VERSLAN SWAPS

Introduction

Crypto perpetuals is one of the innovative products of cryptoverse. It came with no expiry and started a new revolution in trading of underlyings. Nearly all the exchanges benefited out of it. It was/is considered as a best hedge against the holdings.

Only issue with these perpetuals is that there would be a huge room for disruption of prices if underlying contracts are sold in huge volumes. There is a huge probability that prices would plunge/diabolic rise if huge volumes are traded in an exchange. This would simply erase it as a hedge bcoz in all probability there would be premium or discount in prices of underlyings.

What would be a perfect hedge or close to perfection?

In finance, there is nothing called perfection. There would always be unknown unknowns which we'd call it as a tail risk. All we could do is to mitigate the risk in the most efficient manner. That is the best way to look into the risk.

Is there any product that wouldn't probably disrupt the prices but somehow help individuals and institutions to mitigate the risk in a meaningful manner?

There are Futures & Options that do a decent amount of hedging and also provide arbitrage opportunities for shrewd traders. We could have heard, what would be the best way to catch delta, avoid vega, make use of gamma and what not? We have come so far after the introduction of F&O in cryptos.

But any product that doesn't do damage to the prices but would help us to mitigate the risks?

It was a tough question until Verslan followed it and took the matter in its hands. Enter " Crypto Swaps" ! A product that would help to mitigate the risks without causing disruption of prices.

Before getting into Crypto swaps, let's understand about Swaps.

AN INVESTOPEDIA DEFINITION

A swap is a derivative contract through which two parties exchange the cash flows or liabilities from two different financial instruments. Most swaps involve cash flows based on a notional principal amount such as a loan or bond, although the instrument can be almost anything. Usually, the principal does not change hands. Each cash flow comprises one leg of the swap. One cash flow is generally fixed, while the other is variable and based on a benchmark interest rate, floating currency exchange rate, or index price.

Basically Swaps are the products that give leeway for perfect hedge without disruption of prices. One could hedge their risks by entering into swap without disrupting the prices of the underlying product.

Miles Deutscher
@milesdeutscher

200 hours of $BTC price action wiped out in 13 minutes.

14:17 · 19 Apr 23 · **129K** Views

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The chart infact ended like this.

If one needs to mitigate the risk, swaps would be the best tool to do it without disrupting the prices. There wouldn't be a necessity to have slippages and hedgers and commercial traders could simply adopt swaps and mitigate their risk on their HODL positions of respective crypto currencies.

We at Verslan believe that "Crypto Swaps" could become a revolutionary product in crypto verse. Swaps in modern day finance have multiple uses for investors to mitigate the risk. Be it commodities, currencies or in equities, swaps help the investors to mitigate the risk in a meaningful manner. These swaps are mostly used by institutions rather than individuals and swaps are available only for institutions. In crypto, we democratize the use of swaps and we are bringing it to individuals as well as for institutions. According to their capital, investors of different classes could use different types of notional's. Basically Swaps are "Trading the Notional's". Irrespective of countries and capital one would be able to trade the notional's. This is the specialty of cryptos and we at verslan has brought this to mitigate the risk of investors of crypto currencies

In order to democratize swaps , in our V1 we would like to do some adjustments so that it'd be used by everyone in the industry. Our priority is to bring it in "Decentralized Finance" and we have adjusted the product accordingly in order to fit with DeFi.

We have made it simple and will continue to update with different versions. Main agenda is to make crypto verse to get accustomed with this product and help them to mitigate the risk of their investments.

Swaps are basically a long duration product and it would have a duration of more than 5-10 years and we have made big adjustments with the duration. The volatility that is prevailing in crypto currencies is higher compared to Real World Assets(RWA). Hence durations are shortened to make sure that it's in alignment to crypto traders, investors and speculators.

We have kept notional's as static ones and it wouldn't rise in accordance to the MTM of the counterparty that has seen rise in their Mark to Market of notional's. This is to make it lucid and to make this product reach to the last investors of crypto. In RWA, only sophisticated investors would use swaps but in crypto we would like to see everyone use swaps and do the business of trading, risk mitigation and even speculation. In order to make it simple, we have kept " Static Notional's". We would bring MTM Notional's as well as Static Notional's so that investors, according to their expertise could use these products to do their risk mitigation.

We have made substantial adjustments in time so that crypto verse would infact show interest in this product. We've initially come out with shorter time duration of 3hrs, 6hrs, 12hrs, 24 hrs, 5 days and 15 days to make it usable for crypto verse. Mostly there would be Liquidity Pools with the DeFi to fund or maintain liquidity in the system. In crypto swap, we believe that managing liquidity pools in V1 is like touring Amazon. We are the pioneers and we believe that it would need a lot of funds to withstand the volatility of crypto to run liquidity pools. That practically doesn't work in V1 of this product. We are introducing the matching concept that could probably work like an order book and it's going to be a wild ride in DeFi. This is the best option available to run the protocol for swaps.
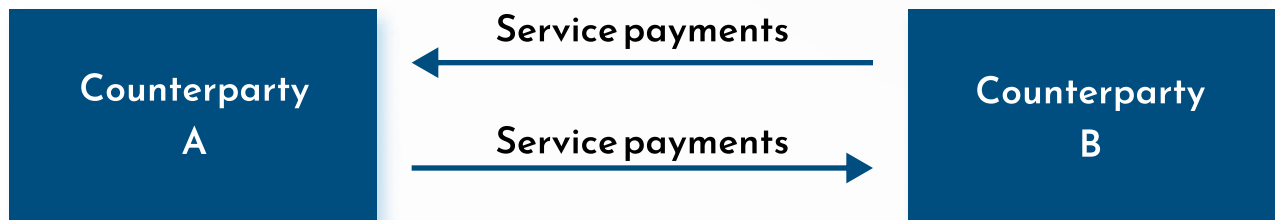
Look into Swap

1. **What's a Swap**
   - Contract between two counterparties
   - Over the counter contract, terms negotiated bt counterparties

2. **What's being "swapped" or exchanged by counterparties**
   - Contract between two counterparties
   - Over the counter contract, terms negotiated bt counterparties

Service payments

Counterparty A ← **Counterparty B**

Service payments →

Fixed Rate Payer & Receiver
Flexible Rate payer & Receiver

Fixed Rate = USDT could be fixed rate and the benchmark interest rate would be the fixed rate to be received on one leg.

Flexible Rate = Volatility of BTC/ETH would be the flexible rate.

Parties involved in this contract would pay or receive USDT interest as fixed rate and Could pay or receive volatility of BTC/ETH.

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Flexible Rate Payer & Receiver
Flexible Rate payer & Receiver

Flexible Rate Payer = ETH/BTC/BNB could be flexible rate to be paid received on the legs.

Flexible Rate = Volatility of BTC/ETH/BNB would be the flexible rate.

Parties involved in this contract would pay or receive flexible rates. Could pay or receive volatility of BTC/ETH/BNB.

For Better Understanding

Contract between two counterparties , Over the counter contract, terms negotiated by counterparties. What's being "swapped" or exchanged by counterparties. Economic exposures reflected by payment for changes in value. Exchanging (on a net basis) streams of service payments (legs)

Components of Swaps

1. Contract Terms

- Type of swap
- Notional amount
- Term (tenor or maturity)
- Payment frequency
- Other contract terms
- standardized contract

2. Crypto Swaps Contract Features

- Notional amount
- Size (and currency) of exposure
- Determinants
- Tenor
- Most a few months to a few years
- Significantly shorter than interest rate swaps
- Settlement frequency

3. Crypto Swaps

- Exposures Swapped Between Counterparties (Underlying Crypto)
- One leg (at least) crypto return
- Total return
- Return based on point or price changes only
- Second leg
- Fixed interest rate - coupon (most basic structure)
- Crypto return
- Total return or point/price return basis
- Same as for other leg

4. Types of Crypto Swaps

- Pay a fixed rate and receive crypto returns.
- Pay a floating rate and receive crypto returns.
- Pay one crypto return and receive another crypto return.
- We can look at a crypto swap as a portfolio of a crypto position and a fixed return paying instrument.
- The crypto swap cash flows are expressed as:

  NA(Crypto return – Fixed rate) (for pay fixed, receive crypto party)

  NA(Crypto return – Floating rate) (for pay floating, receive crypto)

NA(Crypto return X – Crypto return Y) (for pay crypto, receive crypto) where X and Y denote different cryptocurrencies.

The present value of the floating interest rate leg can expressed as

$$PV_{floating}(t) = N \sum_{i=1}^{m} (F_i + s)\tau_i D_i$$

Where

t – the valuation date

N – the notional principal amount

i – the ith cash flow (swaplet) from 1 to n

$\tau_i = \tau(T_{i-1}, T_i)$ - The accrual period (T_{i-1}, T_i) of the ith cash flow.

$D_i = D(t, T_i)$ - the discount factor

$F_i = 1/\tau_i(D_{i-1}/D_i - 1)$ - the simply compounded forward rate

s - the floating spread

The present value of the equity leg is given by

$$PV_{crypto}(t) = N \sum_{i=1}^{n} (S_i - S_{i-1}/S_{i-1}) D_i$$

Where

t – the valuation date

N – the notional principal amount

i – the ith cash flow from 1 to n

$D_i = D(t, T_i)$ - the discount factor

$S_i = S - PV_i(D) e^{r_i(T_i - t)}$ - the crypto forward price.

S - the crypto spot price at valuation date

$PV_i D = \sigma_{t < \tau < T_i} d_\tau e^{-r\tau(\tau - t)}$ - the present value of all dividends between t and T_i

d_τ - the discrete dividend paid at τ where $t \le \tau \le T$

r_i - the continuously compounded interest rate from t to T_i

As said earlier, we can't implement the whole concept of RWA swaps in cryptos and hence have made a lot of adjustments to make it available in DeFi. Over a period of time, we would make adjustments to bring it completely in DeFi. Here we have come up with a way of valuing the swaps to fit into DeFi.

Explanation through an examples

Here we would like to have multiple scenarios for crypto swaps and would explain it through example for thorough understanding of readers of the document.

1. BTC/USDC

There are two traders. Trader A and Trader B. Trader A is bullish on BTC and Trader B is bearish on BTC. Both of them want to enter into a swap agreement to trade their stance.

Here are the contract details of the swap.

Notional Amount = $10,000,000
Crypto = BTC/USDC
Tenure = 1 Month
Fixed Amount = Federal Funds rate @5%
Floating Amount = BTC Volatility on positive/negative movements
Payment Schedule = Monthly

Payout Scenario

Trader A

Trader A receives his receipts with the volatility of BTC. This means he would receive his payouts from the percentage increase/decrease movements of BTC.

Trader would pay Fed Funds rate

Trader B

Trader B receives his payout with Fed Funds rate. This simply means he would receive 5% Fed rates

Trader would pay the volatile movement of BTC - positive/negative accordingly

Scenario 1 - BTC up by 5% in a month.

Payouts

Trader A	Trader B
Receipts Trader A = 5% of $10,000,000 in receipts = $500,000	**Receipts** 5% of the fed rate for a month.
Payments To Trader B 5% of the fed rate for a month.	$10,000,000 * 5/100*30/360 = $41666.66
$10,000,000 * 5/100*30/360 = $41666.66	**Payments to** Trader A = 5% of $10,000,000 = $500,000
Net Payout $500,000 - $41666.66 = $458,333.34	**Net Payout** $41666.66 - $500,000 = ($458,333.34)

Scenario 2 - BTC down by 5% in a month.

Payouts

Trader A

Receipts
Trader A = 5% negative of $10,000,000 in receipts =
($500,000)

Payments
To Trader B
5% of the fed rate for a month.

$10,000,000 * 5/100*30/360 = $41666.66

Net Payout
$500,000 + $41,666.66 = **($541,666.66)**

This indicates a net loss of $541,666.66. This simply means negative cash flows.

Trader B

Receipts
5% of the fed rate for a month.

$10,000,000 * 5/100*30/360 = $41666.66

Payments to
Trader A = Since BTC had a downdraft of 5%, Trader B is entitled to receive the proceeds of negative performance of 5%. This means 5% of $10,000,000 = $500,000

Net Payout
$41666.66 + $500,000 = $541,666.66 net receivables including the fixed rate and the returns made due to downdraft of BTC.

Scenario 3 - No price change on Price for BTC in a month.

Payouts

Trader A

Receipts
Trader A = 0% of $10,000,000 in receipts = 0

Payments
To Trader B
To Trader B 5% of the fed rate for a month.

$10,000,000 * 5/100*30/360 = $41666.66

Net Payout
$0 - $41666.66 = **($41,666.66)**

This indicates net loss of $41,666.66

Trader B

Receipts
5% of the fed rate for a month.

$10,000,000 * 5/100*30/360 = $41666.66

Payments to
Trader A = 0% of $10,000,000 = $0

Net Payout
$41,666.66 - 0 = $41,666.66 net receivables on fed funds rate.

In an alternate scenario, if the payout is on daily basis, then for bonds it would be

$10,000,000 * 5/100*1/360 = 1388.88. Next day the Notional would be $10,001,388.88

From there , for second day the fed interest would be 10,001,388.88*5/100*1/360 = $1389.08 would be the payout for Day 2. This continues till Day 30

Receive Crypto returns and pay another crypto returns

2. BTC/ETH

There are two traders. Trader A and Trader B. Trader A is bullish on BTC and Trader B is bullish on ETH. Both of them want to enter into a swap agreement to trade their stance.

Here are the contract details of the swap.

Notional Amount = $10,000,000

Crypto = BTC / USDC

Tenure = 1 Month

Fixed Amount paid = Volatile percentage of ETH & BTC

Floating Amount received = BTC & ETH Volatility on positive/negative movements

Payment Schedule = Monthly

Payout Scenario

Trader A

Trader A receives his receipts with the volatility of BTC. This means he would receive his payouts from the percentage increase/decrease movements of BTC.

Trader A would pay ETH movement i.e., volatility

Trader B

Trader B receives his payout with the volatility of ETH . This means he would receive his payouts from the percentage increase/decrease movements of ETH.

Trader would pay the volatile movement of BTC - positive/negative accordingly

Scenario 1 - BTC up by 5% in a month. 2% change in ETH.

Payouts

Trader A

Receipts
Trader A = 5% of $10,000,000 in receipts = $500,000

Payments
To Trader B
2% of the ETH for a month.

10,000,000 * 2/100 = $200,000

Net Payout
$500,000 - $200,000 = $300,000

Trader B

Receipts
2% of the ETH for a month.

10,000,000 * 2/100 = $200,000

Payments to
Trader A = 5% of $10,000,000 = $500,000

Net Payout
$200,000 - $500,000 = ($300,000)

Scenario 2 - BTC down by 5% in a month. No change in ETH

Payouts

Trader A

Receipts
Trader A = 5% negative of $10,000,000 in receipts = ($500,000)

Payments
To Trader B
No Change in ETH

10,000,000 * 0 = $0

Trader B

Receipts
0 on ETH

10,000,000 * 0 = $0

Payments to
Trader A = In this case BTC has posted negative 5% which means Trader B is entitled of 5% of $10,000,000 = $500,000

Net Payout
$500,000 + $0 = ($500,000)

This indicates a net loss of $500,000. Net loss is simply negative cash flow.

Net Payout
$0 + $500,000 = $500,000 net receivables includes the returns made due to downdraft of BTC.

Scenario 3 - BTC down by 5% in a month. 5% upside for ETH

Payouts

Trader A

Receipts
Trader A = 5% negative of $10,000,000 in receipts = ($500,000)

Payments
To Trader B
No Change in ETH

10,000,000 * 5/100 = $500,000

Net Payout
$500,000 + $500,000 = ($1,000,000)

This indicates a net loss of $1,000,000. Net loss is simply negative cash flow

Trader B

Receipts
5% on ETH

10,000,000 * 5/100= $500000

Trader A = In this case BTC has posted negative 5% which means Trader B is entitled of 5% of $10,000,000*5/100 = $500,000

Net Payout
$500,000 + $500,000 = $1,000,000 net receivables includes the returns made due to downdraft of BTC

- A crypto swap is an OTC contract between two parties to exchange a set of cash flows in the future. Normally one party pays the return based on capital gains and dividends realized on a crypto and the other party pays the return based on a floating interest rate plus a spread.

- The party receiving the crypto returns gains exposure to the performance of the reference crypto without actually owning the crypto; hence this instrument can be used to obtain a leveraged exposure

- On the other hand, the party receiving payments based on the reference rate receives protection against a loss in the value of the underlying equity.

- Unlike other swap types, the crypto swap notional resets on each cash flow reset date, depending on the performance of the underlying asset.
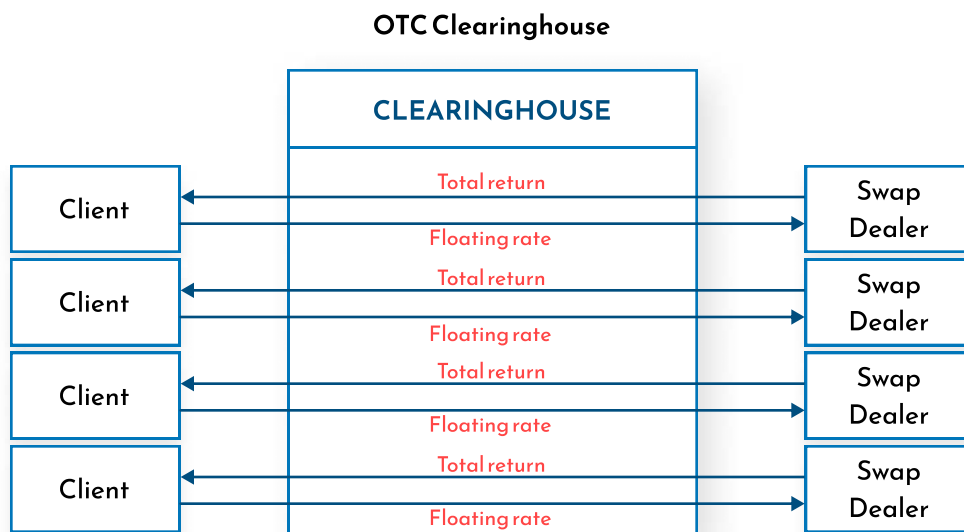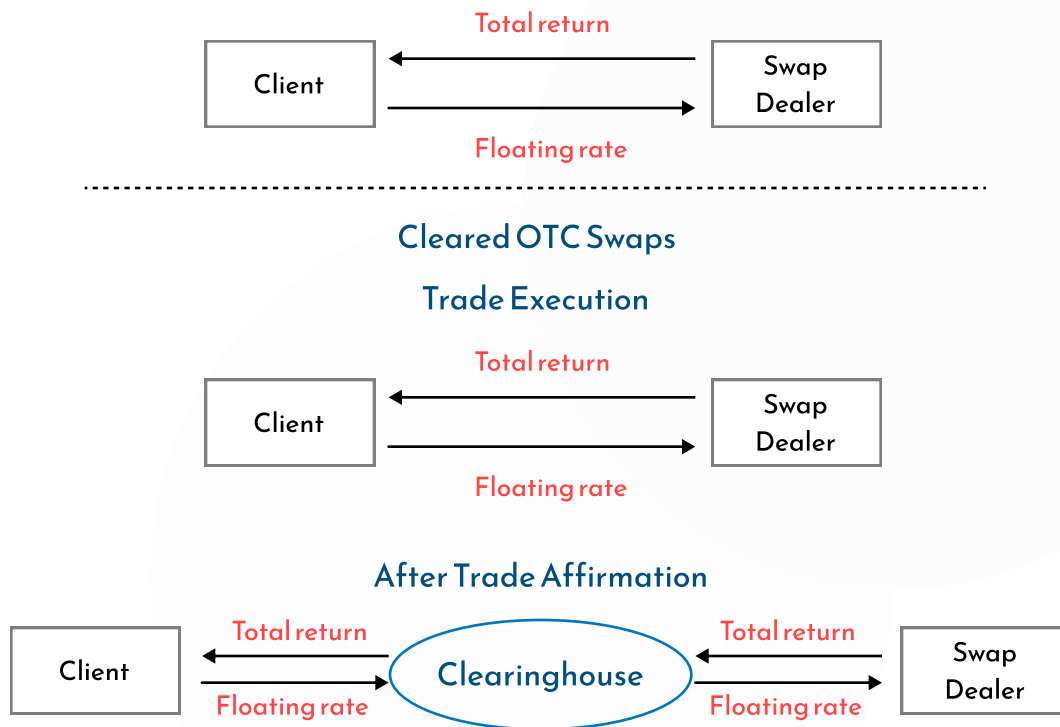
Clearing Houses

Another important element that is present in RWA is the clearing house. Clearing houses exist to clear the trade and mitigate the risk between counterparties. In RWA , everyone trades with clearing houses and these clearing houses are helpful to mitigate credit risk of a counterparty.

In RWA if one has to do a trade, they trade with a clearing house. What happens is that the dealer who is market making your trade finally would be facing the clearing house and orders are settled by clearing houses. Nobody knows the buyer and seller of a security and everyone would eventually be trading with clearing houses.

Clearing houses typically do settlement on a daily basis and they adjust MTM on a daily basis. Crypto doesn't have the concept of clearing houses and there would always be a risk of counterparties. This is the reason why we always have over collateralized loans and why entire crypto is permission less and trustless and is based only on collaterals. We at Verslan has understood the risk of counterparty and have managed to have strict norms to protect the players to overcome credit risk.

How Swaps typically got cleared is shown in the diagram.

Cleared OTC Swaps

Trade Execution

After Trade Affirmation

OTC Clearinghouse

After the GFC and introduction of the Dodd-Frank rule, The concept of clearing houses came into the picture and dealers started doing business with clearing houses. Settlements were made on a daily basis and collaterals had to be posted based on MTM. If collaterals are not posted, positions get liquidated.

The Depository Trust & Clearing Corporation (DTCC) is a financial services company providing clearing and settlement services to the financial markets. It performs the exchange of securities on behalf of buyers and sellers and functions as a central securities depository by providing central custody of securities. They're clearing a couple of quadrillion dollars worth of securities across the world. The dealer would be dealing with DTCC for clearing the swaps for its customers.
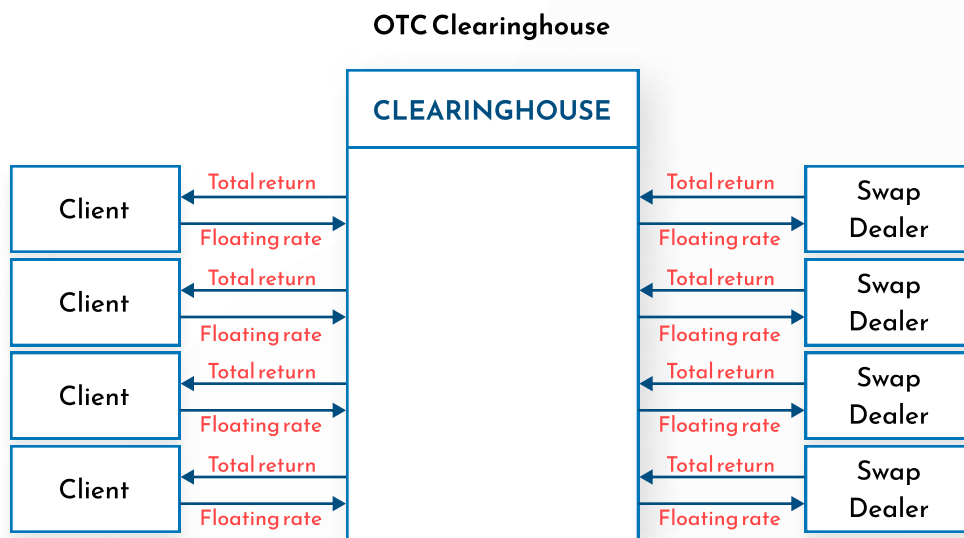
OTC Clearinghouse

Since there is no concept of clearing houses, Verslan needs to look into the counterparty credit risk and settle the trade in an efficient manner. For that we've made adjustments to make it fit into the DeFi model and bring it to the users. Over a period of time, we would come out with continuous updates and sophisticated models to the customers to use it in a better manner. We would continuously work to make it much more efficient and smooth for the customer to execute the trade and mitigate the risk in their portfolios.