity spreads. By definition, an intercommodity spread is the spread between two different commodities i.e. corn/soybeans or crude oil/gasoline. When applied to physical commodities, net change market quotes are intuitive. But interest rate futures are fundamentally different.

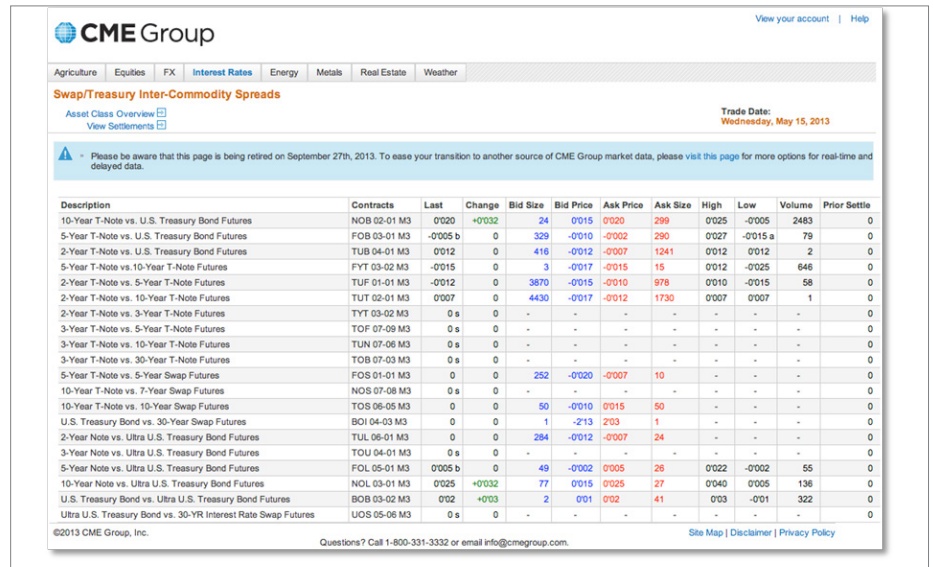


Three side effects stem from the net change quotation standard:

- Spreads with very different yield spreads i.e. 2s5s (TUF) @ 40 bps and 2s30s (TUL) @ 273 bps can be quoted at the same price
- Markets are often quoted as negative numbers
- There is no concept of the actual yield differential.

An alternative approach would be to present the market using the actual yield differential of the cheapest to deliver securities for each pair. CurveTrades' market presentation looks like this:

CME GROUP YIELD CURVE SPREAD "NET CHANGE" MARKET QUOTE SCREEN



Description	Contracts	Last	Change	Bid Size	Bid Price	Ask Price	Ask Size	High	Low	Volume	Prior Settle
10-Year T-Note vs. U.S. Treasury Bond Futures	NOB 02-01 M3	0'020	+0'032	24	0'015	0'020	299	0'025	-0'005	2483	0
5-Year T-Note vs. U.S. Treasury Bond Futures	FOB 03-01 M3	-0'005 b	0	329	-0'010	-0'002	290	0'027	-0'015 a	79	0
2-Year T-Note vs. U.S. Treasury Bond Futures	TUB 04-01 M3	0'012	0	416	-0'012	-0'007	1241	0'012	0'012	2	0
5-Year T-Note vs. 10-Year T-Note Futures	FYT 03-02 M3	-0'015	0	3	-0'017	-0'015	15	0'012	-0'025	646	0
2-Year T-Note vs. 5-Year T-Note Futures	TUF 01-01 M3	-0'012	0	3870	-0'015	-0'010	978	0'010	-0'015	58	0
2-Year T-Note vs. 10-Year T-Note Futures	TUT 02-01 M3	0'007	0	4430	-0'017	-0'012	1730	0'007	0'007	1	0
2-Year T-Note vs. 3-Year T-Note Futures	TYT 03-02 M3	0 s	0	-	-	-	-	-	-	-	0
3-Year T-Note vs. 5-Year T-Note Futures	TOF 07-09 M3	0 s	0	-	-	-	-	-	-	-	0
3-Year T-Note vs. 10-Year T-Note Futures	TUN 07-06 M3	0 s	0	-	-	-	-	-	-	-	0
3-Year T-Note vs. 30-Year T-Note Futures	TOB 07-03 M3	0 s	0	-	-	-	-	-	-	-	0
5-Year T-Note vs. 5-Year Swap Futures	FOS 01-01 M3	0	0	252	-0'020	-0'007	10	-	-	-	0
10-Year T-Note vs. 7-Year Swap Futures	NOS 07-08 M3	0 s	0	-	-	-	-	-	-	-	0
10-Year T-Note vs. 10-Year Swap Futures	TOS 06-05 M3	0	0	50	-0'010	0'015	50	-	-	-	0
U.S. Treasury Bond vs. 30-Year Swap Futures	BOI 04-03 M3	0	0	1	-2'13	2'03	1	-	-	-	0
2-Year Note vs. Ultra U.S. Treasury Bond Futures	TUL 06-01 M3	0	0	284	-0'012	-0'007	24	-	-	-	0
3-Year Note vs. Ultra U.S. Treasury Bond Futures	TOU 04-01 M3	0 s	0	-	-	-	-	-	-	-	0
5-Year Note vs. Ultra U.S. Treasury Bond Futures	FOL 05-01 M3	0'005 b	0	49	-0'002	0'005	28	0'022	-0'002	55	0
10-Year Note vs. Ultra U.S. Treasury Bond Futures	NOL 03-01 M3	0'025	+0'032	77	0'015	0'025	27	0'040	0'005	136	0
U.S. Treasury Bond vs. Ultra U.S. Treasury Bond Futures	BOB 03-02 M3	0'02	+0'03	2	0'01	0'02	41	0'03	-0'01	322	0
U.S. Treasury Bond vs. 30-YR Interest Rate Swap Futures	UOS 05-06 M3	0 s	0	-	-	-	-	-	-	-	0

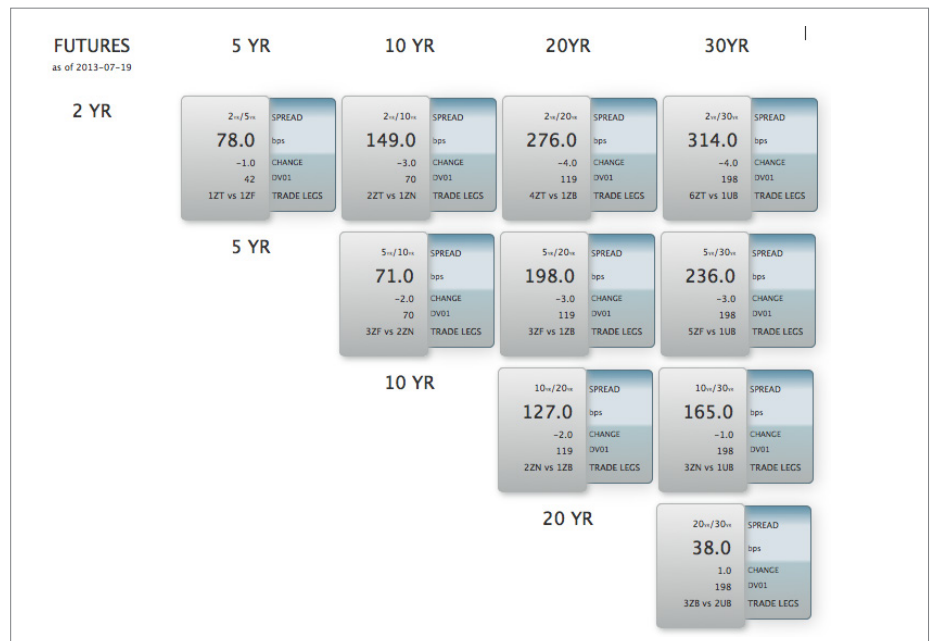
Source: CME Group

Yield Curve Spread Trade Performance Characteristics:

An attractive characteristic of yield curve spread trades is that performance is independent of absolute interest rate changes. As the transactions are long / short by definition, market rallies or sell-offs do not generally affect performance in the same way an outright long or short bond or futures position would be affected.

And, to repeat, performance is not tied to changes in absolute levels of rates, but rather changes in the yield differential between two rates. In a rising rate environment where rates increase from 1.75% to 5.00% and the yield curve steepens, a long NOB position will be profitable while your outright long competition is down! This is a critically important point – please take a minute and re-read this section.

SPREADS QUOTED IN YIELD DIFFERENTIAL



Source: CurveTrades

THE ABSOLUTE SPREAD™

The Absolute Spread™ is a yield curve spread metric developed by CurveTrades. Absolute Spread™ measures the current yield curve spread as a percentage of its maximum possible value. The maximum is the yield of the back leg.

$$\text{Absolute Spread}^{\text{TM}} = \frac{\text{yield curve spread}}{\text{back leg yield}}$$

The Fed's monetary policy and quantitative easing programs have driven yields on U.S. Treasury securities to historical lows.

U.S. Treasury	Low Yield (Summer 2012)
5 yr	0.55%
10 yr	1.45%
30 yr	2.45%

These low yields artificially cap the applicable yield curve spreads. For example, the 2s10s cash yield curve spread cannot be 250 bps when the 10 yr cash treasury yields 1.45%. It's simply not possible!

Cash 2s10s Absolute Spread™ comparison:

While the cash 2s10s yield curve spread flattened in nominal terms from 2010-2012, the Absolute Spread™ became steeper. We believe this is significant. CurveTrades developed Absolute Spread™ to help traders, portfolio managers and others comprehensively analyze the yield curve and the yield curve spread.

YIELD CURVE SPREADS AND LARGE CAP EQUITY PERFORMANCE CORRELATION:

The yield curve is generally thought to be a leading indicator of equity performance. The yield curve and its correlation to equity markets is an often researched and widely published topic. A Google search of "yield curve spread equity correlation" returns some 2.86 million results. The Federal Reserve Bank of New York, the FDIC and Duke University's Fuqua School of Business are among the first page search results. The New York Fed has a web page titled "The Yield Curve as a Leading Indicator".

Date	Cash 2s10s	10 yr Treasury	Absolute Spread™
2/19/10	2.90%	3.68%	79%
2/7/11	2.90%	3.73%	78%
7/26/12	1.26%	1.45%	87%

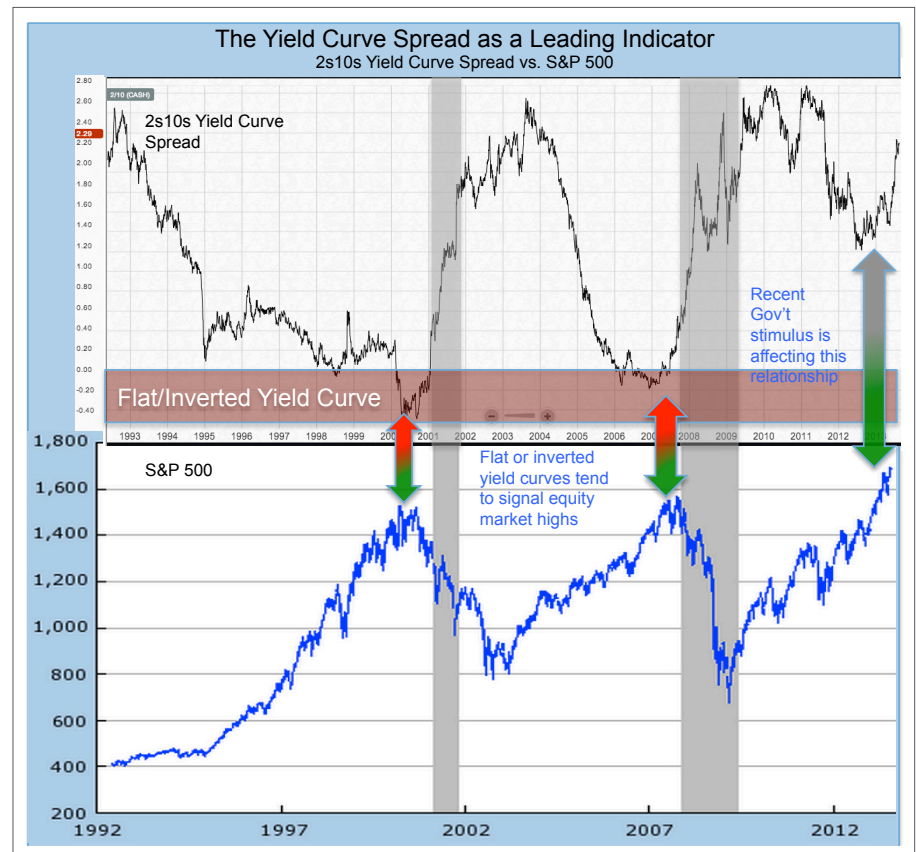
The slope of the yield curve is heavily influenced by central bank monetary policy. The yield curve reflects current monetary policy, expected monetary policy actions and inflation expectations. Central banks raise and lower rates to reign in / stimulate the economy. A flat yield curve indicates tight monetary policy. Steep yield curves reflect periods of monetary stimulus. As a result the yield curve can be used as a leading indicator for major equity indices and yield curve spreads have low correlation to major equity indices.

GENERATING RETURNS. ADDING ALPHA. MANAGING RISK.

Yield curve spread returns are easy to understand. Broadly speaking, the gross return of a yield curve spread trade can be described as:

$$\text{basis point change in yield curve spread} \times \text{DV01}$$

THE CHARTS BELOW SHOWS THE YIELD CURVE SPREAD VERSUS LARGE CAP EQUITY RELATIONSHIP:



Source: CurveTrades LLC, Federal Reserve Bank of St. Louis FRED

Before we dig into the details, let's have a look at estimating the return available on a hypothetical transaction. The chart below plots the NOB yield curve spread (CME Group: ZN vs ZB futures contracts). Importantly, the NOB yield curve spread in the chart below accurately reflects the economic cost basis in the cheapest-to-deliver securities based on the futures price.



We initiate a \$10 million notional NOB flattening trade at 155 bps. Roughly a year later we close the trade at 111 bps making 44 bps.

Hypothetical NOB Yield Curve Spread Flatten ("Notes over Bonds" CME Group: ZN vs ZB)	
Strategy:	Flattener
Action:	Sell NOB
Initiate	155 bps
Close	111 bps
Change	44 bps

How do we estimate returns? A simple way to estimate returns is to the basis point change in yield curve spread and multiply the average DV01.

NOB Spread Change	44 bps
Avg DV01 / Spread	\$165
Total Change / Spread	\$7,260

Return on Notional 7.26%

This translates into a 7.26% unlevered return. It is very important to keep in mind that this example contemplates a long time frame. As futures contracts mature quarterly, one must roll into the new contracts to maintain the trade. The roll costs will affect the trade's performance. With increased risk, you could apply maximum leverage on the position and increase return on margin significantly in this example.

TRADE EXECUTION

So we have looked at the NOB yield curve spread over time, performed our analysis and estimated potential returns. How exactly do we execute the trade? There are three alternatives:

1. execute an order for the front leg and the back leg
2. execute a CME Group NOB spread order
3. combination of both.

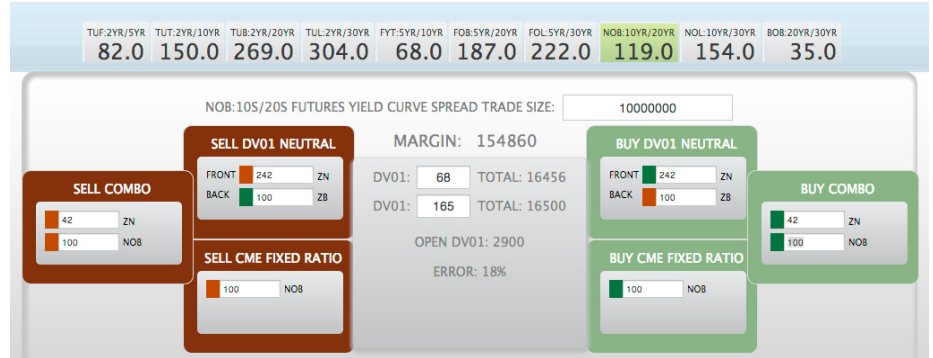
The figure to the right is from CurveTrades LLC and compares trade execution alternatives.

As you can see, you can Sell 242 ZN and Buy 100 ZB or you can Sell 100 NOB. While the CME Group resets the spread ratios quarterly, the NOB ratio is generally 2:1. Thus by selling 100 NOB spreads your resulting position is:

NOB Spread (assuming 2:1 ratio)

Sell 100 NOB	
ZN	(200)
ZB	100

There is a 42 contract mismatch between the DV01 neutral execution and the NOB order. This mismatch is called the tail. As seen above, an order placed to true up the tail can be combined with the NOB spread order to maintain a DV01 neutral position.



Please note the return estimations do not attempt to account for transaction fees, implied carry or any other costs. The example is purely hypothetical.

Unfortunately, curve trades have historically suffered from four problems:

- Operational complexity
- Lack of yield based data availability
- Confusing market quotation methodology
- An absence of widely available easy to use analytical tools.

Much of the difficulty stems from the fact that U.S. Treasury securities are not exchange traded. Additionally, it is difficult to identify the cheapest-to-deliver security and even more difficult to determine the true implied cost basis in the CTD for a given futures price.

Fortunately, advances in technology have simplified the process. CurveTrades LLC provides data and analytics for yield curve spread trades using both cash and futures instruments via an intuitive web application.

DELIVERABLE SWAP FUTURES – NEW OPPORTUNITIES IN YIELD CURVE SPREAD TRADES

In Q4 2012 the CME Group introduced Deliverable Swap Futures (DSF). DSF contracts are a futures contract on a forward starting swap. These new contracts provide similar economics to an interest rate swap with the exchange traded clearing benefits and margin efficiency of a futures contract. Additionally, DSF create a new sector for curve trades!

CASH VERSUS FUTURES EXECUTION: PROS AND CONS

Execution of a yield curve trade can be in either cash or futures markets. Transparent pricing is difficult because U.S. Treasury securities are not exchange traded. Furthermore, the short leg of a cash Treasury spread requires borrowing the underlying bond and paying accrued interest. The long leg requires buying accrued interest. These factors decrease capital efficiency. One then needs to roll both trade legs to stay in the on-the-run security. The result consumes capital and imposes operational burdens.

Futures are exchange traded and capital efficient. The CME Group and other exchanges explicitly recognize the reduced risk profile of a spread, and offer margin offsets for certain curve trades. Futures contracts do have a few idiosyncrasies; fortunately, tools are available that simplify the more complex aspects of executing a futures based yield curve spread trade. These resources enable the market to easily identify value, structure efficient trades and manage risk.



APPLICATIONS: CORE FIXED INCOME MANAGER

Managers of core fixed income portfolios owned by mutual funds, pension and endowment funds, banks and insurance companies face extraordinarily difficult challenges. The two main challenges are intense competition and constantly changing portfolio duration. Compounding this challenge is the historically low rate environment. Fixed income portfolio managers may construct bar-belled portfolios and increase allocation to spread product in search of yield. By definition, this dramatically increases risk of under-performance via increases yield curve spread risk in a risk off, flight to quality scenario.

The current modified duration of the Barclay's U.S. Aggregate Index is 5.37 years³. Credit spreads and equities are highly correlated. Should the Dow Jones Industrial Average and S&P 500 Index markets crack from the current historical highs one could expect a flight to quality

trade in U.S. Treasuries, particularly 10 years and shorter. This is a classic defensive response – risk off and decrease duration. Now let's observe the impact to a bar-belled, credit biased portfolio. Equities sell-off, treasuries rally, rates decrease and durations extend. So every basis point the treasury market rally has more DV01 horsepower than the last. One could expect credit spreads to widen on a 1:1 or greater than 1:1 basis. So, via the cruelty of the markets, the carefully and thoughtfully constructed core fixed income portfolio could manage to turn in NEGATIVE performance as U.S. Treasuries rally.

In this scenario, your boss becomes angry, investors redeem their money and before you know it, you're shining shoes for a living. Not a good day at the office. But there is hope...

You can execute curve trades to help restore portfolio performance. There are many different strategies portfolio managers can deploy.

³ Barclay's, 5/13/2013

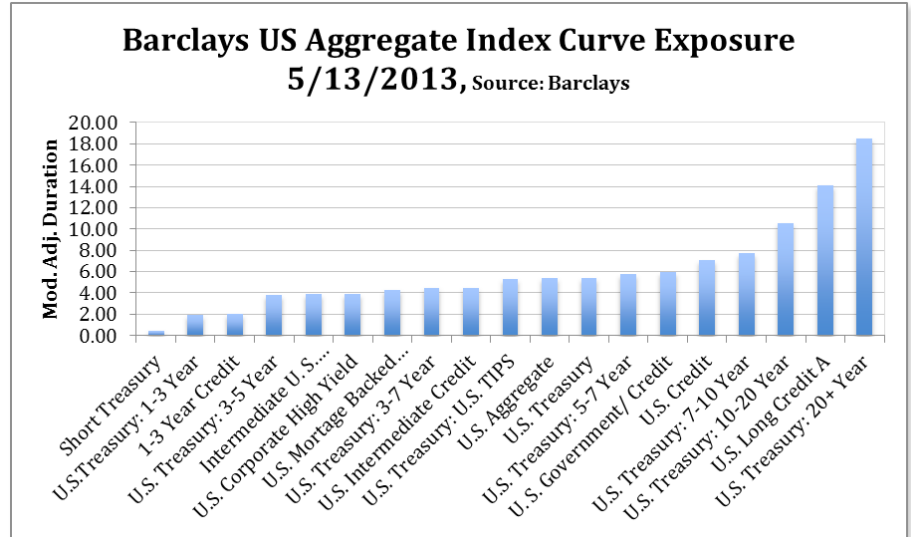
One example is to overlay the index's curve attribution. Another strategy would be to execute yield curve spread trades that tracked an increased allocation to spread product along various points of the curve. A third approach would be to take a more macro view. For example, one may have the view that in the aforementioned scenario, FYT will flatten and NOB and/or NOL will steepen.

The core analytical tool offered by CurveTrades allows you to investigate the movement of futures and cash based yield curve spread pairs over time. The analytics also allow you to estimate performance impact of yield curve spread changes on a DV01 basis. Analyzing and constructing yield curve spread trades is now easy and intuitive!

APPLICATION: CARRY TRADES AND DELIVERABLE SWAP FUTURES IMPLIED CREDIT SPREADS

Carry trades are executed via buying cash treasuries and shorting the like futures contract i.e. long on-the-run 10 yrs and short ZN. These trades can be executed on a 1:1 par notional or on a DV01 neutral basis. An effective way to easily estimate available carry is to weight the yields of the long and short legs. While this approach is highly simplified from the full on analysis, it generally paints a very useable picture of the available carry.

Another application is the implied swap spread using the CME Group's Deliverable Swap Futures (DSF) contract versus its U.S. Treasury future counterpart. In May 2013, the CME Group began offering



implied pricing for DSF vs U.S. Treasury futures in 5, 10 and 30 year maturities on a 1:1 basis.

- 5-Year Treasury Futures (ZF) vs 5-Year Deliverable Swap Futures (F1U)
- 10-Year Treasury Futures (ZN) vs 10-Year Deliverable Swap Futures (N1U)

- Ultra Treasury Bond Futures (UB) vs 30-Year Deliverable Swap Futures (B1U)

The implied credit spread can be observed by comparing the DSF vs. Treasury futures spread. One can trade relative value between the implied credit spread and the OTC market. This is a powerful relative value insight!

CurveTrades
The Yield Curve Trading Authority

BASIS: 10S CASH/FUTURES YIELD CURVE SPREAD

10,000,000

CASH/FUT: 5s	CASH/FUT: 10s	CASH/FUT: 30s/UB	DSF/FUT: 5s	DSF/FUT: 10s	DSF/FUT: 30s/UB
18.0	76.0	18.0	31.0	92.0	12.0

5 YEAR CARRY ESTIMATE				10 YEAR CARRY ESTIMATE				30 YEAR CARRY ESTIMATE			
DV01 NEUTRAL		1:1 RATIO		DV01 NEUTRAL		1:1 RATIO		DV01 NEUTRAL		1:1 RATIO	
DSF/FUT	19bps	CASH/FUT	31bps	DSF/FUT	58bps	CASH/FUT	92bps	DSF/FUT	42bps	CASH/FUT	12bps
CASH/FUT	16bps	IMPLD CREDIT SPREAD	3bps	CASH/FUT	40bps	IMPLD CREDIT SPREAD	18bps	CASH/FUT	43bps	IMPLD CREDIT SPREAD	-1bps
CASH/FUT	18bps	IMPLD CREDIT SPREAD	13bps	CASH/FUT	76bps	IMPLD CREDIT SPREAD	16bps	CASH/FUT	18bps	IMPLD CREDIT SPREAD	-6bps

DSF/UST FUTURES				CASH/UST FUTURES			
DV01 NEUTRAL		1:1 RATIO		DV01 NEUTRAL		1:1 RATIO	
DSF	FUT	DSF	FUT	CASH	FUT	CASH	FUT
78	100	100	100	77	100	100	100
DV01	\$89	\$70	\$89	\$70	DV01	\$90	\$70
TOTAL DV01	\$6,942	\$7,000	\$8,900	\$7,000	TOTAL DV01	\$6,930	\$7,000
YIELD	[N/A]	[N/A]	2.13%	1.21%	YIELD	[N/A]	[N/A]
WEIGHTED YIELD	2.13%	1.55%	[N/A]	[N/A]	WEIGHTED YIELD	1.97%	1.57%

	DV01 Neutral	1:1 Ratio
10 yr DSF vs ZN Spread	58 bps	92 bps
Cash 10 yr vs ZN Spread	40 bps	76 bps
Implied Credit Spread	18 bps	16 bps

Cash Treasuries and the DSF contracts have very similar maturity profiles. The Treasury futures contracts must grapple the cheapest-to-deliver / deliverable securities basket issue. For the 10 year U.S. Treasury future, the CTD is currently a 6.5 year – 7.0 year maturity and the Ultra Bond future is tending towards a 25 year maturity. So the total DSF vs. Treasury spread is composed of a curve component and a credit component. By comparing the cash/ U.S. Treasury futures spread to the DSF/U.S. Treasury futures spread we can identify the curve component and imply the credit component by taking the difference. This creates exciting trading opportunities! If your view is the implied credit spread is too tight, sell the DSF / Treasury spread. If it looks wide, buy it!

LOOKING FORWARD...FUTURE MARKET DEVELOPMENTS

The retail marketplace represents the vast untapped opportunity for curve trades. In a strikingly similar parallel to the foreign exchange market of 15 years ago, CurveTrades believes retail adoption of yield curve spread trading will grow to become a significant portion of total trading volume. Consider the facts: curve trades represent the last highly liquid, established asset class in which the retail investor and wealth management community isn't actively involved.

The U.S. fixed income market has ~ \$38.5 trillion par outstanding and enjoys daily average trading volume of over \$800 billion⁴. In addition to this cash volume, average daily volume in CME Group U.S. Treasury futures contracts was greater than 2,800,000 contracts, representing ~\$280 billion notional⁵.

FOREX shared the exact same fundamentals in the past: a global, highly liquid market with solid infrastructure. Retail participation in the FOREX market currently accounts for ~20% market share

according to a 2012 Greenwich Associates survey⁶. Retail FOREX market share outstrips hedge funds, corporates and insurance companies.

History will repeat itself. Product development efforts and technological advances will bring retail access to yield curve spread trading that, until now, was only available to large institutional investors.

CONCLUSION

Yield curve spread trades offer a world of opportunity that is easy to understand and simple to execute. Core fixed income managers, research analysts, hedge funds, economists and many others benefit from participating in and actively following the curve trades market. When thought of as a core asset class with global applications, market participants can diversify portfolios while increasing capital efficiency.

⁴ SIFMA, Q1 2013

⁵ CME Group, Q1 2013 Quarterly Interest Rate Review

⁶ Greenwich Associates survey cited in [Retail FOREX Trading Surges](#), WSJ 4/26/2012

For more information on CurveTrades, visit www.curvetrades.com or email info@curvetrades.com

This information is not to be construed as an offer to sell or a solicitation or an offer to buy the securities, securities derivative or futures products named herein. Nothing in this report shall be construed as any kind, or any type of trading or investment advice, recommendation or strategy, that is made, given or in any manner endorsed by CurveTrades LLC or the author. The factual information of this report has been obtained from sources believed to be reliable, but is not necessarily all-inclusive and is not guaranteed as to the accuracy, and is not to be construed as representation by CurveTrades LLC or the author. The risk of trading futures and options can be substantial. Past performance, whether actual or indicated by historical tests of strategies, is no guarantee of future performance or success. There is a possibility that you may sustain a loss equal to or greater than your entire investment regardless of which asset class you trade (options, futures or others); therefore, you should not invest or risk money that you cannot afford to lose. Futures and options trading is not suitable for all investors. Each investor must consider whether any investment is suitable.

Copyright © 2013 CME Group. All rights reserved.