

CGF | Five-Year Government of Canada Bond Futures

CGF Invoice Spread

Overview/Description

A futures invoice spread is a fixed income derivatives trade designed to speculate on a view that the yield difference between an interest rate swap and a futures contract will change. A spread tightening position will profit if swap rates fall relative to bond yields while a spread widening position will profit if the opposite occurs.

Drivers of Invoice Spreads

Swap and invoice spreads have many drivers but are generally found to be a function of: credit risk¹, the spread between short-term money market instruments and repo rates, the liquidity of bonds, the potential for “specials” in the repo market, and even government debt/deficit expectations as well as any other factor that affects the medium-term demand and supply of swaps relative to bonds.

Invoice Spread or Asset Swap

Invoice spreads are simply a specific type of asset swap constructed using a futures contract rather than a cash bond. Some advantages of using the active futures contract rather than a cash bond to construct the trade are:

- Futures eliminate the need to use or borrow cash to fund the bond purchase portion of an asset swap
- Futures eliminate the need to short-sell bonds and conduct repo market operations to borrow the bond sold
- Futures are generally simpler to trade, have a lower bid/ask spread, and have as much or more liquidity than individual bonds

Trade Construction

A Portfolio Manager constructs an invoice spread widening position by buying the active futures contract and paying fixed on a forward starting swap from the expected delivery date of the futures to the maturity date of the cheapest-to-deliver bond for the futures contract. Both the futures contract and the swap have the same DV01 making the invoice spread DV01-neutral or non-directional with interest rates. The positions for an invoice spread tightening position are simply reversed by selling futures and receiving fixed in the swap. An example of a CGFH17 invoice spread widening trade construction with a DV01 of \$10,000 per basis point on January 20, 2017 is shown in Table 1².

1. Central clearing and daily margin exchange on swaps has greatly reduced credit risk as a driver of swap spreads in recent years.

2. Notional, contracts, forward and futures DV01 and estimated invoice spread can be easily calculated in Bloomberg via the IVSP function.

Table 1

CGFZ16 INVOICE SPREAD WIDENER	
FUTURES POSITION	Buy 180 contracts CGFH17. (CTD bond = 0.75% Sep1/21)
SWAP POSITION	Pay fixed, \$23.45 million notional from Mar31/17 to Sep1/21
FUTURES DV01	0.0556
SWAP DV01	0.0426
FUTURES FORWARD YIELD	1.165%
FORWARD SWAP RATE	1.456%
INTEREST RATE (DV01) EXPOSURE	DV01 futures = +\$10,000 DV01 swap = -\$10,000 Net DV01 = \$0
INVOICE SPREAD LEVEL	29.0 bps

Potential Results

At the trade horizon, some of the potential outcomes of the invoice spread widening trade are listed below³.

MARKET MOVE	CAUSE	TRADE RESULT
Yields higher, spread unchanged	Bank of Canada hikes rates unexpectedly	No gain or loss ⁴
Yields relatively unchanged but invoice spread widens to 41 bps ie. Swaps cheapen relative to the futures contract	High, unexpected demand for 5y bonds creates bond scarcity and repo specials	Net gain of \$120,000 (+12.0 bps spread change x \$10,000/bp) ⁵
Yields mostly unchanged but invoice spread tightens to 23 bps ie. Futures contract cheapens relative to swaps	Federal government deficit forecasts increase causing 5y bond issuance expectations to rise	Net loss of \$60,000 (-6.0 bps spread change x \$10,000/bp)

3. A number of potential outcomes are ignored here as they are extremely unlikely in today's low interest rate regime. Switch risk, or the risk that the cheapest-to-deliver bond changes, is all but eliminated when rates are so far below the 6% yield used to calculate the conversion factor for each underlying bond. Counterparty risk on the swap is all but eliminated by centrally cleared swaps and daily exchange of maintenance margin. Delivery risk, or the risk that the seller of the futures contract delivers prior to the final delivery date, is almost completely eliminated by the positive slope of the yield curve.
4. With the exception of a possible, but very small P(L), due to differences in the convexity of the swap position relative to the CGF position.
5. There will be a small amount of (probably) negative cost of carry on the trade depending on the holding period and the rate on the floating leg of the swap. Carry cost on an invoice spread trade is easily determined in advance.

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