

MONTREAL EXCHANGE

Carry opportunities: How to identify and exploit them



Introduction

One could assume that, given the fact that a futures contract is just a “promise” to buy a certain asset in the future, its return should closely track the return in the cash market underlying the contract. However, often this is not the case.

Embedded in its price, an equity futures contract will have the cost of carrying an equivalent cash position across time (i.e. the “cost of funding,” measured as the interest paid to hold a cash-equivalent position) and the benefit of doing so (i.e. the expected dividend that you would have received on the duration of the futures contract’s life).

Depending on the balance between the cost and the benefit, the futures contract will be trading in backwardation (when a longer expiration trades at a lower level than a shorter expiration) or in contango (when a longer expiration trades at a higher level than a shorter expiration).

An equity futures contract will be in backwardation when the expected dividend over the contract period is higher than the cost of carrying a cash equivalent position. This situation is known as “positive carry” because if the spot price on the market remains unchanged, holding the futures contract will generate a positive return due to the convergence of the contract toward the spot price as the contract’s expiration date approaches. This amount of return is called roll yield, and it represents the benefit of owning the underlying asset that is not captured by price changes in the asset.

One can decompose the return on a futures contract as follows:

Futures return = Spot return + cost + benefit of owning the spot asset

This implies that:

Future return = Spot return + roll yield

A savvy investor can isolate the roll yield by trading, at the same time and in opposite directions, the cash market basket of constituents and the futures contract.

A carry opportunity arises when the market value of the futures contract diverges from its fair value as calculated on the basis of the cost and benefits. In this situation, if the roll yield generated is superior (inferior) to the cost of carrying the position, the future is considered “cheap” (“expensive”).

The fair value of a futures contract can be calculated with the following formula:

$$\text{Fair Value} = \text{Index level} \times \left(\text{cost of funding} \times \frac{\text{number of days to future expiry}}{360} \right) - \text{expected dividends from the future's expiration}$$

One quick and easy way to identify whether the roll (the position taken by buying a deferred contract and selling the nearby one) is trading cheap or expensive is to compare its implied finance rate with the prevailing rate.

The implied finance rate is extrapolated from the future levels and expected dividend using the following formula:

$$\text{Implied finance rate} = \left(\frac{360}{\text{days between}} \right) \left(\frac{\text{Roll} + \text{Dividend}_{\text{between}}}{\text{Futures}_{\text{nearby}} + \text{Dividend}_{\text{to nearby}}} \right)$$

A simple way to understand the implied finance rate is to see it as the interest rate (i.e. the cost of funding) that an investor would pay to fund the cost of the strategy if the roll was trading at its “fair value,” given a certain expected dividend.

Example of a reverse cash and carry strategy

After determining that the S&P/TSX60 futures contract ("SXF") is trading cheap, an investor decides to arbitrage this opportunity.

On June 13, 2019, the following levels were observed¹:

S&P/TSX 60 972.55
SXF September 2019 expiration 969.20
Bankers' acceptance rate 1.98%
Dividends expected to be paid from June 13 until the SXF expires in September 8.44 (in index points)

The carry return for someone who goes long on the SXF on the day's settlement level is 3.35 (972.55-969.20). Thus, an investor can expect to collect \$670 per contract (3.35 index points x \$200 per index point)² due to the convergence of the futures contract toward the index level on the final settlement day.

However, an investor who only goes long on the SXF faces the risk that the index level on expiration will likely differ from 972.55. The investor therefore decides to hedge this market risk by going short on the basket of constituents at 972.55. This position is carried until expiration of the September SXF contract.

Our investor now has two positions:

- **A short position on the basket of constituents, at 972.55**
- **A long position on Sep SXF, at 969.20**

The carry of the long position in the SEP SXF futures contract will generate 3.35 index points of return, as discussed above, at its expiration. However, because the investor is short on the basket of constituents, she has an obligation to pay back the dividends distributed by the constituents while she holds her short position.

Moreover, our investor can invest the proceeds from the short position in a risk-free rate account during the 106 days from June 13 to the expiration on September 20, thereby generating an additional 5.67 index points of return (i.e. $(972.55 \times [1.98\% \times \{\frac{106}{360}\}])$).

The following payoff is observed:

+3.35 index points from the positive carry
+5.67 index points from the risk-free investment
-8.44 index points from the dividend expected on the period
Total = 0.58 index points per contract
0.58 x \$200 per point = \$116 per contract

Therefore, because the future contract was trading "cheap" (i.e. below its fair value), our investor was able to lock in a risk-free return of \$116 per contract traded, to be realized at the September expiration.

¹ <http://grid.investor.com/PaceOfRoll/en>

² For more information on S&P/TSX60 future specifications, please refer to https://www.m-x.ca/produits_indices_sxf_en.php

The capital efficiency of this strategy and the return on investment is conditional on the brokerage facility used by the investor.

On top of the minimum margin required by the Canadian Derivatives Clearing Corporation (CDCC), each prime brokers demand different margins on the SXF long position. Moreover, in order to short the basket of constituents, the investor will need to borrow the stocks and post margin to guarantee the short positions, increasing the cost and capital required to initiate the transaction.

Ultimately an investor needs to monitor changes in the roll (i.e. when the “front contract” gets close to its expiration and the positions start to migrate to the “back contract”) in order to find the optimal moment to implement a cash and carry strategy.

The Montréal Exchange has created a [Pace of the Roll portal](#) for investors interested in monitoring and learning more about equity futures contract rolls. The portal is intended to support investors interested in analyzing changes in the SXF roll and its historical “cheap vs. expensive” pattern throughout the last roll periods.

For more information

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