

Cash-and-carry trade

A bond trader notes that the price relationship between the CTD Can 5.75% June 1, 2033 bond and the LGB contract is out-of-line.

The trader's observation is supported by:

1. an actual repo rate (1.03%) that is lower than the repo rate (2.45%) implied by the price of the LGB contract—a condition that provides a trader an arbitrage profit by initiating a cash-and-carry trade (whereby the trader sells bond futures and finances the purchase of the cash bond at a rate below the rate implied by the futures price). The bond is then held until it is delivered to fulfill the obligation of the sale of the futures contract; and
2. a net basis (basis after carry) reflecting that the actual LGB contract is overpriced relative to its theoretical fair value.

LGB June 2012	Last Delivery Day 2012-06-29	Price of LGB Contract 154.60	Valuation Date 2012-04-30			
Coupon	Maturity	Bond price	Conversion factor	Implied Repo%	Actual Repo%	Net Basis
5.75%	June 2033	150.35	0.9704	2.45%	1.03%	-0.361

SETTING:

Price of the CTD Can 5.75% June 1, 2033 bond	150.35
Accrued interest: $151/183 \times 2.875$ (151 days = December 1 to April 30 settlement date)	2.372
Financing rate (actual repo rate)	1.03%
Conversion factor	0.9704
Price of the LGB contract	154.60
Days from settlement to futures delivery (April 30 to June 29)	60
Days from next coupon to futures delivery (June 1 to June 29)	28

The trader initiates a cash-and-carry trade that involves the following steps:

1. Pay for the purchase of the CTD bond (bond price + accrued interest).
2. Finance the bond purchase at the current short-term financing rate (actual repo rate).
3. Receive any intervening coupon plus reinvestment income during the life of the futures contract.
4. Receive the futures invoice price + intervening coupon accrued interest from delivering the bond (i.e. collect the anticipated receipt from delivering bond to the buyer).
5. Repay the cash amount borrowed to purchase the CTD bond + interest.
6. Calculate arbitrage profit.

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CASH-AND-CARRY TRANSACTION	AMOUNT (per \$100,000 notional amount)	COMMENTS
Purchase the CTD bond	$\$150,350 + \$2,372 = \$152,722$	Price of bond + Accrued interest
Financing costs until LGB delivery	$\$152,722 \times 0.0103 \times 60/365 = \259	Amount borrowed to buy bond \times Short-term financing rate \times Number of days/365
Income during the life of the LGB contract (credit and reinvestment of the coupon: June 1 to June 28)	$\$2,875 + (\$2,875 \times 0.0103 \times 28/365) = \$2,877$	Coupon income + (Coupon income \times Short-term financing rate \times Number of days/365)
Total costs of the bond position	$\$152,722 + \$259 - \$2,877 = \mathbf{\$150,104}$	Investment + Financing - Income
Delivery price of the deliverable bond at LGB futures delivery	$(\$154,600 \times 0.9704) + \$441^* = \mathbf{\$150,465}$ * $\$100,000 \times 5.75\% \text{ coupon} \times 28/365$	Futures invoice price \times Conversion factor + Accrued interest received by the seller from the bond buyer
Arbitrage profit (per LGB futures)	$\$150,465 - \$150,104 = \mathbf{\$361}$	Delivery price of the deliverable bond - Total costs of the bond position

In the present strategy, the cash-and-carry transaction results in a profit of \$361 per contract.