



CBOT® Treasury Futures

A GERMAN—U.S. YIELD SPREAD TRADE

When two economies are working through different stages of the interest rate cycle, or when exchange rate relationships promise to be volatile, a variety of relative value trades can prove worthwhile. The availability of Chicago Board of Trade (CBOT®) German Bund, Bobl, and Schatz futures alongside the benchmark CBOT U.S. Treasury futures complex makes trades based on differing German and U.S. interest rate movements easier than ever to execute.

The greatly enhanced functionality of the new CBOT electronic trading platform facilitates spread trading and minimizes execution risk. In addition, using these CBOT futures reduces the exchange rate exposure that can plague traders who turn to the two cash markets to make these trades.

The Interest Rate Setting

Suppose you expect the Euro to continue to strengthen relative to the U.S. dollar. At the same time, you look for increasing U.S. inflation and U.S. Treasury issuance, along with the weakening U.S. dollar, to drive U.S. yields higher. Suppose further that you believe that the 10-year yield curve sector will be the most affected. This combination of circumstances should pressure U.S. 10-year Treasury yields to rise relative to 10-year Bund yields.

One way to respond to this outlook is to sell 10-year U.S. Treasury notes and buy German Bunds. Perhaps an even better way to act on this view of the market is to sell CBOT 10-year Treasury note futures and buy CBOT bund futures. Among the advantages of the futures trade are lower transaction costs and reduced exchange rate exposure.

Structuring a Yield Spread Trade

This kind of yield spread trade does take some thought. If the goal is to structure a trade that will respond only to changes in the German-U.S. 10-year yield spread, you will need to determine a hedge ratio that will render the two legs of the spread essentially duration neutral. This way both futures positions will respond equally to equal yield shifts, and the spread trade will produce results only when one yield changes relative to the other. However, because CBOT Bund futures are denominated in Euros, the spread ratio must also take the exchange rate into account.

Assume that CBOT 10-year U.S. Treasury note futures have a \$68.10 DV01 (dollar value of a basis point). A one basis point (bp) yield increase will lower the value of one futures contract \$68.10. Assume further that CBOT Bund futures have a Euro 83.40 DV01, and the Euro-U.S. dollar exchange rate is 1.2767 Euros to a dollar. The spread ratio formula, expressed in terms of Bund contracts per 10-year Treasury note contracts, is:

$$\frac{(\text{CBOT 10-year Treasury note DV01}) \times (\text{Euros per dollar})}{\text{CBOT Bund DV01}}$$

$$\frac{68.10 \times 1.2767}{83.40} = 1.042$$

To structure a duration neutral spread trade, you can buy 104 contracts of CBOT Bund futures for every 100 contracts of CBOT 10-year Treasury note futures that you sell. To demonstrate that this spread position will be essentially duration neutral, simply multiply the currency-adjusted Treasury DV01 by 100 and the CBOT Bund DV01 by 104.

$$86.94 (68.10 \times 1.2767) \times 100 = \$8,694$$

$$83.40 \times 104 = \$8,674$$

This tells you that a one bp yield shift will cause almost the same dollar change in both legs of the spread. Note that the \$20 difference results from rounding error in the spread ratio calculation and, given the scale of the trade, is trivial.

A Consideration of Possible Results

A spread trade structured in this way will generate gains when the German-U.S. 10-year yield spread narrows—that is, when the German 10-year yield falls relative to the U.S. 10-year yield. For example, the U.S. yield can rise while the German yield falls. Or, both yields can fall with the German yield falling more, or both yields can rise with the U.S. yield rising more. All of these are positive developments for a spread structured as above. This spread should generate losses, however, any time the spread widens. The Exhibit illustrates three spread narrowing Scenarios (a-c), a parallel shift Scenario (d), and a spread widening Scenario (e).

Notice that the minus signs in the Position Size column indicate the short leg of the spread trade. Also, these examples have translated the 10-year U.S. Treasury note DV01 into Euros, so all the results are expressed in Euros. Traders more comfortable with dollar terms can divide the Bund DV01 by the exchange rate (rather than multiply the 10-year Treasury note DV01 by the exchange rate). This will produce the same spread ratio.

$$\frac{68.10}{65.32 \text{ (i.e., } 83.40/1.2767)} = 1.042$$

In U.S. dollar terms, the 10-year Treasury and 10-year Bund DV01s in Scenario (a) would become 68.10 and 65.32 respectively, and this yield shift would generate a \$135,949 gain. This multiplied by the 1.2767 exchange rate is essentially equivalent to the Euro 173,574 of Scenario (a) ($135,949 \times 1.2767 = 173,566$).

A Word of Caution

A yield spread trade is a speculative trade, but it shifts the burden of speculation from taking a position on interest rate or price direction to taking a position on what you expect the spread between, in this example, U.S. and German yields to do. This gives you an extra way to be right, for you have no concern for price direction, only for yield spread narrowing or widening.

Because the spread ratio incorporates the exchange rate, this trade has some exposure to shifts in that rate. However, futures users have no need to buy Euros to buy bunds, so any exchange rate exposure will be relatively slight.

Further, because spread trades implemented with CBOT futures are eligible for performance bond reductions (i.e., margin breaks), this kind of trade can be a low-cost means to capitalize on your yield spread outlook.

Exhibit: A Range of Possible Yield Spread Outcomes

Scenario a: Spread narrows, U.S. yields rise, German yields fall

Futures Contract	DV01 (in Euros)	Yield Change (basis points)	Position Size (contracts)	Result (rounded to nearest Euro)
10-year Treasury	86.94	5	-100	43,470
10-year Bund	83.40	-15	104	130,104
				173,574

Scenario b: Spread narrows, both yields fall

Futures Contract	DV01 (in Euros)	Yield Change (basis points)	Position Size (contracts)	Result (rounded to nearest Euro)
10-year Treasury	86.94	-5	-100	-43,470
10-year Bund	83.40	-15	104	130,104
				86,634

Scenario c: Spread narrows, both yields rise

Futures Contract	DV01 (in Euros)	Yield Change (basis points)	Position Size (contracts)	Result (rounded to nearest Euro)
10-year Treasury	86.94	15	-100	130,410
10-year Bund	83.40	10	104	-86,736
				43,674

Scenario d: Spread stable, both yields fall

Futures Contract	DV01 (in Euros)	Yield Change (basis points)	Position Size (contracts)	Result (rounded to nearest Euro)
10-year Treasury	86.94	-15	-100	-103,410
10-year Bund	83.40	-15	104	130,104
				-306

Scenario e: Spread widens, both yields fall

Futures Contract	DV01 (in Euros)	Yield Change (basis points)	Position Size (contracts)	Result (rounded to nearest Euro)
10-year Treasury	86.94	-20	-100	-173,880
10-year Bund	83.40	-15	104	130,104
				-43,776

