Making non-directional return in the cryptocurrency markets.

April- 2021

Commodity Carry or Contango

I spent many years as a professional commodity trader. There has always been a good play in the commodity markets when a physical commodity has a liquid forward futures contract which is trading at a large premium to the current physical spot price. This is called a "carry" or "contango" market.

If, as a commodity merchant, you have access to adequate storage then this play is straight forward.

- You buy spot delivered product which you finance with a bank line. Commodity stock financing can be covered at very low interest rates providing the storage facility is in good condition, the product is price hedged and redelivery of stored product in the future at the prevailing market price can be assured.
- For every metric tonne of product you store you sell the equivalent volume of futures contracts at whichever contract offers the best annualised return along the futures contract curve.
- You ensure your stored product is kept in good condition until you can deliver it against the established futures contract short position. This is cheapest and easiest if your storage facility is owned by you and also a registered delivery facility for an exchange.

The sort of returns available can be significantly more than those available from shipping the same commodity from the producer to a buyer in another location and simply locking in the origin to destination margin.

When dealing with physical commodities there are important considerations regarding transport, product quality, storage facility staff, redelivery mechanics and of course financing. As well as interest costs all these operating costs must be accounted for before realising profit.

Bitcoin Futures Carry

In the emerging crypto space there are already a number of active futures exchanges and these have forward price curves which show a very healthy contango similar to those that sometimes exist in commodity markets where the carry trade becomes realisable.
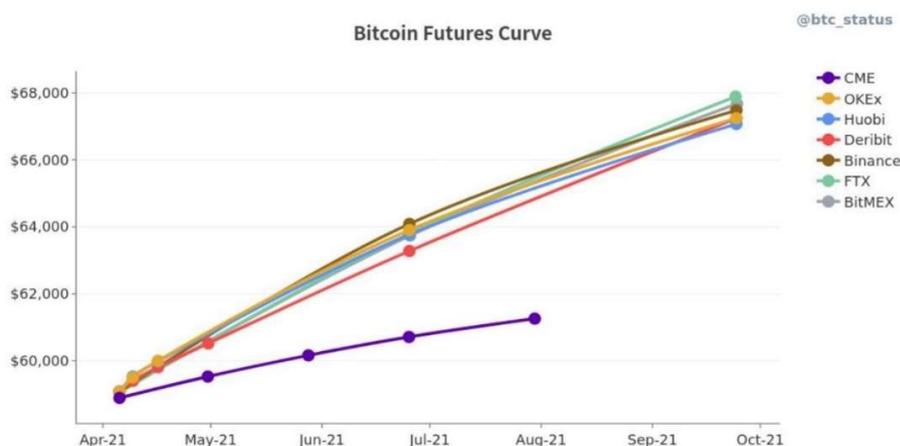
The above chart shows forward prices across multiple bitcoin futures exchanges.

On the date in question spot Bitcoin could be purchased for $58,920 and the forward dates could be traded on Kraken exchange at the prices shown below.

Forget the perpetual contract for now as this has a more complex funding structure and does not suit this trade.

Let's consider April. Shown here, it is trading a 2.5% premium to spot at $60,361.25. The April future will converge in 24days to settle at the same price as the spot is trading on that day.

2.5% in 24 days annualised is a return of 38%. A similar calculation can be done for each of the futures available to determine which provides the best annualised yield.

The mechanics of a carry trade between spot and April Bitcoin work as follows;

Day 1: Bitcoin trading $58,920

Buy 1 BTC $58,920

Sell 1 BTC April Future $60,361

Day 24: Assume BTC price is $70,000

1 BTC bought at $58,920 now has a profit of $11,080

1 BTC April Future sold at $60,361 now has a loss of $9,639

Net profit of this trade is therefore $11,080 – $4639 = $1,441

Assuming BTC price declined to $50,000 rather than rallied in the 24 days to settlement;

1 BTC bought at $58,920 now has a loss of 8,920

1 BTC April Future sold at $60,361 now has a profit of $10,361

Net profit for this trade is therefore $10,361 - $8,920 = $1,441

So the same net result is realised irrespective of the direction of the underlying bitcoin.

If you wish to keep the yield rolling the best practice is to buy back the April future once it is at the spot price, this usually happens a day or two before settlement and then sell another forward future.

As long as the contango continues to exists these dollar gains can continue to be realised.

Trading on Exchange

Various exchanges trade futures in two different contact size formats. Here I take two example exchanges, FTX and Kraken to explain the difference.

FTX keeps contracts in terms of coin quantity. So you buy or sell 0.1, 1 or 10 BTC as required. Your position volume will always appear as it was bought or sold and you profit or loss on all open trades will be shown as a separate US Dollar amount.

Kraken works basis fixed US Dollar amounts. So if you wished to sell 0.1 BTC of a BTC future priced at $62,500 you actually buy or sell $6250 of that future.

This distinction is important because it effects how the futures side of the spread is margined.

Let's start with FTX.

Assume you are long 1 BTC spot which you hold in your FTX account Wallet

You want to sell 1 June BTC Future on FTX
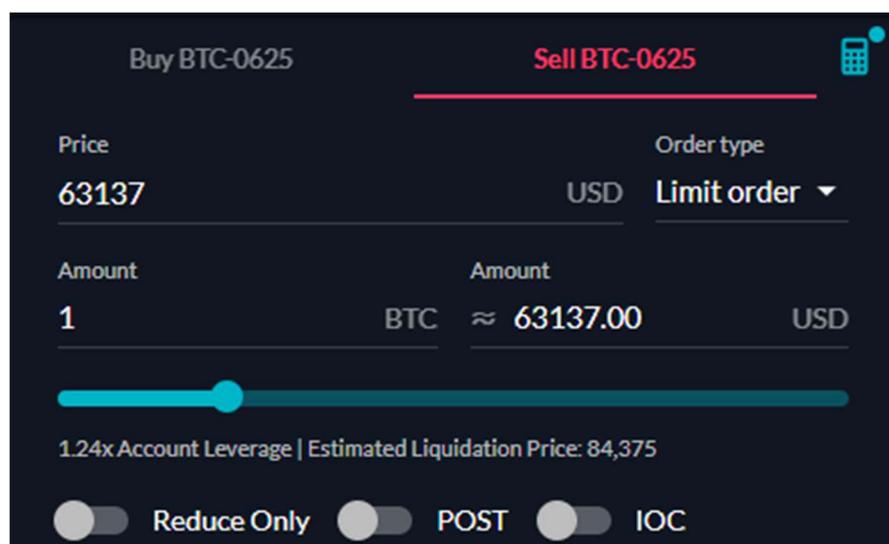
Here is the order entry window.

You would put in the Amount of "1" and FTX will automatically populate the USD value, in this case $63,137 based on a limit order at that price.

Once you are filled FTX will start to margin your position positive or negative in USD.

So, for example, if the price rallied to $70,000 you will have the following positions in your wallet

Long 1.0 BTC spot

Short 1.0 BTC-June

Negative 6863 USD balance

Up to a point the exchange will allow the negative USD balance to be offset by the long 1 BTC spot position but should the negative USD margin get too large >$20-30k the exchange will automatically convert a portion of your BTC spot to USD to bring the USD negative margin back within acceptable levels.

This is not ideal as you want to be able to realise the forward spread on the entire position and so it is prudent to have a USD balance which is greater than negative $20,000.

Once the future settles you have to take the margin balance into account when you calculate your overall profit.

In the above example, assuming the June future settles at $70,000. You bought spot at $58,650 and sold the June future at $63,137 you would have the following result.

Spot $70,000 - $58,650 = $11,350

Future Margin $63137 - $70,000 = - $6,863

Net $4,487

What you are left with on exchange when all is settled out is 1BTC spot with a value of $70,000 but you had to pay in $6,863 to cover the loss on your future short.

The advantage with FTX is that they allow cross product margining. So long as you have sufficient coins of any type traded on the exchange or USD in your account you can trade any product and everything will be reduced to a USD margin amount.

It is somewhat different when futures are margined on other exchanges such as Kraken.

Kraken futures are segregated from the kraken spot exchange. Before trading futures, collateral needs to be transferred from the spot exchange wallet to the futures exchange wallet. You need to have margin deposited in the same coin as the future you wish to trade.

The example above is a populated order sheet for buying or selling 0.1 BTC at $62,670. In this case, rather than specifying the amount of BTC I wish to buy or sell I specify the dollar value, in this case $6,267 which is 0.1*$62,670.

Once the trade is executed and futures prices move up or down, the dollar value sold or bought stays constant.

For example. If I am filled on the sale of $6,267 of BTC at $62,670 and then the market rallies to $70,000 then the following applies.

Sold 0.1 BTC ($6,267) at $62,670

At $70,000 I now have 6,267/70,000 BTC = 0.08953 BTC

So I have lost 0.01047 BTC on the position

This is essentially the same as the margining on FTX but rather than taking everything back to US Dollar values it is continually calculated basis the amount of BTC at a price. This explains why on FTX any deposit can be used to margin any other product but on Kraken it is important to have the coin that you wish to trade deposited as margin.

So considering the above, lets run through a trade example on Kraken.

Long 1 BTC Spot at $58,600

Short $62,670 June BTC futures at $62,670

This is equivalent to 1 BTC long spot and 1 BTC short June futures

Assume that at June settlement the market is trading $70,000, then;

Long 1 BTC spot is in profit $70,000 - $58,600 = $11,400

The short June future is in loss

(Settlement Value – Initial value) * settlement value

= (($62,700/$70,000) – ($62,700/$62,700)) *$70,000

= (0.8957 – 1) * $70,000

= -0.10428 * 70000

= $7,300

This is the same as the straight forward profit/loss calculation

$62,700 – $70,000 = $7,300

but the initial calculation is more of a visualisation of how the real-time margining occurs. Because there is no separate US Dollar margining, as in FTX, the negative margin of the future is simply deducted from the balance of the spot BTC in the futures wallet.

So if this trade is allowed to settle the 1.0 BTC spot wallet deposit will now be reduced to 0.8957 BTC

In $ terms this is still a profitable trade

Day 1 1.0 BTC * $58,600 = $58,600

Day 80 (settlement) 0.8957 BTC * $70,000 = $62,699

Net profit = $4,099 or 7%

Understanding the two margining methodologies is important when considering what to roll over to the next future contract.

Even though 1 BTC was the initial amount that was spread to June, the next roll over should only be for 0.8957 BTC as that is the amount of coin remaining in the futures wallet after the June settlement.

This highlights the fact that you are earning a USD return and not a Bitcoin return. If the price of Bitcoin had fallen rather than rallying between placing the trade and settlement then the amount of Bitcoin would have exceeded 1.0 such that the profit in USD will be the same irrespective of market direction.

Considerations

You must always ensure there is enough margin to cover the futures position adverse price move. Crypto exchanges do not make margin calls, they will close the position as soon as the margin available is exhausted. I usually run 3-6* leverage on my futures and keep the balance of my spot coins in an off exchange wallet.

Each exchange will show you the current liquidation price of your position. This is the price where your futures leg will be automatically closed by the exchange because you run out of collateral.

MARKET	SIZE	ENTRY / MARK PRICE	PRICE CHANGE	LIQ. PRICE	LEVERAGE
₿$ XBT/USD Sep	-141,272	54,341.04 USD / 66,196.50 USD	21.82%	82,424.44 USD	4.88x

Here is an example on Kraken of a $141,272 short position in September BTC futures placed at an Average price of $54,341.04 with the market now at $66,196.50 (a 21.82% rally). Based on the deposited collateral on the exchange this position is leveraged 4.88 times and will be liquidated if the market reaches $82,424.44 should no more collateral be added.

Market	Side	Position Size	Notional Size	Est. Liquidation Price	Mark Price	PnL	Avg Open Price
BTC-0625	Short	0.1500 BTC	$9,496.80	100,103	63,290	-$539.80	59,713

Here is the equivalent screen on FTX showing a short 0.15 BTC June future. The estimated liquidation price based on current deposited collateral is $100,112 and the current market price is $63,290.

It is important to always have collateral ready to send to the exchange should it be required. On Kraken this will be the coins which you are spreading, on FTX it will be USD or USD equivalent stable coins.

Once the spread is locked in there are likely to be some adverse price movements at times which widen it further. At this point you may want to have some capital available to spread more but you must always ensure you can cover any move in the spread against your position to avoid being automatically closed out of the futures leg. The thing to remember is that no matter what happens in the interim the spread will ALWAYS converge on settlement and you will have the opportunity to realise the USD gains which are locked in at initiation.

 Execution when placing the spread and closing it is an important consideration. Each side of the trade requires 2 legs to be transacted. On the way in it is necessary to buy the spot coin and sell the

future. At futures settlement you need to either let the future settle completely, leaving you with only the spot coin remaining or buy back the future short and sell another future further down the curve so that the returns continue to be locked in. Unless these trades are executed well a portion of the profit from the calendar spread can be eaten up in the execution. Exchange costs are cheaper when making a price than taking a price and so it is beneficial to always place an order near to or joining the best bid or offer rather than crossing that spread. Also prices can differ between futures exchanges. Sometimes this is due to the differences in settlement but other times it is just because there is a price disparity. I try to spread my risk between exchanges.

Although it is necessary to have sufficient collateral on the futures exchanges, it is not advisable to place equivalent coins to the futures volume sold as there is always some risk having exposure on exchange. It is better to place as much volume as possible off exchange, ideally in a hard wallet such as https://trezor.io/

Further yield may be found, with some additional risk, by posting some of the spot coins to interest paying providers such as BlockFi or Crypto.com which pay 6% on limited Bitcoin deposits and varying rates for a host of other crypto assets.

When closing current positions and rolling to the next future it is important to track the volume you are rolling. If the market moves higher you will likely have decreasing coin volumes, if lower then increasing volumes.

As time passe the dollar value will increase based on the forward spreads which have been locked in. Between placing a trade and realising the profit things can go against the position more than may be imagined. It is important to always have the collateral to cover these adverse spread moves and also good to keep some volume available to best capitalise on market blow outs.

Currently the US Dollar returns utilising this strategy can yield >30% after costs. How long that return remains available is unknown. It is probably best to sell forward a number of different expiries down the futures curve. Although the shorter term spreads offer a better annualised return, more rolling incurs more costs and a greater chance of execution slippage losses. Also with the knowledge that this return cannot be sustained indefinitely smaller returns locked in over the longer term today may look considerably more attractive before they settle.

It is advisable to stick to markets where liquidity is highest as this will minimise execution losses during initiation, closeout and roll-over. Currently Bitcoin and Ethereum have the highest volume but spreads can, at times, be attractive in Litecoin, Bitcoin Cash and Ripple.

It is essential to keep track of the portfolio, where your coins and futures are, if they are distributed through a number of exchanges and also exactly what returns are being realised, dollars deposited as additional collateral and coins volumes being decreased through margining.

Although this document uses the example of FTX and Kraken there are other exchanges which also have good liquidity including Binance, Derebit and CME. CME does not offer the same spread and also is fully USD collateralised and does not enable fractional contracts. With the advent of a micro BTC contract it may start to gain more traction. One of the reasons for a reduced spread on CME is likely the perceived lower credit risk of dealing on CME vs. the nascent crypto company exchanges.

Links

If anything in this article in unclear maybe these links will help

Carry trade

investopedia.com/carry-trade-definition-4682656

Futures contract

investopedia.com/terms/f/futurescontract.asp

Bitcoin Futures

kraken.com/features/futures

BlockFi

www.blockfi.com

Trezor

trezor.io