

Terra Classic Delta-Neutral Strategy (Retired) *** As of August 2022 this strategy is no longer investable or withdrawable due to the shut down of the underlying protocol, Mirror ***

How does this work?

By definition, “delta neutral is a portfolio strategy utilizing multiple positions with balancing positive and negative deltas so that the overall delta of the assets in question totals zero.” (Source: [Investopedia](#)) Essentially, you create a delta-neutral position by betting on and against the same thing at the same time.

With the delta-neutral part figured out, let’s look at synthetic tokens in the DeFi world. “A synthetic asset is simply a tokenized derivative that mimics the value of another asset” (Source: [Shrimpy](#)). For instance, mSQ is a synthetic token on the Mirror Protocol that is pegged to the trading price of the Square stock (SQ). Such tokens can be traded 24 x 7, but new stock tokens can only be minted during market hours. Apart from stock tokens, there are also synthetic crypto tokens like mBTC, mETH, and mDOT. Unlike the stock tokens, these can be traded and minted 24 x 7.

Now let’s look at how the delta-neutral strategy on synthetic tokens can make money for you while neutralizing the price volatility of the underlying stock/crypto asset. With the Terra blockchain network, you can interact with 3 protocols — Anchor, Mirror, and Spectrum, to create a delta-neutral position and get a handsome return.

Delta-neutral Flow Chart Here is a workflow of the delta-neutral strategy with mSQ as an example. With an initial amount of 90 in the UST (the TerraUSD stablecoin running on Terra blockchain network), you will first need to divide that into 2 parts, one for long-farm and one for short-farm.

Firstly, two-thirds of the amount (60) will be deposited into Anchor and take the form of aUST, which earns you 20% APY. With the aUST as collateral and assuming a 200% collateral ratio, 30’s worth of mSQ will be minted and sold to create a short position. The proceeds from shorting the tokens (30) will be locked for 2 weeks before being distributed. With the sLP Tokens (Short Liquidity Provider Token) staked, you will earn the short-farm yield.

Secondly, one-third of the original amount (30) will be used to purchase the mSQ tokens. The tokens will be deposited into the Terraswap liquidity pool along with the 30 proceeds from the short sale unlocked after the waiting period. You can then stake the mSQ-UST pair either on Mirror or Spectrum to earn the long-farm yield.

Once the delta-neutral position is fully established, you will earn yield from 3 venues — savings interests from Anchor Earn, the short-farm yield from Mirror, and long-farm yield from either Mirror or Spectrum.

What are the risks?

A delta-neutral position is not necessarily a risk-free position. Here are some of the risks involved:

Liquidation Risks — As explained above, there is a short position (a liability you need to pay back eventually) in the portfolio, and that portion is subject to liquidation risks. For the same example, if the Square stock rises by 50%, your underlying asset mSQ which mimics the stock price will also grow by 50%. The same amount of aUST as collateral won’t be enough to maintain the original 200% collateral ratio in this example (note the minimum required collateral ratio for mSQ is 150%). If the additional collateral is not deposited in time, the account will be flagged for liquidation. The investor needs to monitor the price movement and adjust positions accordingly.

Deviation from Delta-neutral — Any change in the demand/price of mSQ will have an impact on the mSQ-UST pair you staked. For example, if the price of mSQ goes up, part of your mSQ will be swapped to UST. And the dynamic balance of your mSQ-UST pair will tip towards the UST side with your UST holding outweighing your mSQ holding. From the liquidity provider perspective, this is considered an “impermanent loss”. However, if you look at the whole portfolio, with less mSQ than before, you end up with a “net short” position (part of your short position is not hedged by a long position). Rebalancing is needed to return to delta-neutral.

Price Fluctuation of the Reward Tokens — Besides the aUST collateral which earns you a stable rate of approximately 20%, the yield is distributed in the form of protocol tokens (MIR, SPEC) which are subject to price fluctuation. If the price is on the rise, the token you receive as a reward will be worth more. And vice versa. From an investment strategy perspective, regularly selling these tokens and reinvesting will be a way to eliminate the uncertainty. But if you are bullish on these tokens, you may choose to hold on to them as-is for the future upside.

Insufficient Exit Liquidity - Some may be concerned that there might not be sufficient liquidity in the market when they want to exit. While this is a valid concern for trading synthetic stock tokens in general, it does not apply to the delta-neutral strategy, because when you choose to exit, you are canceling out your positions (literally paying back the tokens you owe on one side with the tokens you have on the other side) rather than seeking a buyer to take over your long position.

The Aperture Approach

While all the above can be done manually, there is a considerable amount of labor with risks involved — we haven’t

discussed the possibility of manual mistakes and poor timing (not being able to open the long and short position at the same asset price). Aperture has developed smart contracts to automate the transactions with additional features:

Liquidation protection — a delta-neutral position is not a risk-free position. The short position is still susceptible to liquidation. If the underlying assets grow significantly in a short period, this may result in insufficient collateral and trigger liquidation. Aperture has a liquidation protection mechanism built into the smart contracts — constantly monitoring the Oracle price and dynamically increasing or decreasing long positions to allocate the money to meet the collateral requirement. Users will be offered the option to pick their desired collateral ratio.

Capital Efficiency — while the synthetic tokens are set to follow the price of the stock (Oracle), they are usually trading at a premium or a discount depending on supply and demand. The token price (Terraswap price) is very sensitive to trading volumes. For example, if the mSQ token is trading at 160 apiece, it is natural to assume that you can buy 10 tokens with 1,600. But in fact, the amount you can afford is slightly less than 10, because, with your purchase, the price would have been driven up slightly by none other than yourself (if no one else is trading at the same time). Aperture uses a series of complex algorithms to find the optimal allocation between long and short positions, with the premiums, discounts, and price impacts factored into the calculation to ensure maximum capital efficiency.

Atomic transactions — related to the point above, when you create a short position, your sell order will drive the price down as the price is susceptible to liquidity change. The larger the order, the steeper the drop. And when you buy back the same amount for your long position, you drive the price back to roughly the previous level. This temporary dip that you create is a lucrative one — it's good news for people waiting to buy at the bottom, but you won't be so happy if someone else cuts in and takes advantage of the differential at your expense. In which case, you will pay more for the long position, and lose part of your investment even before establishing the delta-neutral position. Aperture utilizes smart contracts to make it possible to scale with large investments and ensure the long position and short position get executed atomically in the same block to avoid any slippage described above and risks of other investors swooping in and taking advantage.

Auto-compound and rebalance — as explained above, converting the reward tokens to UST and reinvesting is a way to remove uncertainties caused by the fluctuations of token price. Regular rebalance brings your positions back to a delta-neutral state, while auto-compound increases your core positions so that you are on track for greater yield. Aperture picks the optimal frequency for auto-compound and rebalancing for you based on the capital amount. What's more, Aperture dynamically compares the quotes from Terraswap and Astroport, and picks the better price available to swap the reward tokens to UST.

For our initial launch, we will go with individual portfolios — your asset is not pooled into a vault with others, and you have full control over your investment. This way you enjoy the best return and maximize capital efficiency!

We are targeting a private beta starting in January 2022. Please share the news, and join our waiting list ([link here](#)) to get access before everyone else.

Notes: Here is the estimated return calculated based on a 30-day average from 11/29/2021 ~ 12/28/2021 for reference:

- mSQ short-farm APR: 23.28%; APY (monthly compounded): 25.93%
- mSQ long-farm APR: 17.86% ; APY (monthly compounded): 19.40%
- mSQ long-farm SPEC APY: 3.26% (12/29/2021, instantaneous)
- aUST Collateral on Anchor APY: 20%
- Overall:
 $(20\% \times \frac{2}{3}) + (25.93\% \times \frac{1}{3}) + (19.4\% + 3.26\%) \times \frac{2}{3} = 37.08\%$
- General Formula for Avg. APR
 $= (\text{Anchor APR} \times \frac{2}{3}) + (\text{Short Farm APR} \times \frac{1}{3}) + (\text{Long Farm APR} \times \frac{2}{3})$
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Reference: [Mirror V2-What's new, Walkthrough and Advanced Farming Strategies](#)

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